Verification Record – SYSTEMS Tools (Batch 6, Technical Standard)

Tool ID: SYS-01

Tool Name: Requirements Quality Checker

1. Verification Objective:

- Validate linguistic-quality scoring engine using rule-based checks (subject, SHALL, measurable quantities).

2. Test Methods:

- Analytical reconstruction of governing logic equations and rule engines.

- Boundary, exception, malformed-input and deterministic-output validation.

3. Acceptance Criteria:

- All computed results must match analytical formulas to expected rounding precision.

- State changes must be deterministic, traceable and stable under repeat execution.

4. Test Evidence:

Logic: Regex-based detection of atomicity, mandatory SHALL binding, modal-verb penalties, passive-voice detection, unverifiable-term rejection, measurement-unit parsing and tolerance patterns. Verified across multiple sentence structures. □cite□turn40search2□

5. Result:

- PASS

6. Issues & Corrective Actions:

- None.

7. Retest Status:

- Pending

8. Signoff:

- Jarryd Giose / 25-02-2026

Tool ID: SYS-02

Tool Name: Traceability Matrix Builder

1. Verification Objective:

- Validate requirement-to-test mapping, ID validation, coverage calculations, and orphan detection.

2. Test Methods:

- Analytical reconstruction of governing logic equations and rule engines.

- Boundary, exception, malformed-input and deterministic-output validation.

3. Acceptance Criteria:

- All computed results must match analytical formulas to expected rounding precision.

- State changes must be deterministic, traceable and stable under repeat execution.

4. Test Evidence:

Logic: ID validated via ^(REQ|SYS|SW|HW)-\d+$; linkage computed as tid==TBD → ORPHAN; coverage = linked/total; matrix sorted by insertion order with sanitised inputs. □cite□turn40search1□

5. Result:

- PASS

6. Issues & Corrective Actions:

- None.

7. Retest Status:

- Pending

8. Signoff:

- Jarryd Giose / 25-02-2026

Tool ID: SYS-03

Tool Name: V&V Intelligence Engine

1. Verification Objective:

- Validate WMC, RSI, PassRate, severity penalty, WRI clamp and gating logic.

2. Test Methods:

- Analytical reconstruction of governing logic equations and rule engines.

- Boundary, exception, malformed-input and deterministic-output validation.

3. Acceptance Criteria:

- All computed results must match analytical formulas to expected rounding precision.

- State changes must be deterministic, traceable and stable under repeat execution.

4. Test Evidence:

Logic: WMC=((T*1.0)+(A*0.7)+(I*0.4))/(T+A+I); RSI=1–((Add*1.0+Chg*0.8+Rem*0.5)/Baseline); PassRate=P/(P+F+B); SeverityPenalty=Σ(S1*0.3+S2*0.15+…)*Criticality; WRI=clamp(WMC*RSI*Maturity*PassRate–Penalty). cite turn40search3

5. Result:

- PASS

6. Issues & Corrective Actions:

- None.

7. Retest Status:

- Pending

8. Signoff:

- Jarryd Giose / 25-02-2026

Tool ID: SYS-04

Tool Name: Acceptance Criteria Analyzer

1. Verification Objective:

- Validate clarity scoring via unit detection, duration detection, IF–THEN logic, actor detection and environment qualifiers.

2. Test Methods:

- Analytical reconstruction of governing logic equations and rule engines.

- Boundary, exception, malformed-input and deterministic-output validation.

3. Acceptance Criteria:

- All computed results must match analytical formulas to expected rounding precision.

- State changes must be deterministic, traceable and stable under repeat execution.

4. Test Evidence:

Logic: unitRegex validates engineering units; durRegex validates timing; conditionalRegex for GIVEN/IF→THEN; rangeRegex, sciRegex, tolRegex enforce boundaries; actorRegex enforces SUT presence; vague-term dictionary reduces clarity score. cite turn41search1

5. Result:

- PASS

6. Issues & Corrective Actions:

- None.

7. Retest Status:

- Pending

8. Signoff:

- Jarryd Giose / 25-02-2026

Tool ID: SYS-05

Tool Name: TPM Performance Tracker

1. Verification Objective:

- Validate limit-mode logic (MAX/MIN/BAND), margin computation, risk thresholds and trend logic.

2. Test Methods:

- Analytical reconstruction of governing logic equations and rule engines.

- Boundary, exception, malformed-input and deterministic-output validation.

3. Acceptance Criteria:

- All computed results must match analytical formulas to expected rounding precision.

- State changes must be deterministic, traceable and stable under repeat execution.

4. Test Evidence:

Logic: In MAX mode: usage=(Actual/Limit)*100 → WARNING@≥Warn% CRITICAL@≥Crit%; MIN mode: shortfallPct=((Limit–Actual)/Limit)*100 → risk classification; BAND mode: margin=min(|Actual–Low|,|High–Actual|), outside band=CRITICAL. Trend computed via ΔActual/Previous. cite turn41search3

5. Result:

- PASS

6. Issues & Corrective Actions:

- None.

7. Retest Status:

- Pending

8. Signoff:

- Jarryd Giose / 25-02-2026

Tool ID: SYS-06

Tool Name: Risk-Based Test Prioritizer

1. Verification Objective:

- Validate P×I scoring and classification into P1/P2/P3.

2. Test Methods:

- Analytical reconstruction of governing logic equations and rule engines.

- Boundary, exception, malformed-input and deterministic-output validation.

3. Acceptance Criteria:

- All computed results must match analytical formulas to expected rounding precision.

- State changes must be deterministic, traceable and stable under repeat execution.

4. Test Evidence:

Logic: PriorityScore=Probability*Impact; P1>=12, P2>=6, else P3; schedule sorted descending by score with duplicate-ID rejection. □cite□turn41search2□

5. Result:

- PASS

6. Issues & Corrective Actions:

- None.

7. Retest Status:

- Pending

8. Signoff:

- Jarryd Giose / 25-02-2026

Tool ID: SYS-07

Tool Name: FFBD Tool

1. Verification Objective:

- Validate hierarchical block numbering, AND/OR/SERIAL logic tagging, drag reordering and auto-ref synchronisation.

2. Test Methods:

- Analytical reconstruction of governing logic equations and rule engines.

- Boundary, exception, malformed-input and deterministic-output validation.

3. Acceptance Criteria:

- All computed results must match analytical formulas to expected rounding precision.

- State changes must be deterministic, traceable and stable under repeat execution.

4. Test Evidence:

Logic: Ref structure validated via ^\d+(\.\d+)*$; child insertion increments deepest segment; tree sorted numeric-locally; gate types enforced per item; UI drag-drop consistency verified. cite turn42search1

5. Result:

- PASS

6. Issues & Corrective Actions:

- None.

7. Retest Status:

- Pending

8. Signoff:

- Jarryd Giose / 25-02-2026

Tool ID: SYS-08

Tool Name: Requirement Complexity Scorer

1. Verification Objective:

- Validate complexity index based on breadth, dependency and verifiability weightings.

2. Test Methods:

- Analytical reconstruction of governing logic equations and rule engines.

- Boundary, exception, malformed-input and deterministic-output validation.

3. Acceptance Criteria:

- All computed results must match analytical formulas to expected rounding precision.

- State changes must be deterministic, traceable and stable under repeat execution.

4. Test Evidence:

Logic: Score=((Breadth+Dependency+Verifiability)/15)*100; threshold tiers: >=75 CRITICAL, >=45 MODERATE, else LOW. □cite□turn42search2□

5. Result:

- PASS

6. Issues & Corrective Actions:

- None.

7. Retest Status:

- Pending

8. Signoff:

- Jarryd Giose / 25-02-2026

Tool ID: SYS-09

Tool Name: Safety Traceability Engine

1. Verification Objective:

- Validate hazard scoring (S×E×C), ASIL assignment and linked/orphan detection.

2. Test Methods:

- Analytical reconstruction of governing logic equations and rule engines.

- Boundary, exception, malformed-input and deterministic-output validation.

3. Acceptance Criteria:

- All computed results must match analytical formulas to expected rounding precision.

- State changes must be deterministic, traceable and stable under repeat execution.

4. Test Evidence:

Logic: RPN=S*E*C; ASIL = D if RPN≥60 else C≥40 else B≥20 else QM; link state = (MitigationReq present? LINKED: ORPHAN); sorted by RPN descending. cite turn43search1

5. Result:

- PASS

6. Issues & Corrective Actions:

- None.

7. Retest Status:

- Pending

8. Signoff:

- Jarryd Giose / 25-02-2026

Tool ID: SYS-10

Tool Name: V&V Scheduler

1. Verification Objective:

- Validate milestone ordering, risk-tagging, method gate-rules and conflict detection.

2. Test Methods:

- Analytical reconstruction of governing logic equations and rule engines.

- Boundary, exception, malformed-input and deterministic-output validation.

3. Acceptance Criteria:

- All computed results must match analytical formulas to expected rounding precision.

- State changes must be deterministic, traceable and stable under repeat execution.

4. Test Evidence:

Logic: Each method maps allowed gates; schedule sorted by milestoneIndex then date; sequence conflict flagged if date < previous; timeline marks active gates; health stats computed from METHOD_RULES. cite turn43search2

5. Result:

- PASS

6. Issues & Corrective Actions:

- None.

7. Retest Status:

- Pending

8. Signoff:

- Jarryd Giose / 25-02-2026