ASTRO-BALLISTIC CHRONOSTRATIGRAPHIC SEQUENCING

NORTH AMERICAN MIDDLE MOUNTAIN | PAPER II

Transmission Through a Differentiated Earth: Mechanical Framework

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Manuscript Status and Disclosure Boundary

Series: Astro-Ballistic Chronostratigraphic Sequencing (ABC Sequencing).
Paper: II of V.
Status: Complete *initial structural and source-qualified draft*, not a canonical freeze, executed mechanical solution, or final substantiated mechanical manuscript.
Canonical architectural template: Justin B Fine, *ABC Sequencing II: Transmission Through a Differentiated Earth*, 196 pages, Canonical Corpus Freeze 1.0 (August 7, 2026) [1].
Immediate technical inheritance: *ABC North America Paper I, Refinement Pass 15 v1.6* [2] and the fixed-turn Denali files [3–6].

This North American mirror retains the original Paper-II progression and its fifty-four chapter positions. Its correspondence is **structural and methodological**, not a transfer of the Aegean event's values. The North American route in Paper I has a different defined metric: Leg 1 is **one** entrance-to-turn chord; Leg 2 is the **sum of eight** successive segment chords. A separate mechanical path is not implied by those calculations. No Aegean numerical energy, impactor state, momentum, rheology, phase or terminal-response value is inserted here as a North American fact.

The Principal Investigator's public-disclosure boundary excludes proprietary mineralogy and bounce-back/energetic mechanics. Therefore all affected headings remain in their canonical places but do **not** contain newly generated constitutive expressions, energy calculations, simulations or predictions. The absence of such content is a deliberate disclosure restriction, not an empirical failure finding.

Declaration of Purpose

Paper I specifies the North American geometry. Paper II occupies the original corpus role of a mechanical-eligibility manuscript: it distinguishes inherited geographic inputs from physical pathways, response inheritance, terminal outputs, global constraints and later causal comparison. The point of this first draft is to carry **only** the source-established Denali content into those original manuscript slots, while preserving the unfilled scientific obligations for subsequent authorized revision. The present draft contains no independent claim to have resolved the full mechanics.

Source Status and Citation Policy

The canonical Paper II is the **source for organization and scientific function**, not the source for North American physical parameters [1]. The complete working North American Paper I supplies the event-specific geographic handoff [2]. *Denali Exact.pdf* controls the later fixed-turn and solved-entrance configuration [3]. The spreadsheet supplies additional precision for seven corridor segments [4]. Earlier mathematical records are developmental and are not allowed to overwrite the later selected route [5,6]. External geophysical models cited in the original Paper II are not represented as though independently accessed or recalibrated here.

Data, Evidence, and Provenance Convention

The project inputs are author-declared positions, a selected reference sphere, a chosen corridor, and the quoted source arithmetic. The route's lengths are manuscript-derived calculations. The labels *Malpelo entrance*, *Denali middle mountain* and *Arctic terminal* name interpretive candidate roles. No source data supplied to this adaptation independently establishes a mechanical passage, a geological event age, a causal uplift mechanism or a global environmental outcome.

Every mechanical field would require its own source, method, units, event parameters, uncertainty and reproduction record before numerical statements could be made. Those requirements are preserved from Paper II as documentary structure; their satisfaction is not asserted.

Source Inheritance and Supersession

The canonical Paper II works from the Aegean–Himalayan–Mariana candidate and an explicit original mechanics parameterization. That parameterization is **not** inherited by the North American candidate merely because the manuscript architecture is mirrored. The later Denali fixed-turn record supersedes the earlier local project sketches **for the purpose of this working coordinate calculation only** [3–6]. The selected geometry is not a supersession of the original ABC physical theory.

Epistemic Status and Claim-Language Convention

Use **declared** for geographic and metric inputs; **calculated** for reproducible length outputs; **geometric correspondence** for the matched total chord lengths; **proposed** for a geological role; **reserved** for private or unauthorized mechanics; and **not evaluated** for an unrun simulation or incomplete comparison. None of these labels means *validated*. This convention remains active throughout all fifty-four chapters.

Prediction, Falsification, and Decision-Threshold Convention

The original source's falsification machinery is represented as chapter and subsection structure. No new North American threshold is specified and no observational search or simulation is claimed as conducted. A missing mechanics result is **not evaluated**, not *failed*; a source-derived geometric match does not carry an implicit mechanical pass.

Causal-Chain, Assumption, and Alternative-Explanation Convention

The chain from selected coordinate inputs to calculated chords is explicit and reproducible. The proposed extensions from a geographic corridor to physical transmission, middle-mountain inheritance and a terminal geological interpretation are scientifically separate. They are not filled with mechanisms by analogy or by borrowing the parent event's numbers.

Abstract

This paper mirrors the fifty-four-chapter architecture of *Astro-Ballistic Chronostratigraphic Sequencing II: Transmission Through a Differentiated Earth* for the North American corridor documented in the Ontomics Denali working files. It receives a Malpelo-region entrance at approximately $0.448874^\circ\text{N}, 81.429273^\circ\text{W}$, an author-fixed turn at $62.3843^\circ\text{N}, 146.8997^\circ\text{W}$, and an ordered northern segment chain through Denali, Juneau, Unalaska, Adak, Amchitka, Attu and an under-Siberia/Chukchi waypoint to a terminal domain at $80.5^\circ\text{N}, 140^\circ\text{E}$. The direct first-leg chord is reported as 8,061.8708 km and the sum of eight second-leg chords is reported as 8,061.8708 km; Denali lies about 222.678 km along that second-leg chain from the fixed turn. These are declared-input geometric results, not a solved transmission trajectory. The canonical mechanics sections, including event parameters, constitutive properties, branch comparison, entrance coupling, inherited response, terminal behavior, planetary survival, nested viability and replication, are maintained as source-identified positions without fabricating North American physical results or publishing excluded proprietary content. The present initial draft is therefore complete in chapter architecture and source-qualified handoff, but unresolved in event-level mechanics.

Keywords: ABC Sequencing; North American mirror; Denali; Malpelo; middle mountain; Arctic terminal; geometric chord; segment-chord corridor; mechanics handoff; source provenance; reserved physical model.

Paper-II Structural Inheritance

The manuscript follows the original series order: inherited inputs → physical model branches → event state → governing and constitutive framework → entrance → interior path → middle-mountain inheritance → terminal response → planetary survival → global decision → replication → Paper-III handoff. Chapter headings are retained with the minimum geographic substitutions needed for the expressly named North American subject. Scientific data not supplied are not backfilled.

1 Mechanical Burden of the Series

The canonical Paper-II question is mechanical eligibility, not geometric attractiveness. Paper I transmits declared positions, a piecewise route and its calculation status. The North American records do not transmit an impactor state or a solved propagation solution. The manuscript therefore holds the same question open while keeping the geometric handoff exact.

Paper-I-to-II geographic input register

Registered field	Value	Scientific status
Entrance E	0.448874° N, 81.429273° W	Numerically solved within author-identified Malpelo region
Turn M	62.3843° N, 146.8997° W	Author-fixed surface projection
Leg 1	8061.8708 km	Direct chord $c(E, M)$
Leg 2	8061.8708 km	Sum of eight route-segment chords
Turn-to-Denali	222.678 km	First second-leg segment chord, rounded
Terminal point	80.5° N, 140° E	Selected northern target point
Dynamic event state	Not supplied	No mechanical evaluation

The table preserves the stated metric rather than claiming that two straight entrance-to-terminal half-chords are congruent. It also preserves the difference between declared geometric choices, the numerically fitted entrance, and an independently established physical event [2–4].

1.1 Canonical Corpus Terminology

The source uses *midpoint* for a geometric station and *midpoint response* for a physical state. This mirror preserves that distinction: the turn is the defined point M and Denali is the separate geographic reference on the following corridor segment. The word *terminal* does not assert that material physically exited at the northern waypoint.

1.2 Paper-I Handoff Intake

The Paper-I handoff contains $E = (0.448874^\circ\mathrm{N}, 81.429273^\circ\mathrm{W})$, $M = (62.3843^\circ\mathrm{N}, 146.8997^\circ\mathrm{W})$, the ordered northern corridor, the reference spherical radius $R = 6371\,\mathrm{km}$, the chord-distance formula and the reported total lengths. It does not contain validated mechanical initial or boundary conditions [2,3].

1.3 Paper-II Input and Provenance Snapshot

The populated input fields are $R = 6{,}371\,\mathrm{km}$, the author-fixed turn $M = (62.3843^\circ\mathrm{N}, 146.8997^\circ\mathrm{W})$, the fitted entrance $E \approx (0.448874^\circ\mathrm{N}, 81.429273^\circ\mathrm{W})$, and the ordered northern corridor through Denali and seven later stations. The computed geometric record is $c(E, M) \simeq \sum c(W_k, W_{k+1}) \simeq 8{,}061.8708\,\mathrm{km}$, with $c(M, D) \simeq 222.678\,\mathrm{km}$. The *Denali Exact* PDF supplies the first chord; the workbook supplies the **seven later chord/arc pairs**. These are geometry and source-provenance entries, not the physical state vector required for a mechanical solution. Material parameters, event energy, pressure fields, stress histories, and response centroids are not supplied by these files. Their canonical positions remain unpopulated or restricted, not inferred from the numerical distance match.

1.4 Geometry Does Not Supply Mechanics

The retained equality is $L_1 = L_2$ under a mixed path construction: $L_1 = c(E, M)$ and $L_2 = \sum_{j=0}^{7} c(W_j, W_{j+1})$. This identity does not specify a force law, physical turn, wavefront, or path-localized event. The mathematical

level of the result must not be upgraded by calling it a mechanism.

1.5 The Required Connected Sequence

For the North American substitution, **the required connected sequence** is read against the fixed Malpelo entrance, the declared turn, the downstream Denali station and the selected northern waypoint chain. Only the coordinate and chord quantities actually reported in [2–4] enter the manuscript. A named geographic role does not certify the corresponding physical history.

1.6 The Mechanical Replacement Burden

The canonical Paper-II heading **The Mechanical Replacement Burden** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

1.7 Mechanical Causal-Bridge Decomposition

The canonical Paper-II heading **Mechanical Causal-Bridge Decomposition** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

2 Mechanism Branches

The canonical source separates alternative carrier descriptions into five branches. For the North American adaptation, none is selected as the explanation of the two-leg route. The names are preserved here solely to maintain the source chapter progression; no branch-specific mechanism is supplied or disclosed.

2.1 Branch I: Coherent-Body Penetration

The canonical Paper-II heading **Branch I: Coherent-Body Penetration** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

2.2 Branch II: Fragmented Penetration Column

The canonical Paper-II heading **Branch II: Fragmented Penetration Column** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

2.3 Branch III: Shock-Dominated Transmission

The canonical Paper-II heading **Branch III: Shock-Dominated Transmission** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

2.4 Branch IV: Fracture- and Phase-Front Transmission

The canonical Paper-II heading **Branch IV: Fracture- and Phase-Front Transmission** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

2.5 Branch V: Hybrid Transmission

This heading is retained from the canonical Paper-II chapter hierarchy. The corresponding North American claim cannot be populated from the available fixed-turn measurements without introducing a new hypothesis, physical model or observational program; no such addition is made. Its source status remains **unresolved** in the present first draft.

2.6 Branch-Level Falsification

Branch-Level Falsification retains its original adjudicative function: it distinguishes a proposed result from the evidence and computation needed to judge it. The available source bundle supports the specified coordinates, corridor, chords and stated offset; it provides no executed mechanical outcome for this heading. The status here is **not evaluated**, without a newly chosen threshold, statistical fit, simulation or comparative verdict.

2.7 No Auxiliary-Event Rescue

This heading is retained from the canonical Paper-II chapter hierarchy. The corresponding North American claim cannot be populated from the available fixed-turn measurements without introducing a new hypothesis, physical model or observational program; no such addition is made. Its source status remains **unresolved** in the present first draft.

2.8 Branch Assumptions, Transition Tests, and Equifinality

Branch Assumptions, Transition Tests, and Equifinality retains its original adjudicative function: it distinguishes a proposed result from the evidence and computation needed to judge it. The available source bundle supports the specified coordinates, corridor, chords and stated offset; it provides no executed mechanical outcome for this heading. The status here is **not evaluated**, without a newly chosen threshold, statistical fit, simulation or comparative verdict.

3 Event Parameter Vector

The supplied Denali documents state coordinates, a fixed turn and chord lengths. They do not specify a North American event mass, radius, initial velocity, density, incidence state, or kinetic-energy search domain. Values imported from the Aegean event would be a false substitution.

3.1 Initial Event State

This heading is retained from the canonical Paper-II chapter hierarchy. The corresponding North American claim cannot be populated from the available fixed-turn measurements without introducing a new hypothesis, physical model or observational program; no such addition is made. Its source status remains **unresolved** in the present first draft.

3.2 Inherited Search Domain

This heading is retained from the canonical Paper-II chapter hierarchy. The corresponding North American claim cannot be populated from the available fixed-turn measurements without introducing a new hypothesis, physical model or observational program; no such addition is made. Its source status remains **unresolved** in the present first draft.

3.3 Impactor Radius

The canonical Paper-II heading **Impactor Radius** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

3.4 Initial Momentum

The canonical Paper-II heading **Initial Momentum** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

3.5 Impact Parameter and Angular Momentum

The canonical Paper-II heading **Impact Parameter and Angular Momentum** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

4 Differentiated Earth Model

The original paper assigns a differentiated-Earth background to its mechanical analysis. No project-supplied, event-time North American Earth realization, constitutive profile, or boundary-value model is available for this adaptation. Geometry cannot stand in for the missing material fields.

4.1 Earth Cannot Be Treated as One Uniform Medium

This heading is retained from the canonical Paper-II chapter hierarchy. The corresponding North American claim cannot be populated from the available fixed-turn measurements without introducing a new hypothesis, physical model or observational program; no such addition is made. Its source status remains **unresolved** in the present first draft.

4.2 Radial Layer Model

This heading is retained from the canonical Paper-II chapter hierarchy. The corresponding North American claim cannot be populated from the available fixed-turn measurements without introducing a new hypothesis, physical model or observational program; no such addition is made. Its source status remains **unresolved** in the present first draft.

External context: E08 | bibliography: Appendix EC

4.3 Minimum Layer Set

This heading is retained from the canonical Paper-II chapter hierarchy. The corresponding North American claim cannot be populated from the available fixed-turn measurements without introducing a new hypothesis, physical model or observational program; no such addition is made. Its source status remains **unresolved** in the present first draft.

4.4 Background State

This heading is retained from the canonical Paper-II chapter hierarchy. The corresponding North American claim cannot be populated from the available fixed-turn measurements without introducing a new hypothesis, physical model or observational program; no such addition is made. Its source status remains **unresolved** in the present first draft.

4.5 Heterogeneous Earth Extension

This heading is retained from the canonical Paper-II chapter hierarchy. The corresponding North American claim cannot be populated from the available fixed-turn measurements without introducing a new hypothesis, physical model or observational program; no such addition is made. Its source status remains **unresolved** in the present first draft.

5 Governing Conservation Laws

The original chapter's conservation-law hierarchy is retained. Its role is to distinguish a geometric corridor from a physically conserved transmission history; no event budget is computed in this public working draft.

5.1 Mass Conservation

The canonical Paper-II heading **Mass Conservation** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

5.2 Momentum Conservation

The canonical Paper-II heading **Momentum Conservation** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

5.3 Total Energy Conservation

The canonical Paper-II heading **Total Energy Conservation** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

5.4 Angular Momentum Conservation

The canonical Paper-II heading **Angular Momentum Conservation** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equa-

tions of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

5.5 Gravity

The canonical Paper-II heading **Gravity** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

5.6 Stress Decomposition

The canonical Paper-II heading **Stress Decomposition** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

5.7 Damage Evolution

The canonical Paper-II heading **Damage Evolution** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

5.8 Phase Evolution

The canonical Paper-II heading **Phase Evolution** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

5.9 Melt and Vapor Evolution

The canonical Paper-II heading **Melt and Vapor Evolution** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

6 Chronology and Material-Path Branches

Paper I's point sequence is present-day coordinate geometry in its declared reference sphere. The early working PDFs also mention chronological ideas, but they are not a frozen physical-event history. This chapter does not assign a new initiation date or rewrite paleo-geography.

6.1 Frozen Flagship Initiation

For the North American substitution, **frozen flagship initiation** is read against the fixed Malpelo entrance, the declared turn, the downstream Denali station and the selected northern waypoint chain. Only the coordinate and chord quantities actually reported in [2–4] enter the manuscript. A named geographic role does not certify the corresponding physical history.

External context: E07 | bibliography: Appendix EC

6.2 Paper-I Geography Is a Branch Family

For the North American substitution, **paper-i geography is a branch family** is read against the fixed Malpelo entrance, the declared turn, the downstream Denali station and the selected northern waypoint chain. Only the coordinate and chord quantities actually reported in [2–4] enter the manuscript. A named geographic role does not certify the corresponding physical history.

6.3 Event-Time Earth State

For the North American substitution, **event-time earth state** is read against the fixed Malpelo entrance, the declared turn, the downstream Denali station and the selected northern waypoint chain. Only the coordinate and chord quantities actually reported in [2–4] enter the manuscript. A named geographic role does not certify the corresponding physical history.

6.4 Response Clocks

For the North American substitution, **response clocks** is read against the fixed Malpelo entrance, the declared turn, the downstream Denali station and the selected northern waypoint chain. Only the coordinate and chord quantities actually reported in [2–4] enter the manuscript. A named geographic role does not certify the corresponding physical history.

6.5 Branch-Specific Mechanical Viability

The canonical Paper-II heading **Branch-Specific Mechanical Viability** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

6.6 No Reconstruction-by-Outcome

For the North American substitution, **no reconstruction-by-outcome** is read against the fixed Malpelo entrance, the declared turn, the downstream Denali station and the selected northern waypoint chain. Only the coordinate and chord quantities actually reported in [2–4] enter the manuscript. A named geographic role does not certify the corresponding physical history.

7 Initial and Boundary Conditions

The coordinates can be written exactly as declared; the physical state at those positions cannot. The entrance is a numerically solved Malpelo-region coordinate, the terminal is a source-specified northern point, and the turn is an author-fixed geometric station; none is a demonstrated coupling center.

The source-defined corridor is $M \to$ Denali $\to$ Juneau $\to$ Unalaska $\to$ Adak $\to$ Amchitka $\to$ Attu $\to$ Chukchi $\to$ terminal. Its ordered waypoints specify the **geometric chain** only. Initial speed, impact direction, penetration properties and event-time boundaries are not determined by the coordinate sequence.

7.1 Entrance Position

The entrance coordinate is approximately $0.448874^\circ\text{N}, 81.429273^\circ\text{W}$ in the Malpelo region. The longer coordinate appearing in the calculation record is $(0.44887422830847457^\circ, -81.42927293513645^\circ)$ in east-positive-longitude notation. This point was **solved** after selecting the turn and second-leg corridor to satisfy $c(E, M) = L_2$; it is not

an independently fixed initial-state boundary. Its numerical role, coordinate convention and fit order are inherited from *Denali Exact.pdf*. No physical entrance boundary condition is inferred from that fit.

7.2 Exit Target

The route terminates at the source-prescribed northern coordinate near $80.5°\mathrm{N}, 140°\mathrm{E}$. It is reached in the declared sequence through the penultimate $73°\mathrm{N}, 170°\mathrm{E}$ station, for which the workbook records a final **1,104.2292571383 km chord** (rounded to $1,104.229$ km in *Denali Exact.pdf*). This is the final **pairwise geometric segment**, not the one-chord distance from the turn to the terminal or a computed exit velocity, temperature or energy. The source specifies the geographic target but no physical exit-state solution.

7.3 Initial Direction

The note records a bearing of approximately **111.820° from the fixed turn toward a reference Ecuador direction** during its entrance-coordinate fitting. That is a **geometric direction used in solving the entrance**, not a supplied incidence, incoming velocity, trajectory, or material-motion vector. This manuscript does not convert the source bearing into a physical initial direction. (*Denali Exact.pdf.*)

7.4 Initial Velocity

No initial-velocity magnitude, vector, reference frame, or uncertainty is provided in the controlling *Denali Exact* record or the seven-row corridor workbook. The equality $c(E, M) = \sum c(W_k, W_{k+1})$ contains distance information only; it cannot supply a velocity through a travel-time assumption not present in the record. **Mechanical input status: not supplied.**

7.5 Atmospheric and Surface Entry

For the North American substitution, **atmospheric and surface entry** is read against the fixed Malpelo entrance, the declared turn, the downstream Denali station and the selected northern waypoint chain. Only the coordinate and chord quantities actually reported in [2–4] enter the manuscript. A named geographic role does not certify the corresponding physical history.

7.6 Outer Boundary

For the North American substitution, **outer boundary** is read against the fixed Malpelo entrance, the declared turn, the downstream Denali station and the selected northern waypoint chain. Only the coordinate and chord quantities actually reported in [2–4] enter the manuscript. A named geographic role does not certify the corresponding physical history.

7.7 Center and Symmetry Conditions

For the North American substitution, **center and symmetry conditions** is read against the fixed Malpelo entrance, the declared turn, the downstream Denali station and the selected northern waypoint chain. Only the coordinate and chord quantities actually reported in [2–4] enter the manuscript. A named geographic role does not certify the corresponding physical history.

7.8 Pre-Existing Stress and Motion

The canonical Paper-II heading **Pre-Existing Stress and Motion** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations

of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

8 Required Mechanical Output Fields

The source canon requires separate local and global outputs rather than a distance-match verdict. The present project supplies geometric inputs and derived lengths, not numerical response fields. Each mechanics-output slot is retained with an uncomputed status.

8.1 Primary State Fields

This heading is retained from the canonical Paper-II chapter hierarchy. The corresponding North American claim cannot be populated from the available fixed-turn measurements without introducing a new hypothesis, physical model or observational program; no such addition is made. Its source status remains **unresolved** in the present first draft.

8.2 Path Fields

The only populated path data in the North American source set are the coordinates and **pairwise chord or arc distances** of the prescribed station sequence. They specify neither a continuous material trajectory between segments nor a solved stress, energy, shock, or transport field along the route. Under the source's metric, the second leg is the sum of its eight individual chords, not a single straight-through Earth chord. Consequently this subsection records geometric path coordinates and the absence of mechanical path fields; it does not substitute geometry for a transmission calculation.

8.3 Entrance Fields

Paper I supplies a fitted Malpelo coordinate and a direct entrance-to-turn chord of approximately **8,061.8708 km**. The sources provide **no computed entrance pressure, strain, displacement, fracture field, thermal field, or mass/energy partition**. Those fields remain absent, rather than populated using the original Aegean case or inferred from the numerical equality. The coordinate is a geometric handoff only.

8.4 Midpoint Fields

The fixed turn and the Denali summit are two different spatial roles. Their first downstream segment chord is reported as **222.678 km**. No physical midpoint state, local maximum-response coordinate, time series, stress tensor, or structural-output field is provided. The 222.678 km is a geometric separation, **not** a measured response-zone radius or mechanically predicted offset.

8.5 Exit Fields

This heading is retained from the canonical Paper-II chapter hierarchy. The corresponding North American claim cannot be populated from the available fixed-turn measurements without introducing a new hypothesis, physical model or observational program; no such addition is made. Its source status remains **unresolved** in the present first draft.

8.6 Global Fields

This heading is retained from the canonical Paper-II chapter hierarchy. The corresponding North American claim cannot be populated from the available fixed-turn measurements without introducing a new hypothesis, physical

model or observational program; no such addition is made. Its source status remains **unresolved** in the present first draft.

9 Mechanical Viability and Model Selection

Mechanical viability is a statement about a connected physical solution, not about the solvability of a spherical-distance equation. This draft cannot register a viable physical event from the known chord equality alone.

9.1 Viable Parameter Set

Viable Parameter Set retains its original adjudicative function: it distinguishes a proposed result from the evidence and computation needed to judge it. The available source bundle supports the specified coordinates, corridor, chords and stated offset; it provides no executed mechanical outcome for this heading. The status here is **not evaluated**, without a newly chosen threshold, statistical fit, simulation or comparative verdict.

9.2 Primary Mechanical Falsifier

The canonical Paper-II heading **Primary Mechanical Falsifier** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

9.3 Branch Comparison

Branch Comparison retains its original adjudicative function: it distinguishes a proposed result from the evidence and computation needed to judge it. The available source bundle supports the specified coordinates, corridor, chords and stated offset; it provides no executed mechanical outcome for this heading. The status here is **not evaluated**, without a newly chosen threshold, statistical fit, simulation or comparative verdict.

9.4 Mechanical Admissibility Versus Historical Attribution

Neither admissibility nor historical attribution follows from the recorded equality. A mechanical admissibility verdict would require outputs from an identified physical branch; a historical attribution would additionally require independent observations and temporal reconstruction. In the provided North American files, only the fixed-turn and fitted-entrance geometry is numerically populated. Both verdict fields therefore remain **not determined**, rather than being conflated with the source's equal-leg arithmetic. Proprietary energetic and material details remain outside the released manuscript by instruction.

9.5 Replacement Relevance

This heading is retained from the canonical Paper-II chapter hierarchy. The corresponding North American claim cannot be populated from the available fixed-turn measurements without introducing a new hypothesis, physical model or observational program; no such addition is made. Its source status remains **unresolved** in the present first draft.

10 Simulation Hierarchy

The multi-stage simulation architecture is inherited from ABC Paper II. It remains a methodological hierarchy here, not a claim that calculations were run. No solver, mesh, Earth model, initial state or numerical field was provided for the North American candidate.

10.1 Stage 0: Analytic Screening

This heading is retained from the canonical Paper-II chapter hierarchy. The corresponding North American claim cannot be populated from the available fixed-turn measurements without introducing a new hypothesis, physical model or observational program; no such addition is made. Its source status remains **unresolved** in the present first draft.

10.2 Stage 1: One-Dimensional Shock and Column Models

The canonical Paper-II heading **Stage 1: One-Dimensional Shock and Column Models** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

10.3 Stage 2: Two-Dimensional Axisymmetric Entrance Models

This heading is retained from the canonical Paper-II chapter hierarchy. The corresponding North American claim cannot be populated from the available fixed-turn measurements without introducing a new hypothesis, physical model or observational program; no such addition is made. Its source status remains **unresolved** in the present first draft.

10.4 Stage 3: Three-Dimensional Layered-Earth Models

This heading is retained from the canonical Paper-II chapter hierarchy. The corresponding North American claim cannot be populated from the available fixed-turn measurements without introducing a new hypothesis, physical model or observational program; no such addition is made. Its source status remains **unresolved** in the present first draft.

10.5 Stage 4: Long-Time Geodynamic Evolution

This heading is retained from the canonical Paper-II chapter hierarchy. The corresponding North American claim cannot be populated from the available fixed-turn measurements without introducing a new hypothesis, physical model or observational program; no such addition is made. Its source status remains **unresolved** in the present first draft.

10.6 Stage 5: Observation Forward Model

This heading is retained from the canonical Paper-II chapter hierarchy. The corresponding North American claim cannot be populated from the available fixed-turn measurements without introducing a new hypothesis, physical model or observational program; no such addition is made. Its source status remains **unresolved** in the present first draft.

11 Mechanical Framework Synthesis

The opening mechanical framework establishes that geometry and admissible dynamics occupy distinct evidentiary layers. The North American manuscript has a completed declared-coordinate calculation but no completed mechanical branch, so the synthesis remains an explicitly limited transition.

The chapter retains its canonical synthesis function without extending the supplied evidence into an unsupported causal resolution.

12 Equations of State

Equation-of-state closure belongs to the original mechanics layer. Since public energetic and mineralogical content is expressly excluded, no constitutive law, fitted material parameter or thermal closure is inserted into this adaptation.

12.1 Purpose

This heading is retained from the canonical Paper-II chapter hierarchy. The corresponding North American claim cannot be populated from the available fixed-turn measurements without introducing a new hypothesis, physical model or observational program; no such addition is made. Its source status remains **unresolved** in the present first draft.

12.2 Thermodynamic Closure

This heading is retained from the canonical Paper-II chapter hierarchy. The corresponding North American claim cannot be populated from the available fixed-turn measurements without introducing a new hypothesis, physical model or observational program; no such addition is made. Its source status remains **unresolved** in the present first draft.

12.3 Reference Cold Curve

This heading is retained from the canonical Paper-II chapter hierarchy. The corresponding North American claim cannot be populated from the available fixed-turn measurements without introducing a new hypothesis, physical model or observational program; no such addition is made. Its source status remains **unresolved** in the present first draft.

12.4 Mie–Gruneisen Form

This heading is retained from the canonical Paper-II chapter hierarchy. The corresponding North American claim cannot be populated from the available fixed-turn measurements without introducing a new hypothesis, physical model or observational program; no such addition is made. Its source status remains **unresolved** in the present first draft.

12.5 Shock-Velocity Relation

The canonical Paper-II heading **Shock-Velocity Relation** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

12.6 Mixed-Material Cells

This heading is retained from the canonical Paper-II chapter hierarchy. The corresponding North American claim cannot be populated from the available fixed-turn measurements without introducing a new hypothesis, physical model or observational program; no such addition is made. Its source status remains **unresolved** in the present first draft.

12.7 Equation-of-State Selection Matrix

This heading is retained from the canonical Paper-II chapter hierarchy. The corresponding North American claim cannot be populated from the available fixed-turn measurements without introducing a new hypothesis, physical

model or observational program; no such addition is made. Its source status remains **unresolved** in the present first draft.

12.8 Equation-of-State Falsifier

Equation-of-State Falsifier retains its original adjudicative function: it distinguishes a proposed result from the evidence and computation needed to judge it. The available source bundle supports the specified coordinates, corridor, chords and stated offset; it provides no executed mechanical outcome for this heading. The status here is **not evaluated**, without a newly chosen threshold, statistical fit, simulation or comparative verdict.

13 Shock Jump Conditions

The canonical shock-jump chapter stays in the same location. It contains no North American shock-solution output: a list of waypoints and distances provides neither upstream nor downstream shock states.

13.1 Rankine–Hugoniot Conditions

This heading is retained from the canonical Paper-II chapter hierarchy. The corresponding North American claim cannot be populated from the available fixed-turn measurements without introducing a new hypothesis, physical model or observational program; no such addition is made. Its source status remains **unresolved** in the present first draft.

13.2 Compression Ratio

The canonical Paper-II heading **Compression Ratio** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

13.3 Acoustic Impedance

The canonical Paper-II heading **Acoustic Impedance** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

13.4 Oblique Shock Geometry

The canonical Paper-II heading **Oblique Shock Geometry** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

13.5 Shock Mach Number

The canonical Paper-II heading **Shock Mach Number** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

13.6 Shock Energy Flux

The canonical Paper-II heading **Shock Energy Flux** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

13.7 Shock Momentum Flux

The canonical Paper-II heading **Shock Momentum Flux** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

13.8 Shock Attenuation

The canonical Paper-II heading **Shock Attenuation** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

13.9 Shock-Branch Requirement

The canonical Paper-II heading **Shock-Branch Requirement** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

14 Strength, Plasticity, and Damage

Strength, plasticity and damage appear in the parent paper as mechanisms of material response. The present source bundle provides no North American stress field, material-history solution or damage tensor. This section is reserved rather than filled from generic impact mechanics.

14.1 Pressure and Deviatoric Stress

The canonical Paper-II heading **Pressure and Deviatoric Stress** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

14.2 Equivalent Stress

The canonical Paper-II heading **Equivalent Stress** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

14.3 Pressure-Dependent Yield

The canonical Paper-II heading **Pressure-Dependent Yield** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

14.4 Plastic Strain

The canonical Paper-II heading **Plastic Strain** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

14.5 Strength Degradation

The canonical Paper-II heading **Strength Degradation** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

14.6 Damage Initiation

The canonical Paper-II heading **Damage Initiation** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

14.7 Damage Evolution

The canonical Paper-II heading **Damage Evolution** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

14.8 Directional Damage Tensor

The canonical Paper-II heading **Directional Damage Tensor** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

14.9 Fracture-Energy Budget

The canonical Paper-II heading **Fracture-Energy Budget** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

14.10 Damage-Inheritance Requirement

The canonical Paper-II heading **Damage-Inheritance Requirement** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

15 Pressure-, Temperature-, and Rate-Dependent Rheology

The canonical rheology hierarchy spans rapid loading and long-time response. No project-specific, time-dependent rheological parameters have been supplied, and the user has excluded proprietary response mechanics. Those items remain undisclosed.

15.1 No Single Mantle Viscosity

The canonical Paper-II heading **No Single Mantle Viscosity** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

15.2 Maxwell Viscoelasticity

This heading is retained from the canonical Paper-II chapter hierarchy. The corresponding North American claim cannot be populated from the available fixed-turn measurements without introducing a new hypothesis, physical model or observational program; no such addition is made. Its source status remains **unresolved** in the present first draft.

15.3 Power-Law Creep

This heading is retained from the canonical Paper-II chapter hierarchy. The corresponding North American claim cannot be populated from the available fixed-turn measurements without introducing a new hypothesis, physical model or observational program; no such addition is made. Its source status remains **unresolved** in the present first draft.

15.4 Effective Viscosity From Creep

The canonical Paper-II heading **Effective Viscosity From Creep** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

15.5 Strain-Rate Regimes

This heading is retained from the canonical Paper-II chapter hierarchy. The corresponding North American claim cannot be populated from the available fixed-turn measurements without introducing a new hypothesis, physical model or observational program; no such addition is made. Its source status remains **unresolved** in the present first draft.

15.6 Thermal Softening

The canonical Paper-II heading **Thermal Softening** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

15.7 Melt Weakening

The canonical Paper-II heading **Melt Weakening** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

15.8 Two-Timescale Mechanical Model

The canonical Paper-II heading **Two-Timescale Mechanical Model** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

15.9 Rheological Falsifier

The canonical Paper-II heading **Rheological Falsifier** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

16 Phase Transitions, Melting, and Vaporization

The phase-state chapter exists to mirror the parent mechanics manuscript. North American phase, melt and vapor histories have not been derived from the Denali geometry and are outside the authorized disclosure.

16.1 Phase-State Vector

The canonical Paper-II heading **Phase-State Vector** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

16.2 Phase Equilibrium

The canonical Paper-II heading **Phase Equilibrium** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

16.3 Kinetic Delay

The canonical Paper-II heading **Kinetic Delay** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or

simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

16.4 Enthalpy Formulation

The canonical Paper-II heading **Enthalpy Formulation** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

16.5 Melt Fraction

The canonical Paper-II heading **Melt Fraction** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

16.6 Vapor Fraction

The canonical Paper-II heading **Vapor Fraction** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

16.7 Phase-Boundary Reflection and Focusing

The canonical Paper-II heading **Phase-Boundary Reflection and Focusing** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

16.8 Persistent Phase Memory

The canonical Paper-II heading **Persistent Phase Memory** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

16.9 Thermal-Anomaly Survival

The canonical Paper-II heading **Thermal-Anomaly Survival** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

16.10 Phase and Melt Falsifier

The canonical Paper-II heading **Phase and Melt Falsifier** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

17 Fragmentation, Entrainment, and Column Loading

The source distinguishes a coherent projectile from a fragmented, entraining column. No North American fragmentation criterion, body mass or column history appears in the controlling fixed-turn calculation. The chapter does not assert one.

17.1 Fragmentation Criterion

The canonical Paper-II heading **Fragmentation Criterion** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

17.2 Fragment-Size Distribution

The canonical Paper-II heading **Fragment-Size Distribution** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

17.3 Fragment Deceleration

The canonical Paper-II heading **Fragment Deceleration** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

17.4 Entrainment

This heading is retained from the canonical Paper-II chapter hierarchy. The corresponding North American claim cannot be populated from the available fixed-turn measurements without introducing a new hypothesis, physical model or observational program; no such addition is made. Its source status remains **unresolved** in the present first draft.

17.5 Momentum Dilution

The canonical Paper-II heading **Momentum Dilution** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

17.6 Projectile Column Density

The canonical Paper-II heading **Projectile Column Density** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

17.7 Illustrative Column-Density Screening

The canonical Paper-II heading **Illustrative Column-Density Screening** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies,

equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

17.8 Swept-Mass Ratio

The canonical Paper-II heading **Swept-Mass Ratio** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

17.9 Composition Tracer

This heading is retained from the canonical Paper-II chapter hierarchy. The corresponding North American claim cannot be populated from the available fixed-turn measurements without introducing a new hypothesis, physical model or observational program; no such addition is made. Its source status remains **unresolved** in the present first draft.

17.10 Fragmented-Column Viability

The canonical Paper-II heading **Fragmented-Column Viability** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

18 Path Localization, Attenuation, and Deflection

A route drawn through surface-projected waypoints is not identical to a simulated three-dimensional high-energy channel. Paper I defines the route's numerical metric precisely; this chapter preserves the source's separate burden to establish localization, attenuation, deflection and terminal coupling without supplying new values.

Source-derived path metric. For central angle θ_{ij} and spherical radius R,

$$c(i,j) = 2R\sin(\theta_{ij}/2), \qquad L_1 = c(E,M), \qquad L_2 = \sum_{j=0}^{7} c(W_j, W_{j+1}).$$

Here $W_0 = M$, $W_1 =$ Denali, and W_8 is the Arctic terminal. The chord sum and the direct chord have different path meanings. The author's reported equality is between their **totals**, not between the complete curves or any physical transit times.

18.1 Reference Axis

The controlling geometrical object is not a single uninterrupted straight axis. It consists of $L_1 = c(E,M)$ and a separate waypoint chain $M = W_0 \to W_1 \to \cdots \to W_8 = T$, measured by $L_2 = \sum_{k=0}^{7} c(W_k, W_{k+1})$. The second object is a total of **eight individually straight interior chord lengths**, not $c(M,T)$. Consequently any inherited Paper-II reference-axis field must distinguish the direct first leg from the *piecewise* second-leg construction. The Denali inputs supply no physical propagation-axis field beyond those geometric definitions.

18.2 Path Tube

For the North American substitution, **path tube** is read against the fixed Malpelo entrance, the declared turn, the downstream Denali station and the selected northern waypoint chain. Only the coordinate and chord quantities

actually reported in [2–4] enter the manuscript. A named geographic role does not certify the corresponding physical history.

18.3 Energy Localization Fraction

The canonical Paper-II heading **Energy Localization Fraction** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

18.4 Momentum Localization Fraction

The canonical Paper-II heading **Momentum Localization Fraction** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

18.5 Angular Dispersion

The canonical Paper-II heading **Angular Dispersion** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

18.6 Path Deflection

For the North American substitution, **path deflection** is read against the fixed Malpelo entrance, the declared turn, the downstream Denali station and the selected northern waypoint chain. Only the coordinate and chord quantities actually reported in [2–4] enter the manuscript. A named geographic role does not certify the corresponding physical history.

18.7 Attenuation Coefficients

The canonical Paper-II heading **Attenuation Coefficients** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

18.8 Branching Ratio

For the North American substitution, **branching ratio** is read against the fixed Malpelo entrance, the declared turn, the downstream Denali station and the selected northern waypoint chain. Only the coordinate and chord quantities actually reported in [2–4] enter the manuscript. A named geographic role does not certify the corresponding physical history.

18.9 Midpoint-Target Offset

For the present case, the only source-supported turn-to-named-feature quantity is $c(M, \text{Denali}) \simeq 222.678$ km, a single straight chord on the adopted reference sphere. The source does not give a simulated localization center, a physical maximum-response point, or a spatial misfit between either of those and Denali. The **geometric waypoint offset** must therefore not be scored as a **mechanical midpoint-target residual**. (*Denali Exact.pdf.*)

18.10 Exit-Target Misfit

The final prescribed pair, under-Siberia/Chukchi to the Arctic terminal, appears in the workbook as a chord of 1104.22925713830 km and an arc of 1105.61608674674 km on the stated $R = 6{,}371$ km sphere. These are **segment lengths**, not residuals between a simulated terminal response and an independent observation. No mechanical terminal centroid, response footprint, covariance, or target misfit is provided; the inherited misfit result remains uncalculated.

18.11 Localization Viability Conditions

Localization Viability Conditions retains its original adjudicative function: it distinguishes a proposed result from the evidence and computation needed to judge it. The available source bundle supports the specified coordinates, corridor, chords and stated offset; it provides no executed mechanical outcome for this heading. The status here is **not evaluated**, without a newly chosen threshold, statistical fit, simulation or comparative verdict.

19 Branch-Specific Viability Tests

The five parent branches and their comparison remain separate. There is no model output that permits ranking them for the North American corridor; all branches are mechanically untested in this adaptation.

19.1 Coherent-Body Branch

The canonical Paper-II heading **Coherent-Body Branch** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

19.2 Fragmented-Column Branch

The canonical Paper-II heading **Fragmented-Column Branch** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

19.3 Shock-Dominated Branch

The canonical Paper-II heading **Shock-Dominated Branch** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

19.4 Fracture- and Phase-Front Branch

The canonical Paper-II heading **Fracture- and Phase-Front Branch** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

19.5 Hybrid Branch

This heading is retained from the canonical Paper-II chapter hierarchy. The corresponding North American claim cannot be populated from the available fixed-turn measurements without introducing a new hypothesis, physical model or observational program; no such addition is made. Its source status remains **unresolved** in the present first draft.

19.6 Branch Comparison Matrix

Branch Comparison Matrix retains its original adjudicative function: it distinguishes a proposed result from the evidence and computation needed to judge it. The available source bundle supports the specified coordinates, corridor, chords and stated offset; it provides no executed mechanical outcome for this heading. The status here is **not evaluated**, without a newly chosen threshold, statistical fit, simulation or comparative verdict.

19.7 Global Branch Decision Rule

Global Branch Decision Rule retains its original adjudicative function: it distinguishes a proposed result from the evidence and computation needed to judge it. The available source bundle supports the specified coordinates, corridor, chords and stated offset; it provides no executed mechanical outcome for this heading. The status here is **not evaluated**, without a newly chosen threshold, statistical fit, simulation or comparative verdict.

20 Constitutive and Transmission Synthesis

The governing source joins constitutive assumptions to path transmission. In this public North American working draft the transmission mechanism is reserved, and thus no newly specified interaction is inferred from geometric equality.

The chapter retains its canonical synthesis function without extending the supplied evidence into an unsupported causal resolution.

21 Entrance Geometry and Oblique Coupling

The solved Malpelo-region entrance was selected to satisfy the direct entrance-to-turn chord against the fixed second-leg sum. That selection does not determine the physical incidence angle or the actual coupling center. The local frame and geometric coordinate remain distinct from event mechanics.

21.1 Local Entrance Frame

For the North American substitution, **local entrance frame** is read against the fixed Malpelo entrance, the declared turn, the downstream Denali station and the selected northern waypoint chain. Only the coordinate and chord quantities actually reported in [2–4] enter the manuscript. A named geographic role does not certify the corresponding physical history.

21.2 Incident Velocity Components

For the North American substitution, **incident velocity components** is read against the fixed Malpelo entrance, the declared turn, the downstream Denali station and the selected northern waypoint chain. Only the coordinate and chord quantities actually reported in [2–4] enter the manuscript. A named geographic role does not certify the corresponding physical history.

21.3 Incidence Angle

For the North American substitution, **incidence angle** is read against the fixed Malpelo entrance, the declared turn, the downstream Denali station and the selected northern waypoint chain. Only the coordinate and chord quantities actually reported in [2–4] enter the manuscript. A named geographic role does not certify the corresponding physical history.

21.4 Normal and Tangential Energy Fractions

The canonical Paper-II heading **Normal and Tangential Energy Fractions** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

21.5 Downrange Direction

For the North American substitution, **downrange direction** is read against the fixed Malpelo entrance, the declared turn, the downstream Denali station and the selected northern waypoint chain. Only the coordinate and chord quantities actually reported in [2–4] enter the manuscript. A named geographic role does not certify the corresponding physical history.

21.6 Projected Contact Geometry

For the North American substitution, **projected contact geometry** is read against the fixed Malpelo entrance, the declared turn, the downstream Denali station and the selected northern waypoint chain. Only the coordinate and chord quantities actually reported in [2–4] enter the manuscript. A named geographic role does not certify the corresponding physical history.

21.7 Entrance Coordinate Versus Coupling Center

The solved entrance coordinate is a fitted endpoint of the geometric construction. A coupling center would refer to a specific physical interaction; no such location, coupling width, or field solution is supplied. The fit procedure fixes M and the second-leg chord sum, then solves for E in the stated entrance region. This does **not** independently locate a physical coupling center or determine an entrance incidence angle.

21.8 Entrance-Domain Requirement

For the North American substitution, **entrance-domain requirement** is read against the fixed Malpelo entrance, the declared turn, the downstream Denali station and the selected northern waypoint chain. Only the coordinate and chord quantities actually reported in [2–4] enter the manuscript. A named geographic role does not certify the corresponding physical history.

22 Atmospheric and Oceanic Entry

The original manuscript's atmosphere–ocean–crust sequence is preserved in chapter order. The project contains no event-time ocean depth, atmosphere column or surface loading for the source-solved Malpelo entrance coordinate; none is fabricated here.

22.1 Atmospheric Column Density

The canonical Paper-II heading **Atmospheric Column Density** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

22.2 Atmospheric Energy Deposition

The canonical Paper-II heading **Atmospheric Energy Deposition** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

22.3 Atmospheric Shock and Blowoff

The canonical Paper-II heading **Atmospheric Shock and Blowoff** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

22.4 Ablation and Surface Heating

This heading is retained from the canonical Paper-II chapter hierarchy. The corresponding North American claim cannot be populated from the available fixed-turn measurements without introducing a new hypothesis, physical model or observational program; no such addition is made. Its source status remains **unresolved** in the present first draft.

22.5 Unknown Paleo-Surface Condition

This heading is retained from the canonical Paper-II chapter hierarchy. The corresponding North American claim cannot be populated from the available fixed-turn measurements without introducing a new hypothesis, physical model or observational program; no such addition is made. Its source status remains **unresolved** in the present first draft.

22.6 Water-Column Loading

The canonical Paper-II heading **Water-Column Loading** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

22.7 Ocean Energy Partition

The canonical Paper-II heading **Ocean Energy Partition** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

22.8 Ocean-Cavity Scale

The canonical Paper-II heading **Ocean-Cavity Scale** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

22.9 Atmosphere–Ocean–Crust Handoff

The canonical Paper-II heading **Atmosphere–Ocean–Crust Handoff** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

23 Crustal Penetration and Excavation

The canonical distinction between penetration and excavation is retained. There are no excavation volumes, depths, or generated material states in the fixed-turn source calculation.

23.1 Penetration and Excavation Are Different Processes

The canonical Paper-II heading **Penetration and Excavation Are Different Processes** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

23.2 Directional Energy Remaining With Depth

The canonical Paper-II heading **Directional Energy Remaining With Depth** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

23.3 Directional Momentum Remaining With Depth

The canonical Paper-II heading **Directional Momentum Remaining With Depth** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

23.4 Penetration Depth

The canonical Paper-II heading **Penetration Depth** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

23.5 Transient Excavation Volume

The canonical Paper-II heading **Transient Excavation Volume** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of

state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

23.6 Excavated Mass

The canonical Paper-II heading **Excavated Mass** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

23.7 Minimum Excavation Work

The canonical Paper-II heading **Minimum Excavation Work** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

23.8 Melt Volume

The canonical Paper-II heading **Melt Volume** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

23.9 Transient Versus Preserved Morphology

This heading is retained from the canonical Paper-II chapter hierarchy. The corresponding North American claim cannot be populated from the available fixed-turn measurements without introducing a new hypothesis, physical model or observational program; no such addition is made. Its source status remains **unresolved** in the present first draft.

23.10 Crust–Mantle Transmission

This heading is retained from the canonical Paper-II chapter hierarchy. The corresponding North American claim cannot be populated from the available fixed-turn measurements without introducing a new hypothesis, physical model or observational program; no such addition is made. Its source status remains **unresolved** in the present first draft.

23.11 Entrance-to-Path Handoff

This heading is retained from the canonical Paper-II chapter hierarchy. The corresponding North American claim cannot be populated from the available fixed-turn measurements without introducing a new hypothesis, physical model or observational program; no such addition is made. Its source status remains **unresolved** in the present first draft.

24 Entrance Energy and Momentum Partition

The source mechanics requires entry partition and propagation budgets. The present authorized material provides only distances; the direction and magnitude of energy and momentum transfers are private or unresolved.

24.1 Complete Entrance Energy Budget

The canonical Paper-II heading **Complete Entrance Energy Budget** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

24.2 Deep-Path Energy Fraction

The canonical Paper-II heading **Deep-Path Energy Fraction** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

24.3 Vector Momentum Budget

The canonical Paper-II heading **Vector Momentum Budget** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

24.4 Angular Momentum Budget

The canonical Paper-II heading **Angular Momentum Budget** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

24.5 Entrance Coupling Matrix

This heading is retained from the canonical Paper-II chapter hierarchy. The corresponding North American claim cannot be populated from the available fixed-turn measurements without introducing a new hypothesis, physical model or observational program; no such addition is made. Its source status remains **unresolved** in the present first draft.

24.6 Entrance Compatibility Condition

Entrance Compatibility Condition retains its original adjudicative function: it distinguishes a proposed result from the evidence and computation needed to judge it. The available source bundle supports the specified coordinates, corridor, chords and stated offset; it provides no executed mechanical outcome for this heading. The status here is **not evaluated**, without a newly chosen threshold, statistical fit, simulation or comparative verdict.

25 Predicted Malpelo Entrance Morphology

The original entrance-morphology analysis is here confined to the proposed Malpelo geographic role. The manuscript does not claim that a modern plate configuration is an independently verified impact structure or supply a fitted morphology field.

25.1 Forward Prediction Before Regional Fitting

Forward Prediction Before Regional Fitting retains its original adjudicative function: it distinguishes a proposed result from the evidence and computation needed to judge it. The available source bundle supports the specified coordinates, corridor, chords and stated offset; it provides no executed mechanical outcome for this heading. The status here is **not evaluated**, without a newly chosen threshold, statistical fit, simulation or comparative verdict.

25.2 Required Morphological Outputs

This heading is retained from the canonical Paper-II chapter hierarchy. The corresponding North American claim cannot be populated from the available fixed-turn measurements without introducing a new hypothesis, physical model or observational program; no such addition is made. Its source status remains **unresolved** in the present first draft.

25.3 Downrange Asymmetry

This heading is retained from the canonical Paper-II chapter hierarchy. The corresponding North American claim cannot be populated from the available fixed-turn measurements without introducing a new hypothesis, physical model or observational program; no such addition is made. Its source status remains **unresolved** in the present first draft.

25.4 Radial and Directional Fractures

The canonical Paper-II heading **Radial and Directional Fractures** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

25.5 Entrance Rings and Arcs

This heading is retained from the canonical Paper-II chapter hierarchy. The corresponding North American claim cannot be populated from the available fixed-turn measurements without introducing a new hypothesis, physical model or observational program; no such addition is made. Its source status remains **unresolved** in the present first draft.

25.6 Deep Corridor Orientation

This heading is retained from the canonical Paper-II chapter hierarchy. The corresponding North American claim cannot be populated from the available fixed-turn measurements without introducing a new hypothesis, physical model or observational program; no such addition is made. Its source status remains **unresolved** in the present first draft.

25.7 Morphology Residual

This heading is retained from the canonical Paper-II chapter hierarchy. The corresponding North American claim cannot be populated from the available fixed-turn measurements without introducing a new hypothesis, physical model or observational program; no such addition is made. Its source status remains **unresolved** in the present first draft.

25.8 Comparison Morphologies

Comparison Morphologies retains its original adjudicative function: it distinguishes a proposed result from the evidence and computation needed to judge it. The available source bundle supports the specified coordinates, corridor, chords and stated offset; it provides no executed mechanical outcome for this heading. The status here is **not evaluated**, without a newly chosen threshold, statistical fit, simulation or comparative verdict.

26 Entrance Melt, Shock, Gravity, Magnetic, and Seismic Predictions

The chapter's geophysical signatures are preserved as canonical manuscript slots. No North American shock, melt, gravity, magnetic or seismic response is calculated in the Denali project files. Their absence from this draft is not a negative test result.

26.1 Peak Shock Pressure Field

The canonical Paper-II heading **Peak Shock Pressure Field** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

26.2 Shock-Gradient Direction

The canonical Paper-II heading **Shock-Gradient Direction** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

26.3 Melt Field

The canonical Paper-II heading **Melt Field** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

26.4 Projectile-Material Distribution

This heading is retained from the canonical Paper-II chapter hierarchy. The corresponding North American claim cannot be populated from the available fixed-turn measurements without introducing a new hypothesis, physical model or observational program; no such addition is made. Its source status remains **unresolved** in the present first draft.

26.5 Residual Density Field

The canonical Paper-II heading **Residual Density Field** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

26.6 Gravity Prediction

The canonical Paper-II heading **Gravity Prediction** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

26.7 Magnetic Resetting

The canonical Paper-II heading **Magnetic Resetting** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

26.8 Seismic-Velocity Prediction

The canonical Paper-II heading **Seismic-Velocity Prediction** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

26.9 Seismic Anisotropy

The canonical Paper-II heading **Seismic Anisotropy** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

26.10 Heat-Flow Prediction

Heat-Flow Prediction retains its original adjudicative function: it distinguishes a proposed result from the evidence and computation needed to judge it. The available source bundle supports the specified coordinates, corridor, chords and stated offset; it provides no executed mechanical outcome for this heading. The status here is **not evaluated**, without a newly chosen threshold, statistical fit, simulation or comparative verdict.

26.11 Forward-to-Modern Observation Operator

This heading is retained from the canonical Paper-II chapter hierarchy. The corresponding North American claim cannot be populated from the available fixed-turn measurements without introducing a new hypothesis, physical model or observational program; no such addition is made. Its source status remains **unresolved** in the present first draft.

27 Entrance Chronology and Preservation

The parent structure separates immediate markers, delayed markers and preservation. The project provides no dated entrance marker with proven material lineage; Paper I has not promoted any chronological label into an independent field observation.

27.1 Immediate and Delayed Entrance Markers

This heading is retained from the canonical Paper-II chapter hierarchy. The corresponding North American claim cannot be populated from the available fixed-turn measurements without introducing a new hypothesis, physical model or observational program; no such addition is made. Its source status remains **unresolved** in the present first draft.

27.2 Marker-State Vector

This heading is retained from the canonical Paper-II chapter hierarchy. The corresponding North American claim cannot be populated from the available fixed-turn measurements without introducing a new hypothesis, physical model or observational program; no such addition is made. Its source status remains **unresolved** in the present first draft.

27.3 Preservation Operator

This heading is retained from the canonical Paper-II chapter hierarchy. The corresponding North American claim cannot be populated from the available fixed-turn measurements without introducing a new hypothesis, physical model or observational program; no such addition is made. Its source status remains **unresolved** in the present first draft.

27.4 Marker Survival Fraction

The canonical Paper-II heading **Marker Survival Fraction** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

27.5 Detection Probability

This heading is retained from the canonical Paper-II chapter hierarchy. The corresponding North American claim cannot be populated from the available fixed-turn measurements without introducing a new hypothesis, physical model or observational program; no such addition is made. Its source status remains **unresolved** in the present first draft.

27.6 Initiation and Marker Clocks

This heading is retained from the canonical Paper-II chapter hierarchy. The corresponding North American claim cannot be populated from the available fixed-turn measurements without introducing a new hypothesis, physical model or observational program; no such addition is made. Its source status remains **unresolved** in the present first draft.

27.7 Cooling-Age Structure

This heading is retained from the canonical Paper-II chapter hierarchy. The corresponding North American claim cannot be populated from the available fixed-turn measurements without introducing a new hypothesis, physical model or observational program; no such addition is made. Its source status remains **unresolved** in the present first draft.

27.8 Stratigraphic Preservation

This heading is retained from the canonical Paper-II chapter hierarchy. The corresponding North American claim cannot be populated from the available fixed-turn measurements without introducing a new hypothesis, physical model or observational program; no such addition is made. Its source status remains **unresolved** in the present first draft.

27.9 Minimum Preserved Entrance Evidence

Minimum Preserved Entrance Evidence retains its original adjudicative function: it distinguishes a proposed result from the evidence and computation needed to judge it. The available source bundle supports the specified coordinates, corridor, chords and stated offset; it provides no executed mechanical outcome for this heading. The status here is **not evaluated**, without a newly chosen threshold, statistical fit, simulation or comparative verdict.

27.10 Preservation Cannot Be Unlimited

This heading is retained from the canonical Paper-II chapter hierarchy. The corresponding North American claim cannot be populated from the available fixed-turn measurements without introducing a new hypothesis, physical model or observational program; no such addition is made. Its source status remains **unresolved** in the present first draft.

28 Entrance Inversion and Falsification

An entrance inversion requires an observed regional data vector and a forward model. Neither is supplied in the Denali fixed-turn source. This chapter records the canonical inversion slot without inventing a likelihood or an adjudicated regional result.

28.1 Forward Model

This heading is retained from the canonical Paper-II chapter hierarchy. The corresponding North American claim cannot be populated from the available fixed-turn measurements without introducing a new hypothesis, physical model or observational program; no such addition is made. Its source status remains **unresolved** in the present first draft.

28.2 Observed Data Vector

This heading is retained from the canonical Paper-II chapter hierarchy. The corresponding North American claim cannot be populated from the available fixed-turn measurements without introducing a new hypothesis, physical model or observational program; no such addition is made. Its source status remains **unresolved** in the present first draft.

28.3 Likelihood

Likelihood retains its original adjudicative function: it distinguishes a proposed result from the evidence and computation needed to judge it. The available source bundle supports the specified coordinates, corridor, chords and stated offset; it provides no executed mechanical outcome for this heading. The status here is **not evaluated**, without a newly chosen threshold, statistical fit, simulation or comparative verdict.

28.4 Posterior Distribution

Posterior Distribution retains its original adjudicative function: it distinguishes a proposed result from the evidence and computation needed to judge it. The available source bundle supports the specified coordinates, corridor, chords and stated offset; it provides no executed mechanical outcome for this heading. The status here is **not evaluated**, without a newly chosen threshold, statistical fit, simulation or comparative verdict.

28.5 Joint Entrance–Path Constraint

Joint Entrance–Path Constraint retains its original adjudicative function: it distinguishes a proposed result from the evidence and computation needed to judge it. The available source bundle supports the specified coordinates, corridor, chords and stated offset; it provides no executed mechanical outcome for this heading. The status here is **not evaluated**, without a newly chosen threshold, statistical fit, simulation or comparative verdict.

28.6 Entrance Model Comparison

Entrance Model Comparison retains its original adjudicative function: it distinguishes a proposed result from the evidence and computation needed to judge it. The available source bundle supports the specified coordinates, corridor, chords and stated offset; it provides no executed mechanical outcome for this heading. The status here is **not evaluated**, without a newly chosen threshold, statistical fit, simulation or comparative verdict.

28.7 Parameter-Complexity Penalty

Parameter-Complexity Penalty retains its original adjudicative function: it distinguishes a proposed result from the evidence and computation needed to judge it. The available source bundle supports the specified coordinates, corridor, chords and stated offset; it provides no executed mechanical outcome for this heading. The status here is **not evaluated**, without a newly chosen threshold, statistical fit, simulation or comparative verdict.

28.8 Entrance Falsification Matrix

Entrance Falsification Matrix retains its original adjudicative function: it distinguishes a proposed result from the evidence and computation needed to judge it. The available source bundle supports the specified coordinates, corridor, chords and stated offset; it provides no executed mechanical outcome for this heading. The status here is **not evaluated**, without a newly chosen threshold, statistical fit, simulation or comparative verdict.

28.9 Entrance Success Standard

Entrance Success Standard retains its original adjudicative function: it distinguishes a proposed result from the evidence and computation needed to judge it. The available source bundle supports the specified coordinates, corridor, chords and stated offset; it provides no executed mechanical outcome for this heading. The status here is **not evaluated**, without a newly chosen threshold, statistical fit, simulation or comparative verdict.

29 Entrance-Mechanics Synthesis

The first mechanical synthesis records the precise geometry that could enter a physical solver, and also the fact that no such solution has been supplied. It does not convert source-reported symmetry into proof of penetration or preservation.

The chapter retains its canonical synthesis function without extending the supplied evidence into an unsupported causal resolution.

30 Mechanical Midpoint and Maximum-Response Structure

The fixed middle turn at 62.3843 degrees north and 146.8997 degrees west is a declared geometric station. Denali lies 222.678 km along the second-leg segment chain from that station. A maximum physical-response point has not been solved; the geometric turn and mountain location are not collapsed into one coordinate.

The route is intentionally offset from Denali. The source reports the first second-leg chord at about 222.678 km, locating Denali *down-path* of the fixed turn. A model that silently moves M onto Denali would replace the controlling input geometry rather than mirror it.

30.1 Geometric and Mechanical Centers

The geometric turn M is an **author-fixed surface projection**, while a mechanical center would have to be an output of a physical model. No such mechanical center appears in the supplied Denali sources. The Denali summit station lies one recorded **222.678 km chord** beyond the turn on the prescribed route. Neither the proximity nor the equal-leg length condition identifies a mechanical maximum. The two labels stay separate in the Paper-II handoff.

30.2 Principal Maximum-Response Coordinates

Paper I supplies geographic inputs, not a mechanical response field. Its specified stations are a fitted Malpelo-region entrance, a fixed turn at (62.3843°N, 146.8997°W), Denali at (63.0695°N, 151.0074°W), and the subsequent prescribed northern corridor. Neither the 222.678 km geometric offset nor the equal-chord sum identifies a computed peak of pressure, displacement, or any other material response. This inherited Paper-II field therefore has **no supplied maximum-response coordinate**.

30.3 Maximum-Response Separation

The corridor's first downstream chord is $c(M, \text{Denali}) \approx 222.678\,\text{km}$, as given in the controlling exact-distance PDF. The physical separation between a response maximum and any mountain response is an entirely different uncomputed quantity [3].

30.4 Time-Integrated Response

For the North American substitution, **time-integrated response** is read against the fixed Malpelo entrance, the declared turn, the downstream Denali station and the selected northern waypoint chain. Only the coordinate and chord quantities actually reported in [2–4] enter the manuscript. A named geographic role does not certify the corresponding physical history.

30.5 Response Volume

For the North American substitution, **response volume** is read against the fixed Malpelo entrance, the declared turn, the downstream Denali station and the selected northern waypoint chain. Only the coordinate and chord quantities actually reported in [2–4] enter the manuscript. A named geographic role does not certify the corresponding physical history.

30.6 Middle-Path Response Functional

For the North American substitution, **middle-path response functional** is read against the fixed Malpelo entrance, the declared turn, the downstream Denali station and the selected northern waypoint chain. Only the coordinate and chord quantities actually reported in [2–4] enter the manuscript. A named geographic role does not certify the corresponding physical history.

30.7 Mechanical Middle-Path Domain

The canonical Paper-II heading **Mechanical Middle-Path Domain** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

30.8 Mechanical Midpoint Offset

The *geometric* turn-to-Denali chord is 222.678 km to the source's displayed precision. The separate *mechanical* offset remains undefined until a physical response field exists; the two must not share a numerical label by implication.

30.9 Mechanical Midpoint Decision Rule

The canonical Paper-II heading **Mechanical Midpoint Decision Rule** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

31 Formation of a Persistent Denali Inheritance Node

The proposed Denali middle-mountain association belongs to the inheritance role occupied by the Himalayan chapter in the canonical source. The offset is a calculated route relationship, not a resolved material weakness, strength node, uplift driver or dynamic field.

31.1 Inheritance-Node Definition

This heading is retained from the canonical Paper-II chapter hierarchy. The corresponding North American claim cannot be populated from the available fixed-turn measurements without introducing a new hypothesis, physical model or observational program; no such addition is made. Its source status remains **unresolved** in the present first draft.

31.2 Inheritance Index

This heading is retained from the canonical Paper-II chapter hierarchy. The corresponding North American claim cannot be populated from the available fixed-turn measurements without introducing a new hypothesis, physical model or observational program; no such addition is made. Its source status remains **unresolved** in the present first draft.

31.3 Minimum Node Size

The function of **minimum node size** in the canonical paper is to distinguish a physical inheritance property from a mapped mountain position. The present Denali sources give a positional relationship but no response-field solution. The underlying mechanics is not disclosed or generated in this draft; the scientific status is **reserved / not evaluated**, not a positive response determination.

31.4 Minimum Node Lifetime

The function of **minimum node lifetime** in the canonical paper is to distinguish a physical inheritance property from a mapped mountain position. The present Denali sources give a positional relationship but no response-field

solution. The underlying mechanics is not disclosed or generated in this draft; the scientific status is **reserved / not evaluated**, not a positive response determination.

31.5 Node Anisotropy

The function of **node anisotropy** in the canonical paper is to distinguish a physical inheritance property from a mapped mountain position. The present Denali sources give a positional relationship but no response-field solution. The underlying mechanics is not disclosed or generated in this draft; the scientific status is **reserved / not evaluated**, not a positive response determination.

31.6 Density and Buoyancy Contribution

The canonical Paper-II heading **Density and Buoyancy Contribution** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

31.7 Weakness Versus Strength Node

The function of **weakness versus strength node** in the canonical paper is to distinguish a physical inheritance property from a mapped mountain position. The present Denali sources give a positional relationship but no response-field solution. The underlying mechanics is not disclosed or generated in this draft; the scientific status is **reserved / not evaluated**, not a positive response determination.

31.8 Node Contribution to Surface Response

This heading is retained from the canonical Paper-II chapter hierarchy. The corresponding North American claim cannot be populated from the available fixed-turn measurements without introducing a new hypothesis, physical model or observational program; no such addition is made. Its source status remains **unresolved** in the present first draft.

31.9 Observable Node Predictions

Observable Node Predictions retains its original adjudicative function: it distinguishes a proposed result from the evidence and computation needed to judge it. The available source bundle supports the specified coordinates, corridor, chords and stated offset; it provides no executed mechanical outcome for this heading. The status here is **not evaluated**, without a newly chosen threshold, statistical fit, simulation or comparative verdict.

31.10 Inheritance-Node Falsifier

Inheritance-Node Falsifier retains its original adjudicative function: it distinguishes a proposed result from the evidence and computation needed to judge it. The available source bundle supports the specified coordinates, corridor, chords and stated offset; it provides no executed mechanical outcome for this heading. The status here is **not evaluated**, without a newly chosen threshold, statistical fit, simulation or comparative verdict.

32 Long-Time Amplification Under Later Regional Forcing

Canonical Paper II distinguishes immediate disturbance from later structural expression. Neither a long-time evolution model nor a paired with-node/without-node solution has been supplied for Denali; the chapter therefore does not claim causation of present elevation.

32.1 Short-Time to Long-Time Handoff

This heading is retained from the canonical Paper-II chapter hierarchy. The corresponding North American claim cannot be populated from the available fixed-turn measurements without introducing a new hypothesis, physical model or observational program; no such addition is made. Its source status remains **unresolved** in the present first draft.

32.2 Long-Time Governing Form

This heading is retained from the canonical Paper-II chapter hierarchy. The corresponding North American claim cannot be populated from the available fixed-turn measurements without introducing a new hypothesis, physical model or observational program; no such addition is made. Its source status remains **unresolved** in the present first draft.

32.3 Later Regional Forcing

The canonical Paper-II heading **Later Regional Forcing** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

32.4 With-Node and Without-Node Solutions

This heading is retained from the canonical Paper-II chapter hierarchy. The corresponding North American claim cannot be populated from the available fixed-turn measurements without introducing a new hypothesis, physical model or observational program; no such addition is made. Its source status remains **unresolved** in the present first draft.

32.5 Amplification Factor

This heading is retained from the canonical Paper-II chapter hierarchy. The corresponding North American claim cannot be populated from the available fixed-turn measurements without introducing a new hypothesis, physical model or observational program; no such addition is made. Its source status remains **unresolved** in the present first draft.

32.6 Localization Gain

This heading is retained from the canonical Paper-II chapter hierarchy. The corresponding North American claim cannot be populated from the available fixed-turn measurements without introducing a new hypothesis, physical model or observational program; no such addition is made. Its source status remains **unresolved** in the present first draft.

32.7 Uplift Contribution

The function of **uplift contribution** in the canonical paper is to distinguish a physical inheritance property from a mapped mountain position. The present Denali sources give a positional relationship but no response-field solution. The underlying mechanics is not disclosed or generated in this draft; the scientific status is **reserved / not evaluated**, not a positive response determination.

32.8 Node Necessity Statistic

This heading is retained from the canonical Paper-II chapter hierarchy. The corresponding North American claim cannot be populated from the available fixed-turn measurements without introducing a new hypothesis, physical model or observational program; no such addition is made. Its source status remains **unresolved** in the present first draft.

32.9 No Double Counting

This heading is retained from the canonical Paper-II chapter hierarchy. The corresponding North American claim cannot be populated from the available fixed-turn measurements without introducing a new hypothesis, physical model or observational program; no such addition is made. Its source status remains **unresolved** in the present first draft.

32.10 Amplification Falsifier

Amplification Falsifier retains its original adjudicative function: it distinguishes a proposed result from the evidence and computation needed to judge it. The available source bundle supports the specified coordinates, corridor, chords and stated offset; it provides no executed mechanical outcome for this heading. The status here is **not evaluated**, without a newly chosen threshold, statistical fit, simulation or comparative verdict.

33 Terminal Approach to the Arctic Region

The ordered second leg terminates at an Arctic trench-domain waypoint after passing Denali, Juneau, Unalaska, Adak, Amchitka, Attu and the under-Siberia/Chukchi waypoint. That path order defines the terminal geography, not the terminal state of a solved transport mechanism.

Northern route segment registry (as displayed in the source documents):

Segment	Chord length (km)
Turn–Denali	222.678 (PDF rounded)
Denali–Juneau	1041.56448672623
Juneau–Unalaska	2019.16819733245
Unalaska–Adak	714.523963789273
Adak–Amchitka	192.565166865369
Amchitka–Attu	538.553341857014
Attu–Chukchi	2228.58884451716
Chukchi–terminal	1104.22925713830

The PDF reports the unrounded-calculation total 8061.8708 km; summing its displayed rounded first segment with seven spreadsheet values produces a 0.458 m difference. Paper I records the precision distinction instead of altering the ledger [2–4].

33.1 Terminal Handoff State

The inherited northern terminal has a reported geographic reference near $(80.5^\circ\mathrm{N}, 140^\circ\mathrm{E})$ and is the last waypoint in the second-leg chord sum. The source record provides its geometric position and preceding chord, not an arrival time, stress field, impulse, energy deposition, deformation, or other physical terminal state. The source note calls the preceding waypoint “under-Siberia”; the workbook uses “Chukchi” in its last two segment labels. The source naming distinction is carried without adding an independently established physical event.

33.2 Terminal Target Domain

The terminal domain is named Arctic, with the source endpoint 80.5° north and 140° east. The preceding segment is the 73° north, 170° east under-Siberia/Chukchi point. No geophysical deformation shape is inferred from the selected endpoint [3,4].

33.3 Terminal Direction

For the North American substitution, **terminal direction** is read against the fixed Malpelo entrance, the declared turn, the downstream Denali station and the selected northern waypoint chain. Only the coordinate and chord quantities actually reported in [2–4] enter the manuscript. A named geographic role does not certify the corresponding physical history.

33.4 Terminal Energy Fraction

At the Arctic terminal, **terminal energy fraction** is a requirement of the parent manuscript rather than a calculated result of this North American study. The selected endpoint is geometric. No North American field or process parameter is supplied to resolve the corresponding physical state, so the original section position is retained with its outcome unreported.

33.5 Terminal Momentum Fraction

At the Arctic terminal, **terminal momentum fraction** is a requirement of the parent manuscript rather than a calculated result of this North American study. The selected endpoint is geometric. No North American field or process parameter is supplied to resolve the corresponding physical state, so the original section position is retained with its outcome unreported.

33.6 Terminal Path Radius

The prescribed endpoint is $80.5°\mathrm{N}, 140°\mathrm{E}$, reached through the under-Siberia waypoint at $73°\mathrm{N}, 170°\mathrm{E}$ in the controlling *Denali Exact* route. Those are surface station coordinates. A physical terminal path radius, material interaction radius, or radius of affected geography is **not given** by the eight chord lengths or seven workbook arc entries. The existing canonical section is retained to distinguish that unavailable physical quantity from the coordinate-defined terminal station.

33.7 Terminal Composition

For the North American substitution, **terminal composition** is read against the fixed Malpelo entrance, the declared turn, the downstream Denali station and the selected northern waypoint chain. Only the coordinate and chord quantities actually reported in [2–4] enter the manuscript. A named geographic role does not certify the corresponding physical history.

33.8 Terminal Viability Conditions

Terminal Viability Conditions retains its original adjudicative function: it distinguishes a proposed result from the evidence and computation needed to judge it. The available source bundle supports the specified coordinates, corridor, chords and stated offset; it provides no executed mechanical outcome for this heading. The status here is **not evaluated**, without a newly chosen threshold, statistical fit, simulation or comparative verdict.

34 Deep-to-Shallow Decompression

The parent paper's deep-to-shallow transition remains a reserved mechanics chapter. There is no North American pressure field or decompression solution in the source files, and no such mechanics is added.

34.1 Pressure Ratio

The canonical Paper-II heading **Pressure Ratio** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

34.2 Adiabatic Expansion Screening

This heading is retained from the canonical Paper-II chapter hierarchy. The corresponding North American claim cannot be populated from the available fixed-turn measurements without introducing a new hypothesis, physical model or observational program; no such addition is made. Its source status remains **unresolved** in the present first draft.

34.3 Enthalpy Conversion

The canonical Paper-II heading **Enthalpy Conversion** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

34.4 Expansion Work

This heading is retained from the canonical Paper-II chapter hierarchy. The corresponding North American claim cannot be populated from the available fixed-turn measurements without introducing a new hypothesis, physical model or observational program; no such addition is made. Its source status remains **unresolved** in the present first draft.

34.5 Fragmentation During Decompression

At the Arctic terminal, **fragmentation during decompression** is a requirement of the parent manuscript rather than a calculated result of this North American study. The selected endpoint is geometric. No North American field or process parameter is supplied to resolve the corresponding physical state, so the original section position is retained with its outcome unreported.

34.6 Vapor Generation

The canonical Paper-II heading **Vapor Generation** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

34.7 Jet and Plume Separation

This heading is retained from the canonical Paper-II chapter hierarchy. The corresponding North American claim cannot be populated from the available fixed-turn measurements without introducing a new hypothesis, physical

model or observational program; no such addition is made. Its source status remains **unresolved** in the present first draft.

34.8 Decompression Focusing and Defocusing

At the Arctic terminal, **decompression focusing and defocusing** is a requirement of the parent manuscript rather than a calculated result of this North American study. The selected endpoint is geometric. No North American field or process parameter is supplied to resolve the corresponding physical state, so the original section position is retained with its outcome unreported.

34.9 Deep-to-Shallow Transition Falsifier

Deep-to-Shallow Transition Falsifier retains its original adjudicative function: it distinguishes a proposed result from the evidence and computation needed to judge it. The available source bundle supports the specified coordinates, corridor, chords and stated offset; it provides no executed mechanical outcome for this heading. The status here is **not evaluated**, without a newly chosen threshold, statistical fit, simulation or comparative verdict.

35 Terminal Excavation, Fracture, and Trench-Scale Response

The selected northern trench coordinate is a geographic endpoint for the corridor sum, not a mechanically predicted excavation domain. This chapter retains the distinction between an inferred terminal role and a measured or simulated terminal response.

35.1 Immediate Terminal Response

This heading is retained from the canonical Paper-II chapter hierarchy. The corresponding North American claim cannot be populated from the available fixed-turn measurements without introducing a new hypothesis, physical model or observational program; no such addition is made. Its source status remains **unresolved** in the present first draft.

35.2 Terminal Excavation Domain

At the Arctic terminal, **terminal excavation domain** is a requirement of the parent manuscript rather than a calculated result of this North American study. The selected endpoint is geometric. No North American field or process parameter is supplied to resolve the corresponding physical state, so the original section position is retained with its outcome unreported.

35.3 Terminal Affected Radius

This heading is retained from the canonical Paper-II chapter hierarchy. The corresponding North American claim cannot be populated from the available fixed-turn measurements without introducing a new hypothesis, physical model or observational program; no such addition is made. Its source status remains **unresolved** in the present first draft.

35.4 Terminal Asymmetry

This heading is retained from the canonical Paper-II chapter hierarchy. The corresponding North American claim cannot be populated from the available fixed-turn measurements without introducing a new hypothesis, physical model or observational program; no such addition is made. Its source status remains **unresolved** in the present first draft.

35.5 Fracture Field

The canonical Paper-II heading **Fracture Field** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

35.6 Terminal Fracture Orientation Residual

At the Arctic terminal, **terminal fracture orientation residual** is a requirement of the parent manuscript rather than a calculated result of this North American study. The selected endpoint is geometric. No North American field or process parameter is supplied to resolve the corresponding physical state, so the original section position is retained with its outcome unreported.

35.7 Transient Depression Versus Modern Trench

This heading is retained from the canonical Paper-II chapter hierarchy. The corresponding North American claim cannot be populated from the available fixed-turn measurements without introducing a new hypothesis, physical model or observational program; no such addition is made. Its source status remains **unresolved** in the present first draft.

35.8 Trench-Scale Inheritance

This heading is retained from the canonical Paper-II chapter hierarchy. The corresponding North American claim cannot be populated from the available fixed-turn measurements without introducing a new hypothesis, physical model or observational program; no such addition is made. Its source status remains **unresolved** in the present first draft.

35.9 Exit-Morphology Forward Model

This heading is retained from the canonical Paper-II chapter hierarchy. The corresponding North American claim cannot be populated from the available fixed-turn measurements without introducing a new hypothesis, physical model or observational program; no such addition is made. Its source status remains **unresolved** in the present first draft.

35.10 Exit Morphology Residual

This heading is retained from the canonical Paper-II chapter hierarchy. The corresponding North American claim cannot be populated from the available fixed-turn measurements without introducing a new hypothesis, physical model or observational program; no such addition is made. Its source status remains **unresolved** in the present first draft.

36 Exit Energy, Momentum, and Angular-Momentum Partition

No event-level energy, angular momentum or excavation-efficiency distribution is supplied. The source's terminal-budget architecture is retained but left numerical-output empty, in accordance with the disclosure boundary.

36.1 Complete Terminal Energy Budget

At the Arctic terminal, **complete terminal energy budget** is a requirement of the parent manuscript rather than a calculated result of this North American study. The selected endpoint is geometric. No North American

field or process parameter is supplied to resolve the corresponding physical state, so the original section position is retained with its outcome unreported.

36.2 Total Event Exit Fraction

This heading is retained from the canonical Paper-II chapter hierarchy. The corresponding North American claim cannot be populated from the available fixed-turn measurements without introducing a new hypothesis, physical model or observational program; no such addition is made. Its source status remains **unresolved** in the present first draft.

36.3 Momentum Budget

The canonical Paper-II heading **Momentum Budget** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

36.4 Impulse Field

The canonical Paper-II heading **Impulse Field** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

36.5 Angular-Momentum Partition

The canonical Paper-II heading **Angular-Momentum Partition** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

36.6 Excavation Efficiency

The canonical Paper-II heading **Excavation Efficiency** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

36.7 Exit-Energy Compatibility

At the Arctic terminal, **exit-energy compatibility** is a requirement of the parent manuscript rather than a calculated result of this North American study. The selected endpoint is geometric. No North American field or process parameter is supplied to resolve the corresponding physical state, so the original section position is retained with its outcome unreported.

37 Oceanic, Atmospheric, Ejecta, and Global Seismic Consequences

The canonical sequence registers large-scale secondary consequences only after a physical solution exists. In the supplied North American record there is no global seismic, oceanic, atmospheric or ejecta forward model for this route.

37.1 Ocean Interaction

The canonical Paper-II heading **Ocean Interaction** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

37.2 Water Vaporization

The canonical Paper-II heading **Water Vaporization** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

37.3 Wave-Energy Distribution

The canonical Paper-II heading **Wave-Energy Distribution** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

37.4 Atmospheric Injection

This heading is retained from the canonical Paper-II chapter hierarchy. The corresponding North American claim cannot be populated from the available fixed-turn measurements without introducing a new hypothesis, physical model or observational program; no such addition is made. Its source status remains **unresolved** in the present first draft.

37.5 Ejecta Velocity Distribution

The canonical Paper-II heading **Ejecta Velocity Distribution** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

37.6 Distal Deposit Prediction

Distal Deposit Prediction retains its original adjudicative function: it distinguishes a proposed result from the evidence and computation needed to judge it. The available source bundle supports the specified coordinates, corridor, chords and stated offset; it provides no executed mechanical outcome for this heading. The status here is **not evaluated**, without a newly chosen threshold, statistical fit, simulation or comparative verdict.

37.7 Global Seismic Energy

The canonical Paper-II heading **Global Seismic Energy** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

37.8 Seismic Moment

The canonical Paper-II heading **Seismic Moment** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

37.9 Global Disturbance Field

This heading is retained from the canonical Paper-II chapter hierarchy. The corresponding North American claim cannot be populated from the available fixed-turn measurements without introducing a new hypothesis, physical model or observational program; no such addition is made. Its source status remains **unresolved** in the present first draft.

37.10 Global Consequence Constraint

Global Consequence Constraint retains its original adjudicative function: it distinguishes a proposed result from the evidence and computation needed to judge it. The available source bundle supports the specified coordinates, corridor, chords and stated offset; it provides no executed mechanical outcome for this heading. The status here is **not evaluated**, without a newly chosen threshold, statistical fit, simulation or comparative verdict.

37.11 Missing-Marker Constraint

Missing-Marker Constraint retains its original adjudicative function: it distinguishes a proposed result from the evidence and computation needed to judge it. The available source bundle supports the specified coordinates, corridor, chords and stated offset; it provides no executed mechanical outcome for this heading. The status here is **not evaluated**, without a newly chosen threshold, statistical fit, simulation or comparative verdict.

38 Arctic Gravity, Magnetic, and Seismic Predictions

The Arctic terminal remains a proposed geographic role. Existing ocean and regional geophysics are not silently appropriated as model-specific predictions, and no observations have been ingested for numerical comparison.

38.1 Post-Event Density Field

The canonical Paper-II heading **Post-Event Density Field** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

38.2 Gravity Anomaly

The canonical Paper-II heading **Gravity Anomaly** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

38.3 Magnetic Resetting and Remanence

The canonical Paper-II heading **Magnetic Resetting and Remanence** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equa-

tions of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

38.4 Seismic Velocity Field

The canonical Paper-II heading **Seismic Velocity Field** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

38.5 Residual Non-Slab Structure

This heading is retained from the canonical Paper-II chapter hierarchy. The corresponding North American claim cannot be populated from the available fixed-turn measurements without introducing a new hypothesis, physical model or observational program; no such addition is made. Its source status remains **unresolved** in the present first draft.

38.6 Exit-Corridor Continuity

This heading is retained from the canonical Paper-II chapter hierarchy. The corresponding North American claim cannot be populated from the available fixed-turn measurements without introducing a new hypothesis, physical model or observational program; no such addition is made. Its source status remains **unresolved** in the present first draft.

38.7 Bathymetric Prediction

Bathymetric Prediction retains its original adjudicative function: it distinguishes a proposed result from the evidence and computation needed to judge it. The available source bundle supports the specified coordinates, corridor, chords and stated offset; it provides no executed mechanical outcome for this heading. The status here is **not evaluated**, without a newly chosen threshold, statistical fit, simulation or comparative verdict.

38.8 Joint Arctic Prediction Vector

Joint Arctic Prediction Vector retains its original adjudicative function: it distinguishes a proposed result from the evidence and computation needed to judge it. The available source bundle supports the specified coordinates, corridor, chords and stated offset; it provides no executed mechanical outcome for this heading. The status here is **not evaluated**, without a newly chosen threshold, statistical fit, simulation or comparative verdict.

38.9 Comparison With Subduction Model

Comparison With Subduction Model retains its original adjudicative function: it distinguishes a proposed result from the evidence and computation needed to judge it. The available source bundle supports the specified coordinates, corridor, chords and stated offset; it provides no executed mechanical outcome for this heading. The status here is **not evaluated**, without a newly chosen threshold, statistical fit, simulation or comparative verdict.

39 Exit Preservation, Overprint, and Falsification

The parent distinction between transient state, later overprint and present-day morphology is preserved. No actual terminal-state simulation, reconstruction or detection survey is claimed in the current manuscript.

39.1 Immediate and Modern Exit States

This heading is retained from the canonical Paper-II chapter hierarchy. The corresponding North American claim cannot be populated from the available fixed-turn measurements without introducing a new hypothesis, physical model or observational program; no such addition is made. Its source status remains **unresolved** in the present first draft.

39.2 Later Overprint Processes

This heading is retained from the canonical Paper-II chapter hierarchy. The corresponding North American claim cannot be populated from the available fixed-turn measurements without introducing a new hypothesis, physical model or observational program; no such addition is made. Its source status remains **unresolved** in the present first draft.

39.3 Marker Survival

The canonical Paper-II heading **Marker Survival** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

39.4 Subduction-Reactivation Hypothesis

This heading is retained from the canonical Paper-II chapter hierarchy. The corresponding North American claim cannot be populated from the available fixed-turn measurements without introducing a new hypothesis, physical model or observational program; no such addition is made. Its source status remains **unresolved** in the present first draft.

39.5 Exit Claim Classes

This heading is retained from the canonical Paper-II chapter hierarchy. The corresponding North American claim cannot be populated from the available fixed-turn measurements without introducing a new hypothesis, physical model or observational program; no such addition is made. Its source status remains **unresolved** in the present first draft.

39.6 Exit Viable Set

Exit Viable Set retains its original adjudicative function: it distinguishes a proposed result from the evidence and computation needed to judge it. The available source bundle supports the specified coordinates, corridor, chords and stated offset; it provides no executed mechanical outcome for this heading. The status here is **not evaluated**, without a newly chosen threshold, statistical fit, simulation or comparative verdict.

39.7 Complete Exit Falsification Matrix

Complete Exit Falsification Matrix retains its original adjudicative function: it distinguishes a proposed result from the evidence and computation needed to judge it. The available source bundle supports the specified coordinates, corridor, chords and stated offset; it provides no executed mechanical outcome for this heading. The status here is **not evaluated**, without a newly chosen threshold, statistical fit, simulation or comparative verdict.

39.8 Terminal-Response Success Standard

Terminal-Response Success Standard retains its original adjudicative function: it distinguishes a proposed result from the evidence and computation needed to judge it. The available source bundle supports the specified coordinates, corridor, chords and stated offset; it provides no executed mechanical outcome for this heading. The status here is **not evaluated**, without a newly chosen threshold, statistical fit, simulation or comparative verdict.

40 Midpoint, Terminal, and Survival Synthesis

This synthesis is a boundary statement, not a viability verdict: the fixed-route geometry is documented, the middle-mountain hypothesis is proposed, and the terminal mechanics and planetary survival fields are not calculated.

The chapter retains its canonical synthesis function without extending the supplied evidence into an unsupported causal resolution.

41 Whole-Planet Survival Window

Whole-planet survival remains a distinct requirement of any future physical interpretation. A geometric two-leg equality is not a planetary-survival test. No mass-loss or retention prediction is made in this public draft.

41.1 Planetary Survival Is a Multivariable Constraint

The canonical Paper-II heading **Planetary Survival Is a Multivariable Constraint** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

41.2 Binding-Energy Reference

The canonical Paper-II heading **Binding-Energy Reference** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

41.3 Planetary-Survival Vector

The canonical Paper-II heading **Planetary-Survival Vector** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

41.4 Minimum Survival Rule

The canonical Paper-II heading **Minimum Survival Rule** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

41.5 Mass-Loss Constraint

The canonical Paper-II heading **Mass-Loss Constraint** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

41.6 Crustal Survival Constraint

The canonical Paper-II heading **Crustal Survival Constraint** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

41.7 Mantle Survival Constraint

The canonical Paper-II heading **Mantle Survival Constraint** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

41.8 Survival Window

The canonical Paper-II heading **Survival Window** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

42 Thermal, Melt, Ocean, and Atmosphere Constraints

The thermodynamic and environmental consequence hierarchy is reproduced as chapter structure only; it is neither populated from the original Aegean energy range nor substituted with novel North American energetic mechanics.

42.1 Total Retained Thermal Energy

The canonical Paper-II heading **Total Retained Thermal Energy** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

42.2 Global Mean Temperature Scale

The canonical Paper-II heading **Global Mean Temperature Scale** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

42.3 Energy-Limited Melt Mass

The canonical Paper-II heading **Energy-Limited Melt Mass** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of

state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

42.4 Melt-Volume Constraint

The canonical Paper-II heading **Melt-Volume Constraint** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

42.5 Ocean Retention

The canonical Paper-II heading **Ocean Retention** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

42.6 Ocean-Vapor Energy

The canonical Paper-II heading **Ocean-Vapor Energy** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

42.7 Atmospheric Retention

This heading is retained from the canonical Paper-II chapter hierarchy. The corresponding North American claim cannot be populated from the available fixed-turn measurements without introducing a new hypothesis, physical model or observational program; no such addition is made. Its source status remains **unresolved** in the present first draft.

42.8 Atmospheric Escape

This heading is retained from the canonical Paper-II chapter hierarchy. The corresponding North American claim cannot be populated from the available fixed-turn measurements without introducing a new hypothesis, physical model or observational program; no such addition is made. Its source status remains **unresolved** in the present first draft.

42.9 Radiative and Climatic Forcing

The canonical Paper-II heading **Radiative and Climatic Forcing** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

42.10 Environmental Consequence Sequence

This heading is retained from the canonical Paper-II chapter hierarchy. The corresponding North American claim cannot be populated from the available fixed-turn measurements without introducing a new hypothesis, physical model or observational program; no such addition is made. Its source status remains **unresolved** in the present first draft.

42.11 Thermal-Survival Falsifier

The canonical Paper-II heading **Thermal-Survival Falsifier** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

43 Rotation, Angular Momentum, and Moment-of-Inertia Constraints

The original paper requires rotational compatibility for physical event models. No North American event momentum or rotational transfer state has been supplied; rotation constraints remain without numeric verdict.

43.1 Pre-Event Rotation State

The canonical Paper-II heading **Pre-Event Rotation State** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

43.2 Post-Event Angular Momentum

The canonical Paper-II heading **Post-Event Angular Momentum** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

43.3 First-Order Rotation Change

The canonical Paper-II heading **First-Order Rotation Change** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

43.4 Moment-of-Inertia Change

This heading is retained from the canonical Paper-II chapter hierarchy. The corresponding North American claim cannot be populated from the available fixed-turn measurements without introducing a new hypothesis, physical model or observational program; no such addition is made. Its source status remains **unresolved** in the present first draft.

43.5 Day-Length Change

This heading is retained from the canonical Paper-II chapter hierarchy. The corresponding North American claim cannot be populated from the available fixed-turn measurements without introducing a new hypothesis, physical model or observational program; no such addition is made. Its source status remains **unresolved** in the present first draft.

43.6 Rotation-Axis Change

The canonical Paper-II heading **Rotation-Axis Change** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

43.7 Rotational Energy

The canonical Paper-II heading **Rotational Energy** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

43.8 Rotation-Compatible Set

The canonical Paper-II heading **Rotation-Compatible Set** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

43.9 Rotation Falsifier

The canonical Paper-II heading **Rotation Falsifier** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

44 Global Ejecta and Stratigraphic Marker Predictions

Global ejecta and stratigraphic predictions require a physically specified event and age-appropriate observations. Neither is present in the controlling fixed-turn geometry, and the requested mineralogical disclosure exclusion remains intact.

44.1 Total Ejecta Distribution

The canonical Paper-II heading **Total Ejecta Distribution** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

44.2 Ejecta Classes

The canonical Paper-II heading **Ejecta Classes** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

44.3 Trajectory Propagation

The canonical Paper-II heading **Trajectory Propagation** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

44.4 Predicted Deposit Field

This heading is retained from the canonical Paper-II chapter hierarchy. The corresponding North American claim cannot be populated from the available fixed-turn measurements without introducing a new hypothesis, physical model or observational program; no such addition is made. Its source status remains **unresolved** in the present first draft.

44.5 Composition Vector

This heading is retained from the canonical Paper-II chapter hierarchy. The corresponding North American claim cannot be populated from the available fixed-turn measurements without introducing a new hypothesis, physical model or observational program; no such addition is made. Its source status remains **unresolved** in the present first draft.

44.6 Stratigraphic Marker Vector

This heading is retained from the canonical Paper-II chapter hierarchy. The corresponding North American claim cannot be populated from the available fixed-turn measurements without introducing a new hypothesis, physical model or observational program; no such addition is made. Its source status remains **unresolved** in the present first draft.

44.7 Global Marker Likelihood

Global Marker Likelihood retains its original adjudicative function: it distinguishes a proposed result from the evidence and computation needed to judge it. The available source bundle supports the specified coordinates, corridor, chords and stated offset; it provides no executed mechanical outcome for this heading. The status here is **not evaluated**, without a newly chosen threshold, statistical fit, simulation or comparative verdict.

44.8 Marker Multiplicity

This heading is retained from the canonical Paper-II chapter hierarchy. The corresponding North American claim cannot be populated from the available fixed-turn measurements without introducing a new hypothesis, physical model or observational program; no such addition is made. Its source status remains **unresolved** in the present first draft.

44.9 Global Marker Falsifier

Global Marker Falsifier retains its original adjudicative function: it distinguishes a proposed result from the evidence and computation needed to judge it. The available source bundle supports the specified coordinates, corridor, chords and stated offset; it provides no executed mechanical outcome for this heading. The status here is **not evaluated**, without a newly chosen threshold, statistical fit, simulation or comparative verdict.

45 Unassigned Far-Field Hypothesis as a Secondary Slot

The original Paper II includes Mauna Kea as a secondary, non-gating hypothesis. No corresponding secondary site has been designated for the North American mirror. This chapter retains a secondary-hypothesis slot without choosing a new location.

45.1 Secondary Status

The original manuscript reserves this role for an explicitly secondary hypothesis. No corresponding North American location or target parameter has been designated; **secondary status** remains an unassigned canonical slot. It is not inferred from the Denali corridor and is not a condition for the reported chord equality.

45.2 Far-Field Impulse Definition

The original manuscript reserves this role for an explicitly secondary hypothesis. No corresponding North American location or target parameter has been designated; **far-field impulse definition** remains an unassigned canonical slot. It is not inferred from the Denali corridor and is not a condition for the reported chord equality.

45.3 Surface and Lithospheric Response

The original manuscript reserves this role for an explicitly secondary hypothesis. No corresponding North American location or target parameter has been designated; **surface and lithospheric response** remains an unassigned canonical slot. It is not inferred from the Denali corridor and is not a condition for the reported chord equality.

45.4 Pre-Existing Structure Requirement

The original manuscript reserves this role for an explicitly secondary hypothesis. No corresponding North American location or target parameter has been designated; **pre-existing structure requirement** remains an unassigned canonical slot. It is not inferred from the Denali corridor and is not a condition for the reported chord equality.

45.5 Directional Prediction

The original manuscript reserves this role for an explicitly secondary hypothesis. No corresponding North American location or target parameter has been designated; **directional prediction** remains an unassigned canonical slot. It is not inferred from the Denali corridor and is not a condition for the reported chord equality.

45.6 Magnitude Prediction

The original manuscript reserves this role for an explicitly secondary hypothesis. No corresponding North American location or target parameter has been designated; **magnitude prediction** remains an unassigned canonical slot. It is not inferred from the Denali corridor and is not a condition for the reported chord equality.

45.7 Independent Comparison Models

The original manuscript reserves this role for an explicitly secondary hypothesis. No corresponding North American location or target parameter has been designated; **independent comparison models** remains an unassigned canonical slot. It is not inferred from the Denali corridor and is not a condition for the reported chord equality.

45.8 Secondary-Hypothesis Falsifier

The original manuscript reserves this role for an explicitly secondary hypothesis. No corresponding North American location or target parameter has been designated; **secondary-hypothesis falsifier** remains an unassigned

canonical slot. It is not inferred from the Denali corridor and is not a condition for the reported chord equality.

46 Nested Viability of Entrance, Path, Midpoint, Exit, and Survival

The source integrates entrance, path, midpoint, terminal and global survival with a single parameter realization. That logic is preserved; because no physical parameter realization is supplied, the nested viable set is not evaluated.

Paper-II eligibility status ledger

Required source element	Available in this mirror	Mechanical verdict
Geographic entrance	Yes, coordinate solved for equal-leg construction	No coupling solution
Route length and waypoint order	Yes, source geometry	No transport solution
Geometric middle turn	Yes, fixed coordinate	No response maximum solved
Denali geographic association	Yes, 222.678 km offset	No causal inheritance solved
Arctic terminal position	Yes, geographic endpoint	No terminal response solved
Whole-Earth physical constraint	No event realization supplied	Not evaluated

No row is marked mechanically viable because geometric completion is not a stand-in for dynamic closure.

46.1 Regional Viable Sets

Regional Viable Sets retains its original adjudicative function: it distinguishes a proposed result from the evidence and computation needed to judge it. The available source bundle supports the specified coordinates, corridor, chords and stated offset; it provides no executed mechanical outcome for this heading. The status here is **not evaluated**, without a newly chosen threshold, statistical fit, simulation or comparative verdict.

46.2 Handoff Operators

This canonical subsection retains its documentary or interpretive role. No additional Denali evidence or simulated event output is available beyond the Paper-I geometric handoff. In particular, manuscript completion and the reported length match are not treated as a completed mechanical outcome or comparative qualification.

46.3 Common Parameter Constraint

The known chord equalities constrain a geometric route using a fixed sphere. They do **not** constitute one shared physical parameter vector satisfying entrance, deep-path, mountain response, terminal effects and planetary survival. The mechanical compatibility intersection cannot be evaluated with the supplied inputs.

46.4 Complete Nested Viable Set

Complete Nested Viable Set retains its original adjudicative function: it distinguishes a proposed result from the evidence and computation needed to judge it. The available source bundle supports the specified coordinates, corridor, chords and stated offset; it provides no executed mechanical outcome for this heading. The status here is **not evaluated**, without a newly chosen threshold, statistical fit, simulation or comparative verdict.

46.5 Empty-Intersection Failure

This canonical subsection retains its documentary or interpretive role. No additional Denali evidence or simulated event output is available beyond the Paper-I geometric handoff. In particular, manuscript completion and the

reported length match are not treated as a completed mechanical outcome or comparative qualification.

46.6 Parameter-Compatibility Matrix

Parameter-Compatibility Matrix retains its original adjudicative function: it distinguishes a proposed result from the evidence and computation needed to judge it. The available source bundle supports the specified coordinates, corridor, chords and stated offset; it provides no executed mechanical outcome for this heading. The status here is **not evaluated**, without a newly chosen threshold, statistical fit, simulation or comparative verdict.

46.7 Regional Tension Statistic

This canonical subsection retains its documentary or interpretive role. No additional Denali evidence or simulated event output is available beyond the Paper-I geometric handoff. In particular, manuscript completion and the reported length match are not treated as a completed mechanical outcome or comparative qualification.

46.8 Paper-II Primary Decision Rule

Paper-II Primary Decision Rule retains its original adjudicative function: it distinguishes a proposed result from the evidence and computation needed to judge it. The available source bundle supports the specified coordinates, corridor, chords and stated offset; it provides no executed mechanical outcome for this heading. The status here is **not evaluated**, without a newly chosen threshold, statistical fit, simulation or comparative verdict.

47 Model Evidence, Complexity, and Branch Selection

The canonical model-selection chapter is retained, but neither likelihood nor comparative mechanical evidence exists for this adaptation. No preferred physical branch or competing-model conclusion is manufactured.

47.1 Candidate Mechanical Models

The canonical Paper-II heading **Candidate Mechanical Models** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

47.2 Likelihood

Likelihood retains its original adjudicative function: it distinguishes a proposed result from the evidence and computation needed to judge it. The available source bundle supports the specified coordinates, corridor, chords and stated offset; it provides no executed mechanical outcome for this heading. The status here is **not evaluated**, without a newly chosen threshold, statistical fit, simulation or comparative verdict.

47.3 Bayesian Evidence

Bayesian Evidence retains its original adjudicative function: it distinguishes a proposed result from the evidence and computation needed to judge it. The available source bundle supports the specified coordinates, corridor, chords and stated offset; it provides no executed mechanical outcome for this heading. The status here is **not evaluated**, without a newly chosen threshold, statistical fit, simulation or comparative verdict.

47.4 Information Criteria

This canonical subsection retains its documentary or interpretive role. No additional Denali evidence or simulated event output is available beyond the Paper-I geometric handoff. In particular, manuscript completion and the reported length match are not treated as a completed mechanical outcome or comparative qualification.

47.5 Physical-Prior Penalty

This canonical subsection retains its documentary or interpretive role. No additional Denali evidence or simulated event output is available beyond the Paper-I geometric handoff. In particular, manuscript completion and the reported length match are not treated as a completed mechanical outcome or comparative qualification.

47.6 Branch-Transition Penalty

This canonical subsection retains its documentary or interpretive role. No additional Denali evidence or simulated event output is available beyond the Paper-I geometric handoff. In particular, manuscript completion and the reported length match are not treated as a completed mechanical outcome or comparative qualification.

47.7 Numerical-Artifact Penalty

This canonical subsection retains its documentary or interpretive role. No additional Denali evidence or simulated event output is available beyond the Paper-I geometric handoff. In particular, manuscript completion and the reported length match are not treated as a completed mechanical outcome or comparative qualification.

47.8 Total Model Score

Total Model Score retains its original adjudicative function: it distinguishes a proposed result from the evidence and computation needed to judge it. The available source bundle supports the specified coordinates, corridor, chords and stated offset; it provides no executed mechanical outcome for this heading. The status here is **not evaluated**, without a newly chosen threshold, statistical fit, simulation or comparative verdict.

47.9 Comparison With Non-Astro-Ballistic Models

Comparison With Non-Astro-Ballistic Models retains its original adjudicative function: it distinguishes a proposed result from the evidence and computation needed to judge it. The available source bundle supports the specified coordinates, corridor, chords and stated offset; it provides no executed mechanical outcome for this heading. The status here is **not evaluated**, without a newly chosen threshold, statistical fit, simulation or comparative verdict.

47.10 Branch Eligibility and Comparative Preference

This canonical subsection retains its documentary or interpretive role. No additional Denali evidence or simulated event output is available beyond the Paper-I geometric handoff. In particular, manuscript completion and the reported length match are not treated as a completed mechanical outcome or comparative qualification.

48 Paper-II Claim Ledger

The ledger separates geometric statements actually present from physical propositions for which the current record supplies no evidence. Status is inherited from the input source and may not be upgraded by manuscript completeness.

ID	Claim	Class	Status
NA-P2-G01	First leg uses a single entrance-to-turn interior chord	Geometric definition	Defined in Paper I
NA-P2-G02	Second leg uses eight successive chords	Geometric definition	Defined in Paper I
NA-P2-G03	Leg totals are reported equal to four decimals	Derived geometric correspondence	Source-reported, conditional on inputs
NA-P2-G04	Denali is offset from the fixed turn	Derived geometric relationship	Source-reported (rounded)
NA-P2-M01	Entrance mechanically couples into the prescribed path	Mechanism proposition	Unresolved / not evaluated
NA-P2-M02	A persistent middle-mountain response emerges	Mechanism proposition	Unresolved / not evaluated
NA-P2-M03	One physical realization reaches the Arctic terminal	Mechanism proposition	Unresolved / not evaluated
NA-P2-M04	The global planetary constraints are satisfied	Physical viability proposition	Unresolved / not evaluated

These categories mirror the original Paper-II claim hierarchy without importing its Aegean mechanical results.

48.1 Claim Classes

This canonical subsection retains its documentary or interpretive role. No additional Denali evidence or simulated event output is available beyond the Paper-I geometric handoff. In particular, manuscript completion and the reported length match are not treated as a completed mechanical outcome or comparative qualification.

48.2 Claim Ledger

This canonical subsection retains its documentary or interpretive role. No additional Denali evidence or simulated event output is available beyond the Paper-I geometric handoff. In particular, manuscript completion and the reported length match are not treated as a completed mechanical outcome or comparative qualification.

48.3 Claim Dependency Structure

This canonical subsection retains its documentary or interpretive role. No additional Denali evidence or simulated event output is available beyond the Paper-I geometric handoff. In particular, manuscript completion and the reported length match are not treated as a completed mechanical outcome or comparative qualification.

49 Complete Paper-II Falsification Matrix

The canonical falsification matrix remains conditional on a declared physical model and executed evidence comparison. Here, ‘not run’ cannot be renamed either ‘passes’ or ‘fails,’ and a missing private model is not treated as a discovered physical contradiction.

49.1 Falsification Levels

Falsification Levels retains its original adjudicative function: it distinguishes a proposed result from the evidence and computation needed to judge it. The available source bundle supports the specified coordinates, corridor, chords and stated offset; it provides no executed mechanical outcome for this heading. The status here is **not evaluated**, without a newly chosen threshold, statistical fit, simulation or comparative verdict.

49.2 Non-Detection and Simulation-Completion Rule

The canonical Paper-II heading **Non-Detection and Simulation-Completion Rule** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

49.3 No Failure Laundering

This canonical subsection retains its documentary or interpretive role. No additional Denali evidence or simulated event output is available beyond the Paper-I geometric handoff. In particular, manuscript completion and the reported length match are not treated as a completed mechanical outcome or comparative qualification.

49.4 Compartmentalized Failure

This canonical subsection retains its documentary or interpretive role. No additional Denali evidence or simulated event output is available beyond the Paper-I geometric handoff. In particular, manuscript completion and the reported length match are not treated as a completed mechanical outcome or comparative qualification.

50 Independent Numerical Replication Protocol

The original replication hierarchy is reproduced as a documentary control: no North American hydrocode, solver run, numerical mesh or independent model reproduction accompanies the source distances. Geometric arithmetic can be reproduced independently of any mechanics claim.

50.1 Replication Objective

The numerical record admits a bounded deterministic check: recompute $c(E, M)$ from the full recorded entrance and turn coordinates, recompute $c(M, \text{Denali})$ from the recorded turn and Denali coordinates, add the other seven source-workbook chords, and compare the totals with the 8,061.8708 km report. The current reference sphere is $R = 6{,}371$ km. The source's **three-decimal first segment** is for printed presentation; using 222.678 km in place of its unrounded coordinate-derived value changes the last digits of the sum. No solver, constitutive parameter file, or mechanical response field is present for replicating a physical transmission simulation.

50.2 Replication Levels

The available North American replication evidence separates three levels: **(1) geometric formula reproduction**, using the stated spherical central-angle and chord definitions; **(2) source reconstruction**, using the first turn-to-Denali segment plus the seven downstream workbook rows; and **(3) mechanical replication**, for which no North American solver configuration, initial state, output field or experiment is supplied. Levels (1) and (2) reproduce the fitted numerical construction to the reported precision. Level (3) is **not evaluated**, not a positive or negative simulation outcome.

50.2.1 Level M1: Analytic Screening

The original replication-level slot is preserved. No Denali physical-model run, validated output or independent numerical reproduction is reported for this level. A geometric chord check belongs to a separate, input-arithmetic replication activity.

50.2.2 Level M2: Constitutive Verification

The original replication-level slot is preserved. No Denali physical-model run, validated output or independent numerical reproduction is reported for this level. A geometric chord check belongs to a separate, input-arithmetic replication activity.

50.2.3 Level M3: Entrance Simulation

The original replication-level slot is preserved. No Denali physical-model run, validated output or independent numerical reproduction is reported for this level. A geometric chord check belongs to a separate, input-arithmetic replication activity.

50.2.4 Level M4: Interior Transmission

The original replication-level slot is preserved. No Denali physical-model run, validated output or independent numerical reproduction is reported for this level. A geometric chord check belongs to a separate, input-arithmetic replication activity.

50.2.5 Level M5: Terminal Exit

The original replication-level slot is preserved. No Denali physical-model run, validated output or independent numerical reproduction is reported for this level. A geometric chord check belongs to a separate, input-arithmetic replication activity.

50.2.6 Level M6: Whole-Planet Survival

The original replication-level slot is preserved. No Denali physical-model run, validated output or independent numerical reproduction is reported for this level. A geometric chord check belongs to a separate, input-arithmetic replication activity.

50.2.7 Level M7: Nested Viability

The original replication-level slot is preserved. No Denali physical-model run, validated output or independent numerical reproduction is reported for this level. A geometric chord check belongs to a separate, input-arithmetic replication activity.

50.3 Required Repository Structure

This canonical subsection retains its documentary or interpretive role. No additional Denali evidence or simulated event output is available beyond the Paper-I geometric handoff. In particular, manuscript completion and the reported length match are not treated as a completed mechanical outcome or comparative qualification.

50.4 Simulation Metadata

North American status: not provided. The available working files specify $R = 6{,}371\,\mathrm{km}$ and geographic waypoints for chord/arc calculations; they do not supply a physical solver identifier, numerical mesh, timestep, material constitutive inputs, event-state parameters, boundary conditions or resulting response fields. These

missing simulation-metadata categories are neither inferred from the corridor geometry nor replaced with Aegean-case parameters. Their headings remain in the inherited Paper-II architecture; restricted mechanics and mineralogy are not disclosed.

50.5 Benchmark Requirements

Benchmark Requirements retains its original adjudicative function: it distinguishes a proposed result from the evidence and computation needed to judge it. The available source bundle supports the specified coordinates, corridor, chords and stated offset; it provides no executed mechanical outcome for this heading. The status here is **not evaluated**, without a newly chosen threshold, statistical fit, simulation or comparative verdict.

50.6 Convergence Suite

Convergence Suite retains its original adjudicative function: it distinguishes a proposed result from the evidence and computation needed to judge it. The available source bundle supports the specified coordinates, corridor, chords and stated offset; it provides no executed mechanical outcome for this heading. The status here is **not evaluated**, without a newly chosen threshold, statistical fit, simulation or comparative verdict.

50.7 Cross-Solver Reproduction

The reproductions available in the supplied North American sources are geometric: $c(E, M)$ is recalculated on a sphere of radius 6,371 km, the turn-to-Denali chord is recomputed from coordinates, and the seven downstream workbook chords are summed. None of those operations is an independent mechanical solver. No second physical solver, mesh-convergence result, boundary-condition file, or comparison of simulated responses is provided. Consequently this original Paper-II replication slot remains **mechanically unexecuted**; arithmetic reproducibility is indexed to Paper I and the atlas instead of being mislabeled a solver agreement.

50.8 Negative Replication

There is no recorded North American mechanical simulation against which to establish negative replication. Recomputing the spherical equality, even with a different arithmetic implementation, would test the mathematical input construction rather than a physical solver's success or failure. This subsection therefore records **mechanical negative-replication status: not evaluated**, distinct from the reproducible geometric arithmetic passed from Paper I.

50.9 Replication Outcomes

Geometric arithmetic: reproducible under the reported sphere, fitted entrance, fixed turn and ordered eight-segment corridor. **Mechanical replication:** no numerical implementation or response dataset supplied. **Independent geological response check:** no observation/model pair supplied in the present Denali records. These separate outcomes prevent a verified geometric sum from being reported as successful physical transmission or as a failed physical hypothesis.

51 Mechanical Eligibility Versus Comparative Preference

The original corpus divides mechanical eligibility from comparative preference. Neither status can be earned from the equality of a direct chord and a segmented chord sum. Paper IV retains its own distinct comparative function.

The chapter retains its canonical synthesis function without extending the supplied evidence into an unsupported causal resolution.

52 Integrated Discussion

The Paper-II discussion addresses the same conceptual handoff from map to mechanics as canonical ABC Sequencing. The North American source delivers an unusually explicit path specification but does not disclose or demonstrate the causal carrier. The bounded result is a complete candidate geometric input, not a complete physical theory.

52.1 Paper II Converts a Map Into a Mechanical Search

Under the original Paper-II division of labor, geometric stations become **inputs** to any mechanical eligibility calculation, not its computed outcomes. For the North American working source, those inputs are the solved entrance, author-fixed turn, ordered Denali-to-Arctic corridor, and the chord/arc bookkeeping recorded in Paper I. No physical response calculation is supplied for the North American substitution, and the restricted mechanism remains withheld. This subsection therefore preserves the canonical handoff distinction while recording no simulated mechanism or validated material response.

52.2 The Lower Mantle Dominates the Mechanical Problem

The canonical Paper-II heading **The Lower Mantle Dominates the Mechanical Problem** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

52.3 Ordinary Rigid Penetration Is the Most Restrictive Branch

The canonical Paper-II heading **Ordinary Rigid Penetration Is the Most Restrictive Branch** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

52.4 A Hybrid Model Cannot Become Unlimited

This canonical subsection retains its documentary or interpretive role. No additional Denali evidence or simulated event output is available beyond the Paper-I geometric handoff. In particular, manuscript completion and the reported length match are not treated as a completed mechanical outcome or comparative qualification.

52.5 The Denali Claim Is an Inheritance Claim

This canonical subsection retains its documentary or interpretive role. No additional Denali evidence or simulated event output is available beyond the Paper-I geometric handoff. In particular, manuscript completion and the reported length match are not treated as a completed mechanical outcome or comparative qualification.

52.6 The Arctic Claim Requires More Than a Deep Trench

This canonical subsection retains its documentary or interpretive role. No additional Denali evidence or simulated event output is available beyond the Paper-I geometric handoff. In particular, manuscript completion and the reported length match are not treated as a completed mechanical outcome or comparative qualification.

52.7 The Planetary Survival Window May Be Narrow

The canonical Paper-II heading **The Planetary Survival Window May Be Narrow** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

52.8 A Mechanically Viable Event Is Not Yet a Replacement

The canonical Paper-II heading **A Mechanically Viable Event Is Not Yet a Replacement** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

53 Limitations of Paper II

The main limitations are source-specific and explicit: no fixed physical initial state, no constituted differentiated-Earth transmission model, no derived middle-mountain response, no terminal-forward simulation, and no completed independent mechanical replication. No false negative verdict follows from those omissions.

53.1 No Completed Planetary Simulation

The canonical Paper-II heading **No Completed Planetary Simulation** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

53.2 Constitutive Uncertainty

The canonical Paper-II heading **Constitutive Uncertainty** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

53.3 Paleo-Earth Uncertainty

This canonical subsection retains its documentary or interpretive role. No additional Denali evidence or simulated event output is available beyond the Paper-I geometric handoff. In particular, manuscript completion and the reported length match are not treated as a completed mechanical outcome or comparative qualification.

53.4 Entrance Uncertainty

This canonical subsection retains its documentary or interpretive role. No additional Denali evidence or simulated event output is available beyond the Paper-I geometric handoff. In particular, manuscript completion and the reported length match are not treated as a completed mechanical outcome or comparative qualification.

53.5 Denali Target Uncertainty

This canonical subsection retains its documentary or interpretive role. No additional Denali evidence or simulated event output is available beyond the Paper-I geometric handoff. In particular, manuscript completion and the reported length match are not treated as a completed mechanical outcome or comparative qualification.

53.6 Arctic Target Uncertainty

The *Denali Exact* terminal location is reported to one decimal place in latitude and to whole degrees in longitude; no stated survey tolerance, spatial target polygon, physical footprint, or alternative terminal ensemble accompanies it. The geometric route is therefore reproducible using the printed coordinate while **Arctic response-domain uncertainty remains unspecified**. Neither the precision of the printed endpoint nor the small residual in the fitted leg lengths should be reinterpreted as geological localization accuracy.

53.7 Long-Time Handoff Uncertainty

This canonical subsection retains its documentary or interpretive role. No additional Denali evidence or simulated event output is available beyond the Paper-I geometric handoff. In particular, manuscript completion and the reported length match are not treated as a completed mechanical outcome or comparative qualification.

53.8 Tomographic Resolution

This canonical subsection retains its documentary or interpretive role. No additional Denali evidence or simulated event output is available beyond the Paper-I geometric handoff. In particular, manuscript completion and the reported length match are not treated as a completed mechanical outcome or comparative qualification.

53.9 Preservation Uncertainty

This canonical subsection retains its documentary or interpretive role. No additional Denali evidence or simulated event output is available beyond the Paper-I geometric handoff. In particular, manuscript completion and the reported length match are not treated as a completed mechanical outcome or comparative qualification.

53.10 Global-Marker Uncertainty

This canonical subsection retains its documentary or interpretive role. No additional Denali evidence or simulated event output is available beyond the Paper-I geometric handoff. In particular, manuscript completion and the reported length match are not treated as a completed mechanical outcome or comparative qualification.

53.11 Replacement Limitation

This canonical subsection retains its documentary or interpretive role. No additional Denali evidence or simulated event output is available beyond the Paper-I geometric handoff. In particular, manuscript completion and the reported length match are not treated as a completed mechanical outcome or comparative qualification.

53.12 Reserved-Event Scope

This canonical subsection retains its documentary or interpretive role. No additional Denali evidence or simulated event output is available beyond the Paper-I geometric handoff. In particular, manuscript completion and the reported length match are not treated as a completed mechanical outcome or comparative qualification.

54 Conclusions

The ten canonical conclusion positions are preserved with North American role substitutions. What is established in the supplied work is geometry and a fixed-route numerical relationship. What remains open is the complete physical event history and any comparative causal qualification.

54.1 Conclusion 1: The Event Is a Coupled Planetary Problem

This canonical subsection retains its documentary or interpretive role. No additional Denali evidence or simulated event output is available beyond the Paper-I geometric handoff. In particular, manuscript completion and the reported length match are not treated as a completed mechanical outcome or comparative qualification.

54.2 Conclusion 2: The Declared Reference Chord Is a Geometric Input, Not a Solved Deep Path

The supplied calculation defines $c(E, M)$ directly from the reference-sphere coordinates and L_2 as eight separate straight-chord lengths summed along a prescribed waypoint corridor. Equality of those calculated distances is a *geometric input relation* for the mechanics paper. It is not a solved interior trajectory, a coupled mechanical state, or an observed transport history. Nothing in the Denali PDF or seven-row workbook supplies that additional physical result, and the proprietary mechanism remains outside the public manuscript.

54.3 Conclusion 3: The Parameter Domain Remains Unspecified

Conclusion 3: The Parameter Domain Remains Unspecified retains its original adjudicative function: it distinguishes a proposed result from the evidence and computation needed to judge it. The available source bundle supports the specified coordinates, corridor, chords and stated offset; it provides no executed mechanical outcome for this heading. The status here is **not evaluated**, without a newly chosen threshold, statistical fit, simulation or comparative verdict.

54.4 Conclusion 4: Coherent Penetration Is Only One Canonical Branch

The canonical Paper-II heading **Conclusion 4: Coherent Penetration Is Only One Canonical Branch** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

54.5 Conclusion 5: The Denali Response Must Emerge

This canonical subsection retains its documentary or interpretive role. No additional Denali evidence or simulated event output is available beyond the Paper-I geometric handoff. In particular, manuscript completion and the reported length match are not treated as a completed mechanical outcome or comparative qualification.

54.6 Conclusion 6: The Arctic Terminal Response Must Be Delivered by the Path

This canonical subsection retains its documentary or interpretive role. No additional Denali evidence or simulated event output is available beyond the Paper-I geometric handoff. In particular, manuscript completion and the reported length match are not treated as a completed mechanical outcome or comparative qualification.

54.7 Conclusion 7: Planetary-Survival Failure Can Falsify a Mechanical Branch

The canonical Paper-II heading **Conclusion 7: Planetary-Survival Failure Can Falsify a Mechanical Branch** concerns physical quantities or material response that are not present in the authorized Denali source record. No Aegean-case coefficients, energies, equations of state, or simulated fields are transferred to this different geography. This slot is intentionally **reserved** under the stated proprietary-content boundary; no numerical success or failure is asserted.

54.8 Conclusion 8: One Event Realization Must Satisfy All Mandatory Domains

This canonical subsection retains its documentary or interpretive role. No additional Denali evidence or simulated event output is available beyond the Paper-I geometric handoff. In particular, manuscript completion and the reported length match are not treated as a completed mechanical outcome or comparative qualification.

54.9 Conclusion 9: Secondary Hypotheses Remain Unassigned

This canonical subsection retains its documentary or interpretive role. No additional Denali evidence or simulated event output is available beyond the Paper-I geometric handoff. In particular, manuscript completion and the reported length match are not treated as a completed mechanical outcome or comparative qualification.

54.10 Conclusion 10: The Mechanical Question Remains Open

The source-qualified result is a fully specified geographic chord construction and an unresolved mechanics interpretation. No novel mechanical failure or success has been established by this adaptation.

54.11 Final Paper-II Statement

Paper II preserves the original differentiated-Earth mechanical questions and its fifty-four-chapter organization, but the available Denali material supplies only a conditional geometric input construction. It does not provide a mechanically parameterized path, an executed solver, conservation-budget outputs or a calculated terminal response. The numerical length equality is inherited from Paper I without being relabeled as physical transmission. Proprietary energetic mechanics and mineralogy remain excluded; Paper III receives this qualified status, not an inferred mechanical solution.

Appendix A — Paper-II Reference Geometry

Inherited full-precision geometric input (Paper I, pass 1): $R = 6371\,\mathrm{km}$; $c(M, D) = 222.677503129\,\mathrm{km}$ from the recorded turn and Denali coordinates; seven workbook chords total $7839.193258226\,\mathrm{km}$; therefore $L_2 = 8061.870761355\,\mathrm{km} = L_1$ at the quoted precision. The segment-chord sum remains a prescribed geometric corridor, not an independently solved physical path. No new mechanical parameter is inferred from the arithmetic.

The controlling coordinate pair E, M and the eight-chord northern route are inherited from North American Paper I [2]. A point on the modern surface is represented on the selected reference sphere by

$$\mathbf{u}(\phi, \lambda) = (\cos\phi\cos\lambda,\ \cos\phi\sin\lambda,\ \sin\phi),$$

$$\theta_{ij} = \arccos[\mathbf{u}_i \cdot \mathbf{u}_j], \qquad c_{ij} = 2R\sin(\theta_{ij}/2), \qquad R = 6371\,\mathrm{km}.$$

The correspondence $c(E, M) = \sum_{j=0}^{7} c(W_j, W_{j+1})$ is reported to four decimals in [3]. This mathematical construction is **not** a simulated Earth-interior path, and this appendix makes no physical-trajectory claim.

Appendix B — Initial Event Parameter Registry

Parameter family from canonical Paper II	North American status
Initial state; event mass; geometry of impactor	Not supplied; proprietary mechanics excluded
Speed; momentum; impact parameter; energy	Not supplied; no imported Aegean search values

Parameter family from canonical Paper II	North American status
Constitutive and differentiated-Earth properties	Not supplied
Earth state at the event time	Not modeled from supplied files
Material / phase fields	Not supplied; excluded from disclosure
Fitted entrance, fixed turn, and source-specified terminal coordinates	Supplied and recorded in Appendix A

No absent parameter is set equal to zero. **Not supplied** is an evidence-status designation, not a physical zero or evidence of non-existence.

Appendix C — Mechanical Output Registry

Domain	Required type of output in canonical structure	Current status
Entrance	Coupling/response	Not evaluated
Interior	Localized transmission	Not evaluated
Middle mountain	Time-integrated/inherited response	Not evaluated
Terminal	Response/morphology	Not evaluated
Planet	Conservation/survival	Not evaluated
Later record	Long-time and observable lineage	Not evaluated

The only populated numerical results in this draft are the geometric records carried from Paper I.

Appendix D — Equation Registry

ID	Public equation	Status
NA-P2-E01	$\mathbf{u}(\phi,\lambda) = (\cos\phi\cos\lambda, \cos\phi\sin\lambda, \sin\phi)$	Inherited coordinate map
NA-P2-E02	$\theta_{ij} = \arccos(\mathbf{u}_i \cdot \mathbf{u}_j)$	Inherited angular separation
NA-P2-E03	$c_{ij} = 2R\sin(\theta_{ij}/2)$	Inherited chord equation
NA-P2-E04	$L_1 = c(E, M)$	First-leg definition
NA-P2-E05	$L_2 = \sum_{j=0}^{7} c(W_j, W_{j+1})$	Eight-chord second-leg definition
NA-P2-E06	$\Delta L = L_1 - L_2$	Distance-equality residual

The canonical mechanics equation families are identified in their respective chapters but are **not** recopied or substituted as North American physical laws with invented parameter values. No numerical event-energy, material-response or bounce-back equation is disclosed.

Appendix E — Simulation Decision Tree

The canonical decision-tree *order* is inherited: audited inputs → declared branch → physical-model realization → domain handoffs → complete viability assessment → reported status. The present candidate reaches only the audited-input stage. All downstream boxes are explicitly **not executed**. Nothing in this appendix initiates or proposes a new observation program.

Appendix F — Paper-III Handoff State

54.12 Purpose

Transmit the source-qualified North American inputs without promoting geometric equality into simulated mechanics.

54.13 Handoff Vector

The valid $H^{\mathrm{NA}}_{II\to III}$ handoff comprises the source-fixed turn, fitted Malpelo-region entrance, ordered waypoint identities and coordinates where supplied, stated spherical radius, one direct first-leg chord, eight summed second-leg chords, separately summed surface arcs, and their source statuses. The first second-leg segment is derived from the turn and Denali coordinates; the subsequent seven chords and arcs come from the workbook. This is a **geometric provenance vector only**. No material-response or event-state field has been calculated or handed off.

54.14 Required Paper-III Outputs

Paper III occupies the same event-sequence and spatial-reconstruction role as in ABC Sequencing. No Paper-III result or independent chronological reconstruction is fabricated here.

54.15 Causal Status of the Paper-III Handoff

The handoff is an **input package only**. It neither demonstrates the proposed initiating event nor assigns an observed mechanism to Denali or the terminal region.

54.16 Handoff Failure

A future mechanical claim that depends on a non-existent Paper-II response output cannot count as an established result. This is a source sufficiency rule, not an empirical finding of impossibility.

Paper-II Working-Draft Status and Remaining Empirical Work

This draft completes the canonical **fifty-four-chapter scaffold**, its source-qualified North American substitutions, corresponding appendix sequence, provenance, and Paper-III handoff. It does **not** contain the canonical source paper's full private physical treatment or a run of its model hierarchy, and is therefore not equivalent in scientific depth or validation to the original 196-page Paper II. The missing physical content is retained as unresolved/reserved rather than invented. This is Draft II of V in the user's established **five initial drafts followed by approximately fifteen corpus-wide refinement passes** workflow.

References

[1] Fine, Justin B. (2026). *Astro-Ballistic Chronostratigraphic Sequencing II: Transmission Through a Differentiated Earth*. Canonical Corpus Freeze 1.0, ABC-CF1-2026-08-07. https://ontomics.com/pdfs/abc-paper-ii.pdf. Controlling structure and paper function, not a North American empirical source.

[2] Fine, Justin B. (2026). *ABC North America Paper I, Refinement Pass 15 v1.6: Malpelo Entrance, Denali Middle Mountain, Arctic Terminal Domain*. Ontomics project working manuscript. Paper-I handoff and source/status conventions.

[3] *Denali Exact.pdf.* Ontomics project research file. Fixed middle-turn surface projection, solved entrance, eight-segment route and reported equal-length construction.

[4] *Denali_Trench_underground_path___per_segment_arc____chord_lengths-1.xlsx*. Ontomics project workbook. Seven full-precision corridor segment calculations.

[5] *Denali Short Math.pdf.* Ontomics project research record. Earlier exploratory model, not controlling over [3].

[6] *8-8-2025 64 ma ABC Math Full (1).pdf.* Ontomics project research record. Earlier exploratory calculations, not silently imported as confirmed mechanics.

External Scholarly and Data Context

ABC Sequencing II - North American Middle Mountain | Public Research Edition v1.7 | 17 November 2026

Citation function and limits. This supplement adds verified external publications and data resources relevant to the named sections of the accompanying v1.6-derived manuscript. These references are **contextual or comparative**, not newly analyzed empirical input, independent support for the proposed passage, or evidence that reserved mechanics or unexecuted model comparisons have been completed. All author-declared coordinates and originally computed chord lengths retain their prior internal provenance.

Section-indexed citation mapping

Manuscript section or subject	External reference IDs
Differentiated Earth model (section 4)	E08
Simulation hierarchy (section 10)	E09, E11
Equations of state; rock strength and damage (section 12-14)	E10, E11
Fragmentation and entrainment (section 17)	E10
Chronology and material path branches (section 6)	E07

Source bibliography and declared relevance

[E08] Dziewonski, A. M., and Anderson, D. L. (1981). Preliminary reference Earth model. Physics of the Earth and Planetary Interiors, 25, 297-356.
https://doi.org/10.1016/0031-9201(81)90046-7
Role: Published differentiated-Earth reference structure; the manuscript has not inserted a calibrated PREM model.

[E09] Collins, G. S., Melosh, H. J., and Marcus, R. A. (2005). Earth Impact Effects Program. Meteoritics and Planetary Science.
https://doi.org/10.1111/j.1945-5100.2005.tb00157.x
Role: Established impact-effects modeling context, not a numerical solution for the proposed path.

[E11] Pierazzo, E., et al. (2008). Validation of numerical codes for impact and explosion cratering: Impacts on strengthless and metal targets. Meteoritics and Planetary Science, 43, 1917-1938.
https://doi.org/10.1111/j.1945-5100.2008.tb00653.x
Role: Simulation-code benchmarking literature; not a validation of this specific event hypothesis.

[E10] Wunnemann, K., Collins, G. S., and Melosh, H. J. (2006). A strain-based porosity model for hydrocode simulations of impacts. Icarus, 180, 514-527.
https://doi.org/10.1016/j.icarus.2005.10.013
Role: Impact-material compaction/porosity-model reference; no calibration imported.

[E07] Muller, R. D., et al. (2018). GPlates: Building a virtual Earth through deep time. Geochemistry, Geophysics, Geosystems, 19, 2243-2261.
https://doi.org/10.1029/2018GC007584
Role: Methods and limitations of deep-time plate/geographic reconstructions; no GPlates output has been newly computed here.

Release integrity and source-status convention

The document cover and running title have been updated for the present public research release. Original internal reference numbers [1], [2], etc. remain unchanged. External citations are identified separately as E01-E18 and by footer notices on their mapped pages; they do not replace or renumber internal provenance sources. Historical draft language and references to v1.6 or earlier pass stages in the underlying manuscript record the development history and are subordinate to this release notice.

Scope remains unchanged: no new causal event has been established by this editorial revision; neither missing observations nor proprietary material have been synthesized to fill an empty source field.