ASTRO-BALLISTIC CHRONOSTRATIGRAPHIC SEQUENCING

NORTH AMERICAN MIDDLE MOUNTAIN | PAPER III

From Event Geometry to Continents, Trenches, Mountains, and Basins

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Canonical Corpus and Working-Draft Notice

Series: Astro-Ballistic Chronostratigraphic Sequencing (ABC Sequencing).
Paper: III of V.
Controlling structural template: Fine (2026), *Astro-Ballistic Chronostratigraphic Sequencing III: From Event Geometry to Continents, Trenches, Mountains, and Basins*, Canonical Corpus Freeze 1.0, ID ABC-CF1-2026-08-07, 246 pages [1].
North American manuscript status: *Refinement Pass 15 working draft v1.6 in the five-paper sequence; not a frozen corpus and not an executed global-reconstruction solution.*
Event-specific source order: North American Paper I [2] → North American Paper II [3] → *Denali Exact.pdf* [4] → numerical workbook [5] → earlier developmental records [6,7].

This is the North American **structural mirror** of canonical Paper III, not a newly organized research program. The canonical headings, chapter divisions, causal role of the third paper, source-status conventions, appendices and Paper-IV handoff are preserved. Only project-supplied geographic findings are inserted. Neither Aegean-case physical values nor North American geology absent from the files is quietly manufactured.

The Principal Investigator's public-release limits withhold **mineralogy** and **bounce-back / energetic mechanisms**. Original headings that concern these topics are present to preserve the source architecture; they carry no generated proprietary mechanism, constitutive parameterization, mineral-system prediction, resource target, or energetic calculation.

Declaration of Purpose

The original third paper receives conditional mechanically eligible states from Paper II and asks whether one sequenced, causally connected reconstruction accounts for plate boundaries, motions, continents, mountains, trenches and basins. The North American mirror preserves this function. It does not assume that the geography of the source-defined Malpelo–Denali–Arctic path is already such a reconstruction. Paper III thus receives a **defined candidate geometry and an unresolved physical handoff** rather than a solved event-generated global state.

Source Status and Citation Policy

Reference [1] is **architectural authority** for this paper's chapters, terminology and distinct scientific burdens; it is not a North American empirical dataset. Reference [2] supplies the controlling geographic scope and chord-method statement. Reference [3] supplies the explicit limitations of the mechanics handoff. Reference [4] fixes the later selected turn and solved entrance. Reference [5] holds segment arithmetic. The older mathematical working files [6,7] are developmental and do not silently replace [4]. This manuscript introduces no independent geophysical, paleogeographic, geodetic, structural or chronometric observational dataset.

Data, Evidence, and Provenance Convention

Distinguish (i) *author-declared* points and waypoints; (ii) *manuscript-derived* great-circle angular differences and chord lengths; (iii) *proposed* geographic roles; (iv) *reserved* private physical content; and (v) *not evaluated* global model results. Coordinates and the choice of a corridor are not geological observations of a historical path. A fitted-coordinate numerical equality is an internally reproducible geometric result, not a probabilistic discovery or a physical identification.

For any source-dependent result, the provenance chain remains: declared input → identified formula or transformation → numerical value → uncertainty/precision statement → eligible interpretation. A missing observation, physical field, time history or comparison must remain explicitly missing.

Conditional Input Statement

Geometric handoff precision (Paper I, pass 1): The retained source-solved Malpelo entrance-to-turn direct chord and the eight-chord second-leg sum both evaluate to 8061.870761355 km with the supplied $R = 6371$ km spherical convention. The first second-leg component is 222.677503129 km before source rounding; it is not an additional observation or a plate-motion reconstruction. These values do not populate any unavailable temporal, regional, or material-history reconstruction field.

Paper III does **not** assume that North American Paper II has produced a mechanically admissible event-specific state. The available Paper II [3] transmitted geographic coordinates and chord arithmetic without a solved impulse, damage, rheological, long-time velocity or surface-structure field. Those absent fields are not set to zero, and they are not replaced with unqualified physics from the canonical Aegean case. Consequently, downstream reconstructions requiring those fields are currently **not evaluated**, not retrospectively rejected.

Event-Indexed Mechanical Eligibility

The canonical Paper-III event catalog comprises only candidates that satisfy the source corpus's event-specific input and mechanical-eligibility conditions. The North American candidate currently has a documented **geometric** entry only; it has not been entered as a certified member of a mechanically viable global event sequence. No additional event in North America or elsewhere is created in this adaptation.

Paper-III Data and Provenance Snapshot

ID	Dataset or result	Present North American source/status
NA-P3-IN-001	Malpelo entrance	Solved coordinate in *Denali Exact* [4]; fitted geographic input
NA-P3-IN-002	Fixed middle turn	62.3843° N, 146.8997° W; fixed by author [4]
NA-P3-IN-003	Eight-chord terminal corridor	Fixed waypoint order and selected northern terminal in [4,5]
NA-P3-RES-001	First-leg chord	8,061.8708 km, reported/calculated [4]
NA-P3-RES-002	Aggregate second-leg chords	8,061.8708 km, reported/calculated [4]
NA-P3-RES-003	Turn-to-Denali offset	222.678 km along the first corridor segment [4]
NA-P3-DAT-001	Historic plate-boundary network	Not provided / not evaluated
NA-P3-DAT-002	Geodetic and finite-rotation model inputs	Not provided / not evaluated
NA-P3-DAT-003	Geological-age and material-lineage datasets	Not provided / not evaluated
NA-P3-DAT-004	Gravity, seismic and magnetic measurements	Not provided as frozen comparative datasets
NA-P3-OUT-001	Predicted long-time boundary, motion and structures	Not computed; mechanical inputs reserved

Epistemic Status and Claim-Language Convention

Specified indicates a coordinate or metric convention. *Calculated* indicates a numerical consequence of that convention. *Candidate* indicates an interpretation in the Ontomics working record. *Not evaluated* means no model run or comparison is reported. *Reserved* indicates information withheld from this public adaptation. None implies a demonstrated geological mechanism. The 64 Ma designation is retained as a research-branch label; no independently measured event age is derived from the chord calculation.

Prediction, Falsification, and Decision-Threshold Convention

The paper retains the original threshold, null, replication and alternative-explanation **positions**. No new North American threshold, null distribution, test result or independently held-out prediction is claimed. The fact that the Malpelo coordinate was solved to achieve the equality is specifically preserved in the model-selection record, rather than described as an unselected chance alignment. Thus no p-value or significance language is attached to the fitted equality.

Causal-Chain, Assumption, and Alternative-Explanation Convention

The demonstrable chain is geographic input selection → central angles → chord lengths → equality under the declared comparison. Every proposed continuation—from a terrestrial geometric construction to an event, transmitted physical state, plate-boundary history, mountain growth or global reconstruction—remains a separate scientific claim. Failure or non-execution of one continuation does not rewrite the elementary geometry, and the geometric match does not certify the continuation.

Abstract

This initial manuscript mirrors the sixty-seven-chapter architecture of *Astro-Ballistic Chronostratigraphic Sequencing III* for the North American geometric candidate recorded in Ontomics's Denali files. The documented source geometry is a source-solved entrance coordinate in the author-identified Malpelo region (0.448874° N, 81.429273° W), a fixed surface projection of the middle turn (62.3843° N, 146.8997° W), and an eight-segment corridor that proceeds through Denali, Juneau, Unalaska, Adak, Amchitka, Attu and an under-Siberia/Chukchi waypoint to an Arctic terminal point. The first leg is a single entrance-to-turn chord of approximately 8,061.8708 km; the second is the sum of eight successive chords totaling approximately 8,061.8708 km. Denali lies approximately 222.678 km after the fixed turn on the second leg. These values provide a reproducible modern-coordinate source geometry, not a predicted plate-motion field or ancient reconstruction. The manuscript retains the canonical Paper-III order of global boundary-network formation, motion inheritance, structural expression, chronology, geophysics, statistical tests, independent replication and Paper-IV handoff, but introduces no unsupported global results or protected mechanics. The resulting paper is a structurally complete refinement-pass-4 working draft with an explicitly conditional physical and empirical status.

Keywords: ABC Sequencing; North American mirror; Malpelo; Denali; geographic middle turn; equal-length chords; segmented interior corridor; geological reconstruction; event-sequence architecture; conditional input.

1 The Causal Replacement Burden

Paper III inherits the canonical task of deciding whether a connected global geological organization could arise from one mechanically admissible event sequence. The North American source record currently specifies only one candidate's geometric corridor. It does not contain a verified global plate-boundary reconstruction, so the replacement burden is neither discharged nor negatived by that corridor.

1.1 Canonical Corpus Terminology

The title and hierarchy continue *ABC Sequencing* rather than creating an alternative theory name. The entry is the source-solved Malpelo coordinate; the midpoint is a fixed geographic turn; Denali is the separately identified middle mountain about 222.678 km farther along Leg 2; the northern endpoint is a selected terminal **domain**, not an observed literal exit. A candidate event is distinct from its geometric construction. These distinctions are controlling throughout the five-paper mirror.

1.2 Measured Plate Motion Is Shared Evidence

Measured Plate Motion Is Shared Evidence has the canonical role of relating physical plate state or modeled movement to an independently observable kinematic quantity. The Malpelo-to-Arctic route contains no computed plate velocity, inertia, rotation, acceleration or torque series. Its waypoint order is not a plate trajectory, so this item remains **not evaluated**.

The distinction prevents route geometry from being used to fit modern plate motion after the fact. Any eventual plate-motion output would have to come from the original paper's eligible shared model, not from a free value supplied by this adaptation.

1.3 Continental Drift and Plate Tectonics

Continental Drift and Plate Tectonics refers to a structural or material feature in the original Paper-III reconstruction. The Denali research identifies selected geographic roles and a corridor through named modern regions, but does not independently derive the proposed feature from a calculated physical history. The name of a waypoint is not a boundary-formation, uplift or basin-formation result.

This subsection consequently preserves the canonical role and distinguishes geographical association from demonstrated causal origin. No unprovided local stratigraphy or material movement is added.

1.4 Three Levels of Explanation

The canonical subsection **Three Levels of Explanation** remains in the original Paper-III order. Its function belongs to event-geometry to reconstruction handoff; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

1.5 Plate-Tectonic Causal Model

In the original architecture, **Plate-Tectonic Causal Model** is a parameterization, forward prediction or inverse-analysis step of event-geometry to reconstruction handoff. The North American evidence package does not include

a solved event-specific output to enter this step. No new branch, fitting parameter, prediction target, best-fit value or model comparison is manufactured in this first draft.

The canonical function of the subsection remains visible so that later authorized material can enter without changing the paper's hierarchy or retroactively strengthening its current evidence status.

1.6 Astro-Ballistic Causal Model

In the original architecture, **Astro-Ballistic Causal Model** is a parameterization, forward prediction or inverse-analysis step of event-geometry to reconstruction handoff. The North American evidence package does not include a solved event-specific output to enter this step. No new branch, fitting parameter, prediction target, best-fit value or model comparison is manufactured in this first draft.

The canonical function of the subsection remains visible so that later authorized material can enter without changing the paper's hierarchy or retroactively strengthening its current evidence status.

1.7 The Full Causal Chain

The canonical subsection **The Full Causal Chain** remains in the original Paper-III order. Its function belongs to event-geometry to reconstruction handoff; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

1.8 Edge-by-Edge Global Causal Audit

The canonical subsection **Edge-by-Edge Global Causal Audit** remains in the original Paper-III order. Its function belongs to event-geometry to reconstruction handoff; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

1.9 Replacement Is Not Addition

The canonical subsection **Replacement Is Not Addition** remains in the original Paper-III order. Its function belongs to event-geometry to reconstruction handoff; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

1.10 Replacement Success Standard

The canonical subsection **Replacement Success Standard** remains in the original Paper-III order. Its function belongs to event-geometry to reconstruction handoff; the North American project files do not provide a separate

result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

2 Scope and Central Questions

The authorized North American substitution is limited to the named Malpelo entrance, geometric turn, Denali association, Aleutian and under-Siberia waypoints, and terminal location. The tasks and result classes of the original Paper III are retained as structural slots, not enlarged to an independently designed program.

2.1 Primary Questions

The canonical subsection **Primary Questions** remains in the original Paper-III order. Its function belongs to event-geometry to reconstruction handoff; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

2.2 Paper-III Output Classes

This subsection retains the original Paper-III distinction between **a declared geometry**, **a mechanical output eligible for reconstruction**, **a reconstructed history**, and **an observation-supported finding**. The North American input bundle populates the first class only: present-coordinate stations and chord/arc calculations. Paper II has not supplied North American stress, displacement, fragmentation, or other post-event numerical fields. Accordingly no second-, third-, or fourth-class result is promoted by the equal-leg fit. The inherited section order remains intact.

2.3 What Paper III Does Not Assume

The canonical subsection **What Paper III Does Not Assume** remains in the original Paper-III order. Its function belongs to event-geometry to reconstruction handoff; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

3 Paper-II Handoff State

The Paper-II handoff gives coordinates, a reference sphere, a path order, chord lengths, and metadata on what is still reserved. No mechanical state vector, event-time field or simulated long-time response was delivered by Draft II. The distinction prevents a geometric input from being relabeled a physical reconstruction.

Paper-II-to-III inherited state, fixed for the present first draft:

Field	Supplied value	Status
Entrance E	0.448874° N, 81.429273° W	Solved coordinate [4]
Turn M	62.3843° N, 146.8997° W	Author-fixed [4]
First-leg chord	8,061.8708 km	Reported result [4]
Second-leg eight-chord sum	8,061.8708 km	Reported result [4]
Turn-to-Denali	222.678 km	Reported result [4]
Event-time mechanical fields	Not supplied	Reserved / not evaluated

3.1 Conditional Post-Event State

Paper II passes the defined present-coordinate geometry but does **not** pass a computed North American post-event state. For example, no time-indexed velocity, pressure, displacement, temperature, damage, or material-identity field is documented for these stations. The proposed geographic roles are therefore not themselves post-event state variables. This is a missing handoff input under the canonical Paper-III dependency, not an adverse experiment or a substitute for an event-time reconstruction.

3.2 Material Handoff Rather Than Symbolic Handoff

The actual available handoff is the source-solved entrance E, fixed turn M, ordered waypoints W_1 through W_8, and the two distinct chord metrics. A simulated temperature, damage, stress or velocity field cannot be replaced by this list of positions. The source status is **geometry supplied; material state not supplied**.

3.3 Handoff Time

No numerical North American event time, travel time between stations, delayed-response interval or reconstruction-time solution is derived in the controlling Denali geometry record. Any 64 Ma label in the developmental corpus is a research-program designation and is not, without a separate dated observation, a chronometric result. Paper-II source material supplies no solved mechanical timing to inherit. The handoff-time field is therefore **unpopulated**, not zero and not a timestamp inferred from chord distance.

3.4 Handoff Uncertainty Ensemble

The controlling note reports decimal positions, chord sums and an equality solved by fitting the entrance after selection of the northern corridor. The workbook reports seven downstream numerical segments at greater computational precision. Neither source provides an independent geographic covariance model, historical rotation ensemble, geological age uncertainty, or mechanical-state uncertainty distribution. Thus the available uncertainty record is **reported precision and input dependence**, not a sampled physical reconstruction ensemble.

3.5 Handoff Admissibility

The canonical subsection **Handoff Admissibility** remains in the original Paper-III order. Its function belongs to event-geometry to reconstruction handoff; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

3.6 Sequence-Level Handoff

The canonical subsection **Sequence-Level Handoff** remains in the original Paper-III order. Its function belongs to event-geometry to reconstruction handoff; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

4 The Sequenced Event Catalog

The canonical event-catalog concept presupposes event-specific states and ordering. The North American documents provide one proposed regional candidate under the working 64 Ma designation, not a complete catalog of qualified global events. Therefore the sequence architecture is preserved without populating fictional entries.

4.1 One Event Is Not the Complete Framework

The canonical subsection **One Event Is Not the Complete Framework** remains in the original Paper-III order. Its function belongs to event-geometry to reconstruction handoff; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

4.2 Chronological Ordering

The available Denali materials establish an **ordered set of geographic route stations**, not a dated series of physical events. The 64 Ma designation used by the project is not in those calculations accompanied by an independently measured event date or sequence of geologic time markers. The waypoint order is retained as **path order** only; it cannot be promoted to **event chronology** without new evidence. No chronology is imputed in this mirror.

4.3 Event Superposition Is Not Linear by Default

Event Superposition Is Not Linear by Default is retained in its canonical mathematical or georeferencing position. For the supplied North American candidate, all stations are represented by present-reference coordinates on the stated sphere: the entrance is fitted after the turn and route are specified, rather than independently author-fixed. The first-leg and segmented-second-leg definitions are held fixed across this manuscript.

No transformation to a plate-fixed event-time reconstruction is asserted, and no geographical orientation is promoted into a physical displacement or material-inheritance vector.

4.4 Event Interaction Classes

The canonical subsection **Event Interaction Classes** remains in the original Paper-III order. Its function belongs to event-geometry to reconstruction handoff; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

4.5 Event-Sequence Dependency

The eight second-leg chords depend mathematically on the fixed turn and seven prescribed downstream intervals, plus the separate turn-to-Denali segment. The entrance coordinate is then solved so the first-leg chord equals their sum. This is a **geometric dependency graph**, not a catalog of interactions among multiple physical events. The original Paper-III event-sequence heading is retained, but the Denali sources do not provide event-to-event dependencies.

4.6 Catalog Completeness

The canonical subsection **Catalog Completeness** remains in the original Paper-III order. Its function belongs to event-geometry to reconstruction handoff; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

4.7 Current Catalog Is Not Claimed Exhaustive

The canonical subsection **Current Catalog Is Not Claimed Exhaustive** remains in the original Paper-III order. Its function belongs to event-geometry to reconstruction handoff; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

5 Global Coordinates and Reference Frames

This section may retain the source's coordinate framework while placing the fixed-turn geometry in the only calculations actually supplied. Geographic surface points do not by themselves define a historical plate-fixed frame or dynamic geocentric trajectory.

The source-specific coordinate relation is reproduced in Section 5.1 below.

5.1 Position Vector

For the reference sphere used by the supplied Denali calculation, a present-day latitude/longitude pair defines

$$\mathbf{u}(\phi,\lambda) = (\cos\phi\cos\lambda,\ \cos\phi\sin\lambda,\ \sin\phi), \qquad \mathbf{r} = R\mathbf{u}, \quad R = 6{,}371 \text{ km}.$$

For two such stations, $\theta_{ij} = \arccos(\mathbf{u}_i \cdot \mathbf{u}_j)$ and $c_{ij} = 2R\sin(\theta_{ij}/2)$. The ordered point labels in the working source are $E \to M \to$ Denali $\to$ Juneau $\to$ Unalaska $\to$ Adak $\to$ Amchitka $\to$ Attu $\to$ Chukchi $\to T$. The

matching operation inherited from Paper I is $c(E, M) = \sum_{k=0}^{7} c(W_k, W_{k+1})$ with $W_0 = M$. This is a **present-day spherical coordinate representation**, not a supplied event-time coordinate transformation or material-trajectory calculation.

5.2 Reference-Frame Index

The registered calculation frame is modern geographic latitude and longitude with an east-positive longitude sign convention and idealized reference sphere $R = 6{,}371\,\text{km}$. Within that frame, the entrance E was fitted for equality, the turn M was specified, and Denali and the downstream stations define the second-leg waypoint order. No rotation-pole history, material parcel paths, or ancient-frame mapping is supplied. Thus the only populated frame entry is the present-coordinate spherical construction; an event-time frame is not calculated.

5.3 Frame Transformation

The canonical subsection **Frame Transformation** remains in the original Paper-III order. Its function belongs to event-geometry to reconstruction handoff; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

5.4 Velocity Transformation

The canonical subsection **Velocity Transformation** remains in the original Paper-III order. Its function belongs to event-geometry to reconstruction handoff; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

5.5 Finite Rotation

The canonical subsection **Finite Rotation** remains in the original Paper-III order. Its function belongs to event-geometry to reconstruction handoff; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

5.6 Angular Velocity

The canonical subsection **Angular Velocity** remains in the original Paper-III order. Its function belongs to event-geometry to reconstruction handoff; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

5.7 Euler Pole

The canonical subsection **Euler Pole** remains in the original Paper-III order. Its function belongs to event-geometry to reconstruction handoff; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

5.8 Relative Motion

The canonical subsection **Relative Motion** remains in the original Paper-III order. Its function belongs to event-geometry to reconstruction handoff; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

5.9 Reference-Frame Robustness

The source calculations use the stated present-day latitude-longitude coordinates on a spherical Earth with $R =$ 6,371 km. The Denali note and workbook contain no dated plate reconstruction, alternate paleogeographic rotation, material-coordinate mapping, or reference-frame ensemble. The equal-leg result has therefore been reproduced only in its **specified present-reference spherical construction**. A robust deep-time claim is **not established** by this arithmetic.

6 Chronology, Paleogeography, and Material Lineage

Geological chronology and changing paleogeography are essential in the canonical reconstruction, but neither the exact-distance note nor the two earlier development files independently date the putative event or reconstruct the moving target domains. Contemporary geographic locations are inputs to this working geometry, not established ancient coordinates.

6.1 Reconstruction Products Are Not Observations

The source chapter uses **Reconstruction Products Are Not Observations** for independent observational comparison in chronology and reference-frame reconstruction. The project files for this adaptation do not supply a frozen dataset, acquisition method, uncertainty covariance, age control or data-to-model mapping for that category. No external values are quietly borrowed to populate it.

The required distinction is between existing public scientific data in principle and data actually accessed, transformed and scored in this North American draft. Only the latter could support a reported result, and it is not present here.

6.2 Material-Lineage Graph

The subsection **Material-Lineage Graph** is an original Paper-III chronology or state-evolution requirement. The North American reference notes do not provide event-specific radiometric ages, dated structural transitions or event-time plate reconstructions. The designation “64 Ma” is therefore retained only as the author’s research-branch label.

No time ordering among additional physical events, chronometric probability distribution or modeled geological lag is generated from static present-day coordinates.

6.3 Present Response Domains and Event-Time Parcels

The names Malpelo, Denali, Juneau, Unalaska, Adak, Amchitka, Attu, under-Siberia, and the northern terminal designate stations in a **modern-coordinate geometric record**. The supplied Denali files do not identify matching parcels at an ancient event time. Modern place-name stations cannot be treated as event-time material parcels by relabeling them; the required material-lineage mapping remains **unsupplied**.

6.4 Flagship Initiating-Event Node

The subsection **Flagship Initiating-Event Node** is an original Paper-III chronology or state-evolution requirement. The North American reference notes do not provide event-specific radiometric ages, dated structural transitions or event-time plate reconstructions. The designation “64 Ma” is therefore retained only as the author’s research-branch label.

No time ordering among additional physical events, chronometric probability distribution or modeled geological lag is generated from static present-day coordinates.

6.5 Sequence Chronology

The subsection **Sequence Chronology** is an original Paper-III chronology or state-evolution requirement. The North American reference notes do not provide event-specific radiometric ages, dated structural transitions or event-time plate reconstructions. The designation “64 Ma” is therefore retained only as the author’s research-branch label.

No time ordering among additional physical events, chronometric probability distribution or modeled geological lag is generated from static present-day coordinates.

6.6 Flagship Seed-to-Expression Ordering

The subsection **Flagship Seed-to-Expression Ordering** is an original Paper-III chronology or state-evolution requirement. The North American reference notes do not provide event-specific radiometric ages, dated structural transitions or event-time plate reconstructions. The designation “64 Ma” is therefore retained only as the author’s research-branch label.

No time ordering among additional physical events, chronometric probability distribution or modeled geological lag is generated from static present-day coordinates.

6.7 Chronology and Lineage Closure

The subsection **Chronology and Lineage Closure** is an original Paper-III chronology or state-evolution requirement. The North American reference notes do not provide event-specific radiometric ages, dated structural transitions or event-time plate reconstructions. The designation “64 Ma” is therefore retained only as the author’s research-branch label.

No time ordering among additional physical events, chronometric probability distribution or modeled geological lag is generated from static present-day coordinates.

7 Plates and Tectonic Blocks as Evolving Material Domains

Paper III models plates as evolving material domains rather than assuming their present-day names and polygons survive unchanged in deep time. For the Denali study, no material lineage, fragmentation state, deformation field, or inherited plate mass map is supplied; the canonical identities remain variables to be resolved rather than assigned.

7.1 Plate Domain

The canonical subsection **Plate Domain** remains in the original Paper-III order. Its function belongs to global boundary-network and material-lineage reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

7.2 Plate Boundary

Plate Boundary refers to a structural or material feature in the original Paper-III reconstruction. The Denali research identifies selected geographic roles and a corridor through named modern regions, but does not independently derive the proposed feature from a calculated physical history. The name of a waypoint is not a boundary-formation, uplift or basin-formation result.

This subsection consequently preserves the canonical role and distinguishes geographical association from demonstrated causal origin. No unprovided local stratigraphy or material movement is added.

7.3 Material Identity

The canonical **Material Identity** subsection follows material rather than simply present-day geographic labels. The North American input points are modern surface positions and selected waypoints; they contain no tracked material parcels or observed transfer histories.

A path-point ordering therefore cannot be used to establish a terrane, plate or crustal lineage. The documentary status is unresolved without interpreting the route as a measured physical transport sequence.

7.4 Rigid and Deforming Components

The canonical subsection **Rigid and Deforming Components** remains in the original Paper-III order. Its function belongs to global boundary-network and material-lineage reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

7.5 Internal Deformation Measure

The canonical subsection **Internal Deformation Measure** remains in the original Paper-III order. Its function belongs to global boundary-network and material-lineage reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

7.6 Plate Birth, Fragmentation, and Merger

The canonical **Plate Birth, Fragmentation, and Merger** subsection follows material rather than simply present-day geographic labels. The North American input points are modern surface positions and selected waypoints; they contain no tracked material parcels or observed transfer histories.

A path-point ordering therefore cannot be used to establish a terrane, plate or crustal lineage. The documentary status is unresolved without interpreting the route as a measured physical transport sequence.

7.7 Plate Identity Through Time

The subsection **Plate Identity Through Time** is an original Paper-III chronology or state-evolution requirement. The North American reference notes do not provide event-specific radiometric ages, dated structural transitions or event-time plate reconstructions. The designation “64 Ma” is therefore retained only as the author’s research-branch label.

No time ordering among additional physical events, chronometric probability distribution or modeled geological lag is generated from static present-day coordinates.

7.8 Material-Lineage Closure Across Plate Names

The subsection **Material-Lineage Closure Across Plate Names** is an original Paper-III chronology or state-evolution requirement. The North American reference notes do not provide event-specific radiometric ages, dated structural transitions or event-time plate reconstructions. The designation “64 Ma” is therefore retained only as the author’s research-branch label.

No time ordering among additional physical events, chronometric probability distribution or modeled geological lag is generated from static present-day coordinates.

8 Global Boundary-Network Representation

The geographic route is a list of stations; it is not a mapped boundary network. The original boundary-graph obligations remain distinct from the chosen Aleutian corridor, and none of the source points is promoted into a detected plate boundary merely because it belongs to the numerical route.

Ordered second-leg segment	Reported chord (km)
Fixed turn → Denali	222.678
Denali → Juneau	1,041.564
Juneau → Unalaska	2,019.168
Unalaska → Adak	714.524
Adak → Amchitka	192.565

External context: E06 | bibliography: Appendix EC

Ordered second-leg segment	Reported chord (km)
Amchitka → Attu	538.553
Attu → under-Siberia / Chukchi waypoint	2,228.589
Under-Siberia / Chukchi → Arctic terminal	1,104.229

The controlling document [4] reports the **full-precision total** as 8,061.8708 km. The rounded segment entries above are for traceability and should not be used to replace that higher-precision reference sum. The separate reported surface-arc total is 8,085.0443 km; it is not the metric of the stated chord equality.

8.1 Boundary Graph

Boundary Graph refers to a structural or material feature in the original Paper-III reconstruction. The Denali research identifies selected geographic roles and a corridor through named modern regions, but does not independently derive the proposed feature from a calculated physical history. The name of a waypoint is not a boundary-formation, uplift or basin-formation result.

This subsection consequently preserves the canonical role and distinguishes geographical association from demonstrated causal origin. No unprovided local stratigraphy or material movement is added.

8.2 Boundary Types

Boundary Types refers to a structural or material feature in the original Paper-III reconstruction. The Denali research identifies selected geographic roles and a corridor through named modern regions, but does not independently derive the proposed feature from a calculated physical history. The name of a waypoint is not a boundary-formation, uplift or basin-formation result.

This subsection consequently preserves the canonical role and distinguishes geographical association from demonstrated causal origin. No unprovided local stratigraphy or material movement is added.

8.3 Boundary Orientation

Boundary Orientation refers to a structural or material feature in the original Paper-III reconstruction. The Denali research identifies selected geographic roles and a corridor through named modern regions, but does not independently derive the proposed feature from a calculated physical history. The name of a waypoint is not a boundary-formation, uplift or basin-formation result.

This subsection consequently preserves the canonical role and distinguishes geographical association from demonstrated causal origin. No unprovided local stratigraphy or material movement is added.

8.4 Normal and Tangential Relative Motion

The canonical subsection **Normal and Tangential Relative Motion** remains in the original Paper-III order. Its function belongs to global boundary-network and material-lineage reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

8.5 Observed Boundary Dataset

The Denali file offers selected place names rather than a digitized and date-qualified global boundary dataset. The corridor's regionally meaningful labels must not be mistaken for independent observations of boundary initiation. No observed boundary graph is frozen in this working paper.

The route points in the source note are tabulated above as **geographic stations**, not as the results of an observed boundary extraction.

8.6 Predicted Event-Derived Boundary Network

Predicted Event-Derived Boundary Network refers to a structural or material feature in the original Paper-III reconstruction. The Denali research identifies selected geographic roles and a corridor through named modern regions, but does not independently derive the proposed feature from a calculated physical history. The name of a waypoint is not a boundary-formation, uplift or basin-formation result.

This subsection consequently preserves the canonical role and distinguishes geographical association from demonstrated causal origin. No unprovided local stratigraphy or material movement is added.

8.7 Boundary-Distance Residual

The heading **Boundary-Distance Residual** is retained as the canonical quantitative-comparison slot for global boundary-network and material-lineage reconstruction. Evaluation requires a pair of corresponding modeled and observed quantities with compatible coordinates, uncertainties and lineage. The Denali sources supply no completed pair of that kind for this topic, and therefore no test statistic or significance is claimed here.

The only numeric residual presently documented is the source-specific first-leg minus aggregated second-leg **chord-length** difference; it is not substituted for an unrelated geological model residual.

8.8 Boundary-Orientation Residual

The heading **Boundary-Orientation Residual** is retained as the canonical quantitative-comparison slot for global boundary-network and material-lineage reconstruction. Evaluation requires a pair of corresponding modeled and observed quantities with compatible coordinates, uncertainties and lineage. The Denali sources supply no completed pair of that kind for this topic, and therefore no test statistic or significance is claimed here.

The only numeric residual presently documented is the source-specific first-leg minus aggregated second-leg **chord-length** difference; it is not substituted for an unrelated geological model residual.

8.9 Boundary-Age Residual

The heading **Boundary-Age Residual** is retained as the canonical quantitative-comparison slot for global boundary-network and material-lineage reconstruction. Evaluation requires a pair of corresponding modeled and observed quantities with compatible coordinates, uncertainties and lineage. The Denali sources supply no completed pair of that kind for this topic, and therefore no test statistic or significance is claimed here.

The only numeric residual presently documented is the source-specific first-leg minus aggregated second-leg **chord-length** difference; it is not substituted for an unrelated geological model residual.

8.10 Boundary-Network Falsifier

The original Paper III uses **Boundary-Network Falsifier** as a bounded failure condition for its global boundary-network and material-lineage reconstruction. No such North American test has been executed with an independent

predicted field and a frozen observation vector. Accordingly this manuscript records **not evaluated** instead of reporting either support or rejection.

A failure judgment would require the specific model output, declared observation, comparison condition, and decision rule already distinguished in the canonical source. Geometric equality alone does not settle that result.

9 Event Impulse and Inheritance Fields

The requested public adaptation excludes impulse transfer, energetic response and proprietary material physics. The original chapter's inheritance-field definitions are therefore preserved as a place in the architecture, without an invented initial impulse distribution or transferred momentum result.

9.1 Impulse Density

The subsection **Impulse Density** concerns the global reconstruction and requires physical parameters or state outputs that are not disclosed by the source files. The North American project record establishes a coordinate-and-chord construction, not the constitutive or energetic quantity required here. This position is **reserved** under the defined proprietary-content boundary; no coefficient, branch, event state or numerical result is inserted.

For source continuity, the geometric corridor can be named as a candidate input but cannot be represented as the completed physical field to which this heading refers.

9.2 Angular Impulse

The subsection **Angular Impulse** concerns the global reconstruction and requires physical parameters or state outputs that are not disclosed by the source files. The North American project record establishes a coordinate-and-chord construction, not the constitutive or energetic quantity required here. This position is **reserved** under the defined proprietary-content boundary; no coefficient, branch, event state or numerical result is inserted.

For source continuity, the geometric corridor can be named as a candidate input but cannot be represented as the completed physical field to which this heading refers.

9.3 Linear Momentum Handoff

The subsection **Linear Momentum Handoff** concerns the global reconstruction and requires physical parameters or state outputs that are not disclosed by the source files. The North American project record establishes a coordinate-and-chord construction, not the constitutive or energetic quantity required here. This position is **reserved** under the defined proprietary-content boundary; no coefficient, branch, event state or numerical result is inserted.

For source continuity, the geometric corridor can be named as a candidate input but cannot be represented as the completed physical field to which this heading refers.

9.4 Event-Generated Damage Field

The subsection **Event-Generated Damage Field** concerns the global reconstruction and requires physical parameters or state outputs that are not disclosed by the source files. The North American project record establishes a coordinate-and-chord construction, not the constitutive or energetic quantity required here. This position is **reserved** under the defined proprietary-content boundary; no coefficient, branch, event state or numerical result is inserted.

For source continuity, the geometric corridor can be named as a candidate input but cannot be represented as the completed physical field to which this heading refers.

9.5 Inherited Rheological Contrast

The subsection **Inherited Rheological Contrast** concerns the global reconstruction and requires physical parameters or state outputs that are not disclosed by the source files. The North American project record establishes a coordinate-and-chord construction, not the constitutive or energetic quantity required here. This position is **reserved** under the defined proprietary-content boundary; no coefficient, branch, event state or numerical result is inserted.

For source continuity, the geometric corridor can be named as a candidate input but cannot be represented as the completed physical field to which this heading refers.

9.6 Inherited Boundary Potential

The canonical subsection **Inherited Boundary Potential** identifies a field, tensor, state or operator necessary to the global reconstruction. It is a model object, not an observation created by writing down its heading. The available North American inputs are the geographic coordinate set and the calculated chords; they do not determine this object's spatial distribution or time evolution.

The field therefore remains a named architectural position without numerical assignments, physical closure or a claimed simulation result.

9.7 Boundary Persistence

Boundary Persistence refers to a structural or material feature in the original Paper-III reconstruction. The Denali research identifies selected geographic roles and a corridor through named modern regions, but does not independently derive the proposed feature from a calculated physical history. The name of a waypoint is not a boundary-formation, uplift or basin-formation result.

This subsection consequently preserves the canonical role and distinguishes geographical association from demonstrated causal origin. No unprovided local stratigraphy or material movement is added.

9.8 Reactivation Potential

The canonical subsection **Reactivation Potential** identifies a field, tensor, state or operator necessary to the global reconstruction. It is a model object, not an observation created by writing down its heading. The available North American inputs are the geographic coordinate set and the calculated chords; they do not determine this object's spatial distribution or time evolution.

The field therefore remains a named architectural position without numerical assignments, physical closure or a claimed simulation result.

9.9 Event Memory Kernel

The subsection **Event Memory Kernel** concerns the global reconstruction and requires physical parameters or state outputs that are not disclosed by the source files. The North American project record establishes a coordinate-and-chord construction, not the constitutive or energetic quantity required here. This position is **reserved** under the defined proprietary-content boundary; no coefficient, branch, event state or numerical result is inserted.

For source continuity, the geometric corridor can be named as a candidate input but cannot be represented as the completed physical field to which this heading refers.

10 Long-Time Governing Equations

The original physical conservation chapter belongs to the canonical Paper-III framework. Its equations cannot be numerically solved for North America because the earlier draft supplies no material constitutive closures or event-driven state fields. The standard mathematical slot is retained, with no numerical mechanics added.

10.1 Continuum Momentum Equation

The subsection **Continuum Momentum Equation** concerns the global reconstruction and requires physical parameters or state outputs that are not disclosed by the source files. The North American project record establishes a coordinate-and-chord construction, not the constitutive or energetic quantity required here. This position is **reserved** under the defined proprietary-content boundary; no coefficient, branch, event state or numerical result is inserted.

For source continuity, the geometric corridor can be named as a candidate input but cannot be represented as the completed physical field to which this heading refers.

10.2 Mass Conservation

The canonical subsection **Mass Conservation** remains in the original Paper-III order. Its function belongs to global reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

10.3 Thermal Evolution

The subsection **Thermal Evolution** concerns the global reconstruction and requires physical parameters or state outputs that are not disclosed by the source files. The North American project record establishes a coordinate-and-chord construction, not the constitutive or energetic quantity required here. This position is **reserved** under the defined proprietary-content boundary; no coefficient, branch, event state or numerical result is inserted.

For source continuity, the geometric corridor can be named as a candidate input but cannot be represented as the completed physical field to which this heading refers.

10.4 Composition and Phase Transport

The subsection **Composition and Phase Transport** concerns the global reconstruction and requires physical parameters or state outputs that are not disclosed by the source files. The North American project record establishes a coordinate-and-chord construction, not the constitutive or energetic quantity required here. This position is **reserved** under the defined proprietary-content boundary; no coefficient, branch, event state or numerical result is inserted.

For source continuity, the geometric corridor can be named as a candidate input but cannot be represented as the completed physical field to which this heading refers.

10.5 Viscoelastic Stress Evolution

The canonical subsection **Viscoelastic Stress Evolution** remains in the original Paper-III order. Its function belongs to global reconstruction; the North American project files do not provide a separate result satisfying that

scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

10.6 Damage and Healing

The subsection **Damage and Healing** concerns the global reconstruction and requires physical parameters or state outputs that are not disclosed by the source files. The North American project record establishes a coordinate-and-chord construction, not the constitutive or energetic quantity required here. This position is **reserved** under the defined proprietary-content boundary; no coefficient, branch, event state or numerical result is inserted.

For source continuity, the geometric corridor can be named as a candidate input but cannot be represented as the completed physical field to which this heading refers.

10.7 Gravity

The subsection **Gravity** concerns the global reconstruction and requires physical parameters or state outputs that are not disclosed by the source files. The North American project record establishes a coordinate-and-chord construction, not the constitutive or energetic quantity required here. This position is **reserved** under the defined proprietary-content boundary; no coefficient, branch, event state or numerical result is inserted.

For source continuity, the geometric corridor can be named as a candidate input but cannot be represented as the completed physical field to which this heading refers.

10.8 Plate-Integrated Linear Momentum

The subsection **Plate-Integrated Linear Momentum** concerns the global reconstruction and requires physical parameters or state outputs that are not disclosed by the source files. The North American project record establishes a coordinate-and-chord construction, not the constitutive or energetic quantity required here. This position is **reserved** under the defined proprietary-content boundary; no coefficient, branch, event state or numerical result is inserted.

For source continuity, the geometric corridor can be named as a candidate input but cannot be represented as the completed physical field to which this heading refers.

10.9 Plate-Integrated Angular Momentum

The subsection **Plate-Integrated Angular Momentum** concerns the global reconstruction and requires physical parameters or state outputs that are not disclosed by the source files. The North American project record establishes a coordinate-and-chord construction, not the constitutive or energetic quantity required here. This position is **reserved** under the defined proprietary-content boundary; no coefficient, branch, event state or numerical result is inserted.

For source continuity, the geometric corridor can be named as a candidate input but cannot be represented as the completed physical field to which this heading refers.

10.10 Rigid-Plate Rotational Equation

Rigid-Plate Rotational Equation has the canonical role of relating physical plate state or modeled movement to an independently observable kinematic quantity. The Malpelo-to-Arctic route contains no computed plate

velocity, inertia, rotation, acceleration or torque series. Its waypoint order is not a plate trajectory, so this item remains **not evaluated**.

The distinction prevents route geometry from being used to fit modern plate motion after the fact. Any eventual plate-motion output would have to come from the original paper's eligible shared model, not from a free value supplied by this adaptation.

10.11 Boundary Traction

Boundary Traction refers to a structural or material feature in the original Paper-III reconstruction. The Denali research identifies selected geographic roles and a corridor through named modern regions, but does not independently derive the proposed feature from a calculated physical history. The name of a waypoint is not a boundary-formation, uplift or basin-formation result.

This subsection consequently preserves the canonical role and distinguishes geographical association from demonstrated causal origin. No unprovided local stratigraphy or material movement is added.

10.12 Mantle Coupling

The subsection **Mantle Coupling** concerns the global reconstruction and requires physical parameters or state outputs that are not disclosed by the source files. The North American project record establishes a coordinate-and-chord construction, not the constitutive or energetic quantity required here. This position is **reserved** under the defined proprietary-content boundary; no coefficient, branch, event state or numerical result is inserted.

For source continuity, the geometric corridor can be named as a candidate input but cannot be represented as the completed physical field to which this heading refers.

10.13 Resistance and Dissipation

The canonical subsection **Resistance and Dissipation** remains in the original Paper-III order. Its function belongs to global reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

11 Inherited Motion and Ongoing Force Decomposition

Direction inherited from a candidate event and speed maintained over geological time are conceptually distinct in the canonical text. The Denali distances resolve neither; the working manuscript does not infer a driving force or a present plate velocity from route orientation.

11.1 Ancient Impulse Alone Is Insufficient

The canonical subsection **Ancient Impulse Alone Is Insufficient** remains in the original Paper-III order. Its function belongs to global reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

External context: E12 | bibliography: Appendix EC

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

11.2 Inherited Direction Versus Sustained Speed

The canonical subsection **Inherited Direction Versus Sustained Speed** remains in the original Paper-III order. Its function belongs to global reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

11.3 Boundary Guidance

Boundary Guidance refers to a structural or material feature in the original Paper-III reconstruction. The Denali research identifies selected geographic roles and a corridor through named modern regions, but does not independently derive the proposed feature from a calculated physical history. The name of a waypoint is not a boundary-formation, uplift or basin-formation result.

This subsection consequently preserves the canonical role and distinguishes geographical association from demonstrated causal origin. No unprovided local stratigraphy or material movement is added.

11.4 Event-Modified Gravity

The canonical subsection **Event-Modified Gravity** remains in the original Paper-III order. Its function belongs to global reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

11.5 Event-Modified Buoyancy

The canonical subsection **Event-Modified Buoyancy** remains in the original Paper-III order. Its function belongs to global reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

11.6 Event-Modified Resistance

The canonical subsection **Event-Modified Resistance** remains in the original Paper-III order. Its function belongs to global reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

11.7 Motion-Memory State

The canonical subsection **Motion-Memory State** identifies a field, tensor, state or operator necessary to the global reconstruction. It is a model object, not an observation created by writing down its heading. The available North American inputs are the geographic coordinate set and the calculated chords; they do not determine this object's spatial distribution or time evolution.

The field therefore remains a named architectural position without numerical assignments, physical closure or a claimed simulation result.

11.8 Primary Inheritance Test

The canonical subsection **Primary Inheritance Test** remains in the original Paper-III order. Its function belongs to global reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

11.9 Mediator-Specific Inheritance Tests

The canonical subsection **Mediator-Specific Inheritance Tests** remains in the original Paper-III order. Its function belongs to global reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

12 Plate-Direction and Speed Prediction

The original paper requires model-predicted velocities, directions and Euler poles to be compared with independently sourced observations. There is no North American predicted plate-motion field in the project files, so this section records the pending outputs rather than assigning numerical residuals.

12.1 Predicted Plate Velocity

Predicted Plate Velocity has the canonical role of relating physical plate state or modeled movement to an independently observable kinematic quantity. The Malpelo-to-Arctic route contains no computed plate velocity, inertia, rotation, acceleration or torque series. Its waypoint order is not a plate trajectory, so this item remains **not evaluated**.

The distinction prevents route geometry from being used to fit modern plate motion after the fact. Any eventual plate-motion output would have to come from the original paper's eligible shared model, not from a free value supplied by this adaptation.

12.2 Velocity Residual

The heading **Velocity Residual** is retained as the canonical quantitative-comparison slot for global reconstruction. Evaluation requires a pair of corresponding modeled and observed quantities with compatible coordinates, uncertainties and lineage. The Denali sources supply no completed pair of that kind for this topic, and therefore no test statistic or significance is claimed here.

The only numeric residual presently documented is the source-specific first-leg minus aggregated second-leg **chord-length** difference; it is not substituted for an unrelated geological model residual.

12.3 Directional Residual

The heading **Directional Residual** is retained as the canonical quantitative-comparison slot for global reconstruction. Evaluation requires a pair of corresponding modeled and observed quantities with compatible coordinates, uncertainties and lineage. The Denali sources supply no completed pair of that kind for this topic, and therefore no test statistic or significance is claimed here.

The only numeric residual presently documented is the source-specific first-leg minus aggregated second-leg **chord-length** difference; it is not substituted for an unrelated geological model residual.

12.4 Speed Residual

The heading **Speed Residual** is retained as the canonical quantitative-comparison slot for global reconstruction. Evaluation requires a pair of corresponding modeled and observed quantities with compatible coordinates, uncertainties and lineage. The Denali sources supply no completed pair of that kind for this topic, and therefore no test statistic or significance is claimed here.

The only numeric residual presently documented is the source-specific first-leg minus aggregated second-leg **chord-length** difference; it is not substituted for an unrelated geological model residual.

12.5 Euler-Pole Residual

The heading **Euler-Pole Residual** is retained as the canonical quantitative-comparison slot for global reconstruction. Evaluation requires a pair of corresponding modeled and observed quantities with compatible coordinates, uncertainties and lineage. The Denali sources supply no completed pair of that kind for this topic, and therefore no test statistic or significance is claimed here.

The only numeric residual presently documented is the source-specific first-leg minus aggregated second-leg **chord-length** difference; it is not substituted for an unrelated geological model residual.

12.6 Global Velocity Misfit

The heading **Global Velocity Misfit** is retained as the canonical quantitative-comparison slot for global reconstruction. Evaluation requires a pair of corresponding modeled and observed quantities with compatible coordinates, uncertainties and lineage. The Denali sources supply no completed pair of that kind for this topic, and therefore no test statistic or significance is claimed here.

The only numeric residual presently documented is the source-specific first-leg minus aggregated second-leg **chord-length** difference; it is not substituted for an unrelated geological model residual.

12.7 No Independent Plate-Speed Tuning

No Independent Plate-Speed Tuning has the canonical role of relating physical plate state or modeled movement to an independently observable kinematic quantity. The Malpelo-to-Arctic route contains no computed plate

velocity, inertia, rotation, acceleration or torque series. Its waypoint order is not a plate trajectory, so this item remains **not evaluated**.

The distinction prevents route geometry from being used to fit modern plate motion after the fact. Any eventual plate-motion output would have to come from the original paper's eligible shared model, not from a free value supplied by this adaptation.

12.8 Shared-Parameter Requirement

In the original architecture, **Shared-Parameter Requirement** is a parameterization, forward prediction or inverse-analysis step of global reconstruction. The North American evidence package does not include a solved event-specific output to enter this step. No new branch, fitting parameter, prediction target, best-fit value or model comparison is manufactured in this first draft.

The canonical function of the subsection remains visible so that later authorized material can enter without changing the paper's hierarchy or retroactively strengthening its current evidence status.

12.9 Plate-Motion Prediction Falsifier

The original Paper III uses **Plate-Motion Prediction Falsifier** as a bounded failure condition for its global reconstruction. No such North American test has been executed with an independent predicted field and a frozen observation vector. Accordingly this manuscript records **not evaluated** instead of reporting either support or rejection.

A failure judgment would require the specific model output, declared observation, comparison condition, and decision rule already distinguished in the canonical source. Geometric equality alone does not settle that result.

13 Global Reconstruction Hierarchy

The global reconstruction hierarchy is inherited from canonical Paper III. Each stage remains bound to the original series' upstream dependencies; the regional geometry can be the input to such a hierarchy but cannot be substituted for completed boundary, motion, structure and prediction stages.

13.1 Stage 0: Observational Freeze

The geometric input list is source-frozen **for the purpose of drafting** to the later *Denali Exact* record. That preserves numerical lineage but is not a global observational freeze. The original Paper III calls for much more than route input bookkeeping at Stage 0, and this document does not claim that stage was completed.

13.2 Stage 1: Single-Event Boundary Test

The subsection **Stage 1: Single-Event Boundary Test** is an original Paper-III chronology or state-evolution requirement. The North American reference notes do not provide event-specific radiometric ages, dated structural transitions or event-time plate reconstructions. The designation "64 Ma" is therefore retained only as the author's research-branch label.

No time ordering among additional physical events, chronometric probability distribution or modeled geological lag is generated from static present-day coordinates.

13.3 Stage 2: Single-Event Motion Test

The subsection **Stage 2: Single-Event Motion Test** is an original Paper-III chronology or state-evolution requirement. The North American reference notes do not provide event-specific radiometric ages, dated structural

transitions or event-time plate reconstructions. The designation “64 Ma” is therefore retained only as the author’s research-branch label.

No time ordering among additional physical events, chronometric probability distribution or modeled geological lag is generated from static present-day coordinates.

13.4 Stage 3: Event-Sequence Assembly

The subsection **Stage 3: Event-Sequence Assembly** is an original Paper-III chronology or state-evolution requirement. The North American reference notes do not provide event-specific radiometric ages, dated structural transitions or event-time plate reconstructions. The designation “64 Ma” is therefore retained only as the author’s research-branch label.

No time ordering among additional physical events, chronometric probability distribution or modeled geological lag is generated from static present-day coordinates.

13.5 Stage 4: Plate and Boundary Reconstruction

The subsection **Stage 4: Plate and Boundary Reconstruction** is an original Paper-III chronology or state-evolution requirement. The North American reference notes do not provide event-specific radiometric ages, dated structural transitions or event-time plate reconstructions. The designation “64 Ma” is therefore retained only as the author’s research-branch label.

No time ordering among additional physical events, chronometric probability distribution or modeled geological lag is generated from static present-day coordinates.

13.6 Stage 5: Surface-Structure Forward Model

The subsection **Stage 5: Surface-Structure Forward Model** is an original Paper-III chronology or state-evolution requirement. The North American reference notes do not provide event-specific radiometric ages, dated structural transitions or event-time plate reconstructions. The designation “64 Ma” is therefore retained only as the author’s research-branch label.

No time ordering among additional physical events, chronometric probability distribution or modeled geological lag is generated from static present-day coordinates.

13.7 Stage 6: Counterfactual Reconstruction

The **Stage 6: Counterfactual Reconstruction** position tests whether an apparently successful result actually depends on the event-derived state rather than an unfixed background assumption. This is part of the original manuscript architecture. No pair of North American with-event/without-event model solutions is present in the supplied records; no ablation result or difference statistic is produced.

The present equal-chord geometry is preserved as input provenance and is not used as a surrogate for a causal counterfactual.

13.8 Causal Identification Requirements for the Counterfactual Family

The **Causal Identification Requirements for the Counterfactual Family** position tests whether an apparently successful result actually depends on the event-derived state rather than an unfixed background assumption. This is part of the original manuscript architecture. No pair of North American with-event/without-event model solutions is present in the supplied records; no ablation result or difference statistic is produced.

The present equal-chord geometry is preserved as input provenance and is not used as a surrogate for a causal counterfactual.

13.9 Stage 7: Advance Prediction

The subsection **Stage 7: Advance Prediction** is an original Paper-III chronology or state-evolution requirement. The North American reference notes do not provide event-specific radiometric ages, dated structural transitions or event-time plate reconstructions. The designation “64 Ma” is therefore retained only as the author’s research-branch label.

No time ordering among additional physical events, chronometric probability distribution or modeled geological lag is generated from static present-day coordinates.

14 Initial Paper-III Falsification Architecture

A falsifier is attached to a stated proposition and its registered test. Missing Northern American field solutions do not constitute performed falsification tests. The chapter records the canonical failure categories without claiming that any threshold was executed or crossed.

14.1 Primary Paper-III Falsifier

The original Paper III uses **Primary Paper-III Falsifier** as a bounded failure condition for its global reconstruction. No such North American test has been executed with an independent predicted field and a frozen observation vector. Accordingly this manuscript records **not evaluated** instead of reporting either support or rejection.

A failure judgment would require the specific model output, declared observation, comparison condition, and decision rule already distinguished in the canonical source. Geometric equality alone does not settle that result.

14.2 Boundary Falsifier

The original Paper III uses **Boundary Falsifier** as a bounded failure condition for its global reconstruction. No such North American test has been executed with an independent predicted field and a frozen observation vector. Accordingly this manuscript records **not evaluated** instead of reporting either support or rejection.

A failure judgment would require the specific model output, declared observation, comparison condition, and decision rule already distinguished in the canonical source. Geometric equality alone does not settle that result.

14.3 Direction Falsifier

The original Paper III uses **Direction Falsifier** as a bounded failure condition for its global reconstruction. No such North American test has been executed with an independent predicted field and a frozen observation vector. Accordingly this manuscript records **not evaluated** instead of reporting either support or rejection.

A failure judgment would require the specific model output, declared observation, comparison condition, and decision rule already distinguished in the canonical source. Geometric equality alone does not settle that result.

14.4 Speed Falsifier

The original Paper III uses **Speed Falsifier** as a bounded failure condition for its global reconstruction. No such North American test has been executed with an independent predicted field and a frozen observation vector. Accordingly this manuscript records **not evaluated** instead of reporting either support or rejection.

A failure judgment would require the specific model output, declared observation, comparison condition, and decision rule already distinguished in the canonical source. Geometric equality alone does not settle that result.

14.5 Chronology Falsifier

The original Paper III uses **Chronology Falsifier** as a bounded failure condition for its global reconstruction. No such North American test has been executed with an independent predicted field and a frozen observation vector. Accordingly this manuscript records **not evaluated** instead of reporting either support or rejection.

A failure judgment would require the specific model output, declared observation, comparison condition, and decision rule already distinguished in the canonical source. Geometric equality alone does not settle that result.

14.6 Inheritance Falsifier

The original Paper III uses **Inheritance Falsifier** as a bounded failure condition for its global reconstruction. No such North American test has been executed with an independent predicted field and a frozen observation vector. Accordingly this manuscript records **not evaluated** instead of reporting either support or rejection.

A failure judgment would require the specific model output, declared observation, comparison condition, and decision rule already distinguished in the canonical source. Geometric equality alone does not settle that result.

14.7 Complexity Falsifier

The original Paper III uses **Complexity Falsifier** as a bounded failure condition for its global reconstruction. No such North American test has been executed with an independent predicted field and a frozen observation vector. Accordingly this manuscript records **not evaluated** instead of reporting either support or rejection.

A failure judgment would require the specific model output, declared observation, comparison condition, and decision rule already distinguished in the canonical source. Geometric equality alone does not settle that result.

14.8 Mechanical-Consistency Falsifier

The original Paper III uses **Mechanical-Consistency Falsifier** as a bounded failure condition for its global reconstruction. No such North American test has been executed with an independent predicted field and a frozen observation vector. Accordingly this manuscript records **not evaluated** instead of reporting either support or rejection.

A failure judgment would require the specific model output, declared observation, comparison condition, and decision rule already distinguished in the canonical source. Geometric equality alone does not settle that result.

14.9 Comparison-Model Falsifier

The original Paper III uses **Comparison-Model Falsifier** as a bounded failure condition for its global reconstruction. No such North American test has been executed with an independent predicted field and a frozen observation vector. Accordingly this manuscript records **not evaluated** instead of reporting either support or rejection.

A failure judgment would require the specific model output, declared observation, comparison condition, and decision rule already distinguished in the canonical source. Geometric equality alone does not settle that result.

15 Global Reconstruction Framework Synthesis

The original chapter synthesizes the complete global-reconstruction architecture. In this North American initial draft, only the source-defined geographic state is populated. Neither global boundaries nor plate motion, structures,

or material lineage have been computed from that state.

16 Event-Derived Boundary Nucleation

The canonical term boundary nucleation denotes a material-state transition, not the mere tracing of a geographical corridor. The Denali fixed-turn path is not supplied with a calculated physical damage or fracture state; the boundary-nucleation functional remains a reserved model slot.

16.1 Boundary Nucleation as a Material-State Transition

The canonical subsection **Boundary Nucleation as a Material-State Transition** identifies a field, tensor, state or operator necessary to the global boundary-network and material-lineage reconstruction. It is a model object, not an observation created by writing down its heading. The available North American inputs are the geographic coordinate set and the calculated chords; they do not determine this object's spatial distribution or time evolution.

The field therefore remains a named architectural position without numerical assignments, physical closure or a claimed simulation result.

16.2 Normalized Boundary-Nucleation Functional

Normalized Boundary-Nucleation Functional refers to a structural or material feature in the original Paper-III reconstruction. The Denali research identifies selected geographic roles and a corridor through named modern regions, but does not independently derive the proposed feature from a calculated physical history. The name of a waypoint is not a boundary-formation, uplift or basin-formation result.

This subsection consequently preserves the canonical role and distinguishes geographical association from demonstrated causal origin. No unprovided local stratigraphy or material movement is added.

16.3 Candidate Boundary Domain

Candidate Boundary Domain refers to a structural or material feature in the original Paper-III reconstruction. The Denali research identifies selected geographic roles and a corridor through named modern regions, but does not independently derive the proposed feature from a calculated physical history. The name of a waypoint is not a boundary-formation, uplift or basin-formation result.

This subsection consequently preserves the canonical role and distinguishes geographical association from demonstrated causal origin. No unprovided local stratigraphy or material movement is added.

16.4 Boundary Skeleton

Boundary Skeleton refers to a structural or material feature in the original Paper-III reconstruction. The Denali research identifies selected geographic roles and a corridor through named modern regions, but does not independently derive the proposed feature from a calculated physical history. The name of a waypoint is not a boundary-formation, uplift or basin-formation result.

This subsection consequently preserves the canonical role and distinguishes geographical association from demonstrated causal origin. No unprovided local stratigraphy or material movement is added.

16.5 Boundary Thickness

Boundary Thickness refers to a structural or material feature in the original Paper-III reconstruction. The Denali research identifies selected geographic roles and a corridor through named modern regions, but does not

independently derive the proposed feature from a calculated physical history. The name of a waypoint is not a boundary-formation, uplift or basin-formation result.

This subsection consequently preserves the canonical role and distinguishes geographical association from demonstrated causal origin. No unprovided local stratigraphy or material movement is added.

16.6 Boundary Orientation From Material Tensors

The canonical subsection **Boundary Orientation From Material Tensors** identifies a field, tensor, state or operator necessary to the global boundary-network and material-lineage reconstruction. It is a model object, not an observation created by writing down its heading. The available North American inputs are the geographic coordinate set and the calculated chords; they do not determine this object's spatial distribution or time evolution.

The field therefore remains a named architectural position without numerical assignments, physical closure or a claimed simulation result.

16.7 Boundary Initiation Time

The subsection **Boundary Initiation Time** is an original Paper-III chronology or state-evolution requirement. The North American reference notes do not provide event-specific radiometric ages, dated structural transitions or event-time plate reconstructions. The designation "64 Ma" is therefore retained only as the author's research-branch label.

No time ordering among additional physical events, chronometric probability distribution or modeled geological lag is generated from static present-day coordinates.

16.8 Boundary Maturity

Boundary Maturity refers to a structural or material feature in the original Paper-III reconstruction. The Denali research identifies selected geographic roles and a corridor through named modern regions, but does not independently derive the proposed feature from a calculated physical history. The name of a waypoint is not a boundary-formation, uplift or basin-formation result.

This subsection consequently preserves the canonical role and distinguishes geographical association from demonstrated causal origin. No unprovided local stratigraphy or material movement is added.

16.9 Boundary-Creation Classes

Boundary-Creation Classes refers to a structural or material feature in the original Paper-III reconstruction. The Denali research identifies selected geographic roles and a corridor through named modern regions, but does not independently derive the proposed feature from a calculated physical history. The name of a waypoint is not a boundary-formation, uplift or basin-formation result.

This subsection consequently preserves the canonical role and distinguishes geographical association from demonstrated causal origin. No unprovided local stratigraphy or material movement is added.

16.10 Boundary-Nucleation Falsifier

The original Paper III uses **Boundary-Nucleation Falsifier** as a bounded failure condition for its global boundary-network and material-lineage reconstruction. No such North American test has been executed with an independent predicted field and a frozen observation vector. Accordingly this manuscript records **not evaluated** instead of reporting either support or rejection.

A failure judgment would require the specific model output, declared observation, comparison condition, and decision rule already distinguished in the canonical source. Geometric equality alone does not settle that result.

17 Damage Connectivity and Plate Enclosure

The original enclosure analysis asks whether connected predicted boundaries delineate plausible plate and block domains without arbitrary joins. Named route stations do not establish that connectivity, and no North American closure count or enclosure metric has been reported.

17.1 Connected Boundary Components

Connected Boundary Components refers to a structural or material feature in the original Paper-III reconstruction. The Denali research identifies selected geographic roles and a corridor through named modern regions, but does not independently derive the proposed feature from a calculated physical history. The name of a waypoint is not a boundary-formation, uplift or basin-formation result.

This subsection consequently preserves the canonical role and distinguishes geographical association from demonstrated causal origin. No unprovided local stratigraphy or material movement is added.

17.2 Surface Boundary Network

Surface Boundary Network refers to a structural or material feature in the original Paper-III reconstruction. The Denali research identifies selected geographic roles and a corridor through named modern regions, but does not independently derive the proposed feature from a calculated physical history. The name of a waypoint is not a boundary-formation, uplift or basin-formation result.

This subsection consequently preserves the canonical role and distinguishes geographical association from demonstrated causal origin. No unprovided local stratigraphy or material movement is added.

17.3 Candidate Plate Enclosure

The canonical subsection **Candidate Plate Enclosure** remains in the original Paper-III order. Its function belongs to global boundary-network and material-lineage reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

17.4 Closure Defect

The canonical subsection **Closure Defect** remains in the original Paper-III order. Its function belongs to global boundary-network and material-lineage reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

17.5 Boundary Completeness Fraction

Boundary Completeness Fraction refers to a structural or material feature in the original Paper-III reconstruction. The Denali research identifies selected geographic roles and a corridor through named modern regions, but does not independently derive the proposed feature from a calculated physical history. The name of a waypoint is not a boundary-formation, uplift or basin-formation result.

This subsection consequently preserves the canonical role and distinguishes geographical association from demonstrated causal origin. No unprovided local stratigraphy or material movement is added.

17.6 Enclosure Confidence

The canonical subsection **Enclosure Confidence** remains in the original Paper-III order. Its function belongs to global boundary-network and material-lineage reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

17.7 Percolation Threshold

The canonical subsection **Percolation Threshold** remains in the original Paper-III order. Its function belongs to global boundary-network and material-lineage reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

17.8 Boundary Gaps

Boundary Gaps refers to a structural or material feature in the original Paper-III reconstruction. The Denali research identifies selected geographic roles and a corridor through named modern regions, but does not independently derive the proposed feature from a calculated physical history. The name of a waypoint is not a boundary-formation, uplift or basin-formation result.

This subsection consequently preserves the canonical role and distinguishes geographical association from demonstrated causal origin. No unprovided local stratigraphy or material movement is added.

17.9 No Arbitrary Boundary Bridging

No Arbitrary Boundary Bridging refers to a structural or material feature in the original Paper-III reconstruction. The Denali research identifies selected geographic roles and a corridor through named modern regions, but does not independently derive the proposed feature from a calculated physical history. The name of a waypoint is not a boundary-formation, uplift or basin-formation result.

This subsection consequently preserves the canonical role and distinguishes geographical association from demonstrated causal origin. No unprovided local stratigraphy or material movement is added.

17.10 Plate-Enclosure Falsifier

The original Paper III uses **Plate-Enclosure Falsifier** as a bounded failure condition for its global boundary-network and material-lineage reconstruction. No such North American test has been executed with an independent predicted field and a frozen observation vector. Accordingly this manuscript records **not evaluated** instead of reporting either support or rejection.

A failure judgment would require the specific model output, declared observation, comparison condition, and decision rule already distinguished in the canonical source. Geometric equality alone does not settle that result.

18 Plate Fragmentation, Merger, and Terrane Transfer

Plate fragmentation, merger and terrane transfer require defined material identity through time. The present route labels geographic locations rather than material parcels; the latter should not be retroactively assigned the former's coordinates as proven evolutionary trajectories.

18.1 Plate Lineage Graph

The subsection **Plate Lineage Graph** is an original Paper-III chronology or state-evolution requirement. The North American reference notes do not provide event-specific radiometric ages, dated structural transitions or event-time plate reconstructions. The designation "64 Ma" is therefore retained only as the author's research-branch label.

No time ordering among additional physical events, chronometric probability distribution or modeled geological lag is generated from static present-day coordinates.

18.2 Fragmentation Criterion

The canonical **Fragmentation Criterion** subsection follows material rather than simply present-day geographic labels. The North American input points are modern surface positions and selected waypoints; they contain no tracked material parcels or observed transfer histories.

A path-point ordering therefore cannot be used to establish a terrane, plate or crustal lineage. The documentary status is unresolved without interpreting the route as a measured physical transport sequence.

18.3 Fragment Mass Conservation

The canonical **Fragment Mass Conservation** subsection follows material rather than simply present-day geographic labels. The North American input points are modern surface positions and selected waypoints; they contain no tracked material parcels or observed transfer histories.

A path-point ordering therefore cannot be used to establish a terrane, plate or crustal lineage. The documentary status is unresolved without interpreting the route as a measured physical transport sequence.

18.4 Fragment Velocity

The canonical **Fragment Velocity** subsection follows material rather than simply present-day geographic labels. The North American input points are modern surface positions and selected waypoints; they contain no tracked material parcels or observed transfer histories.

A path-point ordering therefore cannot be used to establish a terrane, plate or crustal lineage. The documentary status is unresolved without interpreting the route as a measured physical transport sequence.

18.5 Merger Criterion

The canonical subsection **Merger Criterion** remains in the original Paper-III order. Its function belongs to global boundary-network and material-lineage reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

18.6 Terrane Domain

Terrane Domain refers to a structural or material feature in the original Paper-III reconstruction. The Denali research identifies selected geographic roles and a corridor through named modern regions, but does not independently derive the proposed feature from a calculated physical history. The name of a waypoint is not a boundary-formation, uplift or basin-formation result.

This subsection consequently preserves the canonical role and distinguishes geographical association from demonstrated causal origin. No unprovided local stratigraphy or material movement is added.

18.7 Terrane Transfer

Terrane Transfer refers to a structural or material feature in the original Paper-III reconstruction. The Denali research identifies selected geographic roles and a corridor through named modern regions, but does not independently derive the proposed feature from a calculated physical history. The name of a waypoint is not a boundary-formation, uplift or basin-formation result.

This subsection consequently preserves the canonical role and distinguishes geographical association from demonstrated causal origin. No unprovided local stratigraphy or material movement is added.

18.8 Terrane Displacement Path

Terrane Displacement Path refers to a structural or material feature in the original Paper-III reconstruction. The Denali research identifies selected geographic roles and a corridor through named modern regions, but does not independently derive the proposed feature from a calculated physical history. The name of a waypoint is not a boundary-formation, uplift or basin-formation result.

This subsection consequently preserves the canonical role and distinguishes geographical association from demonstrated causal origin. No unprovided local stratigraphy or material movement is added.

18.9 Terrane-Fit Residual

The heading **Terrane-Fit Residual** is retained as the canonical quantitative-comparison slot for global boundary-network and material-lineage reconstruction. Evaluation requires a pair of corresponding modeled and observed quantities with compatible coordinates, uncertainties and lineage. The Denali sources supply no completed pair of that kind for this topic, and therefore no test statistic or significance is claimed here.

The only numeric residual presently documented is the source-specific first-leg minus aggregated second-leg **chord-length** difference; it is not substituted for an unrelated geological model residual.

18.10 Identity Falsifier

The original Paper III uses **Identity Falsifier** as a bounded failure condition for its global boundary-network and material-lineage reconstruction. No such North American test has been executed with an independent predicted field and a frozen observation vector. Accordingly this manuscript records **not evaluated** instead of reporting either support or rejection.

A failure judgment would require the specific model output, declared observation, comparison condition, and decision rule already distinguished in the canonical source. Geometric equality alone does not settle that result.

19 Boundary Type From Relative Motion and Material State

Modern descriptions of convergent, divergent, transform and oblique boundaries must not be mistaken for a Paper-III reconstruction of why or when those boundaries appeared. The canonical classification slots are retained, but no event-produced boundary-type map is computed in this draft.

19.1 Kinematic Boundary Components

Kinematic Boundary Components refers to a structural or material feature in the original Paper-III reconstruction. The Denali research identifies selected geographic roles and a corridor through named modern regions, but does not independently derive the proposed feature from a calculated physical history. The name of a waypoint is not a boundary-formation, uplift or basin-formation result.

This subsection consequently preserves the canonical role and distinguishes geographical association from demonstrated causal origin. No unprovided local stratigraphy or material movement is added.

19.2 Kinematic Type Ratios

The canonical subsection **Kinematic Type Ratios** remains in the original Paper-III order. Its function belongs to global boundary-network and material-lineage reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

19.3 Convergent Boundary

Convergent Boundary refers to a structural or material feature in the original Paper-III reconstruction. The Denali research identifies selected geographic roles and a corridor through named modern regions, but does not independently derive the proposed feature from a calculated physical history. The name of a waypoint is not a boundary-formation, uplift or basin-formation result.

This subsection consequently preserves the canonical role and distinguishes geographical association from demonstrated causal origin. No unprovided local stratigraphy or material movement is added.

19.4 Divergent Boundary

Divergent Boundary refers to a structural or material feature in the original Paper-III reconstruction. The Denali research identifies selected geographic roles and a corridor through named modern regions, but does not independently derive the proposed feature from a calculated physical history. The name of a waypoint is not a boundary-formation, uplift or basin-formation result.

This subsection consequently preserves the canonical role and distinguishes geographical association from demonstrated causal origin. No unprovided local stratigraphy or material movement is added.

19.5 Transform or Shear-Dominated Boundary

Transform or Shear-Dominated Boundary refers to a structural or material feature in the original Paper-III reconstruction. The Denali research identifies selected geographic roles and a corridor through named modern regions, but does not independently derive the proposed feature from a calculated physical history. The name of a waypoint is not a boundary-formation, uplift or basin-formation result.

This subsection consequently preserves the canonical role and distinguishes geographical association from demonstrated causal origin. No unprovided local stratigraphy or material movement is added.

19.6 Oblique Boundary

Oblique Boundary refers to a structural or material feature in the original Paper-III reconstruction. The Denali research identifies selected geographic roles and a corridor through named modern regions, but does not independently derive the proposed feature from a calculated physical history. The name of a waypoint is not a boundary-formation, uplift or basin-formation result.

This subsection consequently preserves the canonical role and distinguishes geographical association from demonstrated causal origin. No unprovided local stratigraphy or material movement is added.

19.7 Collapse Boundary

Collapse Boundary refers to a structural or material feature in the original Paper-III reconstruction. The Denali research identifies selected geographic roles and a corridor through named modern regions, but does not independently derive the proposed feature from a calculated physical history. The name of a waypoint is not a boundary-formation, uplift or basin-formation result.

This subsection consequently preserves the canonical role and distinguishes geographical association from demonstrated causal origin. No unprovided local stratigraphy or material movement is added.

19.8 Material-State Classification

The canonical subsection **Material-State Classification** identifies a field, tensor, state or operator necessary to the global boundary-network and material-lineage reconstruction. It is a model object, not an observation created by writing down its heading. The available North American inputs are the geographic coordinate set and the calculated chords; they do not determine this object's spatial distribution or time evolution.

The field therefore remains a named architectural position without numerical assignments, physical closure or a claimed simulation result.

19.9 Boundary-Type Transition

Boundary-Type Transition refers to a structural or material feature in the original Paper-III reconstruction. The Denali research identifies selected geographic roles and a corridor through named modern regions, but does not independently derive the proposed feature from a calculated physical history. The name of a waypoint is not a boundary-formation, uplift or basin-formation result.

This subsection consequently preserves the canonical role and distinguishes geographical association from demonstrated causal origin. No unprovided local stratigraphy or material movement is added.

19.10 Boundary-Type Confusion Matrix

Boundary-Type Confusion Matrix refers to a structural or material feature in the original Paper-III reconstruction. The Denali research identifies selected geographic roles and a corridor through named modern regions, but does not independently derive the proposed feature from a calculated physical history. The name of a waypoint is not a boundary-formation, uplift or basin-formation result.

This subsection consequently preserves the canonical role and distinguishes geographical association from demonstrated causal origin. No unprovided local stratigraphy or material movement is added.

19.11 Boundary-Type Falsifier

The original Paper III uses **Boundary-Type Falsifier** as a bounded failure condition for its global boundary-network and material-lineage reconstruction. No such North American test has been executed with an independent predicted field and a frozen observation vector. Accordingly this manuscript records **not evaluated** instead of reporting either support or rejection.

A failure judgment would require the specific model output, declared observation, comparison condition, and decision rule already distinguished in the canonical source. Geometric equality alone does not settle that result.

20 Boundary Propagation, Branching, and Termination

The canonical paper distinguishes a boundary's birth, advance, branching and termination. The northward sequence of named geographic waypoints is an ordered numerical path and not a calculated advancing boundary front; the two histories must remain separate.

20.1 Boundary Front

Boundary Front refers to a structural or material feature in the original Paper-III reconstruction. The Denali research identifies selected geographic roles and a corridor through named modern regions, but does not independently derive the proposed feature from a calculated physical history. The name of a waypoint is not a boundary-formation, uplift or basin-formation result.

This subsection consequently preserves the canonical role and distinguishes geographical association from demonstrated causal origin. No unprovided local stratigraphy or material movement is added.

20.2 Boundary Propagation Law

Boundary Propagation Law refers to a structural or material feature in the original Paper-III reconstruction. The Denali research identifies selected geographic roles and a corridor through named modern regions, but does not independently derive the proposed feature from a calculated physical history. The name of a waypoint is not a boundary-formation, uplift or basin-formation result.

This subsection consequently preserves the canonical role and distinguishes geographical association from demonstrated causal origin. No unprovided local stratigraphy or material movement is added.

20.3 Propagation Criterion

The canonical subsection **Propagation Criterion** remains in the original Paper-III order. Its function belongs to global boundary-network and material-lineage reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

20.4 Propagation Direction

The canonical subsection **Propagation Direction** remains in the original Paper-III order. Its function belongs to global boundary-network and material-lineage reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

20.5 Branching Criterion

The canonical subsection **Branching Criterion** remains in the original Paper-III order. Its function belongs to global boundary-network and material-lineage reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

20.6 Junctions

The canonical subsection **Junctions** remains in the original Paper-III order. Its function belongs to global boundary-network and material-lineage reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

20.7 Boundary Termination

Boundary Termination refers to a structural or material feature in the original Paper-III reconstruction. The Denali research identifies selected geographic roles and a corridor through named modern regions, but does not independently derive the proposed feature from a calculated physical history. The name of a waypoint is not a boundary-formation, uplift or basin-formation result.

This subsection consequently preserves the canonical role and distinguishes geographical association from demonstrated causal origin. No unprovided local stratigraphy or material movement is added.

20.8 Boundary Lifetime

The subsection **Boundary Lifetime** is an original Paper-III chronology or state-evolution requirement. The North American reference notes do not provide event-specific radiometric ages, dated structural transitions or event-time plate reconstructions. The designation “64 Ma” is therefore retained only as the author’s research-branch label.

No time ordering among additional physical events, chronometric probability distribution or modeled geological lag is generated from static present-day coordinates.

20.9 Propagation Residual

The heading **Propagation Residual** is retained as the canonical quantitative-comparison slot for global boundary-network and material-lineage reconstruction. Evaluation requires a pair of corresponding modeled and observed quantities with compatible coordinates, uncertainties and lineage. The Denali sources supply no completed pair of that kind for this topic, and therefore no test statistic or significance is claimed here.

The only numeric residual presently documented is the source-specific first-leg minus aggregated second-leg **chord-length** difference; it is not substituted for an unrelated geological model residual.

20.10 Propagation Falsifier

The original Paper III uses **Propagation Falsifier** as a bounded failure condition for its global boundary-network and material-lineage reconstruction. No such North American test has been executed with an independent predicted field and a frozen observation vector. Accordingly this manuscript records **not evaluated** instead of reporting either support or rejection.

A failure judgment would require the specific model output, declared observation, comparison condition, and decision rule already distinguished in the canonical source. Geometric equality alone does not settle that result.

21 Reactivation by Later Events

A later-event reactivation analysis requires at least two eligible dated event states and compatible response fields. The Denali record does not supply such a sequence, so no new later event, overprint or timed reactivation is introduced.

21.1 Latent Boundary State

The canonical subsection **Latent Boundary State** identifies a field, tensor, state or operator necessary to the global boundary-network and material-lineage reconstruction. It is a model object, not an observation created by writing down its heading. The available North American inputs are the geographic coordinate set and the calculated chords; they do not determine this object's spatial distribution or time evolution.

The field therefore remains a named architectural position without numerical assignments, physical closure or a claimed simulation result.

21.2 Later-Event Loading

The canonical subsection **Later-Event Loading** remains in the original Paper-III order. Its function belongs to global boundary-network and material-lineage reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

21.3 Reactivation Index

The canonical subsection **Reactivation Index** remains in the original Paper-III order. Its function belongs to global boundary-network and material-lineage reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

21.4 Reactivation Angle

The canonical subsection **Reactivation Angle** remains in the original Paper-III order. Its function belongs to global boundary-network and material-lineage reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

21.5 Boundary Inversion

In the original architecture, **Boundary Inversion** is a parameterization, forward prediction or inverse-analysis step of global boundary-network and material-lineage reconstruction. The North American evidence package does not include a solved event-specific output to enter this step. No new branch, fitting parameter, prediction target, best-fit value or model comparison is manufactured in this first draft.

The canonical function of the subsection remains visible so that later authorized material can enter without changing the paper's hierarchy or retroactively strengthening its current evidence status.

21.6 Boundary Overprint

Boundary Overprint refers to a structural or material feature in the original Paper-III reconstruction. The Denali research identifies selected geographic roles and a corridor through named modern regions, but does not independently derive the proposed feature from a calculated physical history. The name of a waypoint is not a boundary-formation, uplift or basin-formation result.

This subsection consequently preserves the canonical role and distinguishes geographical association from demonstrated causal origin. No unprovided local stratigraphy or material movement is added.

21.7 Event Attribution

The canonical subsection **Event Attribution** remains in the original Paper-III order. Its function belongs to global boundary-network and material-lineage reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

21.8 Reactivation Falsifier

The original Paper III uses **Reactivation Falsifier** as a bounded failure condition for its global boundary-network and material-lineage reconstruction. No such North American test has been executed with an independent predicted field and a frozen observation vector. Accordingly this manuscript records **not evaluated** instead of reporting either support or rejection.

A failure judgment would require the specific model output, declared observation, comparison condition, and decision rule already distinguished in the canonical source. Geometric equality alone does not settle that result.

22 Continental-Margin and Ocean-Basin Inheritance

The original margin and basin inheritance chapter concerns predicted changes in material domains. The Malpelo entrance and Arctic terminal designations are geographic interpretation labels only; this manuscript does not derive North American basin opening, thinning or closure histories from their separation.

22.1 Continental Margin as a Material Transition

Continental Margin as a Material Transition refers to a structural or material feature in the original Paper-III reconstruction. The Denali research identifies selected geographic roles and a corridor through named modern regions, but does not independently derive the proposed feature from a calculated physical history. The name of a waypoint is not a boundary-formation, uplift or basin-formation result.

This subsection consequently preserves the canonical role and distinguishes geographical association from demonstrated causal origin. No unprovided local stratigraphy or material movement is added.

22.2 Margin-Nucleation Potential

The canonical subsection **Margin-Nucleation Potential** identifies a field, tensor, state or operator necessary to the global boundary-network and material-lineage reconstruction. It is a model object, not an observation created by writing down its heading. The available North American inputs are the geographic coordinate set and the calculated chords; they do not determine this object's spatial distribution or time evolution.

The field therefore remains a named architectural position without numerical assignments, physical closure or a claimed simulation result.

22.3 Crustal Stretching

The canonical subsection **Crustal Stretching** remains in the original Paper-III order. Its function belongs to global boundary-network and material-lineage reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

22.4 Crustal-Thinning Relation

The canonical subsection **Crustal-Thinning Relation** remains in the original Paper-III order. Its function belongs to global boundary-network and material-lineage reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

22.5 Basin Domain

Basin Domain refers to a structural or material feature in the original Paper-III reconstruction. The Denali research identifies selected geographic roles and a corridor through named modern regions, but does not independently derive the proposed feature from a calculated physical history. The name of a waypoint is not a boundary-formation, uplift or basin-formation result.

This subsection consequently preserves the canonical role and distinguishes geographical association from demonstrated causal origin. No unprovided local stratigraphy or material movement is added.

22.6 Basin Subsidence

Basin Subsidence refers to a structural or material feature in the original Paper-III reconstruction. The Denali research identifies selected geographic roles and a corridor through named modern regions, but does not independently derive the proposed feature from a calculated physical history. The name of a waypoint is not a boundary-formation, uplift or basin-formation result.

This subsection consequently preserves the canonical role and distinguishes geographical association from demonstrated causal origin. No unprovided local stratigraphy or material movement is added.

22.7 Basin Opening Rate

Basin Opening Rate refers to a structural or material feature in the original Paper-III reconstruction. The Denali research identifies selected geographic roles and a corridor through named modern regions, but does not independently derive the proposed feature from a calculated physical history. The name of a waypoint is not a boundary-formation, uplift or basin-formation result.

This subsection consequently preserves the canonical role and distinguishes geographical association from demonstrated causal origin. No unprovided local stratigraphy or material movement is added.

22.8 New Intervening Material

The canonical subsection **New Intervening Material** remains in the original Paper-III order. Its function belongs to global boundary-network and material-lineage reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

22.9 Basin Closure

Basin Closure refers to a structural or material feature in the original Paper-III reconstruction. The Denali research identifies selected geographic roles and a corridor through named modern regions, but does not independently derive the proposed feature from a calculated physical history. The name of a waypoint is not a boundary-formation, uplift or basin-formation result.

This subsection consequently preserves the canonical role and distinguishes geographical association from demonstrated causal origin. No unprovided local stratigraphy or material movement is added.

22.10 Margin Pairing

Margin Pairing refers to a structural or material feature in the original Paper-III reconstruction. The Denali research identifies selected geographic roles and a corridor through named modern regions, but does not independently derive the proposed feature from a calculated physical history. The name of a waypoint is not a boundary-formation, uplift or basin-formation result.

This subsection consequently preserves the canonical role and distinguishes geographical association from demonstrated causal origin. No unprovided local stratigraphy or material movement is added.

22.11 Ocean-Basin Inheritance Chain

Ocean-Basin Inheritance Chain refers to a structural or material feature in the original Paper-III reconstruction. The Denali research identifies selected geographic roles and a corridor through named modern regions, but does not independently derive the proposed feature from a calculated physical history. The name of a waypoint is not a boundary-formation, uplift or basin-formation result.

This subsection consequently preserves the canonical role and distinguishes geographical association from demonstrated causal origin. No unprovided local stratigraphy or material movement is added.

22.12 Margin and Basin Falsifier

The original Paper III uses **Margin and Basin Falsifier** as a bounded failure condition for its global boundary-network and material-lineage reconstruction. No such North American test has been executed with an independent predicted field and a frozen observation vector. Accordingly this manuscript records **not evaluated** instead of reporting either support or rejection.

A failure judgment would require the specific model output, declared observation, comparison condition, and decision rule already distinguished in the canonical source. Geometric equality alone does not settle that result.

23 Boundary-Network Topology and Graph Metrics

The boundary-network metric chapter retains its graph, orientation, distance and adjacency roles. No observed-versus-predicted pair of networks has been provided, so computed scores would be fictitious. The measured quantity remains the source-specific pair of geometric leg lengths.

23.1 Observed and Predicted Graphs

The source chapter uses **Observed and Predicted Graphs** for independent observational comparison in global boundary-network and material-lineage reconstruction. The project files for this adaptation do not supply a frozen dataset, acquisition method, uncertainty covariance, age control or data-to-model mapping for that category. No external values are quietly borrowed to populate it.

The required distinction is between existing public scientific data in principle and data actually accessed, transformed and scored in this North American draft. Only the latter could support a reported result, and it is not present here.

23.2 Basic Graph Counts

The canonical subsection **Basic Graph Counts** remains in the original Paper-III order. Its function belongs to global boundary-network and material-lineage reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

23.3 Degree Distribution

The canonical subsection **Degree Distribution** remains in the original Paper-III order. Its function belongs to global boundary-network and material-lineage reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

23.4 Cycle Rank

The canonical subsection **Cycle Rank** remains in the original Paper-III order. Its function belongs to global boundary-network and material-lineage reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

23.5 Plate-Enclosure Count

The canonical subsection **Plate-Enclosure Count** remains in the original Paper-III order. Its function belongs to global boundary-network and material-lineage reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

23.6 Boundary-Length Distribution

Boundary-Length Distribution refers to a structural or material feature in the original Paper-III reconstruction. The Denali research identifies selected geographic roles and a corridor through named modern regions, but does not independently derive the proposed feature from a calculated physical history. The name of a waypoint is not a boundary-formation, uplift or basin-formation result.

This subsection consequently preserves the canonical role and distinguishes geographical association from demonstrated causal origin. No unprovided local stratigraphy or material movement is added.

23.7 Hausdorff Distance

The heading **Hausdorff Distance** is retained as the canonical quantitative-comparison slot for global boundary-network and material-lineage reconstruction. Evaluation requires a pair of corresponding modeled and observed quantities with compatible coordinates, uncertainties and lineage. The Denali sources supply no completed pair of that kind for this topic, and therefore no test statistic or significance is claimed here.

The only numeric residual presently documented is the source-specific first-leg minus aggregated second-leg **chord-length** difference; it is not substituted for an unrelated geological model residual.

23.8 Average Symmetric Boundary Distance

The heading **Average Symmetric Boundary Distance** is retained as the canonical quantitative-comparison slot for global boundary-network and material-lineage reconstruction. Evaluation requires a pair of corresponding modeled and observed quantities with compatible coordinates, uncertainties and lineage. The Denali sources supply no completed pair of that kind for this topic, and therefore no test statistic or significance is claimed here.

The only numeric residual presently documented is the source-specific first-leg minus aggregated second-leg **chord-length** difference; it is not substituted for an unrelated geological model residual.

23.9 Boundary-Type Agreement

Boundary-Type Agreement refers to a structural or material feature in the original Paper-III reconstruction. The Denali research identifies selected geographic roles and a corridor through named modern regions, but does not independently derive the proposed feature from a calculated physical history. The name of a waypoint is not a boundary-formation, uplift or basin-formation result.

This subsection consequently preserves the canonical role and distinguishes geographical association from demonstrated causal origin. No unprovided local stratigraphy or material movement is added.

23.10 Orientation Agreement

Orientation Agreement is retained in its canonical mathematical or georeferencing position. For the supplied North American candidate, all stations are represented by present-reference coordinates on the stated sphere: the entrance is fitted after the turn and route are specified, rather than independently author-fixed. The first-leg and segmented-second-leg definitions are held fixed across this manuscript.

No transformation to a plate-fixed event-time reconstruction is asserted, and no geographical orientation is promoted into a physical displacement or material-inheritance vector.

23.11 Adjacency-Matrix Difference

The canonical subsection **Adjacency-Matrix Difference** remains in the original Paper-III order. Its function belongs to global boundary-network and material-lineage reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

23.12 Graph-Spectral Difference

The canonical subsection **Graph-Spectral Difference** remains in the original Paper-III order. Its function belongs to global boundary-network and material-lineage reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

23.13 Event-to-Boundary Sparsity

Event-to-Boundary Sparsity refers to a structural or material feature in the original Paper-III reconstruction. The Denali research identifies selected geographic roles and a corridor through named modern regions, but does not independently derive the proposed feature from a calculated physical history. The name of a waypoint is not a boundary-formation, uplift or basin-formation result.

This subsection consequently preserves the canonical role and distinguishes geographical association from demonstrated causal origin. No unprovided local stratigraphy or material movement is added.

23.14 Composite Network Score

The heading **Composite Network Score** is retained as the canonical quantitative-comparison slot for global boundary-network and material-lineage reconstruction. Evaluation requires a pair of corresponding modeled and observed quantities with compatible coordinates, uncertainties and lineage. The Denali sources supply no completed pair of that kind for this topic, and therefore no test statistic or significance is claimed here.

The only numeric residual presently documented is the source-specific first-leg minus aggregated second-leg **chord-length** difference; it is not substituted for an unrelated geological model residual.

24 Boundary-Network Model Comparison

Comparison methods belong to the canon, but the project files provide neither a reconstructed boundary network nor a matched likelihood data vector. Thus neither a superiority conclusion nor a boundary fit score can be newly claimed from the available Denali numbers.

24.1 Competing Model Families

In the original architecture, **Competing Model Families** is a parameterization, forward prediction or inverse-analysis step of global boundary-network and material-lineage reconstruction. The North American evidence package does not include a solved event-specific output to enter this step. No new branch, fitting parameter, prediction target, best-fit value or model comparison is manufactured in this first draft.

The canonical function of the subsection remains visible so that later authorized material can enter without changing the paper's hierarchy or retroactively strengthening its current evidence status.

24.2 Boundary Data Vector

The canonical subsection **Boundary Data Vector** identifies a field, tensor, state or operator necessary to the global boundary-network and material-lineage reconstruction. It is a model object, not an observation created by writing down its heading. The available North American inputs are the geographic coordinate set and the calculated chords; they do not determine this object's spatial distribution or time evolution.

The field therefore remains a named architectural position without numerical assignments, physical closure or a claimed simulation result.

24.3 Boundary Likelihood

The heading **Boundary Likelihood** is retained as the canonical quantitative-comparison slot for global boundary-network and material-lineage reconstruction. Evaluation requires a pair of corresponding modeled and observed quantities with compatible coordinates, uncertainties and lineage. The Denali sources supply no completed pair of that kind for this topic, and therefore no test statistic or significance is claimed here.

The only numeric residual presently documented is the source-specific first-leg minus aggregated second-leg **chord-length** difference; it is not substituted for an unrelated geological model residual.

24.4 Model Evidence

In the original architecture, **Model Evidence** is a parameterization, forward prediction or inverse-analysis step of global boundary-network and material-lineage reconstruction. The North American evidence package does not include a solved event-specific output to enter this step. No new branch, fitting parameter, prediction target, best-fit value or model comparison is manufactured in this first draft.

The canonical function of the subsection remains visible so that later authorized material can enter without changing the paper's hierarchy or retroactively strengthening its current evidence status.

24.5 Boundary Complexity

Boundary Complexity refers to a structural or material feature in the original Paper-III reconstruction. The Denali research identifies selected geographic roles and a corridor through named modern regions, but does not independently derive the proposed feature from a calculated physical history. The name of a waypoint is not a boundary-formation, uplift or basin-formation result.

This subsection consequently preserves the canonical role and distinguishes geographical association from demonstrated causal origin. No unprovided local stratigraphy or material movement is added.

24.6 Event-Count Penalty

The original **Event-Count Penalty** section constrains model or feature selection and statistical flexibility in global boundary-network and material-lineage reconstruction. In this North American source the midpoint and route were stipulated first, then an entrance coordinate was solved to impose the chord equality. That conditional construction must be retained in the selection record.

No null simulations, penalized model evidence, independent confirmation threshold or probability value are reported for the adapted candidate. The method slot is inherited, not falsely marked as executed.

24.7 Boundary-Assignment Penalty

Boundary-Assignment Penalty refers to a structural or material feature in the original Paper-III reconstruction. The Denali research identifies selected geographic roles and a corridor through named modern regions, but does not independently derive the proposed feature from a calculated physical history. The name of a waypoint is not a boundary-formation, uplift or basin-formation result.

This subsection consequently preserves the canonical role and distinguishes geographical association from demonstrated causal origin. No unprovided local stratigraphy or material movement is added.

24.8 Spatial Null Test

The original **Spatial Null Test** section constrains model or feature selection and statistical flexibility in global boundary-network and material-lineage reconstruction. In this North American source the midpoint and route were stipulated first, then an entrance coordinate was solved to impose the chord equality. That conditional construction must be retained in the selection record.

No null simulations, penalized model evidence, independent confirmation threshold or probability value are reported for the adapted candidate. The method slot is inherited, not falsely marked as executed.

24.9 Spatial Cross-Validation

The canonical subsection **Spatial Cross-Validation** remains in the original Paper-III order. Its function belongs to global boundary-network and material-lineage reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

24.10 Chronological Cross-Validation

The subsection **Chronological Cross-Validation** is an original Paper-III chronology or state-evolution requirement. The North American reference notes do not provide event-specific radiometric ages, dated structural transitions or event-time plate reconstructions. The designation “64 Ma” is therefore retained only as the author’s research-branch label.

No time ordering among additional physical events, chronometric probability distribution or modeled geological lag is generated from static present-day coordinates.

24.11 Leave-One-Event-Out Test

The **Leave-One-Event-Out Test** position tests whether an apparently successful result actually depends on the event-derived state rather than an unfixed background assumption. This is part of the original manuscript architecture. No pair of North American with-event/without-event model solutions is present in the supplied records; no ablation result or difference statistic is produced.

The present equal-chord geometry is preserved as input provenance and is not used as a surrogate for a causal counterfactual.

24.12 Comparison Decision

The canonical subsection **Comparison Decision** remains in the original Paper-III order. Its function belongs to global boundary-network and material-lineage reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

25 Boundary Viability and Falsification

Viability sets combine evaluated conditions. Here, the input geographic route is specified and the boundary-formation outputs are not evaluated. The chapter preserves the matrix structure without treating unrun tests as passes or failures.

25.1 Boundary Parameter Vector

The canonical subsection **Boundary Parameter Vector** identifies a field, tensor, state or operator necessary to the global boundary-network and material-lineage reconstruction. It is a model object, not an observation created by writing down its heading. The available North American inputs are the geographic coordinate set and the calculated chords; they do not determine this object's spatial distribution or time evolution.

The field therefore remains a named architectural position without numerical assignments, physical closure or a claimed simulation result.

25.2 Boundary Viable Set

Boundary Viable Set refers to a structural or material feature in the original Paper-III reconstruction. The Denali research identifies selected geographic roles and a corridor through named modern regions, but does not independently derive the proposed feature from a calculated physical history. The name of a waypoint is not a boundary-formation, uplift or basin-formation result.

This subsection consequently preserves the canonical role and distinguishes geographical association from demonstrated causal origin. No unprovided local stratigraphy or material movement is added.

25.3 Boundary Falsification Matrix

The original Paper III uses **Boundary Falsification Matrix** as a bounded failure condition for its global boundary-network and material-lineage reconstruction. No such North American test has been executed with an independent predicted field and a frozen observation vector. Accordingly this manuscript records **not evaluated** instead of reporting either support or rejection.

A failure judgment would require the specific model output, declared observation, comparison condition, and decision rule already distinguished in the canonical source. Geometric equality alone does not settle that result.

25.4 Boundary Success Standard

Boundary Success Standard refers to a structural or material feature in the original Paper-III reconstruction. The Denali research identifies selected geographic roles and a corridor through named modern regions, but does not independently derive the proposed feature from a calculated physical history. The name of a waypoint is not a boundary-formation, uplift or basin-formation result.

This subsection consequently preserves the canonical role and distinguishes geographical association from demonstrated causal origin. No unprovided local stratigraphy or material movement is added.

26 Boundary-Network Synthesis

The canonical network synthesis assembles the results of chapters 16–25. In the North American draft, those results are presently uncomputed; the traceable deliverable is the path-coordinate handoff and a clearly delimited scientific status.

27 Event-to-Plate Impulse Mapping

The exact-distance source does not contain plate-membership fields or event-to-plate impulse matrices. Mapping the proposed corridor to the modern names of plates would be a new reconstruction and is not done here. This chapter retains its original model-output slots without disclosure of protected energetic mechanics.

27.1 Purpose

The canonical subsection **Purpose** remains in the original Paper-III order. Its function belongs to plate-motion and inherited-motion reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

27.2 Plate-Membership Field

The canonical subsection **Plate-Membership Field** identifies a field, tensor, state or operator necessary to the plate-motion and inherited-motion reconstruction. It is a model object, not an observation created by writing down its heading. The available North American inputs are the geographic coordinate set and the calculated chords; they do not determine this object's spatial distribution or time evolution.

The field therefore remains a named architectural position without numerical assignments, physical closure or a claimed simulation result.

27.3 Impulse Partition

The subsection **Impulse Partition** concerns the plate-motion and inherited-motion reconstruction and requires physical parameters or state outputs that are not disclosed by the source files. The North American project record establishes a coordinate-and-chord construction, not the constitutive or energetic quantity required here. This position is **reserved** under the defined proprietary-content boundary; no coefficient, branch, event state or numerical result is inserted.

For source continuity, the geometric corridor can be named as a candidate input but cannot be represented as the completed physical field to which this heading refers.

27.4 Translation, Rotation, and Internal Deformation

The canonical subsection **Translation, Rotation, and Internal Deformation** remains in the original Paper-III order. Its function belongs to plate-motion and inherited-motion reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

27.5 Immediate Translational Response

The canonical subsection **Immediate Translational Response** remains in the original Paper-III order. Its function belongs to plate-motion and inherited-motion reconstruction; the North American project files do not

provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

27.6 Immediate Rotational Response

The canonical subsection **Immediate Rotational Response** remains in the original Paper-III order. Its function belongs to plate-motion and inherited-motion reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

27.7 Impulse Projection Into Rigid and Deforming Modes

The subsection **Impulse Projection Into Rigid and Deforming Modes** concerns the plate-motion and inherited-motion reconstruction and requires physical parameters or state outputs that are not disclosed by the source files. The North American project record establishes a coordinate-and-chord construction, not the constitutive or energetic quantity required here. This position is **reserved** under the defined proprietary-content boundary; no coefficient, branch, event state or numerical result is inserted.

For source continuity, the geometric corridor can be named as a candidate input but cannot be represented as the completed physical field to which this heading refers.

27.8 Impulse-Direction Field

The subsection **Impulse-Direction Field** concerns the plate-motion and inherited-motion reconstruction and requires physical parameters or state outputs that are not disclosed by the source files. The North American project record establishes a coordinate-and-chord construction, not the constitutive or energetic quantity required here. This position is **reserved** under the defined proprietary-content boundary; no coefficient, branch, event state or numerical result is inserted.

For source continuity, the geometric corridor can be named as a candidate input but cannot be represented as the completed physical field to which this heading refers.

27.9 Event-to-Plate Contribution Matrix

The canonical subsection **Event-to-Plate Contribution Matrix** remains in the original Paper-III order. Its function belongs to plate-motion and inherited-motion reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

27.10 No Modern-Plate Projection Without Reconstruction

The supplied source positions are contemporary geographic references used to specify the entrance, turn and selected corridor. No time-indexed plate rotation, paleocoordinate reconstruction or uncertainty distribution has been supplied. Consequently the present-day Malpelo-region and northern-waypoint layout cannot be projected backward as if it were independently recovered event-time geometry. This preserves the canonical chronology and reconstruction obligation without creating or substituting a new North American geological history.

27.11 Impulse-Mapping Falsifier

The subsection **Impulse-Mapping Falsifier** concerns the plate-motion and inherited-motion reconstruction and requires physical parameters or state outputs that are not disclosed by the source files. The North American project record establishes a coordinate-and-chord construction, not the constitutive or energetic quantity required here. This position is **reserved** under the defined proprietary-content boundary; no coefficient, branch, event state or numerical result is inserted.

For source continuity, the geometric corridor can be named as a candidate input but cannot be represented as the completed physical field to which this heading refers.

28 Plate Mass, Inertia, and Rotational Response

Mass, inertia, and rotational response would require event-time material domains and physical states, neither of which is in the Denali files. These entries remain unresolved with no zero-filled parameter values and no adaptation of the original Aegean event numbers.

28.1 Plate Mass

Plate Mass has the canonical role of relating physical plate state or modeled movement to an independently observable kinematic quantity. The Malpelo-to-Arctic route contains no computed plate velocity, inertia, rotation, acceleration or torque series. Its waypoint order is not a plate trajectory, so this item remains **not evaluated**.

The distinction prevents route geometry from being used to fit modern plate motion after the fact. Any eventual plate-motion output would have to come from the original paper's eligible shared model, not from a free value supplied by this adaptation.

28.2 Plate Center of Mass

Plate Center of Mass has the canonical role of relating physical plate state or modeled movement to an independently observable kinematic quantity. The Malpelo-to-Arctic route contains no computed plate velocity, inertia, rotation, acceleration or torque series. Its waypoint order is not a plate trajectory, so this item remains **not evaluated**.

The distinction prevents route geometry from being used to fit modern plate motion after the fact. Any eventual plate-motion output would have to come from the original paper's eligible shared model, not from a free value supplied by this adaptation.

28.3 Plate Inertia Tensor

Plate Inertia Tensor has the canonical role of relating physical plate state or modeled movement to an independently observable kinematic quantity. The Malpelo-to-Arctic route contains no computed plate velocity, inertia, rotation, acceleration or torque series. Its waypoint order is not a plate trajectory, so this item remains **not evaluated**.

The distinction prevents route geometry from being used to fit modern plate motion after the fact. Any eventual plate-motion output would have to come from the original paper's eligible shared model, not from a free value supplied by this adaptation.

28.4 Principal Inertial Axes

The canonical subsection **Principal Inertial Axes** remains in the original Paper-III order. Its function belongs to plate-motion and inherited-motion reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

28.5 Rigid Rotational Momentum

The subsection **Rigid Rotational Momentum** concerns the plate-motion and inherited-motion reconstruction and requires physical parameters or state outputs that are not disclosed by the source files. The North American project record establishes a coordinate-and-chord construction, not the constitutive or energetic quantity required here. This position is **reserved** under the defined proprietary-content boundary; no coefficient, branch, event state or numerical result is inserted.

For source continuity, the geometric corridor can be named as a candidate input but cannot be represented as the completed physical field to which this heading refers.

28.6 Immediate Event Rotation

The canonical subsection **Immediate Event Rotation** remains in the original Paper-III order. Its function belongs to plate-motion and inherited-motion reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

28.7 Changing Inertia Tensor

The canonical subsection **Changing Inertia Tensor** identifies a field, tensor, state or operator necessary to the plate-motion and inherited-motion reconstruction. It is a model object, not an observation created by writing down its heading. The available North American inputs are the geographic coordinate set and the calculated chords; they do not determine this object's spatial distribution or time evolution.

The field therefore remains a named architectural position without numerical assignments, physical closure or a claimed simulation result.

28.8 Fragmentation Response

The canonical **Fragmentation Response** subsection follows material rather than simply present-day geographic labels. The North American input points are modern surface positions and selected waypoints; they contain no tracked material parcels or observed transfer histories.

A path-point ordering therefore cannot be used to establish a terrane, plate or crustal lineage. The documentary status is unresolved without interpreting the route as a measured physical transport sequence.

28.9 Rigid-Plate Adequacy

The canonical subsection **Rigid-Plate Adequacy** remains in the original Paper-III order. Its function belongs to plate-motion and inherited-motion reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

28.10 Plate-Mass and Inertia Uncertainty

Plate-Mass and Inertia Uncertainty has the canonical role of relating physical plate state or modeled movement to an independently observable kinematic quantity. The Malpelo-to-Arctic route contains no computed plate velocity, inertia, rotation, acceleration or torque series. Its waypoint order is not a plate trajectory, so this item remains **not evaluated**.

The distinction prevents route geometry from being used to fit modern plate motion after the fact. Any eventual plate-motion output would have to come from the original paper's eligible shared model, not from a free value supplied by this adaptation.

28.11 Inertia Falsifier

The original Paper III uses **Inertia Falsifier** as a bounded failure condition for its plate-motion and inherited-motion reconstruction. No such North American test has been executed with an independent predicted field and a frozen observation vector. Accordingly this manuscript records **not evaluated** instead of reporting either support or rejection.

A failure judgment would require the specific model output, declared observation, comparison condition, and decision rule already distinguished in the canonical source. Geometric equality alone does not settle that result.

29 Euler-Pole Generation

Euler poles in the canonical reconstruction are predicted outputs derived from evolving plate rotations. No poles or rotations have been calculated for the North American candidate; the method's headings are kept without independently fitting a regional pole after seeing present motion.

29.1 Euler Poles as Model Outputs

In the original architecture, **Euler Poles as Model Outputs** is a parameterization, forward prediction or inverse-analysis step of plate-motion and inherited-motion reconstruction. The North American evidence package does not include a solved event-specific output to enter this step. No new branch, fitting parameter, prediction target, best-fit value or model comparison is manufactured in this first draft.

The canonical function of the subsection remains visible so that later authorized material can enter without changing the paper's hierarchy or retroactively strengthening its current evidence status.

29.2 Initial Euler Vector

The canonical subsection **Initial Euler Vector** identifies a field, tensor, state or operator necessary to the plate-motion and inherited-motion reconstruction. It is a model object, not an observation created by writing down its heading. The available North American inputs are the geographic coordinate set and the calculated chords; they do not determine this object's spatial distribution or time evolution.

The field therefore remains a named architectural position without numerical assignments, physical closure or a claimed simulation result.

29.3 Euler-Vector Evolution

The canonical subsection **Euler-Vector Evolution** identifies a field, tensor, state or operator necessary to the plate-motion and inherited-motion reconstruction. It is a model object, not an observation created by writing down its heading. The available North American inputs are the geographic coordinate set and the calculated chords; they do not determine this object's spatial distribution or time evolution.

The field therefore remains a named architectural position without numerical assignments, physical closure or a claimed simulation result.

29.4 Finite Rotation

The canonical subsection **Finite Rotation** remains in the original Paper-III order. Its function belongs to plate-motion and inherited-motion reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

29.5 Time-Dependent Finite Rotation

The subsection **Time-Dependent Finite Rotation** is an original Paper-III chronology or state-evolution requirement. The North American reference notes do not provide event-specific radiometric ages, dated structural transitions or event-time plate reconstructions. The designation "64 Ma" is therefore retained only as the author's research-branch label.

No time ordering among additional physical events, chronometric probability distribution or modeled geological lag is generated from static present-day coordinates.

29.6 Predicted Euler Pole

The canonical subsection **Predicted Euler Pole** remains in the original Paper-III order. Its function belongs to plate-motion and inherited-motion reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

29.7 Relative Euler Pole

The canonical subsection **Relative Euler Pole** remains in the original Paper-III order. Its function belongs to plate-motion and inherited-motion reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

29.8 Euler-Pole Drift

Euler-Pole Drift refers to a structural or material feature in the original Paper-III reconstruction. The Denali research identifies selected geographic roles and a corridor through named modern regions, but does not independently derive the proposed feature from a calculated physical history. The name of a waypoint is not a boundary-formation, uplift or basin-formation result.

This subsection consequently preserves the canonical role and distinguishes geographical association from demonstrated causal origin. No unprovided local stratigraphy or material movement is added.

29.9 Euler-Pole Residuals

The heading **Euler-Pole Residuals** is retained as the canonical quantitative-comparison slot for plate-motion and inherited-motion reconstruction. Evaluation requires a pair of corresponding modeled and observed quantities with compatible coordinates, uncertainties and lineage. The Denali sources supply no completed pair of that kind for this topic, and therefore no test statistic or significance is claimed here.

The only numeric residual presently documented is the source-specific first-leg minus aggregated second-leg **chord-length** difference; it is not substituted for an unrelated geological model residual.

29.10 No Independent Euler-Pole Fitting

The canonical subsection **No Independent Euler-Pole Fitting** remains in the original Paper-III order. Its function belongs to plate-motion and inherited-motion reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

29.11 Euler-Pole Falsifier

The original Paper III uses **Euler-Pole Falsifier** as a bounded failure condition for its plate-motion and inherited-motion reconstruction. No such North American test has been executed with an independent predicted field and a frozen observation vector. Accordingly this manuscript records **not evaluated** instead of reporting either support or rejection.

A failure judgment would require the specific model output, declared observation, comparison condition, and decision rule already distinguished in the canonical source. Geometric equality alone does not settle that result.

30 Force and Torque Decomposition

The force and torque budget and its attribution fractions are proprietary/unsupported for this substitution. No driving force magnitude, plate torque, or energy flow is supplied; the original audit categories remain visible without constructing a new mechanism.

30.1 Plate Net Force

The subsection **Plate Net Force** concerns the plate-motion and inherited-motion reconstruction and requires physical parameters or state outputs that are not disclosed by the source files. The North American project record establishes a coordinate-and-chord construction, not the constitutive or energetic quantity required here. This position is **reserved** under the defined proprietary-content boundary; no coefficient, branch, event state or numerical result is inserted.

For source continuity, the geometric corridor can be named as a candidate input but cannot be represented as the completed physical field to which this heading refers.

30.2 Plate Net Torque

The subsection **Plate Net Torque** concerns the plate-motion and inherited-motion reconstruction and requires physical parameters or state outputs that are not disclosed by the source files. The North American project record establishes a coordinate-and-chord construction, not the constitutive or energetic quantity required here. This position is **reserved** under the defined proprietary-content boundary; no coefficient, branch, event state or numerical result is inserted.

For source continuity, the geometric corridor can be named as a candidate input but cannot be represented as the completed physical field to which this heading refers.

30.3 Force and Torque Registry

The subsection **Force and Torque Registry** concerns the plate-motion and inherited-motion reconstruction and requires physical parameters or state outputs that are not disclosed by the source files. The North American project record establishes a coordinate-and-chord construction, not the constitutive or energetic quantity required here. This position is **reserved** under the defined proprietary-content boundary; no coefficient, branch, event state or numerical result is inserted.

For source continuity, the geometric corridor can be named as a candidate input but cannot be represented as the completed physical field to which this heading refers.

30.4 Power by Force Component

The subsection **Power by Force Component** concerns the plate-motion and inherited-motion reconstruction and requires physical parameters or state outputs that are not disclosed by the source files. The North American project record establishes a coordinate-and-chord construction, not the constitutive or energetic quantity required here. This position is **reserved** under the defined proprietary-content boundary; no coefficient, branch, event state or numerical result is inserted.

For source continuity, the geometric corridor can be named as a candidate input but cannot be represented as the completed physical field to which this heading refers.

30.5 Driving and Resisting Components

The canonical subsection **Driving and Resisting Components** remains in the original Paper-III order. Its function belongs to plate-motion and inherited-motion reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

30.6 Force Attribution Fraction

The subsection **Force Attribution Fraction** concerns the plate-motion and inherited-motion reconstruction and requires physical parameters or state outputs that are not disclosed by the source files. The North American project record establishes a coordinate-and-chord construction, not the constitutive or energetic quantity required here. This position is **reserved** under the defined proprietary-content boundary; no coefficient, branch, event state or numerical result is inserted.

For source continuity, the geometric corridor can be named as a candidate input but cannot be represented as the completed physical field to which this heading refers.

30.7 Torque Attribution Fraction

The subsection **Torque Attribution Fraction** concerns the plate-motion and inherited-motion reconstruction and requires physical parameters or state outputs that are not disclosed by the source files. The North American project record establishes a coordinate-and-chord construction, not the constitutive or energetic quantity required here. This position is **reserved** under the defined proprietary-content boundary; no coefficient, branch, event state or numerical result is inserted.

For source continuity, the geometric corridor can be named as a candidate input but cannot be represented as the completed physical field to which this heading refers.

30.8 Action–Reaction Across Shared Boundaries

The canonical subsection **Action–Reaction Across Shared Boundaries** remains in the original Paper-III order. Its function belongs to plate-motion and inherited-motion reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

30.9 Force-Balance Residual

The subsection **Force-Balance Residual** concerns the plate-motion and inherited-motion reconstruction and requires physical parameters or state outputs that are not disclosed by the source files. The North American project record establishes a coordinate-and-chord construction, not the constitutive or energetic quantity required here. This position is **reserved** under the defined proprietary-content boundary; no coefficient, branch, event state or numerical result is inserted.

For source continuity, the geometric corridor can be named as a candidate input but cannot be represented as the completed physical field to which this heading refers.

30.10 Force-Decomposition Falsifier

The subsection **Force-Decomposition Falsifier** concerns the plate-motion and inherited-motion reconstruction and requires physical parameters or state outputs that are not disclosed by the source files. The North American project record establishes a coordinate-and-chord construction, not the constitutive or energetic quantity required here. This position is **reserved** under the defined proprietary-content boundary; no coefficient, branch, event state or numerical result is inserted.

For source continuity, the geometric corridor can be named as a candidate input but cannot be represented as the completed physical field to which this heading refers.

31 Gravitational and Buoyancy Maintenance

Gravity and buoyancy maintenance are separate long-time scientific burdens in the original work. The selected Denali route contains no calculated persistent gravitational contrast, phase state or buoyancy source, and the geometric equality cannot be used as a surrogate.

31.1 Event-Modified Gravitational Potential

The canonical subsection **Event-Modified Gravitational Potential** identifies a field, tensor, state or operator necessary to the plate-motion and inherited-motion reconstruction. It is a model object, not an observation created by writing down its heading. The available North American inputs are the geographic coordinate set and the calculated chords; they do not determine this object's spatial distribution or time evolution.

The field therefore remains a named architectural position without numerical assignments, physical closure or a claimed simulation result.

31.2 Plate Gravitational Force

The subsection **Plate Gravitational Force** concerns the plate-motion and inherited-motion reconstruction and requires physical parameters or state outputs that are not disclosed by the source files. The North American project record establishes a coordinate-and-chord construction, not the constitutive or energetic quantity required here. This position is **reserved** under the defined proprietary-content boundary; no coefficient, branch, event state or numerical result is inserted.

For source continuity, the geometric corridor can be named as a candidate input but cannot be represented as the completed physical field to which this heading refers.

31.3 Gravitational Potential Energy

The subsection **Gravitational Potential Energy** concerns the plate-motion and inherited-motion reconstruction and requires physical parameters or state outputs that are not disclosed by the source files. The North American project record establishes a coordinate-and-chord construction, not the constitutive or energetic quantity required here. This position is **reserved** under the defined proprietary-content boundary; no coefficient, branch, event state or numerical result is inserted.

For source continuity, the geometric corridor can be named as a candidate input but cannot be represented as the completed physical field to which this heading refers.

31.4 Topographic Potential Energy

The subsection **Topographic Potential Energy** concerns the plate-motion and inherited-motion reconstruction and requires physical parameters or state outputs that are not disclosed by the source files. The North American project record establishes a coordinate-and-chord construction, not the constitutive or energetic quantity required here. This position is **reserved** under the defined proprietary-content boundary; no coefficient, branch, event state or numerical result is inserted.

For source continuity, the geometric corridor can be named as a candidate input but cannot be represented as the completed physical field to which this heading refers.

31.5 Buoyancy Force

The subsection **Buoyancy Force** concerns the plate-motion and inherited-motion reconstruction and requires physical parameters or state outputs that are not disclosed by the source files. The North American project record establishes a coordinate-and-chord construction, not the constitutive or energetic quantity required here. This position is **reserved** under the defined proprietary-content boundary; no coefficient, branch, event state or numerical result is inserted.

For source continuity, the geometric corridor can be named as a candidate input but cannot be represented as the completed physical field to which this heading refers.

31.6 Thermal Buoyancy

The subsection **Thermal Buoyancy** concerns the plate-motion and inherited-motion reconstruction and requires physical parameters or state outputs that are not disclosed by the source files. The North American project record establishes a coordinate-and-chord construction, not the constitutive or energetic quantity required here. This position is **reserved** under the defined proprietary-content boundary; no coefficient, branch, event state or numerical result is inserted.

For source continuity, the geometric corridor can be named as a candidate input but cannot be represented as the completed physical field to which this heading refers.

31.7 Compositional Buoyancy

The subsection **Compositional Buoyancy** concerns the plate-motion and inherited-motion reconstruction and requires physical parameters or state outputs that are not disclosed by the source files. The North American project record establishes a coordinate-and-chord construction, not the constitutive or energetic quantity required here. This position is **reserved** under the defined proprietary-content boundary; no coefficient, branch, event state or numerical result is inserted.

For source continuity, the geometric corridor can be named as a candidate input but cannot be represented as the completed physical field to which this heading refers.

31.8 Phase Buoyancy

The subsection **Phase Buoyancy** concerns the plate-motion and inherited-motion reconstruction and requires physical parameters or state outputs that are not disclosed by the source files. The North American project record establishes a coordinate-and-chord construction, not the constitutive or energetic quantity required here. This position is **reserved** under the defined proprietary-content boundary; no coefficient, branch, event state or numerical result is inserted.

For source continuity, the geometric corridor can be named as a candidate input but cannot be represented as the completed physical field to which this heading refers.

31.9 Buoyancy-Decay Kernel

The subsection **Buoyancy-Decay Kernel** concerns the plate-motion and inherited-motion reconstruction and requires physical parameters or state outputs that are not disclosed by the source files. The North American project record establishes a coordinate-and-chord construction, not the constitutive or energetic quantity required here. This position is **reserved** under the defined proprietary-content boundary; no coefficient, branch, event state or numerical result is inserted.

For source continuity, the geometric corridor can be named as a candidate input but cannot be represented as the completed physical field to which this heading refers.

31.10 Maintenance Fraction

The canonical subsection **Maintenance Fraction** remains in the original Paper-III order. Its function belongs to plate-motion and inherited-motion reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

31.11 Impulse Versus Persistent Forcing

The subsection **Impulse Versus Persistent Forcing** concerns the plate-motion and inherited-motion reconstruction and requires physical parameters or state outputs that are not disclosed by the source files. The North American project record establishes a coordinate-and-chord construction, not the constitutive or energetic quantity required here. This position is **reserved** under the defined proprietary-content boundary; no coefficient, branch, event state or numerical result is inserted.

For source continuity, the geometric corridor can be named as a candidate input but cannot be represented as the completed physical field to which this heading refers.

31.12 Maintenance Falsifier

The original Paper III uses **Maintenance Falsifier** as a bounded failure condition for its plate-motion and inherited-motion reconstruction. No such North American test has been executed with an independent predicted field and a frozen observation vector. Accordingly this manuscript records **not evaluated** instead of reporting either support or rejection.

A failure judgment would require the specific model output, declared observation, comparison condition, and decision rule already distinguished in the canonical source. Geometric equality alone does not settle that result.

32 Boundary and Mantle Coupling

Boundary traction and mantle coupling cannot be inferred from distances among selected surface points. The original chapter's headings remain documentary slots for an authorized physical model, with no filled coupling parameters or asserted power budget.

32.1 Boundary Traction

Boundary Traction refers to a structural or material feature in the original Paper-III reconstruction. The Denali research identifies selected geographic roles and a corridor through named modern regions, but does not independently derive the proposed feature from a calculated physical history. The name of a waypoint is not a boundary-formation, uplift or basin-formation result.

This subsection consequently preserves the canonical role and distinguishes geographical association from demonstrated causal origin. No unprovided local stratigraphy or material movement is added.

32.2 Boundary Force

The subsection **Boundary Force** concerns the plate-motion and inherited-motion reconstruction and requires physical parameters or state outputs that are not disclosed by the source files. The North American project record establishes a coordinate-and-chord construction, not the constitutive or energetic quantity required here. This position is **reserved** under the defined proprietary-content boundary; no coefficient, branch, event state or numerical result is inserted.

For source continuity, the geometric corridor can be named as a candidate input but cannot be represented as the completed physical field to which this heading refers.

32.3 Boundary Mobility Tensor

The canonical subsection **Boundary Mobility Tensor** identifies a field, tensor, state or operator necessary to the plate-motion and inherited-motion reconstruction. It is a model object, not an observation created by writing down its heading. The available North American inputs are the geographic coordinate set and the calculated chords; they do not determine this object's spatial distribution or time evolution.

The field therefore remains a named architectural position without numerical assignments, physical closure or a claimed simulation result.

32.4 Inherited Boundary Anisotropy

Inherited Boundary Anisotropy refers to a structural or material feature in the original Paper-III reconstruction. The Denali research identifies selected geographic roles and a corridor through named modern regions, but does not independently derive the proposed feature from a calculated physical history. The name of a waypoint is not a boundary-formation, uplift or basin-formation result.

This subsection consequently preserves the canonical role and distinguishes geographical association from demonstrated causal origin. No unprovided local stratigraphy or material movement is added.

32.5 Boundary Dissipation

Boundary Dissipation refers to a structural or material feature in the original Paper-III reconstruction. The Denali research identifies selected geographic roles and a corridor through named modern regions, but does not independently derive the proposed feature from a calculated physical history. The name of a waypoint is not a boundary-formation, uplift or basin-formation result.

This subsection consequently preserves the canonical role and distinguishes geographical association from demonstrated causal origin. No unprovided local stratigraphy or material movement is added.

32.6 Basal Mantle Traction

The subsection **Basal Mantle Traction** concerns the plate-motion and inherited-motion reconstruction and requires physical parameters or state outputs that are not disclosed by the source files. The North American project record establishes a coordinate-and-chord construction, not the constitutive or energetic quantity required here. This position is **reserved** under the defined proprietary-content boundary; no coefficient, branch, event state or numerical result is inserted.

For source continuity, the geometric corridor can be named as a candidate input but cannot be represented as the completed physical field to which this heading refers.

32.7 Mantle Force and Torque

The subsection **Mantle Force and Torque** concerns the plate-motion and inherited-motion reconstruction and requires physical parameters or state outputs that are not disclosed by the source files. The North American project record establishes a coordinate-and-chord construction, not the constitutive or energetic quantity required here. This position is **reserved** under the defined proprietary-content boundary; no coefficient, branch, event state or numerical result is inserted.

For source continuity, the geometric corridor can be named as a candidate input but cannot be represented as the completed physical field to which this heading refers.

32.8 Event-Modified Mantle Flow

The subsection **Event-Modified Mantle Flow** concerns the plate-motion and inherited-motion reconstruction and requires physical parameters or state outputs that are not disclosed by the source files. The North American project record establishes a coordinate-and-chord construction, not the constitutive or energetic quantity required here. This position is **reserved** under the defined proprietary-content boundary; no coefficient, branch, event state or numerical result is inserted.

For source continuity, the geometric corridor can be named as a candidate input but cannot be represented as the completed physical field to which this heading refers.

32.9 Coupling Regimes

The subsection **Coupling Regimes** concerns the plate-motion and inherited-motion reconstruction and requires physical parameters or state outputs that are not disclosed by the source files. The North American project record establishes a coordinate-and-chord construction, not the constitutive or energetic quantity required here. This position is **reserved** under the defined proprietary-content boundary; no coefficient, branch, event state or numerical result is inserted.

For source continuity, the geometric corridor can be named as a candidate input but cannot be represented as the completed physical field to which this heading refers.

32.10 Coupling Power

The subsection **Coupling Power** concerns the plate-motion and inherited-motion reconstruction and requires physical parameters or state outputs that are not disclosed by the source files. The North American project record establishes a coordinate-and-chord construction, not the constitutive or energetic quantity required here. This position is **reserved** under the defined proprietary-content boundary; no coefficient, branch, event state or numerical result is inserted.

For source continuity, the geometric corridor can be named as a candidate input but cannot be represented as the completed physical field to which this heading refers.

32.11 Coupling Falsifier

The subsection **Coupling Falsifier** concerns the plate-motion and inherited-motion reconstruction and requires physical parameters or state outputs that are not disclosed by the source files. The North American project record establishes a coordinate-and-chord construction, not the constitutive or energetic quantity required here. This position is **reserved** under the defined proprietary-content boundary; no coefficient, branch, event state or numerical result is inserted.

For source continuity, the geometric corridor can be named as a candidate input but cannot be represented as the completed physical field to which this heading refers.

33 Velocity Memory and Directional Inheritance

The original directional-inheritance argument requires physical memory parameters, predicted plate velocities and counterfactual solutions. Neither a memory tensor nor a longitudinal decay kernel follows from the source's chord arithmetic, so no quantitative persistence claim is entered.

33.1 Velocity Memory Tensor

The subsection **Velocity Memory Tensor** concerns the plate-motion and inherited-motion reconstruction and requires physical parameters or state outputs that are not disclosed by the source files. The North American project record establishes a coordinate-and-chord construction, not the constitutive or energetic quantity required here. This position is **reserved** under the defined proprietary-content boundary; no coefficient, branch, event state or numerical result is inserted.

For source continuity, the geometric corridor can be named as a candidate input but cannot be represented as the completed physical field to which this heading refers.

33.2 Directional and Magnitude Memory

The subsection **Directional and Magnitude Memory** concerns the plate-motion and inherited-motion reconstruction and requires physical parameters or state outputs that are not disclosed by the source files. The North American project record establishes a coordinate-and-chord construction, not the constitutive or energetic quantity required here. This position is **reserved** under the defined proprietary-content boundary; no coefficient, branch, event state or numerical result is inserted.

For source continuity, the geometric corridor can be named as a candidate input but cannot be represented as the completed physical field to which this heading refers.

33.3 Scalar Speed-Memory Kernel

The subsection **Scalar Speed-Memory Kernel** concerns the plate-motion and inherited-motion reconstruction and requires physical parameters or state outputs that are not disclosed by the source files. The North American project record establishes a coordinate-and-chord construction, not the constitutive or energetic quantity required here. This position is **reserved** under the defined proprietary-content boundary; no coefficient, branch, event state or numerical result is inserted.

For source continuity, the geometric corridor can be named as a candidate input but cannot be represented as the completed physical field to which this heading refers.

33.4 Directional Persistence Angle

The canonical subsection **Directional Persistence Angle** remains in the original Paper-III order. Its function belongs to plate-motion and inherited-motion reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

33.5 Direction-Persistence Statistic

The canonical subsection **Direction-Persistence Statistic** remains in the original Paper-III order. Its function belongs to plate-motion and inherited-motion reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

33.6 Speed-Persistence Statistic

The subsection **Speed-Persistence Statistic** concerns the plate-motion and inherited-motion reconstruction and requires physical parameters or state outputs that are not disclosed by the source files. The North American project record establishes a coordinate-and-chord construction, not the constitutive or energetic quantity required here. This position is **reserved** under the defined proprietary-content boundary; no coefficient, branch, event state or numerical result is inserted.

For source continuity, the geometric corridor can be named as a candidate input but cannot be represented as the completed physical field to which this heading refers.

33.7 Boundary-Guided Direction

Boundary-Guided Direction refers to a structural or material feature in the original Paper-III reconstruction. The Denali research identifies selected geographic roles and a corridor through named modern regions, but does not independently derive the proposed feature from a calculated physical history. The name of a waypoint is not a boundary-formation, uplift or basin-formation result.

This subsection consequently preserves the canonical role and distinguishes geographical association from demonstrated causal origin. No unprovided local stratigraphy or material movement is added.

33.8 Later-Event Reinforcement

The subsection **Later-Event Reinforcement** concerns the plate-motion and inherited-motion reconstruction and requires physical parameters or state outputs that are not disclosed by the source files. The North American project record establishes a coordinate-and-chord construction, not the constitutive or energetic quantity required here. This position is **reserved** under the defined proprietary-content boundary; no coefficient, branch, event state or numerical result is inserted.

For source continuity, the geometric corridor can be named as a candidate input but cannot be represented as the completed physical field to which this heading refers.

33.9 Cumulative Directional Inheritance

The canonical subsection **Cumulative Directional Inheritance** remains in the original Paper-III order. Its function belongs to plate-motion and inherited-motion reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

33.10 Inherited Direction Fraction

The canonical subsection **Inherited Direction Fraction** remains in the original Paper-III order. Its function belongs to plate-motion and inherited-motion reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

33.11 Directional-Inheritance Counterfactual

The **Directional-Inheritance Counterfactual** position tests whether an apparently successful result actually depends on the event-derived state rather than an unfixed background assumption. This is part of the original manuscript architecture. No pair of North American with-event/without-event model solutions is present in the supplied records; no ablation result or difference statistic is produced.

The present equal-chord geometry is preserved as input provenance and is not used as a surrogate for a causal counterfactual.

33.12 Memory Falsifier

The subsection **Memory Falsifier** concerns the plate-motion and inherited-motion reconstruction and requires physical parameters or state outputs that are not disclosed by the source files. The North American project record establishes a coordinate-and-chord construction, not the constitutive or energetic quantity required here. This position is **reserved** under the defined proprietary-content boundary; no coefficient, branch, event state or numerical result is inserted.

For source continuity, the geometric corridor can be named as a candidate input but cannot be represented as the completed physical field to which this heading refers.

34 Plate Acceleration, Deceleration, and Speed Hierarchy

Plate speed rank, acceleration and relaxation are physical and geodetic outputs. The North American file records distances of a stationary coordinate construction only. No length is reinterpreted as elapsed time, speed or acceleration.

34.1 Plate Speed

The subsection **Plate Speed** concerns the plate-motion and inherited-motion reconstruction and requires physical parameters or state outputs that are not disclosed by the source files. The North American project record estab-

lishes a coordinate-and-chord construction, not the constitutive or energetic quantity required here. This position is **reserved** under the defined proprietary-content boundary; no coefficient, branch, event state or numerical result is inserted.

For source continuity, the geometric corridor can be named as a candidate input but cannot be represented as the completed physical field to which this heading refers.

34.2 Tangential Acceleration

The canonical subsection **Tangential Acceleration** remains in the original Paper-III order. Its function belongs to plate-motion and inherited-motion reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

34.3 Speed Evolution

The subsection **Speed Evolution** concerns the plate-motion and inherited-motion reconstruction and requires physical parameters or state outputs that are not disclosed by the source files. The North American project record establishes a coordinate-and-chord construction, not the constitutive or energetic quantity required here. This position is **reserved** under the defined proprietary-content boundary; no coefficient, branch, event state or numerical result is inserted.

For source continuity, the geometric corridor can be named as a candidate input but cannot be represented as the completed physical field to which this heading refers.

34.4 Characteristic Relaxation Time

The subsection **Characteristic Relaxation Time** is an original Paper-III chronology or state-evolution requirement. The North American reference notes do not provide event-specific radiometric ages, dated structural transitions or event-time plate reconstructions. The designation “64 Ma” is therefore retained only as the author’s research-branch label.

No time ordering among additional physical events, chronometric probability distribution or modeled geological lag is generated from static present-day coordinates.

34.5 Reduced Speed Equation

The subsection **Reduced Speed Equation** concerns the plate-motion and inherited-motion reconstruction and requires physical parameters or state outputs that are not disclosed by the source files. The North American project record establishes a coordinate-and-chord construction, not the constitutive or energetic quantity required here. This position is **reserved** under the defined proprietary-content boundary; no coefficient, branch, event state or numerical result is inserted.

For source continuity, the geometric corridor can be named as a candidate input but cannot be represented as the completed physical field to which this heading refers.

34.6 Quasi-Steady Speed

The subsection **Quasi-Steady Speed** concerns the plate-motion and inherited-motion reconstruction and requires physical parameters or state outputs that are not disclosed by the source files. The North American project record establishes a coordinate-and-chord construction, not the constitutive or energetic quantity required here. This position is **reserved** under the defined proprietary-content boundary; no coefficient, branch, event state or numerical result is inserted.

For source continuity, the geometric corridor can be named as a candidate input but cannot be represented as the completed physical field to which this heading refers.

34.7 Speed-Hierarchy Prediction

The subsection **Speed-Hierarchy Prediction** concerns the plate-motion and inherited-motion reconstruction and requires physical parameters or state outputs that are not disclosed by the source files. The North American project record establishes a coordinate-and-chord construction, not the constitutive or energetic quantity required here. This position is **reserved** under the defined proprietary-content boundary; no coefficient, branch, event state or numerical result is inserted.

For source continuity, the geometric corridor can be named as a candidate input but cannot be represented as the completed physical field to which this heading refers.

34.8 Speed-Rank Residual

The subsection **Speed-Rank Residual** concerns the plate-motion and inherited-motion reconstruction and requires physical parameters or state outputs that are not disclosed by the source files. The North American project record establishes a coordinate-and-chord construction, not the constitutive or energetic quantity required here. This position is **reserved** under the defined proprietary-content boundary; no coefficient, branch, event state or numerical result is inserted.

For source continuity, the geometric corridor can be named as a candidate input but cannot be represented as the completed physical field to which this heading refers.

34.9 Speed-Scale Residual

The subsection **Speed-Scale Residual** concerns the plate-motion and inherited-motion reconstruction and requires physical parameters or state outputs that are not disclosed by the source files. The North American project record establishes a coordinate-and-chord construction, not the constitutive or energetic quantity required here. This position is **reserved** under the defined proprietary-content boundary; no coefficient, branch, event state or numerical result is inserted.

For source continuity, the geometric corridor can be named as a candidate input but cannot be represented as the completed physical field to which this heading refers.

34.10 Acceleration Chronology

The subsection **Acceleration Chronology** is an original Paper-III chronology or state-evolution requirement. The North American reference notes do not provide event-specific radiometric ages, dated structural transitions or event-time plate reconstructions. The designation “64 Ma” is therefore retained only as the author’s research-branch label.

No time ordering among additional physical events, chronometric probability distribution or modeled geological lag is generated from static present-day coordinates.

34.11 Speed-Hierarchy Falsifier

The subsection **Speed-Hierarchy Falsifier** concerns the plate-motion and inherited-motion reconstruction and requires physical parameters or state outputs that are not disclosed by the source files. The North American project record establishes a coordinate-and-chord construction, not the constitutive or energetic quantity required here. This position is **reserved** under the defined proprietary-content boundary; no coefficient, branch, event state or numerical result is inserted.

For source continuity, the geometric corridor can be named as a candidate input but cannot be represented as the completed physical field to which this heading refers.

35 Relative Motion Across the Global Boundary Network

Relative plate motion is a global network quantity, not a property of the Denali route's segment bearings. Without event-time plate identities and velocity vectors, circuit-closure and triple-junction tests cannot be numerically completed.

35.1 Boundary Relative Velocity

Boundary Relative Velocity refers to a structural or material feature in the original Paper-III reconstruction. The Denali research identifies selected geographic roles and a corridor through named modern regions, but does not independently derive the proposed feature from a calculated physical history. The name of a waypoint is not a boundary-formation, uplift or basin-formation result.

This subsection consequently preserves the canonical role and distinguishes geographical association from demonstrated causal origin. No unprovided local stratigraphy or material movement is added.

35.2 Opening, Closing, and Shear Rates

The canonical subsection **Opening, Closing, and Shear Rates** remains in the original Paper-III order. Its function belongs to plate-motion and inherited-motion reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

35.3 Plate-Circuit Closure

The canonical subsection **Plate-Circuit Closure** remains in the original Paper-III order. Its function belongs to plate-motion and inherited-motion reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

35.4 Velocity-Circuit Closure

The canonical subsection **Velocity-Circuit Closure** remains in the original Paper-III order. Its function belongs to plate-motion and inherited-motion reconstruction; the North American project files do not provide a separate

result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

35.5 Triple-Junction Compatibility

The canonical subsection **Triple-Junction Compatibility** remains in the original Paper-III order. Its function belongs to plate-motion and inherited-motion reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

35.6 Global Motion Constraint Matrix

The canonical subsection **Global Motion Constraint Matrix** remains in the original Paper-III order. Its function belongs to plate-motion and inherited-motion reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

35.7 Network Kinematic Residual

The heading **Network Kinematic Residual** is retained as the canonical quantitative-comparison slot for plate-motion and inherited-motion reconstruction. Evaluation requires a pair of corresponding modeled and observed quantities with compatible coordinates, uncertainties and lineage. The Denali sources supply no completed pair of that kind for this topic, and therefore no test statistic or significance is claimed here.

The only numeric residual presently documented is the source-specific first-leg minus aggregated second-leg **chord-length** difference; it is not substituted for an unrelated geological model residual.

35.8 Boundary Work Consistency

Boundary Work Consistency refers to a structural or material feature in the original Paper-III reconstruction. The Denali research identifies selected geographic roles and a corridor through named modern regions, but does not independently derive the proposed feature from a calculated physical history. The name of a waypoint is not a boundary-formation, uplift or basin-formation result.

This subsection consequently preserves the canonical role and distinguishes geographical association from demonstrated causal origin. No unprovided local stratigraphy or material movement is added.

35.9 Global Area Consistency

The canonical subsection **Global Area Consistency** remains in the original Paper-III order. Its function belongs to plate-motion and inherited-motion reconstruction; the North American project files do not provide a separate

result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

35.10 Relative-Motion Falsifier

The original Paper III uses **Relative-Motion Falsifier** as a bounded failure condition for its plate-motion and inherited-motion reconstruction. No such North American test has been executed with an independent predicted field and a frozen observation vector. Accordingly this manuscript records **not evaluated** instead of reporting either support or rejection.

A failure judgment would require the specific model output, declared observation, comparison condition, and decision rule already distinguished in the canonical source. Geometric equality alone does not settle that result.

36 Present-Day and Deep-Time Velocity Datasets

This chapter retains the original observation hierarchy. The current project supplied no frozen satellite-geodesy, paleomagnetic, global finite-rotation or boundary age datasets to evaluate against a candidate North American model.

36.1 Observational Hierarchy

The source chapter uses **Observational Hierarchy** for independent observational comparison in plate-motion and inherited-motion reconstruction. The project files for this adaptation do not supply a frozen dataset, acquisition method, uncertainty covariance, age control or data-to-model mapping for that category. No external values are quietly borrowed to populate it.

The required distinction is between existing public scientific data in principle and data actually accessed, transformed and scored in this North American draft. Only the latter could support a reported result, and it is not present here.

36.2 Global Navigation Satellite System Data

The source chapter uses **Global Navigation Satellite System Data** for independent observational comparison in plate-motion and inherited-motion reconstruction. The project files for this adaptation do not supply a frozen dataset, acquisition method, uncertainty covariance, age control or data-to-model mapping for that category. No external values are quietly borrowed to populate it.

The required distinction is between existing public scientific data in principle and data actually accessed, transformed and scored in this North American draft. Only the latter could support a reported result, and it is not present here.

36.3 Plate-Interior and Boundary Sites

Plate-Interior and Boundary Sites refers to a structural or material feature in the original Paper-III reconstruction. The Denali research identifies selected geographic roles and a corridor through named modern regions, but does not independently derive the proposed feature from a calculated physical history. The name of a waypoint is not a boundary-formation, uplift or basin-formation result.

This subsection consequently preserves the canonical role and distinguishes geographical association from demonstrated causal origin. No unprovided local stratigraphy or material movement is added.

36.4 Site Prediction

In the original architecture, **Site Prediction** is a parameterization, forward prediction or inverse-analysis step of plate-motion and inherited-motion reconstruction. The North American evidence package does not include a solved event-specific output to enter this step. No new branch, fitting parameter, prediction target, best-fit value or model comparison is manufactured in this first draft.

The canonical function of the subsection remains visible so that later authorized material can enter without changing the paper's hierarchy or retroactively strengthening its current evidence status.

36.5 Finite-Interval Velocity

The canonical subsection **Finite-Interval Velocity** remains in the original Paper-III order. Its function belongs to plate-motion and inherited-motion reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

36.6 Finite-Rotation Observation

The source chapter uses **Finite-Rotation Observation** for independent observational comparison in plate-motion and inherited-motion reconstruction. The project files for this adaptation do not supply a frozen dataset, acquisition method, uncertainty covariance, age control or data-to-model mapping for that category. No external values are quietly borrowed to populate it.

The required distinction is between existing public scientific data in principle and data actually accessed, transformed and scored in this North American draft. Only the latter could support a reported result, and it is not present here.

36.7 Paleomagnetic Observation Vector

The canonical subsection **Paleomagnetic Observation Vector** identifies a field, tensor, state or operator necessary to the plate-motion and inherited-motion reconstruction. It is a model object, not an observation created by writing down its heading. The available North American inputs are the geographic coordinate set and the calculated chords; they do not determine this object's spatial distribution or time evolution.

The field therefore remains a named architectural position without numerical assignments, physical closure or a claimed simulation result.

36.8 Boundary-Age Kinematic Constraint

The subsection **Boundary-Age Kinematic Constraint** is an original Paper-III chronology or state-evolution requirement. The North American reference notes do not provide event-specific radiometric ages, dated structural transitions or event-time plate reconstructions. The designation "64 Ma" is therefore retained only as the author's research-branch label.

No time ordering among additional physical events, chronometric probability distribution or modeled geological lag is generated from static present-day coordinates.

36.9 Timescale Separation

The subsection **Timescale Separation** is an original Paper-III chronology or state-evolution requirement. The North American reference notes do not provide event-specific radiometric ages, dated structural transitions or event-time plate reconstructions. The designation “64 Ma” is therefore retained only as the author’s research-branch label.

No time ordering among additional physical events, chronometric probability distribution or modeled geological lag is generated from static present-day coordinates.

36.10 Observation Covariance

The source chapter uses **Observation Covariance** for independent observational comparison in plate-motion and inherited-motion reconstruction. The project files for this adaptation do not supply a frozen dataset, acquisition method, uncertainty covariance, age control or data-to-model mapping for that category. No external values are quietly borrowed to populate it.

The required distinction is between existing public scientific data in principle and data actually accessed, transformed and scored in this North American draft. Only the latter could support a reported result, and it is not present here.

36.11 No Double Counting

The canonical subsection **No Double Counting** remains in the original Paper-III order. Its function belongs to plate-motion and inherited-motion reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

36.12 Training and Validation Split

The canonical subsection **Training and Validation Split** remains in the original Paper-III order. Its function belongs to plate-motion and inherited-motion reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

36.13 Velocity-Data Falsifier

The original Paper III uses **Velocity-Data Falsifier** as a bounded failure condition for its plate-motion and inherited-motion reconstruction. No such North American test has been executed with an independent predicted field and a frozen observation vector. Accordingly this manuscript records **not evaluated** instead of reporting either support or rejection.

A failure judgment would require the specific model output, declared observation, comparison condition, and decision rule already distinguished in the canonical source. Geometric equality alone does not settle that result.

37 Velocity Inversion, Counterfactuals, and Model Comparison

The canonical inverse and counterfactual calculations cannot be represented as run without forward-model outputs and a specified data likelihood. The current North American manuscript does not claim to have estimated a posterior, performed an ablation, or fitted an observed velocity field.

37.1 Forward Model

In the original architecture, **Forward Model** is a parameterization, forward prediction or inverse-analysis step of plate-motion and inherited-motion reconstruction. The North American evidence package does not include a solved event-specific output to enter this step. No new branch, fitting parameter, prediction target, best-fit value or model comparison is manufactured in this first draft.

The canonical function of the subsection remains visible so that later authorized material can enter without changing the paper's hierarchy or retroactively strengthening its current evidence status.

37.2 Inversion Target

In the original architecture, **Inversion Target** is a parameterization, forward prediction or inverse-analysis step of plate-motion and inherited-motion reconstruction. The North American evidence package does not include a solved event-specific output to enter this step. No new branch, fitting parameter, prediction target, best-fit value or model comparison is manufactured in this first draft.

The canonical function of the subsection remains visible so that later authorized material can enter without changing the paper's hierarchy or retroactively strengthening its current evidence status.

37.3 Velocity Likelihood

The heading **Velocity Likelihood** is retained as the canonical quantitative-comparison slot for plate-motion and inherited-motion reconstruction. Evaluation requires a pair of corresponding modeled and observed quantities with compatible coordinates, uncertainties and lineage. The Denali sources supply no completed pair of that kind for this topic, and therefore no test statistic or significance is claimed here.

The only numeric residual presently documented is the source-specific first-leg minus aggregated second-leg **chord-length** difference; it is not substituted for an unrelated geological model residual.

37.4 Posterior Distribution

The canonical subsection **Posterior Distribution** remains in the original Paper-III order. Its function belongs to plate-motion and inherited-motion reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

37.5 Regularization

The canonical subsection **Regularization** remains in the original Paper-III order. Its function belongs to plate-motion and inherited-motion reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

37.6 Counterfactual Model Family

The **Counterfactual Model Family** position tests whether an apparently successful result actually depends on the event-derived state rather than an unfixed background assumption. This is part of the original manuscript architecture. No pair of North American with-event/without-event model solutions is present in the supplied records; no ablation result or difference statistic is produced.

The present equal-chord geometry is preserved as input provenance and is not used as a surrogate for a causal counterfactual.

37.7 No-Impulse Counterfactual

The **No-Impulse Counterfactual** position tests whether an apparently successful result actually depends on the event-derived state rather than an unfixed background assumption. This is part of the original manuscript architecture. No pair of North American with-event/without-event model solutions is present in the supplied records; no ablation result or difference statistic is produced.

The present equal-chord geometry is preserved as input provenance and is not used as a surrogate for a causal counterfactual.

37.8 No-Boundary-Inheritance Counterfactual

The **No-Boundary-Inheritance Counterfactual** position tests whether an apparently successful result actually depends on the event-derived state rather than an unfixed background assumption. This is part of the original manuscript architecture. No pair of North American with-event/without-event model solutions is present in the supplied records; no ablation result or difference statistic is produced.

The present equal-chord geometry is preserved as input provenance and is not used as a surrogate for a causal counterfactual.

37.9 No-Density-Inheritance Counterfactual

The **No-Density-Inheritance Counterfactual** position tests whether an apparently successful result actually depends on the event-derived state rather than an unfixed background assumption. This is part of the original manuscript architecture. No pair of North American with-event/without-event model solutions is present in the supplied records; no ablation result or difference statistic is produced.

The present equal-chord geometry is preserved as input provenance and is not used as a surrogate for a causal counterfactual.

37.10 Leave-One-Event-Out Motion Test

The **Leave-One-Event-Out Motion Test** position tests whether an apparently successful result actually depends on the event-derived state rather than an unfixed background assumption. This is part of the original manuscript architecture. No pair of North American with-event/without-event model solutions is present in the supplied records; no ablation result or difference statistic is produced.

The present equal-chord geometry is preserved as input provenance and is not used as a surrogate for a causal counterfactual.

37.11 Randomized Event Test

The **Randomized Event Test** position tests whether an apparently successful result actually depends on the event-derived state rather than an unfixed background assumption. This is part of the original manuscript architecture. No pair of North American with-event/without-event model solutions is present in the supplied records; no ablation result or difference statistic is produced.

The present equal-chord geometry is preserved as input provenance and is not used as a surrogate for a causal counterfactual.

37.12 Model Evidence

In the original architecture, **Model Evidence** is a parameterization, forward prediction or inverse-analysis step of plate-motion and inherited-motion reconstruction. The North American evidence package does not include a solved event-specific output to enter this step. No new branch, fitting parameter, prediction target, best-fit value or model comparison is manufactured in this first draft.

The canonical function of the subsection remains visible so that later authorized material can enter without changing the paper's hierarchy or retroactively strengthening its current evidence status.

37.13 Held-Out Prediction

In the original architecture, **Held-Out Prediction** is a parameterization, forward prediction or inverse-analysis step of plate-motion and inherited-motion reconstruction. The North American evidence package does not include a solved event-specific output to enter this step. No new branch, fitting parameter, prediction target, best-fit value or model comparison is manufactured in this first draft.

The canonical function of the subsection remains visible so that later authorized material can enter without changing the paper's hierarchy or retroactively strengthening its current evidence status.

37.14 Parameter Identifiability

In the original architecture, **Parameter Identifiability** is a parameterization, forward prediction or inverse-analysis step of plate-motion and inherited-motion reconstruction. The North American evidence package does not include a solved event-specific output to enter this step. No new branch, fitting parameter, prediction target, best-fit value or model comparison is manufactured in this first draft.

The canonical function of the subsection remains visible so that later authorized material can enter without changing the paper's hierarchy or retroactively strengthening its current evidence status.

37.15 Causal Contribution Fraction

The canonical subsection **Causal Contribution Fraction** remains in the original Paper-III order. Its function belongs to plate-motion and inherited-motion reconstruction; the North American project files do not provide

a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

37.16 Inversion Falsifier

The original Paper III uses **Inversion Falsifier** as a bounded failure condition for its plate-motion and inherited-motion reconstruction. No such North American test has been executed with an independent predicted field and a frozen observation vector. Accordingly this manuscript records **not evaluated** instead of reporting either support or rejection.

A failure judgment would require the specific model output, declared observation, comparison condition, and decision rule already distinguished in the canonical source. Geometric equality alone does not settle that result.

38 Plate-Motion Viability and Falsification

The original motion viability set remains a downstream output. Absent an event-produced velocity field, the current status of those motion results is ‘not evaluated’; there is no implied proof of impossibility and no proof of success.

38.1 Complete Motion Parameter Vector

The canonical subsection **Complete Motion Parameter Vector** identifies a field, tensor, state or operator necessary to the plate-motion and inherited-motion reconstruction. It is a model object, not an observation created by writing down its heading. The available North American inputs are the geographic coordinate set and the calculated chords; they do not determine this object’s spatial distribution or time evolution.

The field therefore remains a named architectural position without numerical assignments, physical closure or a claimed simulation result.

38.2 Plate-Motion Viable Set

Plate-Motion Viable Set has the canonical role of relating physical plate state or modeled movement to an independently observable kinematic quantity. The Malpelo-to-Arctic route contains no computed plate velocity, inertia, rotation, acceleration or torque series. Its waypoint order is not a plate trajectory, so this item remains **not evaluated**.

The distinction prevents route geometry from being used to fit modern plate motion after the fact. Any eventual plate-motion output would have to come from the original paper’s eligible shared model, not from a free value supplied by this adaptation.

38.3 Motion Falsification Matrix

The original Paper III uses **Motion Falsification Matrix** as a bounded failure condition for its plate-motion and inherited-motion reconstruction. No such North American test has been executed with an independent predicted field and a frozen observation vector. Accordingly this manuscript records **not evaluated** instead of reporting either support or rejection.

A failure judgment would require the specific model output, declared observation, comparison condition, and decision rule already distinguished in the canonical source. Geometric equality alone does not settle that result.

38.4 Plate-Motion Success Standard

Plate-Motion Success Standard has the canonical role of relating physical plate state or modeled movement to an independently observable kinematic quantity. The Malpelo-to-Arctic route contains no computed plate velocity, inertia, rotation, acceleration or torque series. Its waypoint order is not a plate trajectory, so this item remains **not evaluated**.

The distinction prevents route geometry from being used to fit modern plate motion after the fact. Any eventual plate-motion output would have to come from the original paper's eligible shared model, not from a free value supplied by this adaptation.

39 Plate-Motion Synthesis

The canonical motion synthesis collects results from chapters 27–38. In this manuscript no physical plate-motion solution has yet been carried forward from the Denali geometric source. No motion conclusion is strengthened by the matched chord construction.

40 Inherited Compression and Mountain-System Localization

Denali is explicitly a named middle mountain in the source, but the geometric turn lies approximately 222.678 km away along the selected corridor. The chapter preserves the original distinction between proposed localized structural expression and a calculated physical compression or uplift field.

Geometric/geological distinction: A near-middle regional mountain, a geometric turn, and a calculated physical maximum-response location are three different objects. The files supply the first two roles as names and coordinates; they do not compute the third.

40.1 Mountain Systems as Forward-Modeled Responses

Denali is the named middle-mountain location in the author's regional architecture. The **turn** is at 62.3843° N, 146.8997° W; the **mountain** is not located at that turn but along the first second-leg chord. This manuscript does not claim to have calculated the uplift or compression responsible for the mountain, and it does not substitute geometric vicinity for mountain-system forward modeling.

40.2 Mountain-System State Vector

The canonical subsection **Mountain-System State Vector** identifies a field, tensor, state or operator necessary to the surface-structure reconstruction. It is a model object, not an observation created by writing down its heading. The available North American inputs are the geographic coordinate set and the calculated chords; they do not determine this object's spatial distribution or time evolution.

The field therefore remains a named architectural position without numerical assignments, physical closure or a claimed simulation result.

40.3 Inherited Compression Field

The canonical subsection **Inherited Compression Field** identifies a field, tensor, state or operator necessary to the surface-structure reconstruction. It is a model object, not an observation created by writing down its heading. The available North American inputs are the geographic coordinate set and the calculated chords; they do not determine this object's spatial distribution or time evolution.

The field therefore remains a named architectural position without numerical assignments, physical closure or a claimed simulation result.

40.4 Convergence Field

The canonical subsection **Convergence Field** identifies a field, tensor, state or operator necessary to the surface-structure reconstruction. It is a model object, not an observation created by writing down its heading. The available North American inputs are the geographic coordinate set and the calculated chords; they do not determine this object's spatial distribution or time evolution.

The field therefore remains a named architectural position without numerical assignments, physical closure or a claimed simulation result.

40.5 Shortening Tensor

The canonical subsection **Shortening Tensor** identifies a field, tensor, state or operator necessary to the surface-structure reconstruction. It is a model object, not an observation created by writing down its heading. The available North American inputs are the geographic coordinate set and the calculated chords; they do not determine this object's spatial distribution or time evolution.

The field therefore remains a named architectural position without numerical assignments, physical closure or a claimed simulation result.

40.6 Cumulative Shortening

The canonical subsection **Cumulative Shortening** remains in the original Paper-III order. Its function belongs to surface-structure reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

40.7 Inherited Orogenic Susceptibility

The canonical subsection **Inherited Orogenic Susceptibility** remains in the original Paper-III order. Its function belongs to surface-structure reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

40.8 Predicted Orogenic Domain

The canonical subsection **Predicted Orogenic Domain** remains in the original Paper-III order. Its function belongs to surface-structure reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

40.9 Mountain-Location Residual

The heading **Mountain-Location Residual** is retained as the canonical quantitative-comparison slot for surface-structure reconstruction. Evaluation requires a pair of corresponding modeled and observed quantities with compatible coordinates, uncertainties and lineage. The Denali sources supply no completed pair of that kind for this topic, and therefore no test statistic or significance is claimed here.

The only numeric residual presently documented is the source-specific first-leg minus aggregated second-leg **chord-length** difference; it is not substituted for an unrelated geological model residual.

40.10 Mountain-Specific Event Attribution

Mountain-Specific Event Attribution refers to a structural or material feature in the original Paper-III reconstruction. The Denali research identifies selected geographic roles and a corridor through named modern regions, but does not independently derive the proposed feature from a calculated physical history. The name of a waypoint is not a boundary-formation, uplift or basin-formation result.

This subsection consequently preserves the canonical role and distinguishes geographical association from demonstrated causal origin. No unprovided local stratigraphy or material movement is added.

40.11 No Prominence Selection

The original **No Prominence Selection** section constrains model or feature selection and statistical flexibility in surface-structure reconstruction. In this North American source the midpoint and route were stipulated first, then an entrance coordinate was solved to impose the chord equality. That conditional construction must be retained in the selection record.

No null simulations, penalized model evidence, independent confirmation threshold or probability value are reported for the adapted candidate. The method slot is inherited, not falsely marked as executed.

40.12 Mountain-Localization Falsifier

The original Paper III uses **Mountain-Localization Falsifier** as a bounded failure condition for its surface-structure reconstruction. No such North American test has been executed with an independent predicted field and a frozen observation vector. Accordingly this manuscript records **not evaluated** instead of reporting either support or rejection.

A failure judgment would require the specific model output, declared observation, comparison condition, and decision rule already distinguished in the canonical source. Geometric equality alone does not settle that result.

41 Mountain Growth, Orientation, and Structural Amplification

The source names Denali without producing an elevation-history calculation, crustal-thickness model, or structural-amplification solution. Physical claims about mountain growth remain bounded as candidate interpretation; no new temporal history is invented.

41.1 Surface-Elevation Evolution

The canonical subsection **Surface-Elevation Evolution** remains in the original Paper-III order. Its function belongs to surface-structure reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

41.2 Crustal Thickening

The canonical subsection **Crustal Thickening** remains in the original Paper-III order. Its function belongs to surface-structure reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

41.3 Shortening-to-Thickening Screening

The canonical subsection **Shortening-to-Thickening Screening** remains in the original Paper-III order. Its function belongs to surface-structure reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

41.4 Isostatic Response

The canonical subsection **Isostatic Response** remains in the original Paper-III order. Its function belongs to surface-structure reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

41.5 Orogenic Orientation

Orogenic Orientation is retained in its canonical mathematical or georeferencing position. For the supplied North American candidate, all stations are represented by present-reference coordinates on the stated sphere: the entrance is fitted after the turn and route are specified, rather than independently author-fixed. The first-leg and segmented-second-leg definitions are held fixed across this manuscript.

No transformation to a plate-fixed event-time reconstruction is asserted, and no geographical orientation is promoted into a physical displacement or material-inheritance vector.

41.6 Orientation Residual

The heading **Orientation Residual** is retained as the canonical quantitative-comparison slot for surface-structure reconstruction. Evaluation requires a pair of corresponding modeled and observed quantities with compatible coordinates, uncertainties and lineage. The Denali sources supply no completed pair of that kind for this topic, and therefore no test statistic or significance is claimed here.

The only numeric residual presently documented is the source-specific first-leg minus aggregated second-leg **chord-length** difference; it is not substituted for an unrelated geological model residual.

41.7 Mountain-Length and Width Metrics

Mountain-Length and Width Metrics refers to a structural or material feature in the original Paper-III reconstruction. The Denali research identifies selected geographic roles and a corridor through named modern regions, but does not independently derive the proposed feature from a calculated physical history. The name of a waypoint is not a boundary-formation, uplift or basin-formation result.

This subsection consequently preserves the canonical role and distinguishes geographical association from demonstrated causal origin. No unprovided local stratigraphy or material movement is added.

41.8 Structural Amplification

The canonical subsection **Structural Amplification** remains in the original Paper-III order. Its function belongs to surface-structure reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

41.9 With-Inheritance Counterfactual

The **With-Inheritance Counterfactual** position tests whether an apparently successful result actually depends on the event-derived state rather than an unfixed background assumption. This is part of the original manuscript architecture. No pair of North American with-event/without-event model solutions is present in the supplied records; no ablation result or difference statistic is produced.

The present equal-chord geometry is preserved as input provenance and is not used as a surrogate for a causal counterfactual.

41.10 Orogenic Necessity Score

The heading **Orogenic Necessity Score** is retained as the canonical quantitative-comparison slot for surface-structure reconstruction. Evaluation requires a pair of corresponding modeled and observed quantities with compatible coordinates, uncertainties and lineage. The Denali sources supply no completed pair of that kind for this topic, and therefore no test statistic or significance is claimed here.

The only numeric residual presently documented is the source-specific first-leg minus aggregated second-leg **chord-length** difference; it is not substituted for an unrelated geological model residual.

41.11 Mountain Chronology

The subsection **Mountain Chronology** is an original Paper-III chronology or state-evolution requirement. The North American reference notes do not provide event-specific radiometric ages, dated structural transitions or event-time plate reconstructions. The designation “64 Ma” is therefore retained only as the author’s research-branch label.

No time ordering among additional physical events, chronometric probability distribution or modeled geological lag is generated from static present-day coordinates.

41.12 Mountain-Growth Falsifier

The original Paper III uses **Mountain-Growth Falsifier** as a bounded failure condition for its surface-structure reconstruction. No such North American test has been executed with an independent predicted field and a frozen observation vector. Accordingly this manuscript records **not evaluated** instead of reporting either support or rejection.

A failure judgment would require the specific model output, declared observation, comparison condition, and decision rule already distinguished in the canonical source. Geometric equality alone does not settle that result.

42 Terminal Zones, Trench Development, and Descent

The northern terminal location in the source is a coordinate in an Arctic target domain. A terminal point is not the same as demonstrated material descent, trench excavation or later trench inheritance. The original distinctions remain, but no new trench mechanism is disclosed.

42.1 Trench-System State Vector

The canonical subsection **Trench-System State Vector** identifies a field, tensor, state or operator necessary to the surface-structure reconstruction. It is a model object, not an observation created by writing down its heading. The available North American inputs are the geographic coordinate set and the calculated chords; they do not determine this object’s spatial distribution or time evolution.

The field therefore remains a named architectural position without numerical assignments, physical closure or a claimed simulation result.

42.2 Candidate Terminal-Inheritance Field

The canonical subsection **Candidate Terminal-Inheritance Field** identifies a field, tensor, state or operator necessary to the surface-structure reconstruction. It is a model object, not an observation created by writing down its heading. The available North American inputs are the geographic coordinate set and the calculated chords; they do not determine this object’s spatial distribution or time evolution.

The field therefore remains a named architectural position without numerical assignments, physical closure or a claimed simulation result.

42.3 Descent Velocity

The subsection **Descent Velocity** concerns the surface-structure reconstruction and requires physical parameters or state outputs that are not disclosed by the source files. The North American project record establishes a coordinate-and-chord construction, not the constitutive or energetic quantity required here. This position is **reserved** under the defined proprietary-content boundary; no coefficient, branch, event state or numerical result is inserted.

For source continuity, the geometric corridor can be named as a candidate input but cannot be represented as the completed physical field to which this heading refers.

42.4 Descent Mass Flux

The subsection **Descent Mass Flux** concerns the surface-structure reconstruction and requires physical parameters or state outputs that are not disclosed by the source files. The North American project record establishes a coordinate-and-chord construction, not the constitutive or energetic quantity required here. This position is **reserved** under the defined proprietary-content boundary; no coefficient, branch, event state or numerical result is inserted.

For source continuity, the geometric corridor can be named as a candidate input but cannot be represented as the completed physical field to which this heading refers.

42.5 Inherited Weakness and Descent Initiation

The subsection **Inherited Weakness and Descent Initiation** concerns the surface-structure reconstruction and requires physical parameters or state outputs that are not disclosed by the source files. The North American project record establishes a coordinate-and-chord construction, not the constitutive or energetic quantity required here. This position is **reserved** under the defined proprietary-content boundary; no coefficient, branch, event state or numerical result is inserted.

For source continuity, the geometric corridor can be named as a candidate input but cannot be represented as the completed physical field to which this heading refers.

42.6 Trench-Depth Evolution

Trench-Depth Evolution refers to a structural or material feature in the original Paper-III reconstruction. The Denali research identifies selected geographic roles and a corridor through named modern regions, but does not independently derive the proposed feature from a calculated physical history. The name of a waypoint is not a boundary-formation, uplift or basin-formation result.

This subsection consequently preserves the canonical role and distinguishes geographical association from demonstrated causal origin. No unprovided local stratigraphy or material movement is added.

42.7 Trench Axis

Trench Axis refers to a structural or material feature in the original Paper-III reconstruction. The Denali research identifies selected geographic roles and a corridor through named modern regions, but does not independently derive the proposed feature from a calculated physical history. The name of a waypoint is not a boundary-formation, uplift or basin-formation result.

This subsection consequently preserves the canonical role and distinguishes geographical association from demonstrated causal origin. No unprovided local stratigraphy or material movement is added.

42.8 Trench Curvature

Trench Curvature refers to a structural or material feature in the original Paper-III reconstruction. The Denali research identifies selected geographic roles and a corridor through named modern regions, but does not independently derive the proposed feature from a calculated physical history. The name of a waypoint is not a boundary-formation, uplift or basin-formation result.

This subsection consequently preserves the canonical role and distinguishes geographical association from demonstrated causal origin. No unprovided local stratigraphy or material movement is added.

42.9 Terminal Exit Versus Later Trench

The source identifies a selected northern trench coordinate at 80.5° N, 140° E. The modern point is a route endpoint. No physical exit, excavation, descending slab, or terminal material inheritance is demonstrated by the chord calculation. The original conceptual distinction between an initiating terminal event and a later geological trench therefore remains intact.

42.10 Terminal Necessity Score

The heading **Terminal Necessity Score** is retained as the canonical quantitative-comparison slot for surface-structure reconstruction. Evaluation requires a pair of corresponding modeled and observed quantities with compatible coordinates, uncertainties and lineage. The Denali sources supply no completed pair of that kind for this topic, and therefore no test statistic or significance is claimed here.

The only numeric residual presently documented is the source-specific first-leg minus aggregated second-leg **chord-length** difference; it is not substituted for an unrelated geological model residual.

42.11 Trench-System Falsifier

The original Paper III uses **Trench-System Falsifier** as a bounded failure condition for its surface-structure reconstruction. No such North American test has been executed with an independent predicted field and a frozen observation vector. Accordingly this manuscript records **not evaluated** instead of reporting either support or rejection.

A failure judgment would require the specific model output, declared observation, comparison condition, and decision rule already distinguished in the canonical source. Geometric equality alone does not settle that result.

43 Underthrusting, Bending, and Excavation Alternatives

The original source separates alternative trench mechanisms. The North American substitution does not select one or add excavation, bending or underthrusting mechanics; no share fractions or energy budgets are calculated.

43.1 Competing Trench-Formation Branches

Competing Trench-Formation Branches refers to a structural or material feature in the original Paper-III reconstruction. The Denali research identifies selected geographic roles and a corridor through named modern regions, but does not independently derive the proposed feature from a calculated physical history. The name of a waypoint is not a boundary-formation, uplift or basin-formation result.

This subsection consequently preserves the canonical role and distinguishes geographical association from demonstrated causal origin. No unprovided local stratigraphy or material movement is added.

43.2 Underthrusting Velocity

The canonical subsection **Underthrusting Velocity** remains in the original Paper-III order. Its function belongs to surface-structure reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

43.3 Bending Curvature

The canonical subsection **Bending Curvature** remains in the original Paper-III order. Its function belongs to surface-structure reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

43.4 Flexural Rigidity

The canonical subsection **Flexural Rigidity** remains in the original Paper-III order. Its function belongs to surface-structure reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

43.5 Flexural Response

The canonical subsection **Flexural Response** remains in the original Paper-III order. Its function belongs to surface-structure reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

43.6 Bending Energy

The subsection **Bending Energy** concerns the surface-structure reconstruction and requires physical parameters or state outputs that are not disclosed by the source files. The North American project record establishes a coordinate-and-chord construction, not the constitutive or energetic quantity required here. This position is **reserved** under the defined proprietary-content boundary; no coefficient, branch, event state or numerical result is inserted.

For source continuity, the geometric corridor can be named as a candidate input but cannot be represented as the completed physical field to which this heading refers.

43.7 Excavation Contribution

The subsection **Excavation Contribution** concerns the surface-structure reconstruction and requires physical parameters or state outputs that are not disclosed by the source files. The North American project record establishes a coordinate-and-chord construction, not the constitutive or energetic quantity required here. This position

is **reserved** under the defined proprietary-content boundary; no coefficient, branch, event state or numerical result is inserted.

For source continuity, the geometric corridor can be named as a candidate input but cannot be represented as the completed physical field to which this heading refers.

43.8 Contribution Fractions

The canonical subsection **Contribution Fractions** remains in the original Paper-III order. Its function belongs to surface-structure reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

43.9 Mechanism-Specific Predictions

In the original architecture, **Mechanism-Specific Predictions** is a parameterization, forward prediction or inverse-analysis step of surface-structure reconstruction. The North American evidence package does not include a solved event-specific output to enter this step. No new branch, fitting parameter, prediction target, best-fit value or model comparison is manufactured in this first draft.

The canonical function of the subsection remains visible so that later authorized material can enter without changing the paper's hierarchy or retroactively strengthening its current evidence status.

43.10 Branch-Selection Rule

The original **Branch-Selection Rule** section constrains model or feature selection and statistical flexibility in surface-structure reconstruction. In this North American source the midpoint and route were stipulated first, then an entrance coordinate was solved to impose the chord equality. That conditional construction must be retained in the selection record.

No null simulations, penalized model evidence, independent confirmation threshold or probability value are reported for the adapted candidate. The method slot is inherited, not falsely marked as executed.

43.11 Trench-Mechanism Falsifier

The original Paper III uses **Trench-Mechanism Falsifier** as a bounded failure condition for its surface-structure reconstruction. No such North American test has been executed with an independent predicted field and a frozen observation vector. Accordingly this manuscript records **not evaluated** instead of reporting either support or rejection.

A failure judgment would require the specific model output, declared observation, comparison condition, and decision rule already distinguished in the canonical source. Geometric equality alone does not settle that result.

44 Ridge, Rift, and Spreading-System Inheritance

A route station in the Aleutian region is not itself a predicted rift or spreading axis. The original chapter retains its output classes, without invented North American spreading ages, melt paths or asymmetric ridge predictions.

44.1 Extensional Boundary Field

The canonical subsection **Extensional Boundary Field** identifies a field, tensor, state or operator necessary to the surface-structure reconstruction. It is a model object, not an observation created by writing down its heading. The available North American inputs are the geographic coordinate set and the calculated chords; they do not determine this object's spatial distribution or time evolution.

The field therefore remains a named architectural position without numerical assignments, physical closure or a claimed simulation result.

44.2 Inherited Rift Potential

The canonical subsection **Inherited Rift Potential** identifies a field, tensor, state or operator necessary to the surface-structure reconstruction. It is a model object, not an observation created by writing down its heading. The available North American inputs are the geographic coordinate set and the calculated chords; they do not determine this object's spatial distribution or time evolution.

The field therefore remains a named architectural position without numerical assignments, physical closure or a claimed simulation result.

44.3 Rift-Axis Orientation

Rift-Axis Orientation refers to a structural or material feature in the original Paper-III reconstruction. The Denali research identifies selected geographic roles and a corridor through named modern regions, but does not independently derive the proposed feature from a calculated physical history. The name of a waypoint is not a boundary-formation, uplift or basin-formation result.

This subsection consequently preserves the canonical role and distinguishes geographical association from demonstrated causal origin. No unprovided local stratigraphy or material movement is added.

44.4 Lithospheric Thinning

The canonical subsection **Lithospheric Thinning** remains in the original Paper-III order. Its function belongs to surface-structure reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

44.5 Decompression and Melt Potential

The subsection **Decompression and Melt Potential** concerns the surface-structure reconstruction and requires physical parameters or state outputs that are not disclosed by the source files. The North American project record establishes a coordinate-and-chord construction, not the constitutive or energetic quantity required here. This position is **reserved** under the defined proprietary-content boundary; no coefficient, branch, event state or numerical result is inserted.

For source continuity, the geometric corridor can be named as a candidate input but cannot be represented as the completed physical field to which this heading refers.

44.6 New-Material Production

The canonical subsection **New-Material Production** remains in the original Paper-III order. Its function belongs to surface-structure reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

44.7 Age-Distance Prediction

The heading **Age-Distance Prediction** is retained as the canonical quantitative-comparison slot for surface-structure reconstruction. Evaluation requires a pair of corresponding modeled and observed quantities with compatible coordinates, uncertainties and lineage. The Denali sources supply no completed pair of that kind for this topic, and therefore no test statistic or significance is claimed here.

The only numeric residual presently documented is the source-specific first-leg minus aggregated second-leg **chord-length** difference; it is not substituted for an unrelated geological model residual.

44.8 Symmetry and Asymmetry

The canonical subsection **Symmetry and Asymmetry** remains in the original Paper-III order. Its function belongs to surface-structure reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

44.9 Transform Offsets

The canonical subsection **Transform Offsets** remains in the original Paper-III order. Its function belongs to surface-structure reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

44.10 Ridge Counterfactual

The **Ridge Counterfactual** position tests whether an apparently successful result actually depends on the event-derived state rather than an unfixed background assumption. This is part of the original manuscript architecture. No pair of North American with-event/without-event model solutions is present in the supplied records; no ablation result or difference statistic is produced.

The present equal-chord geometry is preserved as input provenance and is not used as a surrogate for a causal counterfactual.

44.11 Ridge-System Falsifier

The original Paper III uses **Ridge-System Falsifier** as a bounded failure condition for its surface-structure reconstruction. No such North American test has been executed with an independent predicted field and a frozen observation vector. Accordingly this manuscript records **not evaluated** instead of reporting either support or rejection.

A failure judgment would require the specific model output, declared observation, comparison condition, and decision rule already distinguished in the canonical source. Geometric equality alone does not settle that result.

45 Basin Formation, Subsidence, and Inversion

The original basin-state and inversion terms remain part of the architecture. No source-supplied basin subsidence series or material balance was available, and no basin outcome can be deduced from the fixed-turn chord equality alone.

45.1 Basin State Vector

The canonical subsection **Basin State Vector** identifies a field, tensor, state or operator necessary to the surface-structure reconstruction. It is a model object, not an observation created by writing down its heading. The available North American inputs are the geographic coordinate set and the calculated chords; they do not determine this object's spatial distribution or time evolution.

The field therefore remains a named architectural position without numerical assignments, physical closure or a claimed simulation result.

45.2 Event-Created Basin Components

Event-Created Basin Components refers to a structural or material feature in the original Paper-III reconstruction. The Denali research identifies selected geographic roles and a corridor through named modern regions, but does not independently derive the proposed feature from a calculated physical history. The name of a waypoint is not a boundary-formation, uplift or basin-formation result.

This subsection consequently preserves the canonical role and distinguishes geographical association from demonstrated causal origin. No unprovided local stratigraphy or material movement is added.

45.3 Total Subsidence Evolution

The canonical subsection **Total Subsidence Evolution** remains in the original Paper-III order. Its function belongs to surface-structure reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

45.4 Subsidence Rate

The canonical subsection **Subsidence Rate** remains in the original Paper-III order. Its function belongs to surface-structure reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

45.5 Accommodation Space

The canonical subsection **Accommodation Space** remains in the original Paper-III order. Its function belongs to surface-structure reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

45.6 Sediment Balance

The canonical subsection **Sediment Balance** remains in the original Paper-III order. Its function belongs to surface-structure reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

45.7 Basin Shape Tensor

The canonical subsection **Basin Shape Tensor** identifies a field, tensor, state or operator necessary to the surface-structure reconstruction. It is a model object, not an observation created by writing down its heading. The available North American inputs are the geographic coordinate set and the calculated chords; they do not determine this object's spatial distribution or time evolution.

The field therefore remains a named architectural position without numerical assignments, physical closure or a claimed simulation result.

45.8 Basin Orientation

Basin Orientation refers to a structural or material feature in the original Paper-III reconstruction. The Denali research identifies selected geographic roles and a corridor through named modern regions, but does not independently derive the proposed feature from a calculated physical history. The name of a waypoint is not a boundary-formation, uplift or basin-formation result.

This subsection consequently preserves the canonical role and distinguishes geographical association from demonstrated causal origin. No unprovided local stratigraphy or material movement is added.

45.9 Basin Inversion

In the original architecture, **Basin Inversion** is a parameterization, forward prediction or inverse-analysis step of surface-structure reconstruction. The North American evidence package does not include a solved event-specific output to enter this step. No new branch, fitting parameter, prediction target, best-fit value or model comparison is manufactured in this first draft.

The canonical function of the subsection remains visible so that later authorized material can enter without changing the paper's hierarchy or retroactively strengthening its current evidence status.

45.10 Event-Sequence Inversion

In the original architecture, **Event-Sequence Inversion** is a parameterization, forward prediction or inverse-analysis step of surface-structure reconstruction. The North American evidence package does not include a solved event-specific output to enter this step. No new branch, fitting parameter, prediction target, best-fit value or model comparison is manufactured in this first draft.

The canonical function of the subsection remains visible so that later authorized material can enter without changing the paper's hierarchy or retroactively strengthening its current evidence status.

45.11 Basin Chronology Vector

The subsection **Basin Chronology Vector** is an original Paper-III chronology or state-evolution requirement. The North American reference notes do not provide event-specific radiometric ages, dated structural transitions or event-time plate reconstructions. The designation "64 Ma" is therefore retained only as the author's research-branch label.

No time ordering among additional physical events, chronometric probability distribution or modeled geological lag is generated from static present-day coordinates.

45.12 Basin Counterfactual

The **Basin Counterfactual** position tests whether an apparently successful result actually depends on the event-derived state rather than an unfixed background assumption. This is part of the original manuscript architecture. No pair of North American with-event/without-event model solutions is present in the supplied records; no ablation result or difference statistic is produced.

The present equal-chord geometry is preserved as input provenance and is not used as a surrogate for a causal counterfactual.

45.13 Basin Falsifier

The original Paper III uses **Basin Falsifier** as a bounded failure condition for its surface-structure reconstruction. No such North American test has been executed with an independent predicted field and a frozen observation vector. Accordingly this manuscript records **not evaluated** instead of reporting either support or rejection.

A failure judgment would require the specific model output, declared observation, comparison condition, and decision rule already distinguished in the canonical source. Geometric equality alone does not settle that result.

46 Continental Plateaus and Persistent Uplift Nodes

Plateau and persistent-uplift sections are preserved without assigning a regional plateau response to the candidate path. The supplied records do not compute long-term surface-elevation support or uplift persistence.

46.1 Plateau State

The canonical subsection **Plateau State** identifies a field, tensor, state or operator necessary to the surface-structure reconstruction. It is a model object, not an observation created by writing down its heading. The

available North American inputs are the geographic coordinate set and the calculated chords; they do not determine this object's spatial distribution or time evolution.

The field therefore remains a named architectural position without numerical assignments, physical closure or a claimed simulation result.

46.2 Persistent Uplift Potential

The canonical subsection **Persistent Uplift Potential** identifies a field, tensor, state or operator necessary to the surface-structure reconstruction. It is a model object, not an observation created by writing down its heading. The available North American inputs are the geographic coordinate set and the calculated chords; they do not determine this object's spatial distribution or time evolution.

The field therefore remains a named architectural position without numerical assignments, physical closure or a claimed simulation result.

46.3 Plateau Elevation Budget

The canonical subsection **Plateau Elevation Budget** remains in the original Paper-III order. Its function belongs to surface-structure reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

46.4 Dynamic Support

The canonical subsection **Dynamic Support** remains in the original Paper-III order. Its function belongs to surface-structure reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

46.5 Plateau Persistence

The canonical subsection **Plateau Persistence** remains in the original Paper-III order. Its function belongs to surface-structure reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

46.6 Plateau Edge Prediction

In the original architecture, **Plateau Edge Prediction** is a parameterization, forward prediction or inverse-analysis step of surface-structure reconstruction. The North American evidence package does not include a solved

event-specific output to enter this step. No new branch, fitting parameter, prediction target, best-fit value or model comparison is manufactured in this first draft.

The canonical function of the subsection remains visible so that later authorized material can enter without changing the paper's hierarchy or retroactively strengthening its current evidence status.

46.7 Plateau Counterfactual

The **Plateau Counterfactual** position tests whether an apparently successful result actually depends on the event-derived state rather than an unfixed background assumption. This is part of the original manuscript architecture. No pair of North American with-event/without-event model solutions is present in the supplied records; no ablation result or difference statistic is produced.

The present equal-chord geometry is preserved as input provenance and is not used as a surrogate for a causal counterfactual.

46.8 Plateau Falsifier

The original Paper III uses **Plateau Falsifier** as a bounded failure condition for its surface-structure reconstruction. No such North American test has been executed with an independent predicted field and a frozen observation vector. Accordingly this manuscript records **not evaluated** instead of reporting either support or rejection.

A failure judgment would require the specific model output, declared observation, comparison condition, and decision rule already distinguished in the canonical source. Geometric equality alone does not settle that result.

47 Volcanic-Province and Melt-Path Localization

Volcanic localizations and melt paths require physical and chronological predictions that are not in the permitted data. No melt-transport mechanism or new volcanic-province association is introduced from geographical proximity to the corridor.

47.1 Volcanic-Province State Vector

The canonical subsection **Volcanic-Province State Vector** identifies a field, tensor, state or operator necessary to the surface-structure reconstruction. It is a model object, not an observation created by writing down its heading. The available North American inputs are the geographic coordinate set and the calculated chords; they do not determine this object's spatial distribution or time evolution.

The field therefore remains a named architectural position without numerical assignments, physical closure or a claimed simulation result.

47.2 Melt-Generation Potential

The subsection **Melt-Generation Potential** concerns the surface-structure reconstruction and requires physical parameters or state outputs that are not disclosed by the source files. The North American project record establishes a coordinate-and-chord construction, not the constitutive or energetic quantity required here. This position is **reserved** under the defined proprietary-content boundary; no coefficient, branch, event state or numerical result is inserted.

For source continuity, the geometric corridor can be named as a candidate input but cannot be represented as the completed physical field to which this heading refers.

47.3 Melt Production Rate

The subsection **Melt Production Rate** concerns the surface-structure reconstruction and requires physical parameters or state outputs that are not disclosed by the source files. The North American project record establishes a coordinate-and-chord construction, not the constitutive or energetic quantity required here. This position is **reserved** under the defined proprietary-content boundary; no coefficient, branch, event state or numerical result is inserted.

For source continuity, the geometric corridor can be named as a candidate input but cannot be represented as the completed physical field to which this heading refers.

47.4 Melt Migration

The subsection **Melt Migration** concerns the surface-structure reconstruction and requires physical parameters or state outputs that are not disclosed by the source files. The North American project record establishes a coordinate-and-chord construction, not the constitutive or energetic quantity required here. This position is **reserved** under the defined proprietary-content boundary; no coefficient, branch, event state or numerical result is inserted.

For source continuity, the geometric corridor can be named as a candidate input but cannot be represented as the completed physical field to which this heading refers.

47.5 Damage-Guided Melt Transport

The subsection **Damage-Guided Melt Transport** concerns the surface-structure reconstruction and requires physical parameters or state outputs that are not disclosed by the source files. The North American project record establishes a coordinate-and-chord construction, not the constitutive or energetic quantity required here. This position is **reserved** under the defined proprietary-content boundary; no coefficient, branch, event state or numerical result is inserted.

For source continuity, the geometric corridor can be named as a candidate input but cannot be represented as the completed physical field to which this heading refers.

47.6 Melt-Path Network

The subsection **Melt-Path Network** concerns the surface-structure reconstruction and requires physical parameters or state outputs that are not disclosed by the source files. The North American project record establishes a coordinate-and-chord construction, not the constitutive or energetic quantity required here. This position is **reserved** under the defined proprietary-content boundary; no coefficient, branch, event state or numerical result is inserted.

For source continuity, the geometric corridor can be named as a candidate input but cannot be represented as the completed physical field to which this heading refers.

47.7 Volcanic Localization Score

The heading **Volcanic Localization Score** is retained as the canonical quantitative-comparison slot for surface-structure reconstruction. Evaluation requires a pair of corresponding modeled and observed quantities with compatible coordinates, uncertainties and lineage. The Denali sources supply no completed pair of that kind for this topic, and therefore no test statistic or significance is claimed here.

The only numeric residual presently documented is the source-specific first-leg minus aggregated second-leg **chord-length** difference; it is not substituted for an unrelated geological model residual.

47.8 Volcanic Chronology

The subsection **Volcanic Chronology** is an original Paper-III chronology or state-evolution requirement. The North American reference notes do not provide event-specific radiometric ages, dated structural transitions or event-time plate reconstructions. The designation “64 Ma” is therefore retained only as the author’s research-branch label.

No time ordering among additional physical events, chronometric probability distribution or modeled geological lag is generated from static present-day coordinates.

47.9 Event-Volcanism Lag

The subsection **Event-Volcanism Lag** is an original Paper-III chronology or state-evolution requirement. The North American reference notes do not provide event-specific radiometric ages, dated structural transitions or event-time plate reconstructions. The designation “64 Ma” is therefore retained only as the author’s research-branch label.

No time ordering among additional physical events, chronometric probability distribution or modeled geological lag is generated from static present-day coordinates.

47.10 Volcanic Counterfactual

The **Volcanic Counterfactual** position tests whether an apparently successful result actually depends on the event-derived state rather than an unfixed background assumption. This is part of the original manuscript architecture. No pair of North American with-event/without-event model solutions is present in the supplied records; no ablation result or difference statistic is produced.

The present equal-chord geometry is preserved as input provenance and is not used as a surrogate for a causal counterfactual.

47.11 No Universal Volcanic Assignment

The canonical subsection **No Universal Volcanic Assignment** remains in the original Paper-III order. Its function belongs to surface-structure reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

47.12 Volcanic-Province Falsifier

The original Paper III uses **Volcanic-Province Falsifier** as a bounded failure condition for its surface-structure reconstruction. No such North American test has been executed with an independent predicted field and a frozen observation vector. Accordingly this manuscript records **not evaluated** instead of reporting either support or rejection.

A failure judgment would require the specific model output, declared observation, comparison condition, and decision rule already distinguished in the canonical source. Geometric equality alone does not settle that result.

48 Displaced Terranes, Sutures, and Orogenic Assembly

Terrane lineage and suture history cannot be deduced from present station coordinates. The original material-identity and temporal-registration burdens are unchanged; the project files do not supply a North American terrane transfer trajectory.

48.1 Terrane Identity

Terrane Identity refers to a structural or material feature in the original Paper-III reconstruction. The Denali research identifies selected geographic roles and a corridor through named modern regions, but does not independently derive the proposed feature from a calculated physical history. The name of a waypoint is not a boundary-formation, uplift or basin-formation result.

This subsection consequently preserves the canonical role and distinguishes geographical association from demonstrated causal origin. No unprovided local stratigraphy or material movement is added.

48.2 Terrane Trajectory

Terrane Trajectory refers to a structural or material feature in the original Paper-III reconstruction. The Denali research identifies selected geographic roles and a corridor through named modern regions, but does not independently derive the proposed feature from a calculated physical history. The name of a waypoint is not a boundary-formation, uplift or basin-formation result.

This subsection consequently preserves the canonical role and distinguishes geographical association from demonstrated causal origin. No unprovided local stratigraphy or material movement is added.

48.3 Terrane Transfer Event

Terrane Transfer Event refers to a structural or material feature in the original Paper-III reconstruction. The Denali research identifies selected geographic roles and a corridor through named modern regions, but does not independently derive the proposed feature from a calculated physical history. The name of a waypoint is not a boundary-formation, uplift or basin-formation result.

This subsection consequently preserves the canonical role and distinguishes geographical association from demonstrated causal origin. No unprovided local stratigraphy or material movement is added.

48.4 Suture Definition

The canonical subsection **Suture Definition** remains in the original Paper-III order. Its function belongs to surface-structure reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

48.5 Suture-Formation Condition

The canonical subsection **Suture-Formation Condition** remains in the original Paper-III order. Its function belongs to surface-structure reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

48.6 Suture Orientation

Suture Orientation is retained in its canonical mathematical or georeferencing position. For the supplied North American candidate, all stations are represented by present-reference coordinates on the stated sphere: the entrance is fitted after the turn and route are specified, rather than independently author-fixed. The first-leg and segmented-second-leg definitions are held fixed across this manuscript.

No transformation to a plate-fixed event-time reconstruction is asserted, and no geographical orientation is promoted into a physical displacement or material-inheritance vector.

48.7 Orogenic Assembly Graph

The canonical subsection **Orogenic Assembly Graph** remains in the original Paper-III order. Its function belongs to surface-structure reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

48.8 Assembly Chronology

The subsection **Assembly Chronology** is an original Paper-III chronology or state-evolution requirement. The North American reference notes do not provide event-specific radiometric ages, dated structural transitions or event-time plate reconstructions. The designation “64 Ma” is therefore retained only as the author’s research-branch label.

No time ordering among additional physical events, chronometric probability distribution or modeled geological lag is generated from static present-day coordinates.

48.9 Material-Identity Residual

The heading **Material-Identity Residual** is retained as the canonical quantitative-comparison slot for surface-structure reconstruction. Evaluation requires a pair of corresponding modeled and observed quantities with compatible coordinates, uncertainties and lineage. The Denali sources supply no completed pair of that kind for this topic, and therefore no test statistic or significance is claimed here.

The only numeric residual presently documented is the source-specific first-leg minus aggregated second-leg **chord-length** difference; it is not substituted for an unrelated geological model residual.

48.10 Terrane-Path Residual

The heading **Terrane-Path Residual** is retained as the canonical quantitative-comparison slot for surface-structure reconstruction. Evaluation requires a pair of corresponding modeled and observed quantities with compatible coordinates, uncertainties and lineage. The Denali sources supply no completed pair of that kind for this topic, and therefore no test statistic or significance is claimed here.

The only numeric residual presently documented is the source-specific first-leg minus aggregated second-leg **chord-length** difference; it is not substituted for an unrelated geological model residual.

48.11 Assembly Counterfactual

The **Assembly Counterfactual** position tests whether an apparently successful result actually depends on the event-derived state rather than an unfixed background assumption. This is part of the original manuscript architecture. No pair of North American with-event/without-event model solutions is present in the supplied records; no ablation result or difference statistic is produced.

The present equal-chord geometry is preserved as input provenance and is not used as a surrogate for a causal counterfactual.

48.12 Terrane and Suture Falsifier

The original Paper III uses **Terrane and Suture Falsifier** as a bounded failure condition for its surface-structure reconstruction. No such North American test has been executed with an independent predicted field and a frozen observation vector. Accordingly this manuscript records **not evaluated** instead of reporting either support or rejection.

A failure judgment would require the specific model output, declared observation, comparison condition, and decision rule already distinguished in the canonical source. Geometric equality alone does not settle that result.

49 Surface-Structure Chronology and Counterfactuals

The canonical paper tests whether one sequence predicts structures and their dates rather than merely assigning recognizable modern features. The route is author selected, so a fit to its included waypoints is not an advance structural prediction.

49.1 Unified Structure Catalog

The canonical subsection **Unified Structure Catalog** remains in the original Paper-III order. Its function belongs to surface-structure reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

49.2 Structure Chronology Vector

The subsection **Structure Chronology Vector** is an original Paper-III chronology or state-evolution requirement. The North American reference notes do not provide event-specific radiometric ages, dated structural transitions or event-time plate reconstructions. The designation “64 Ma” is therefore retained only as the author’s research-branch label.

No time ordering among additional physical events, chronometric probability distribution or modeled geological lag is generated from static present-day coordinates.

49.3 Event-to-Structure Dependency Matrix

The canonical subsection **Event-to-Structure Dependency Matrix** remains in the original Paper-III order. Its function belongs to surface-structure reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

49.4 Chronological Precedence

The subsection **Chronological Precedence** is an original Paper-III chronology or state-evolution requirement. The North American reference notes do not provide event-specific radiometric ages, dated structural transitions or event-time plate reconstructions. The designation “64 Ma” is therefore retained only as the author’s research-branch label.

No time ordering among additional physical events, chronometric probability distribution or modeled geological lag is generated from static present-day coordinates.

49.5 Chronological Lag

The subsection **Chronological Lag** is an original Paper-III chronology or state-evolution requirement. The North American reference notes do not provide event-specific radiometric ages, dated structural transitions or event-time plate reconstructions. The designation “64 Ma” is therefore retained only as the author’s research-branch label.

No time ordering among additional physical events, chronometric probability distribution or modeled geological lag is generated from static present-day coordinates.

49.6 Chronological Likelihood

The heading **Chronological Likelihood** is retained as the canonical quantitative-comparison slot for surface-structure reconstruction. Evaluation requires a pair of corresponding modeled and observed quantities with compatible coordinates, uncertainties and lineage. The Denali sources supply no completed pair of that kind for this topic, and therefore no test statistic or significance is claimed here.

The only numeric residual presently documented is the source-specific first-leg minus aggregated second-leg **chord-length** difference; it is not substituted for an unrelated geological model residual.

49.7 Structure-by-Structure Counterfactual

The **Structure-by-Structure Counterfactual** position tests whether an apparently successful result actually depends on the event-derived state rather than an unfixed background assumption. This is part of the original manuscript architecture. No pair of North American with-event/without-event model solutions is present in the supplied records; no ablation result or difference statistic is produced.

The present equal-chord geometry is preserved as input provenance and is not used as a surrogate for a causal counterfactual.

49.8 Leave-One-Event-Out Surface Test

The **Leave-One-Event-Out Surface Test** position tests whether an apparently successful result actually depends on the event-derived state rather than an unfixed background assumption. This is part of the original manuscript

architecture. No pair of North American with-event/without-event model solutions is present in the supplied records; no ablation result or difference statistic is produced.

The present equal-chord geometry is preserved as input provenance and is not used as a surrogate for a causal counterfactual.

49.9 Leave-One-Structure-Out Prediction

The **Leave-One-Structure-Out Prediction** position tests whether an apparently successful result actually depends on the event-derived state rather than an unfixed background assumption. This is part of the original manuscript architecture. No pair of North American with-event/without-event model solutions is present in the supplied records; no ablation result or difference statistic is produced.

The present equal-chord geometry is preserved as input provenance and is not used as a surrogate for a causal counterfactual.

49.10 Randomized Event-Structure Test

The **Randomized Event-Structure Test** position tests whether an apparently successful result actually depends on the event-derived state rather than an unfixed background assumption. This is part of the original manuscript architecture. No pair of North American with-event/without-event model solutions is present in the supplied records; no ablation result or difference statistic is produced.

The present equal-chord geometry is preserved as input provenance and is not used as a surrogate for a causal counterfactual.

49.11 Structure Complexity Penalty

The original **Structure Complexity Penalty** section constrains model or feature selection and statistical flexibility in surface-structure reconstruction. In this North American source the midpoint and route were stipulated first, then an entrance coordinate was solved to impose the chord equality. That conditional construction must be retained in the selection record.

No null simulations, penalized model evidence, independent confirmation threshold or probability value are reported for the adapted candidate. The method slot is inherited, not falsely marked as executed.

49.12 Composite Surface Score

The heading **Composite Surface Score** is retained as the canonical quantitative-comparison slot for surface-structure reconstruction. Evaluation requires a pair of corresponding modeled and observed quantities with compatible coordinates, uncertainties and lineage. The Denali sources supply no completed pair of that kind for this topic, and therefore no test statistic or significance is claimed here.

The only numeric residual presently documented is the source-specific first-leg minus aggregated second-leg **chord-length** difference; it is not substituted for an unrelated geological model residual.

49.13 Chronology and Counterfactual Falsifier

The original Paper III uses **Chronology and Counterfactual Falsifier** as a bounded failure condition for its surface-structure reconstruction. No such North American test has been executed with an independent predicted field and a frozen observation vector. Accordingly this manuscript records **not evaluated** instead of reporting either support or rejection.

A failure judgment would require the specific model output, declared observation, comparison condition, and decision rule already distinguished in the canonical source. Geometric equality alone does not settle that result.

50 Surface-Expression Viability and Falsification

A surface viability verdict requires completed forward predictions and independently evaluated observations. The current Denali records provide a documented geometric relationship but no global surface-expression viable set.

50.1 Complete Surface Parameter Vector

The canonical subsection **Complete Surface Parameter Vector** identifies a field, tensor, state or operator necessary to the surface-structure reconstruction. It is a model object, not an observation created by writing down its heading. The available North American inputs are the geographic coordinate set and the calculated chords; they do not determine this object's spatial distribution or time evolution.

The field therefore remains a named architectural position without numerical assignments, physical closure or a claimed simulation result.

50.2 Surface Viable Set

The canonical subsection **Surface Viable Set** remains in the original Paper-III order. Its function belongs to surface-structure reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

50.3 Nested Global Viability

The canonical subsection **Nested Global Viability** remains in the original Paper-III order. Its function belongs to surface-structure reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

50.4 Surface-Expression Falsification Matrix

The original Paper III uses **Surface-Expression Falsification Matrix** as a bounded failure condition for its surface-structure reconstruction. No such North American test has been executed with an independent predicted field and a frozen observation vector. Accordingly this manuscript records **not evaluated** instead of reporting either support or rejection.

A failure judgment would require the specific model output, declared observation, comparison condition, and decision rule already distinguished in the canonical source. Geometric equality alone does not settle that result.

50.5 Surface-Expression Success Standard

The canonical subsection **Surface-Expression Success Standard** remains in the original Paper-III order. Its function belongs to surface-structure reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

51 Surface-Structure Synthesis

The original section synthesizes mountain, trench, ridge, basin, plateau, volcanic and terrane outputs. None is independently calculated here, so the synthesis records qualified non-results rather than an apparently global solution.

52 Global Event Chronology and Time-Slice Architecture

The working 64 Ma label is not an independent series of geological dates. Paper III must not quietly turn that label into a dated event sequence, stratigraphic lag, or historical time-slice solution; no such dataset is supplied.

52.1 Chronology as a Causal Constraint

The subsection **Chronology as a Causal Constraint** is an original Paper-III chronology or state-evolution requirement. The North American reference notes do not provide event-specific radiometric ages, dated structural transitions or event-time plate reconstructions. The designation “64 Ma” is therefore retained only as the author’s research-branch label.

No time ordering among additional physical events, chronometric probability distribution or modeled geological lag is generated from static present-day coordinates.

52.2 Forward-Time Coordinate

The subsection **Forward-Time Coordinate** is an original Paper-III chronology or state-evolution requirement. The North American reference notes do not provide event-specific radiometric ages, dated structural transitions or event-time plate reconstructions. The designation “64 Ma” is therefore retained only as the author’s research-branch label.

No time ordering among additional physical events, chronometric probability distribution or modeled geological lag is generated from static present-day coordinates.

52.3 Event Phase Vector

The subsection **Event Phase Vector** is an original Paper-III chronology or state-evolution requirement. The North American reference notes do not provide event-specific radiometric ages, dated structural transitions or event-time plate reconstructions. The designation “64 Ma” is therefore retained only as the author’s research-branch label.

No time ordering among additional physical events, chronometric probability distribution or modeled geological lag is generated from static present-day coordinates.

52.4 Event-State Update

The canonical subsection **Event-State Update** identifies a field, tensor, state or operator necessary to the chronology and reference-frame reconstruction. It is a model object, not an observation created by writing down its heading. The available North American inputs are the geographic coordinate set and the calculated chords; they do not determine this object's spatial distribution or time evolution.

The field therefore remains a named architectural position without numerical assignments, physical closure or a claimed simulation result.

52.5 Time-Slice Grid

The subsection **Time-Slice Grid** is an original Paper-III chronology or state-evolution requirement. The North American reference notes do not provide event-specific radiometric ages, dated structural transitions or event-time plate reconstructions. The designation "64 Ma" is therefore retained only as the author's research-branch label.

No time ordering among additional physical events, chronometric probability distribution or modeled geological lag is generated from static present-day coordinates.

52.6 Adaptive Temporal Resolution

The canonical subsection **Adaptive Temporal Resolution** remains in the original Paper-III order. Its function belongs to chronology and reference-frame reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

52.7 Event Overlap

The canonical subsection **Event Overlap** remains in the original Paper-III order. Its function belongs to chronology and reference-frame reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

52.8 Chronological Dependency Graph

The subsection **Chronological Dependency Graph** is an original Paper-III chronology or state-evolution requirement. The North American reference notes do not provide event-specific radiometric ages, dated structural transitions or event-time plate reconstructions. The designation "64 Ma" is therefore retained only as the author's research-branch label.

No time ordering among additional physical events, chronometric probability distribution or modeled geological lag is generated from static present-day coordinates.

52.9 Chronological Violation Count

The subsection **Chronological Violation Count** is an original Paper-III chronology or state-evolution requirement. The North American reference notes do not provide event-specific radiometric ages, dated structural transitions or event-time plate reconstructions. The designation “64 Ma” is therefore retained only as the author’s research-branch label.

No time ordering among additional physical events, chronometric probability distribution or modeled geological lag is generated from static present-day coordinates.

52.10 Chronological Residual

The *64 Ma* designation is the working research-program label in the supplied materials, not a list of dated stages or dated station observations. Neither *Denali Exact.pdf* nor its workbook specifies an event-time coordinate transformation, independently constrained initiation age, or dated arrival sequence for the corridor. Hence no predicted-minus-observed chronological residual follows from the eight-segment chord arithmetic. The canonical chronology comparison is **unexecuted** for this substitution.

52.11 Temporal Cross-Validation

The canonical subsection **Temporal Cross-Validation** remains in the original Paper-III order. Its function belongs to chronology and reference-frame reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

52.12 Chronology Falsifier

The original Paper III uses **Chronology Falsifier** as a bounded failure condition for its chronology and reference-frame reconstruction. No such North American test has been executed with an independent predicted field and a frozen observation vector. Accordingly this manuscript records **not evaluated** instead of reporting either support or rejection.

A failure judgment would require the specific model output, declared observation, comparison condition, and decision rule already distinguished in the canonical source. Geometric equality alone does not settle that result.

53 Continental Displacement and Paleogeographic Reconstruction

Contemporary longitude and latitude used in the chord construction are not paleogeographically restored locations. The original plate-reconstruction metrics remain defined slots, but no alternative continental displacements or mapped ancient coastlines are introduced.

53.1 Continents as Evolving Material Domains

The canonical subsection **Continents as Evolving Material Domains** remains in the original Paper-III order. Its function belongs to chronology and reference-frame reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

53.2 Material-Point Evolution

The canonical subsection **Material-Point Evolution** remains in the original Paper-III order. Its function belongs to chronology and reference-frame reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

53.3 Continental Displacement

The canonical subsection **Continental Displacement** remains in the original Paper-III order. Its function belongs to chronology and reference-frame reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

53.4 Shape Evolution

The canonical subsection **Shape Evolution** remains in the original Paper-III order. Its function belongs to chronology and reference-frame reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

53.5 Area Accounting

The canonical subsection **Area Accounting** remains in the original Paper-III order. Its function belongs to chronology and reference-frame reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

53.6 Reconstructed Continental Dataset

The source chapter uses **Reconstructed Continental Dataset** for independent observational comparison in chronology and reference-frame reconstruction. The project files for this adaptation do not supply a frozen dataset,

acquisition method, uncertainty covariance, age control or data-to-model mapping for that category. No external values are quietly borrowed to populate it.

The required distinction is between existing public scientific data in principle and data actually accessed, transformed and scored in this North American draft. Only the latter could support a reported result, and it is not present here.

53.7 Centroid Residual

The heading **Centroid Residual** is retained as the canonical quantitative-comparison slot for chronology and reference-frame reconstruction. Evaluation requires a pair of corresponding modeled and observed quantities with compatible coordinates, uncertainties and lineage. The Denali sources supply no completed pair of that kind for this topic, and therefore no test statistic or significance is claimed here.

The only numeric residual presently documented is the source-specific first-leg minus aggregated second-leg **chord-length** difference; it is not substituted for an unrelated geological model residual.

53.8 Shape-Overlap Residual

The heading **Shape-Overlap Residual** is retained as the canonical quantitative-comparison slot for chronology and reference-frame reconstruction. Evaluation requires a pair of corresponding modeled and observed quantities with compatible coordinates, uncertainties and lineage. The Denali sources supply no completed pair of that kind for this topic, and therefore no test statistic or significance is claimed here.

The only numeric residual presently documented is the source-specific first-leg minus aggregated second-leg **chord-length** difference; it is not substituted for an unrelated geological model residual.

53.9 Boundary Distance

The heading **Boundary Distance** is retained as the canonical quantitative-comparison slot for chronology and reference-frame reconstruction. Evaluation requires a pair of corresponding modeled and observed quantities with compatible coordinates, uncertainties and lineage. The Denali sources supply no completed pair of that kind for this topic, and therefore no test statistic or significance is claimed here.

The only numeric residual presently documented is the source-specific first-leg minus aggregated second-leg **chord-length** difference; it is not substituted for an unrelated geological model residual.

53.10 Adjacency Matrix

The canonical subsection **Adjacency Matrix** remains in the original Paper-III order. Its function belongs to chronology and reference-frame reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

53.11 Paleomagnetic Residual

The heading **Paleomagnetic Residual** is retained as the canonical quantitative-comparison slot for chronology and reference-frame reconstruction. Evaluation requires a pair of corresponding modeled and observed quantities

with compatible coordinates, uncertainties and lineage. The Denali sources supply no completed pair of that kind for this topic, and therefore no test statistic or significance is claimed here.

The only numeric residual presently documented is the source-specific first-leg minus aggregated second-leg **chord-length** difference; it is not substituted for an unrelated geological model residual.

53.12 Reconstruction Ensemble

The canonical subsection **Reconstruction Ensemble** remains in the original Paper-III order. Its function belongs to chronology and reference-frame reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

53.13 Continental Reconstruction Score

The heading **Continental Reconstruction Score** is retained as the canonical quantitative-comparison slot for chronology and reference-frame reconstruction. Evaluation requires a pair of corresponding modeled and observed quantities with compatible coordinates, uncertainties and lineage. The Denali sources supply no completed pair of that kind for this topic, and therefore no test statistic or significance is claimed here.

The only numeric residual presently documented is the source-specific first-leg minus aggregated second-leg **chord-length** difference; it is not substituted for an unrelated geological model residual.

53.14 Continental-Displacement Falsifier

The original Paper III uses **Continental-Displacement Falsifier** as a bounded failure condition for its chronology and reference-frame reconstruction. No such North American test has been executed with an independent predicted field and a frozen observation vector. Accordingly this manuscript records **not evaluated** instead of reporting either support or rejection.

A failure judgment would require the specific model output, declared observation, comparison condition, and decision rule already distinguished in the canonical source. Geometric equality alone does not settle that result.

54 Event Paths in Moving Plates and Reference Frames

The modern-coordinate equal-leg route is a reproducible present-frame geometry. The canonical moving-frame chapter requires event-time target coordinates and transformations that the Denali note does not furnish; it would be improper to transport the route through time without them.

54.1 Present Coordinates Are Not Event Coordinates

The direct first-leg chord and eight second-leg chords are calculated between supplied **present-day geographic** stations. The source provides no time-dependent frame transformation for the route, and the nominal 64 Ma research label is not a reconstruction operator. Thus the reproduced current geometry is not a calculated ancient path, and this section records that limit without assigning any unprovided motion history.

54.2 Material Target Domains

The canonical subsection **Material Target Domains** remains in the original Paper-III order. Its function belongs to chronology and reference-frame reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

54.3 Inertial Event Path

The canonical subsection **Inertial Event Path** remains in the original Paper-III order. Its function belongs to chronology and reference-frame reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

54.4 Rotating-Earth Velocity

The canonical subsection **Rotating-Earth Velocity** remains in the original Paper-III order. Its function belongs to chronology and reference-frame reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

54.5 Material Motion During the Event

The canonical subsection **Material Motion During the Event** remains in the original Paper-III order. Its function belongs to chronology and reference-frame reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

54.6 Path Through a Moving Interior

The canonical subsection **Path Through a Moving Interior** remains in the original Paper-III order. Its function belongs to chronology and reference-frame reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers

I–II.

54.7 Event-Path Transport to the Present

The available Denali source represents every station in present-day latitude and longitude. It does not supply a time-dependent geographic transformation, rotation history, material parcel identifiers, or dated positions with which to transport the proposed sequence from an earlier epoch to the present. Thus the plotted route is a **modern-coordinate construction**, not a reconstructed ancient track. The original Paper-III transport section remains the location for a qualified chronological reconstruction, but no such output is asserted by this draft.

54.8 Path-to-Boundary Intersection

Path-to-Boundary Intersection refers to a structural or material feature in the original Paper-III reconstruction. The Denali research identifies selected geographic roles and a corridor through named modern regions, but does not independently derive the proposed feature from a calculated physical history. The name of a waypoint is not a boundary-formation, uplift or basin-formation result.

This subsection consequently preserves the canonical role and distinguishes geographical association from demonstrated causal origin. No unprovided local stratigraphy or material movement is added.

54.9 Path Uncertainty Ensemble

The canonical subsection **Path Uncertainty Ensemble** remains in the original Paper-III order. Its function belongs to chronology and reference-frame reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

54.10 Path-Target Residual

The one documented residual is the **constructed length residual**, $\Delta L = c(E, M) - \sum_{k=0}^{7} c(W_k, W_{k+1})$, which is approximately zero when the entrance is fitted to the chosen second-leg sum. This is not a residual between predicted geological target locations and independently observed ancient targets. No such observed target set, time-indexed prediction, or positional uncertainty field is supplied for Paper III, so no path-to-structure success statistic can be computed from the recorded chord match alone.

54.11 Moving-Frame Falsifier

The original Paper III uses **Moving-Frame Falsifier** as a bounded failure condition for its chronology and reference-frame reconstruction. No such North American test has been executed with an independent predicted field and a frozen observation vector. Accordingly this manuscript records **not evaluated** instead of reporting either support or rejection.

A failure judgment would require the specific model output, declared observation, comparison condition, and decision rule already distinguished in the canonical source. Geometric equality alone does not settle that result.

55 Global Gravity, Seismic, Magnetic, and Heat-Flow Predictions

The original paper requires independently reproducible predictions in gravity, seismic velocity, magnetic and heat-flow data. No North American forward geophysical model or corridor residual field appears in the source files, so all such outputs are untested.

55.1 Global Prediction Vector

The canonical subsection **Global Prediction Vector** identifies a field, tensor, state or operator necessary to the global geophysical prediction. It is a model object, not an observation created by writing down its heading. The available North American inputs are the geographic coordinate set and the calculated chords; they do not determine this object's spatial distribution or time evolution.

The field therefore remains a named architectural position without numerical assignments, physical closure or a claimed simulation result.

55.2 Gravity Field

The canonical subsection **Gravity Field** identifies a field, tensor, state or operator necessary to the global geophysical prediction. It is a model object, not an observation created by writing down its heading. The available North American inputs are the geographic coordinate set and the calculated chords; they do not determine this object's spatial distribution or time evolution.

The field therefore remains a named architectural position without numerical assignments, physical closure or a claimed simulation result.

55.3 Geoid Prediction

In the original architecture, **Geoid Prediction** is a parameterization, forward prediction or inverse-analysis step of global geophysical prediction. The North American evidence package does not include a solved event-specific output to enter this step. No new branch, fitting parameter, prediction target, best-fit value or model comparison is manufactured in this first draft.

The canonical function of the subsection remains visible so that later authorized material can enter without changing the paper's hierarchy or retroactively strengthening its current evidence status.

55.4 Seismic Velocity

The canonical subsection **Seismic Velocity** remains in the original Paper-III order. Its function belongs to global geophysical prediction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

55.5 Seismic Anisotropy

The canonical subsection **Seismic Anisotropy** remains in the original Paper-III order. Its function belongs to global geophysical prediction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

55.6 Attenuation

The canonical subsection **Attenuation** remains in the original Paper-III order. Its function belongs to global geophysical prediction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

55.7 Tomographic Forward Operator

In the original architecture, **Tomographic Forward Operator** is a parameterization, forward prediction or inverse-analysis step of global geophysical prediction. The North American evidence package does not include a solved event-specific output to enter this step. No new branch, fitting parameter, prediction target, best-fit value or model comparison is manufactured in this first draft.

The canonical function of the subsection remains visible so that later authorized material can enter without changing the paper's hierarchy or retroactively strengthening its current evidence status.

55.8 Magnetic Field

The canonical subsection **Magnetic Field** identifies a field, tensor, state or operator necessary to the global geophysical prediction. It is a model object, not an observation created by writing down its heading. The available North American inputs are the geographic coordinate set and the calculated chords; they do not determine this object's spatial distribution or time evolution.

The field therefore remains a named architectural position without numerical assignments, physical closure or a claimed simulation result.

55.9 Heat Flow

The canonical subsection **Heat Flow** remains in the original Paper-III order. Its function belongs to global geophysical prediction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

55.10 Global Observation Residual

The North American source supplies one fitted present-coordinate length relation and a prescribed ordered corridor. It contains no paired modeled-versus-observed global boundary, motion, basin, or mountain data suitable for a Paper-III global residual. The numerical near-zero $L_1 - L_2$ is a constructed geometric residual and must not be substituted for such an empirical prediction residual. This canonical result slot remains **uncomputed**.

55.11 Corridor Detection Statistic

The canonical subsection **Corridor Detection Statistic** remains in the original Paper-III order. Its function belongs to global geophysical prediction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

55.12 Resolution Test

The canonical subsection **Resolution Test** remains in the original Paper-III order. Its function belongs to global geophysical prediction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

55.13 Geophysical Falsifier

The original Paper III uses **Geophysical Falsifier** as a bounded failure condition for its global geophysical prediction. No such North American test has been executed with an independent predicted field and a frozen observation vector. Accordingly this manuscript records **not evaluated** instead of reporting either support or rejection.

A failure judgment would require the specific model output, declared observation, comparison condition, and decision rule already distinguished in the canonical source. Geometric equality alone does not settle that result.

56 Resource Provinces and Mineralization as Advance Predictions

The source paper retains a secondary resource-prediction chapter, but the user explicitly excludes mineralogy and related intellectual property from this public mirror. The headings remain in canonical order and the body is intentionally reserved without a prospectivity map, deposit type or economic implication.

56.1 Secondary Predictive Status

The subsection **Secondary Predictive Status** occupies its canonical position in the original Paper-III secondary-prediction chapter. Under the investigator's explicit public-disclosure boundary, no North American mineralogy, mineral-system field, resource-location result, commodity inference or prospectivity calculation is furnished. This item is **reserved**, not an evaluated regional prediction.

Its position is retained so the structure mirrors the original manuscript; it contributes no result to the present claims or the Paper-IV handoff.

56.2 Mineral-System State Vector

The subsection **Mineral-System State Vector** occupies its canonical position in the original Paper-III secondary-prediction chapter. Under the investigator's explicit public-disclosure boundary, no North American mineralogy,

mineral-system field, resource-location result, commodity inference or prospectivity calculation is furnished. This item is **reserved**, not an evaluated regional prediction.

Its position is retained so the structure mirrors the original manuscript; it contributes no result to the present claims or the Paper-IV handoff.

56.3 Event-Derived Prospectivity Field

The subsection **Event-Derived Prospectivity Field** occupies its canonical position in the original Paper-III secondary-prediction chapter. Under the investigator's explicit public-disclosure boundary, no North American mineralogy, mineral-system field, resource-location result, commodity inference or prospectivity calculation is furnished. This item is **reserved**, not an evaluated regional prediction.

Its position is retained so the structure mirrors the original manuscript; it contributes no result to the present claims or the Paper-IV handoff.

56.4 Predicted Province Domain

The subsection **Predicted Province Domain** occupies its canonical position in the original Paper-III secondary-prediction chapter. Under the investigator's explicit public-disclosure boundary, no North American mineralogy, mineral-system field, resource-location result, commodity inference or prospectivity calculation is furnished. This item is **reserved**, not an evaluated regional prediction.

Its position is retained so the structure mirrors the original manuscript; it contributes no result to the present claims or the Paper-IV handoff.

56.5 Resource-Type Classification

The subsection **Resource-Type Classification** occupies its canonical position in the original Paper-III secondary-prediction chapter. Under the investigator's explicit public-disclosure boundary, no North American mineralogy, mineral-system field, resource-location result, commodity inference or prospectivity calculation is furnished. This item is **reserved**, not an evaluated regional prediction.

Its position is retained so the structure mirrors the original manuscript; it contributes no result to the present claims or the Paper-IV handoff.

56.6 Blind Prediction Requirement

The subsection **Blind Prediction Requirement** occupies its canonical position in the original Paper-III secondary-prediction chapter. Under the investigator's explicit public-disclosure boundary, no North American mineralogy, mineral-system field, resource-location result, commodity inference or prospectivity calculation is furnished. This item is **reserved**, not an evaluated regional prediction.

Its position is retained so the structure mirrors the original manuscript; it contributes no result to the present claims or the Paper-IV handoff.

56.7 Hit and False-Positive Rates

The subsection **Hit and False-Positive Rates** occupies its canonical position in the original Paper-III secondary-prediction chapter. Under the investigator's explicit public-disclosure boundary, no North American mineralogy, mineral-system field, resource-location result, commodity inference or prospectivity calculation is furnished. This item is **reserved**, not an evaluated regional prediction.

Its position is retained so the structure mirrors the original manuscript; it contributes no result to the present claims or the Paper-IV handoff.

56.8 Area-Normalized Enrichment

The subsection **Area-Normalized Enrichment** occupies its canonical position in the original Paper-III secondary-prediction chapter. Under the investigator's explicit public-disclosure boundary, no North American mineralogy, mineral-system field, resource-location result, commodity inference or prospectivity calculation is furnished. This item is **reserved**, not an evaluated regional prediction.

Its position is retained so the structure mirrors the original manuscript; it contributes no result to the present claims or the Paper-IV handoff.

56.9 Resource-Prediction Falsifier

The subsection **Resource-Prediction Falsifier** occupies its canonical position in the original Paper-III secondary-prediction chapter. Under the investigator's explicit public-disclosure boundary, no North American mineralogy, mineral-system field, resource-location result, commodity inference or prospectivity calculation is furnished. This item is **reserved**, not an evaluated regional prediction.

Its position is retained so the structure mirrors the original manuscript; it contributes no result to the present claims or the Paper-IV handoff.

57 Sequence-Wide Statistical Null Models

The original null-model chapter concerns the significance of a complete reconstructed event sequence. The exact-distance source does not report such null simulations; matching a chord after selecting an entrance to satisfy the match is not an independently calibrated probability result.

57.1 Null Models Must Preserve Relevant Structure

In the original architecture, **Null Models Must Preserve Relevant Structure** is a parameterization, forward prediction or inverse-analysis step of global statistical evaluation and causal adjudication. The North American evidence package does not include a solved event-specific output to enter this step. No new branch, fitting parameter, prediction target, best-fit value or model comparison is manufactured in this first draft.

The canonical function of the subsection remains visible so that later authorized material can enter without changing the paper's hierarchy or retroactively strengthening its current evidence status.

57.2 Uniform Spatial Null

The original **Uniform Spatial Null** section constrains model or feature selection and statistical flexibility in global statistical evaluation and causal adjudication. In this North American source the midpoint and route were stipulated first, then an entrance coordinate was solved to impose the chord equality. That conditional construction must be retained in the selection record.

No null simulations, penalized model evidence, independent confirmation threshold or probability value are reported for the adapted candidate. The method slot is inherited, not falsely marked as executed.

57.3 Geological-Opportunity Null

The original **Geological-Opportunity Null** section constrains model or feature selection and statistical flexibility in global statistical evaluation and causal adjudication. In this North American source the midpoint and route

were stipulated first, then an entrance coordinate was solved to impose the chord equality. That conditional construction must be retained in the selection record.

No null simulations, penalized model evidence, independent confirmation threshold or probability value are reported for the adapted candidate. The method slot is inherited, not falsely marked as executed.

57.4 Boundary-Conditioned Null

Boundary-Conditioned Null refers to a structural or material feature in the original Paper-III reconstruction. The Denali research identifies selected geographic roles and a corridor through named modern regions, but does not independently derive the proposed feature from a calculated physical history. The name of a waypoint is not a boundary-formation, uplift or basin-formation result.

This subsection consequently preserves the canonical role and distinguishes geographical association from demonstrated causal origin. No unprovided local stratigraphy or material movement is added.

57.5 Chronology-Permutation Null

The subsection **Chronology-Permutation Null** is an original Paper-III chronology or state-evolution requirement. The North American reference notes do not provide event-specific radiometric ages, dated structural transitions or event-time plate reconstructions. The designation “64 Ma” is therefore retained only as the author’s research-branch label.

No time ordering among additional physical events, chronometric probability distribution or modeled geological lag is generated from static present-day coordinates.

57.6 Orientation Null

The original **Orientation Null** section constrains model or feature selection and statistical flexibility in global statistical evaluation and causal adjudication. In this North American source the midpoint and route were stipulated first, then an entrance coordinate was solved to impose the chord equality. That conditional construction must be retained in the selection record.

No null simulations, penalized model evidence, independent confirmation threshold or probability value are reported for the adapted candidate. The method slot is inherited, not falsely marked as executed.

57.7 Event-Count Null

The original **Event-Count Null** section constrains model or feature selection and statistical flexibility in global statistical evaluation and causal adjudication. In this North American source the midpoint and route were stipulated first, then an entrance coordinate was solved to impose the chord equality. That conditional construction must be retained in the selection record.

No null simulations, penalized model evidence, independent confirmation threshold or probability value are reported for the adapted candidate. The method slot is inherited, not falsely marked as executed.

57.8 Plate-Preserving Null

The original **Plate-Preserving Null** section constrains model or feature selection and statistical flexibility in global statistical evaluation and causal adjudication. In this North American source the midpoint and route were stipulated first, then an entrance coordinate was solved to impose the chord equality. That conditional construction must be retained in the selection record.

No null simulations, penalized model evidence, independent confirmation threshold or probability value are reported for the adapted candidate. The method slot is inherited, not falsely marked as executed.

57.9 Complete Sequence Statistic

The recorded numerical comparison is a **single constructed equal-leg distance condition**, not a global sequence-wide statistic. The first-leg direct chord and second-leg sum of eight chords use different endpoint/path definitions, and the entrance was fitted to enforce their equality. The sources do not specify a sampling population, count of alternative sequences, null-distribution simulations, or an independent test statistic. **Sequence-wide numerical status: uncomputed.**

57.10 Empirical Null Probability

The heading **Empirical Null Probability** is retained as the canonical quantitative-comparison slot for global statistical evaluation and causal adjudication. Evaluation requires a pair of corresponding modeled and observed quantities with compatible coordinates, uncertainties and lineage. The Denali sources supply no completed pair of that kind for this topic, and therefore no test statistic or significance is claimed here.

The only numeric residual presently documented is the source-specific first-leg minus aggregated second-leg **chord-length** difference; it is not substituted for an unrelated geological model residual.

57.11 Feature-Level Statistics

The canonical subsection **Feature-Level Statistics** remains in the original Paper-III order. Its function belongs to global statistical evaluation and causal adjudication; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

57.12 Null-Model Falsifier

The original Paper III uses **Null-Model Falsifier** as a bounded failure condition for its global statistical evaluation and causal adjudication. No such North American test has been executed with an independent predicted field and a frozen observation vector. Accordingly this manuscript records **not evaluated** instead of reporting either support or rejection.

A failure judgment would require the specific model output, declared observation, comparison condition, and decision rule already distinguished in the canonical source. Geometric equality alone does not settle that result.

58 Multiple Testing, Selection Bias, and Model Flexibility

The source chronology matters to the selection ledger: turn and route were fixed, and the entrance coordinate was solved for equality. This is a known fitted degree of freedom, and it must remain recorded rather than be described as an accidental pre-registered match.

58.1 Search-Space Disclosure

The declared construction choices are: a fixed surface turn at $62.3843^\circ\text{N}, 146.8997^\circ\text{W}$, an ordered path from that turn through Denali, Juneau, Unalaska, Adak, Amchitka, Attu, under-Siberia and the Arctic endpoint, and a solved

entrance in the Malpelo region. The written source describes a bearing toward reference Ecuador in obtaining the entrance and acknowledges a same-distance locus of alternative entrances. It does not report a comprehensive candidate search history or number of rejected corridor configurations. This is the **available selection ledger**; unreported searches are not assigned fictitious counts.

58.2 Selection Ledger

The source-order ledger is explicit: (1) the surface turn M was fixed at approximately $62.3843^{\circ}\mathrm{N}, 146.8997^{\circ}\mathrm{W}$; (2) the second-leg corridor was prescribed from M through Denali and the seven further named route stations; (3) its eight pairwise chords were summed; and (4) the Malpelo-region entrance coordinate was solved so its direct chord to M equaled that sum. The record therefore does **not** constitute a geometry outcome withheld from the coordinate fit. This ledger records the existing construction without introducing a new statistical calculation or changing its geological interpretation.

58.3 Family-Wise Error

The canonical subsection **Family-Wise Error** remains in the original Paper-III order. Its function belongs to global statistical evaluation and causal adjudication; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

58.4 False-Discovery Control

The canonical subsection **False-Discovery Control** remains in the original Paper-III order. Its function belongs to global statistical evaluation and causal adjudication; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

58.5 Effective Degrees of Freedom

The canonical subsection **Effective Degrees of Freedom** remains in the original Paper-III order. Its function belongs to global statistical evaluation and causal adjudication; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

58.6 Model Revision Penalty

In the original architecture, **Model Revision Penalty** is a parameterization, forward prediction or inverse-analysis step of global statistical evaluation and causal adjudication. The North American evidence package does

not include a solved event-specific output to enter this step. No new branch, fitting parameter, prediction target, best-fit value or model comparison is manufactured in this first draft.

The canonical function of the subsection remains visible so that later authorized material can enter without changing the paper's hierarchy or retroactively strengthening its current evidence status.

58.7 Mechanism-Switching Penalty

The original **Mechanism-Switching Penalty** section constrains model or feature selection and statistical flexibility in global statistical evaluation and causal adjudication. In this North American source the midpoint and route were stipulated first, then an entrance coordinate was solved to impose the chord equality. That conditional construction must be retained in the selection record.

No null simulations, penalized model evidence, independent confirmation threshold or probability value are reported for the adapted candidate. The method slot is inherited, not falsely marked as executed.

58.8 Coordinate-Flexibility Penalty

The source-controlled length match was imposed by solving for the entrance **after** fixing the second-leg target length, so it cannot be counted as if the entrance had been independently frozen before comparison. This original canonical subsection provides the place to account for that fitting dependence. The permitted public materials contain neither a defined search space nor the requisite null distribution for a numerical flexibility penalty; none is inserted here. The fitted-versus-fixed distinction is propagated into Paper IV and Paper V as a provenance constraint, not a new hypothesis.

58.9 Age-Flexibility Penalty

The subsection **Age-Flexibility Penalty** is an original Paper-III chronology or state-evolution requirement. The North American reference notes do not provide event-specific radiometric ages, dated structural transitions or event-time plate reconstructions. The designation "64 Ma" is therefore retained only as the author's research-branch label.

No time ordering among additional physical events, chronometric probability distribution or modeled geological lag is generated from static present-day coordinates.

58.10 Combined Flexibility Volume

The canonical subsection **Combined Flexibility Volume** remains in the original Paper-III order. Its function belongs to global statistical evaluation and causal adjudication; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

58.11 Training-Data Reuse

The source chapter uses **Training-Data Reuse** for independent observational comparison in global statistical evaluation and causal adjudication. The project files for this adaptation do not supply a frozen dataset, acquisition method, uncertainty covariance, age control or data-to-model mapping for that category. No external values are quietly borrowed to populate it.

The required distinction is between existing public scientific data in principle and data actually accessed, transformed and scored in this North American draft. Only the latter could support a reported result, and it is not present here.

58.12 Selection-Bias Falsifier

The original Paper III uses **Selection-Bias Falsifier** as a bounded failure condition for its global statistical evaluation and causal adjudication. No such North American test has been executed with an independent predicted field and a frozen observation vector. Accordingly this manuscript records **not evaluated** instead of reporting either support or rejection.

A failure judgment would require the specific model output, declared observation, comparison condition, and decision rule already distinguished in the canonical source. Geometric equality alone does not settle that result.

59 Global Advance-Prediction Program

The canonical prediction framework distinguishes frozen forecasts from retrospective construction. No new forecast, geographic holdout, depth interval or confirmation test is introduced in this manuscript. The chapter contains the original reporting positions in their unexecuted state.

59.1 Purpose

The canonical subsection **Purpose** remains in the original Paper-III order. Its function belongs to global statistical evaluation and causal adjudication; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

59.2 Prediction Record

The North American record supplies the fixed turn M, fitted entrance E, ordered current-coordinate northern stations, and the equality defined on that station sequence. Because E was solved to reach the preselected second-leg chord sum, its numerical fit is **not** an advance prediction. The inputs contain no dated boundary-network output, plate-motion field, or independently observed target corresponding to the original Paper-III global-prediction requirements. This prediction record therefore documents **source geometry present; prospective geological prediction unreported** without adding a new target or test.

59.3 Prediction Classes

In the original architecture, **Prediction Classes** is a parameterization, forward prediction or inverse-analysis step of global statistical evaluation and causal adjudication. The North American evidence package does not include a solved event-specific output to enter this step. No new branch, fitting parameter, prediction target, best-fit value or model comparison is manufactured in this first draft.

The canonical function of the subsection remains visible so that later authorized material can enter without changing the paper's hierarchy or retroactively strengthening its current evidence status.

59.4 Positive and Negative Predictions

In the original architecture, **Positive and Negative Predictions** is a parameterization, forward prediction or inverse-analysis step of global statistical evaluation and causal adjudication. The North American evidence package does not include a solved event-specific output to enter this step. No new branch, fitting parameter, prediction target, best-fit value or model comparison is manufactured in this first draft.

The canonical function of the subsection remains visible so that later authorized material can enter without changing the paper's hierarchy or retroactively strengthening its current evidence status.

59.5 Blind Geographic Validation

The canonical subsection **Blind Geographic Validation** remains in the original Paper-III order. Its function belongs to global statistical evaluation and causal adjudication; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

59.6 Blind Depth Validation

The canonical subsection **Blind Depth Validation** remains in the original Paper-III order. Its function belongs to global statistical evaluation and causal adjudication; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

59.7 Prediction Scoring

In the original architecture, **Prediction Scoring** is a parameterization, forward prediction or inverse-analysis step of global statistical evaluation and causal adjudication. The North American evidence package does not include a solved event-specific output to enter this step. No new branch, fitting parameter, prediction target, best-fit value or model comparison is manufactured in this first draft.

The canonical function of the subsection remains visible so that later authorized material can enter without changing the paper's hierarchy or retroactively strengthening its current evidence status.

59.8 Prediction Freeze

In the original architecture, **Prediction Freeze** is a parameterization, forward prediction or inverse-analysis step of global statistical evaluation and causal adjudication. The North American evidence package does not include a solved event-specific output to enter this step. No new branch, fitting parameter, prediction target, best-fit value or model comparison is manufactured in this first draft.

The canonical function of the subsection remains visible so that later authorized material can enter without changing the paper's hierarchy or retroactively strengthening its current evidence status.

59.9 Advance-Prediction Falsifier

The original Paper III uses **Advance-Prediction Falsifier** as a bounded failure condition for its global statistical evaluation and causal adjudication. No such North American test has been executed with an independent predicted field and a frozen observation vector. Accordingly this manuscript records **not evaluated** instead of reporting either support or rejection.

A failure judgment would require the specific model output, declared observation, comparison condition, and decision rule already distinguished in the canonical source. Geometric equality alone does not settle that result.

60 Integrated Paper-III Viability

Integrated eligibility cannot be asserted where boundary, motion, structure, chronology and geophysical model outputs are not provided. The geometric source result is preserved independently; no global replacement qualification is inferred.

60.1 Component Viable Sets

The canonical subsection **Component Viable Sets** remains in the original Paper-III order. Its function belongs to global statistical evaluation and causal adjudication; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

60.2 Complete Paper-III Viable Set

The canonical subsection **Complete Paper-III Viable Set** remains in the original Paper-III order. Its function belongs to global statistical evaluation and causal adjudication; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

60.3 Shared Event-Sequence Requirement

The canonical subsection **Shared Event-Sequence Requirement** remains in the original Paper-III order. Its function belongs to global statistical evaluation and causal adjudication; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

60.4 Shared Parameter Requirement

In the original architecture, **Shared Parameter Requirement** is a parameterization, forward prediction or inverse-analysis step of global statistical evaluation and causal adjudication. The North American evidence package

does not include a solved event-specific output to enter this step. No new branch, fitting parameter, prediction target, best-fit value or model comparison is manufactured in this first draft.

The canonical function of the subsection remains visible so that later authorized material can enter without changing the paper's hierarchy or retroactively strengthening its current evidence status.

60.5 Posterior Overlap

The canonical subsection **Posterior Overlap** remains in the original Paper-III order. Its function belongs to global statistical evaluation and causal adjudication; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

60.6 Integrated Model Score

The heading **Integrated Model Score** is retained as the canonical quantitative-comparison slot for global statistical evaluation and causal adjudication. Evaluation requires a pair of corresponding modeled and observed quantities with compatible coordinates, uncertainties and lineage. The Denali sources supply no completed pair of that kind for this topic, and therefore no test statistic or significance is claimed here.

The only numeric residual presently documented is the source-specific first-leg minus aggregated second-leg **chord-length** difference; it is not substituted for an unrelated geological model residual.

60.7 Replacement Contribution

The canonical subsection **Replacement Contribution** remains in the original Paper-III order. Its function belongs to global statistical evaluation and causal adjudication; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

60.8 Outcome Classes

The canonical subsection **Outcome Classes** remains in the original Paper-III order. Its function belongs to global statistical evaluation and causal adjudication; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

60.9 Integrated Decision Rule

The canonical subsection **Integrated Decision Rule** remains in the original Paper-III order. Its function belongs to global statistical evaluation and causal adjudication; the North American project files do not provide a separate

result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

61 Paper-III Claim Ledger

The claim ledger records the known geographic and numerical facts separately from the unevaluated event, boundary, motion and surface-structure interpretations. Source provenance and disclosure restrictions are explicit for every class of claim.

Claim ID	Narrow claim	Present support / status
NA-III-C01	One first-leg direct chord equals the specified aggregate eight-segment chord length at reported precision	Author-calibrated geometry in [4,5]; source-derived calculation
NA-III-C02	Denali is offset from the fixed turn by the first second-leg chord	222.678 km in [4]; calculated geographic relation
NA-III-C03	A physical event produced this proposed geographical pattern	Candidate interpretation only; not mechanically demonstrated in [2–7]
NA-III-C04	Event-generated global boundary network	No output; not evaluated
NA-III-C05	Event-inherited present plate-motion field	No output; not evaluated
NA-III-C06	Reconstructed mountains, trenches, basins and terranes	No forward outputs; not evaluated
NA-III-C07	Independent geological age and event sequence	No frozen date series; not evaluated
NA-III-C08	Global causal replacement of Plate Tectonics	Not established; original comparison burden remains in Paper IV

62 Complete Paper-III Falsification Matrix

The paper's broad falsification chapter must distinguish an invalidated executed prediction from the absence of an executed test. No integrated North American failure or validation is claimed from the present documents.

Canonical test family	North American present status
Event-specific mechanical eligibility	Not evaluated; physical handoff withheld
Global boundary geometry	Not evaluated; predicted network unavailable
Plate velocities and rotations	Not evaluated; forward field unavailable
Structural and chronological outputs	Not evaluated; forward histories unavailable
Sequence-wide null and held-out tests	Not executed
Independent reproduction	Geometry reproducible in principle; global physics not reproduced

62.1 Global Non-Detection and Comparison Rule

The original Paper III uses **Global Non-Detection and Comparison Rule** as a bounded failure condition for its global statistical evaluation and causal adjudication. No such North American test has been executed with an independent predicted field and a frozen observation vector. Accordingly this manuscript records **not evaluated** instead of reporting either support or rejection.

A failure judgment would require the specific model output, declared observation, comparison condition, and decision rule already distinguished in the canonical source. Geometric equality alone does not settle that result.

62.2 No Cross-Compensation

The canonical subsection **No Cross-Compensation** remains in the original Paper-III order. Its function belongs to global statistical evaluation and causal adjudication; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

62.3 Compartmentalized Failure

The original Paper III uses **Compartmentalized Failure** as a bounded failure condition for its global statistical evaluation and causal adjudication. No such North American test has been executed with an independent predicted field and a frozen observation vector. Accordingly this manuscript records **not evaluated** instead of reporting either support or rejection.

A failure judgment would require the specific model output, declared observation, comparison condition, and decision rule already distinguished in the canonical source. Geometric equality alone does not settle that result.

63 Independent Replication Protocol

Geometric arithmetic can be independently repeated from the source coordinates. Physical replication levels beyond that do not have released model fields or simulation outputs, and the manuscript will not characterize them as reproduced.

Minimum reproducible arithmetic: Given the same ordered coordinates and selected R, compute $c(E, M)$ once; compute the eight $c(W_j, W_{j+1})$ separately; sum without premature rounding; report $L_1 - L_2$ at common precision. Preserve the fact that the entrance was solved for the equality.

63.1 Replication Levels

The exact-distance geometry is replicable by recalculating central angles and the chord formula from the declared coordinate set. This is replication of **arithmetic and selection**, not independent validation of the physical event. Canonical levels dealing with paleogeography, boundary networks, motion, structure, geophysics and integrated viability remain unevaluated because the requisite model outputs are absent.

63.1.1 Level R1: Event and Source Audit

Recover the selected coordinates, numerical convention and input-file lineage. This permits an arithmetic audit but is not a geological confirmation.

63.1.2 Level R2: Paleogeographic Reconstruction

Not executed for the North American candidate.

63.1.3 Level R3: Boundary Network

Not executed: no North American predicted boundary graph.

63.1.4 Level R4: Plate Motion

Not executed: no modeled plate velocity or Euler-pole outputs.

63.1.5 Level R5: Surface Structures

Not executed: no forward mountain/trench/basin fields.

63.1.6 Level R6: Global Geophysics

Not executed: no model fields scored against frozen gravity, seismic, magnetic or heat-flow products.

63.1.7 Level R7: Statistics and Null Models

Not executed: no event-sequence null runs or held-out tests.

63.1.8 Level R8: Integrated Viability

Not evaluated: upstream global physical conditions have not been satisfied through an executed calculation.

63.2 Repository Structure

The canonical subsection **Repository Structure** remains in the original Paper-III order. Its function belongs to global statistical evaluation and causal adjudication; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

63.3 Required Metadata

The source chapter uses **Required Metadata** for independent observational comparison in global statistical evaluation and causal adjudication. The project files for this adaptation do not supply a frozen dataset, acquisition method, uncertainty covariance, age control or data-to-model mapping for that category. No external values are quietly borrowed to populate it.

The required distinction is between existing public scientific data in principle and data actually accessed, transformed and scored in this North American draft. Only the latter could support a reported result, and it is not present here.

63.4 Replication Statuses

Three statuses must remain distinct. **Arithmetic reproduction:** the source's one direct chord equals its eight-chord sum to stated precision when the unrounded first segment and seven workbook entries are used. **Historical**

reconstruction reproduction: not available, because the source bundle supplies no time-indexed North American model states or independent paleogeographic solution. **Independent physical replication:** not available from a geometry-only source record. These statuses remain conditional and do not represent a favorable or adverse global-history verdict.

64 Reconstruction Eligibility Versus Replacement Qualification

In the original series a reconstructed sequence's eligibility is not equivalent to causal replacement. This North American initial draft establishes neither; it documents the route input and the limits on what can be taken from it.

65 Integrated Discussion

The central conclusion is bounded by the source: a specified and internally calculable Malpelo-to-Arctic route with equal total chord lengths under a particular two-leg definition. Paper III's global-reconstruction burden remains unfulfilled by that fact alone, without constituting a negative empirical judgment.

65.1 Paper III Addresses Organization Rather Than Motion Denial

The canonical subsection **Paper III Addresses Organization Rather Than Motion Denial** remains in the original Paper-III order. Its function belongs to global reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

65.2 The Replacement Burden Is Global

The canonical subsection **The Replacement Burden Is Global** remains in the original Paper-III order. Its function belongs to global reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

65.3 Ancient Impulse Is Not Treated as Perpetual Motion

The canonical subsection **Ancient Impulse Is Not Treated as Perpetual Motion** remains in the original Paper-III order. Its function belongs to global reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

65.4 Boundary Generation Is the First Global Test

Boundary Generation Is the First Global Test refers to a structural or material feature in the original Paper-III reconstruction. The Denali research identifies selected geographic roles and a corridor through named modern regions, but does not independently derive the proposed feature from a calculated physical history. The name of a waypoint is not a boundary-formation, uplift or basin-formation result.

This subsection consequently preserves the canonical role and distinguishes geographical association from demonstrated causal origin. No unprovided local stratigraphy or material movement is added.

65.5 Motion Must Be Generated Rather Than Reassigned

The canonical subsection **Motion Must Be Generated Rather Than Reassigned** remains in the original Paper-III order. Its function belongs to global reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

65.6 Surface Structures Are Conditional Outputs

The canonical subsection **Surface Structures Are Conditional Outputs** remains in the original Paper-III order. Its function belongs to global reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

65.7 Chronology Can Reject Attractive Geometry

The subsection **Chronology Can Reject Attractive Geometry** is an original Paper-III chronology or state-evolution requirement. The North American reference notes do not provide event-specific radiometric ages, dated structural transitions or event-time plate reconstructions. The designation “64 Ma” is therefore retained only as the author’s research-branch label.

No time ordering among additional physical events, chronometric probability distribution or modeled geological lag is generated from static present-day coordinates.

65.8 Global Geophysics Creates Independent Burdens

The canonical subsection **Global Geophysics Creates Independent Burdens** remains in the original Paper-III order. Its function belongs to global reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

65.9 The Model Must Compress Rather Than Multiply Explanations

In the original architecture, **The Model Must Compress Rather Than Multiply Explanations** is a parameterization, forward prediction or inverse-analysis step of global reconstruction. The North American evidence package does not include a solved event-specific output to enter this step. No new branch, fitting parameter, prediction target, best-fit value or model comparison is manufactured in this first draft.

The canonical function of the subsection remains visible so that later authorized material can enter without changing the paper's hierarchy or retroactively strengthening its current evidence status.

65.10 Regional Success Remains Scientifically Useful

The canonical subsection **Regional Success Remains Scientifically Useful** remains in the original Paper-III order. Its function belongs to global reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

65.11 Paper III Is an Architecture, Not a Completed Demonstration

The canonical subsection **Paper III Is an Architecture, Not a Completed Demonstration** remains in the original Paper-III order. Its function belongs to global reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

66 Limitations of Paper III

The principal limitation is not the number of chapters in this file but the specificity of the scientific inputs supplied for adaptation. The author has reserved mechanics and mineralogy. No completed boundary, velocity, time-slice or global physical solution was supplied with the Denali calculation.

66.1 No Validated Complete Event Catalog

The canonical subsection **No Validated Complete Event Catalog** remains in the original Paper-III order. Its function belongs to global reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

66.2 Conditional Dependence on Paper II

The canonical subsection **Conditional Dependence on Paper II** remains in the original Paper-III order. Its function belongs to global reconstruction; the North American project files do not provide a separate result

satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

66.3 Paleogeographic Uncertainty

The canonical subsection **Paleogeographic Uncertainty** remains in the original Paper-III order. Its function belongs to global reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

66.4 Boundary Nonuniqueness

Boundary Nonuniqueness refers to a structural or material feature in the original Paper-III reconstruction. The Denali research identifies selected geographic roles and a corridor through named modern regions, but does not independently derive the proposed feature from a calculated physical history. The name of a waypoint is not a boundary-formation, uplift or basin-formation result.

This subsection consequently preserves the canonical role and distinguishes geographical association from demonstrated causal origin. No unprovided local stratigraphy or material movement is added.

66.5 Motion Nonuniqueness

The canonical subsection **Motion Nonuniqueness** remains in the original Paper-III order. Its function belongs to global reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

66.6 Computational Scale

The canonical subsection **Computational Scale** remains in the original Paper-III order. Its function belongs to global reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

66.7 Constitutive Uncertainty

The canonical subsection **Constitutive Uncertainty** remains in the original Paper-III order. Its function belongs to global reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

66.8 Observation Dependence

The source chapter uses **Observation Dependence** for independent observational comparison in global reconstruction. The project files for this adaptation do not supply a frozen dataset, acquisition method, uncertainty covariance, age control or data-to-model mapping for that category. No external values are quietly borrowed to populate it.

The required distinction is between existing public scientific data in principle and data actually accessed, transformed and scored in this North American draft. Only the latter could support a reported result, and it is not present here.

66.9 Preservation Bias

The canonical subsection **Preservation Bias** remains in the original Paper-III order. Its function belongs to global reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

66.10 Selection Risk

The original **Selection Risk** section constrains model or feature selection and statistical flexibility in global reconstruction. In this North American source the midpoint and route were stipulated first, then an entrance coordinate was solved to impose the chord equality. That conditional construction must be retained in the selection record.

No null simulations, penalized model evidence, independent confirmation threshold or probability value are reported for the adapted candidate. The method slot is inherited, not falsely marked as executed.

66.11 Resource-Prediction Limitation

In the original architecture, **Resource-Prediction Limitation** is a parameterization, forward prediction or inverse-analysis step of global reconstruction. The North American evidence package does not include a solved event-specific output to enter this step. No new branch, fitting parameter, prediction target, best-fit value or model comparison is manufactured in this first draft.

The canonical function of the subsection remains visible so that later authorized material can enter without changing the paper's hierarchy or retroactively strengthening its current evidence status.

66.12 Replacement Limitation

The canonical subsection **Replacement Limitation** remains in the original Paper-III order. Its function belongs to global reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

66.13 Reserved Directionality and Terrain Scope

The canonical subsection **Reserved Directionality and Terrain Scope** remains in the original Paper-III order. Its function belongs to global reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

67 Conclusions

Paper III does not advance numerical or physical conclusions that are absent from the controlling project sources. It closes with a source-qualified geometric handoff, a faithful record of the canonical reconstruction architecture, and explicit unexecuted-status labels for the unresolved global model components.

67.1 Conclusion 1: Plate Motion Is Accepted

Conclusion 1: Plate Motion Is Accepted has the canonical role of relating physical plate state or modeled movement to an independently observable kinematic quantity. The Malpelo-to-Arctic route contains no computed plate velocity, inertia, rotation, acceleration or torque series. Its waypoint order is not a plate trajectory, so this item remains **not evaluated**.

The distinction prevents route geometry from being used to fit modern plate motion after the fact. Any eventual plate-motion output would have to come from the original paper's eligible shared model, not from a free value supplied by this adaptation.

67.2 Conclusion 2: Mechanical Admissibility Comes First

The canonical subsection **Conclusion 2: Mechanical Admissibility Comes First** remains in the original Paper-III order. Its function belongs to global reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

67.3 Conclusion 3: Boundaries Must Emerge

The canonical subsection **Conclusion 3: Boundaries Must Emerge** remains in the original Paper-III order. Its function belongs to global reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

67.4 Conclusion 4: Motion Must Be Predicted

The canonical subsection **Conclusion 4: Motion Must Be Predicted** remains in the original Paper-III order. Its function belongs to global reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

67.5 Conclusion 5: Ancient Impulse Is Only One Contribution

The canonical subsection **Conclusion 5: Ancient Impulse Is Only One Contribution** remains in the original Paper-III order. Its function belongs to global reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

67.6 Conclusion 6: Surface Structures Are Coupled Outputs

The canonical subsection **Conclusion 6: Surface Structures Are Coupled Outputs** remains in the original Paper-III order. Its function belongs to global reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

67.7 Conclusion 7: Paleogeography Is Decisive

The canonical subsection **Conclusion 7: Paleogeography Is Decisive** remains in the original Paper-III order. Its function belongs to global reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers

I–II.

67.8 Conclusion 8: Chronology Can Falsify the Sequence

The original Paper III uses **Conclusion 8: Chronology Can Falsify the Sequence** as a bounded failure condition for its global reconstruction. No such North American test has been executed with an independent predicted field and a frozen observation vector. Accordingly this manuscript records **not evaluated** instead of reporting either support or rejection.

A failure judgment would require the specific model output, declared observation, comparison condition, and decision rule already distinguished in the canonical source. Geometric equality alone does not settle that result.

67.9 Conclusion 9: Deep Geophysics Supplies Independent Tests

The canonical subsection **Conclusion 9: Deep Geophysics Supplies Independent Tests** remains in the original Paper-III order. Its function belongs to global reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

67.10 Conclusion 10: Statistical Flexibility Must Be Penalized

The canonical subsection **Conclusion 10: Statistical Flexibility Must Be Penalized** remains in the original Paper-III order. Its function belongs to global reconstruction; the North American project files do not provide a separate result satisfying that scientific function. The entry therefore retains its definition and evidentiary boundary instead of extending the subject by new assumptions.

Where the original source uses a quantitative or physical output, the adapted status is **not evaluated** unless a corresponding value is explicitly documented in the fixed Denali coordinate record or in North American Papers I–II.

67.11 Conclusion 11: Advance Predictions Are Required

In the original architecture, **Conclusion 11: Advance Predictions Are Required** is a parameterization, forward prediction or inverse-analysis step of global reconstruction. The North American evidence package does not include a solved event-specific output to enter this step. No new branch, fitting parameter, prediction target, best-fit value or model comparison is manufactured in this first draft.

The canonical function of the subsection remains visible so that later authorized material can enter without changing the paper's hierarchy or retroactively strengthening its current evidence status.

67.12 Conclusion 12: Global Viability Requires One Shared Model

In the original architecture, **Conclusion 12: Global Viability Requires One Shared Model** is a parameterization, forward prediction or inverse-analysis step of global reconstruction. The North American evidence package does not include a solved event-specific output to enter this step. No new branch, fitting parameter, prediction target, best-fit value or model comparison is manufactured in this first draft.

The canonical function of the subsection remains visible so that later authorized material can enter without changing the paper's hierarchy or retroactively strengthening its current evidence status.

67.13 Final Paper-III Statement

The qualified source inheritance at the close of Paper III is the reproducible fixed-turn equal-chord construction and its explicit fitted-entrance status. The selected modern-coordinate corridor is not a dated plate-motion reconstruction, and the absence of a supplied mechanical result in Paper II does not become a positive or negative historical sequence in Paper III. The canonical reconstruction chapter order remains intact. Paper IV receives geometry as an auditable input and all physical, temporal and geological reconstruction claims as unexecuted within this source bundle.

AI-Assisted Research Disclosure

This complete initial manuscript was assembled with AI-assisted drafting and document production under the Principal Investigator's instructions. The canonical third paper determines the chapter and subsection architecture; author-supplied project files determine the North American geographic inputs. Unverified geological and protected physical quantities are not represented as scientific findings. The present revision is not a canonical freeze.

Appendix A — Global Time and State Registry

Item	Current status	Scientific handling
64 Ma program label	Working research designation in source filenames	Not a new independent age measurement
Entrance-to-turn geometry	Fitted-entrance chord calculation	Modern source-solved entrance and fixed-turn reference
Eight-segment northern corridor	Prescribed-corridor chord sum	Ordered modern waypoint list
Material state before/after event	No numerical field supplied	Reserved; not evaluated
Reconstructed ancient plate identities	Not supplied	No assignment invented
Absolute global event sequence	Not supplied	No additional events inserted

Appendix B — Continental Reconstruction Metric Registry

The canonical paper defines centroids, adjacency, boundary distance, overlap, finite rotations and reference-frame sensitivity as reconstruction metrics. The North American files do not contain paired predicted/observed continental polygons or event-time trajectories. No metric is assigned an artificial value. The sole populated distance metric is the source-declared spherical chord, which measures geographic station separation rather than continental evolution.

Appendix C — Complete Global Observation Vector

The canonical observation-vector **categories** are preserved: mapped boundary geometry and age; motion and finite rotations; continental and terrane identities; mountains and basins; deep gravity and seismic response; magnetic and heat-flow fields; chronology; and source/selection metadata. For this first draft, these categories are **not a frozen North American observation release**. The numeric geographic source set is instead limited to the Denali route ledger and reference-sphere calculations below.

Ordered second-leg segment	Reported chord (km)
Fixed turn → Denali	222.678
Denali → Juneau	1,041.564
Juneau → Unalaska	2,019.168
Unalaska → Adak	714.524
Adak → Amchitka	192.565
Amchitka → Attu	538.553
Attu → under-Siberia / Chukchi waypoint	2,228.589
Under-Siberia / Chukchi → Arctic terminal	1,104.229

The controlling document [4] reports the **full-precision total** as 8,061.8708 km. The rounded segment entries above are for traceability and should not be used to replace that higher-precision reference sum. The separate reported surface-arc total is 8,085.0443 km; it is not the metric of the stated chord equality.

Appendix D — Sequence-Wide Null-Simulation Pseudocode

The original Paper III retains a global null-simulation appendix. No North American event-sequence null simulation was executed or preregistered for this adaptation. The source arithmetic must not be converted into a simulated probability or blinded validation claim.

The numerical calculation actually present:

```
INPUT: the author-fixed turn; ordered northern route; solved entrance;
       spherical-radius convention and coordinate precision
CALCULATE: first-leg direct chord c(entrance,turn)
CALCULATE: each successive second-leg chord
SUM: eight second-leg chords without early rounding
COMPARE: direct first-leg chord to second-leg sum
DOCUMENT: entrance was solved after target second-leg total was defined
DO NOT INFER: event occurrence, history, causal physics, p-value, or replication
```

Appendix E — Claim, Source, and Selection Audit Template

Claim family	Controlling source	Recorded selection	Status
Equal-length construction	Denali Exact [4]	Fixed turn/route; solved entrance	Manuscript-derived
Segment breakdown	Denali Exact and worksheet [4,5]	Eight ordered chords	Manuscript-derived
Denali association	Denali Exact [4]	Name and waypoint chosen	Candidate geographic role
Geological initiating event	Earlier developmental and author work [6,7]	Not independently dated here	Interpretive, not demonstrated
Global reconstruction	Canonical Paper III [1] supplies structure	No North American physical model	Not evaluated
Mineral/resource claims	Canonical position only	Content excluded by instruction	Reserved

Appendix F — Figure and Table Production Registry

The current draft supplies numerical input and provenance tables but **does not** present a newly reconstructed boundary map, physical simulation frame or observational residual figure. The North American Continental Design image is contextual source art only and is not used as an independently measured event-time geological dataset. No statistical chart, regional stratigraphic drawing or simulation rendering is invented to occupy a canonical figure slot.

Appendix G — Paper-IV Handoff

Purpose

Carry the Paper-III geographic and claim-status record to the original corpus's comparative-adjudication paper without prematurely awarding causal replacement.

Paper-III Output Package for Paper IV

The packet consists of (1) the controlling modern-coordinate input and eight-chord sum; (2) identification of the separate Denali middle-mountain and turn locations; (3) the source version ledger; (4) the declared physical disclosure boundary; and (5) the complete list of boundary, motion, structural, paleogeographic and global outputs still **not evaluated**. It contains no invented event sequence or empirical comparison score.

Paper-IV Comparison Questions

The original Paper-IV comparative function is retained. Nothing in this Paper-III draft independently proves global superiority, nor are the canonical comparison questions replaced by new North American challenges. Any later evidence must preserve the same source-qualified statuses.

Causal and Alternative-Model Handoff Record

Causal layer	Handoff status
Declared coordinates and route	Present
Chord arithmetic	Present; fitted entrance recorded
Event occurrence	Candidate interpretation only
Mechanical transmission	Reserved / not evaluated
Geological structure inheritance	Not evaluated
Global kinematics and boundaries	Not evaluated
Comparative replacement	Not established

Handoff Failure

A Paper-IV calculation that calls an absent Paper-II physical field or Paper-III global field an **established result** would exceed the source record. This is a documentation/causal-dependency limitation, not a report of a failed physical experiment.

Appendix H — Paper-III Production Checklist

- ☒ All sixty-seven canonical numbered chapter positions retained.
- ☒ Canonical III subsection and appendix architecture transcribed for the initial structural mirror.

- ☒ North American Paper-I and Paper-II handoff status preserved.
- ☒ Denali fixed turn distinguished from the Denali mountain waypoint.
- ☒ One direct chord distinguished from the eight-chord second-leg sum.
- ☒ Solved/fitted entrance selection recorded.
- ☒ Restricted mechanics and mineralogy withheld.
- ☒ Unperformed simulation, observational and causal tests labeled not evaluated.
- ☐ Full numerical global reconstruction produced — **not claimed**.
- ☐ Independent empirical model validation — **not claimed**.
- ☐ Canonical corpus freeze — **not yet performed**.

Paper-III Working-Draft Freeze Status and Handoff

Draft III of V is assembled for the initial-draft phase. The source chapter-section hierarchy is not shortened to an executive summary: the source's full **sixty-seven chapter** sequence and its known nested headings have been retained. This document is not an assertion that the science has reached the original 246-page paper's quantitative completion. The approximately fifteen planned passes concern the entire five-paper mirror after working Drafts I–V exist; those passes must not import new scientific subjects or outside claims without express direction.

References

[1] Fine, Justin B. (2026). *Astro-Ballistic Chronostratigraphic Sequencing III: From Event Geometry to Continents, Trenches, Mountains, and Basins.* Canonical Corpus Freeze 1.0, `ABC-CF1-2026-08-07`. https://ontomics.com/pdfs/abc-paper-iii.pdf. Structural authority for Paper III.

[2] Fine, Justin B. (2026). *ABC North America Paper I — Refinement Pass 15 v1.6.* Ontomics project manuscript. Geographic, coordinate and claim-status handoff.

[3] Fine, Justin B. (2026). *ABC North America Paper II — Refinement Pass 15 v1.6.* Ontomics project manuscript. Conditional mechanics and Paper-III handoff.

[4] *Denali Exact.pdf.* Ontomics project research file. Fixed middle-turn coordinate, solved entrance, segmented route and equal-leg calculation.

[5] *Denali_Trench_underground_path___per_segment_arc____chord_lengths-1.xlsx*. Ontomics project distance workbook. Corridor calculation precision and segment provenance.

[6] *Denali Short Math.pdf.* Ontomics project developmental calculation; earlier alternate geometric exploration.

[7] *8-8-2025 64 ma ABC Math Full (1).pdf.* Ontomics project developmental research record, not substituted for the later fixed-turn geometry.

External Scholarly and Data Context

ABC Sequencing III - 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
Global coordinates and reference frames; chronology (section 5-6)	E07
Global boundary-network representation (section 8)	E06
Inherited plate motion and plate-speed prediction (section 11-12)	E12
Denali relief and regional uplift context (section regional mountain sections)	E04
Aleutian tectonic/trench context (section trench sections)	E18

Source bibliography and declared relevance

[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.

[E06] Bird, P. (2003). An updated digital model of plate boundaries. Geochemistry, Geophysics, Geosystems, 4, 1027.
https://doi.org/10.1029/2001GC000252
Role: Reference digital plate-boundary map and plate-boundary classification for geographic comparison.

[E12] DeMets, C., Gordon, R. G., and Argus, D. F. (2010). Geologically current plate motions. Geophysical Journal International, 181, 1-80.
https://doi.org/10.1111/j.1365-246X.2009.04491.x
Role: Published MORVEL plate-motion kinematic reference for model comparisons.

[E04] Matmon, A., Haeussler, P. J., Loso, M., and ASTER Team (2024). Anomalously high relief on Denali, Alaska, caused by tectonic, lithologic, and climatic drivers. Earth and Planetary Science Letters, 646, 118999.
https://doi.org/10.1016/j.epsl.2024.118999
Role: Observed Denali relief, fault geometry, erosion and multiple uplift explanations; comparison context, not an event attribution.

[E18] Carver, G. A., and Plafker, G. (2008). Paleoseismicity and neotectonics of the Aleutian subduction zone - An overview. In Active Tectonics and Seismic Potential of Alaska.
https://doi.org/10.1029/179GM03
Role: Published Aleutian trench/subduction region geology for a comparison baseline.

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.