

AWO Workflow v4.2 – Test Plan

v1.0

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1. Purpose

This document defines the test plan for validating the Aurora Workflow Orchestration (AWO) GitHub Actions workflow prior to declaring workflow behavior **locked** (v4.2).

The goal is to verify:

- Environment capture
- Approval logic (including override behavior)
- Attestation independence
- Commit gating
- Logging and governance structure
- Basic integrity and ordering of generated artifacts

This plan is intentionally minimal but standards-grade: it focuses on the behaviors that matter for governance, provenance, and reproducibility.

2. System Under Test

- **Workflow file:** .github/workflows/awo_run_v4.1.yml
- **Trigger:** workflow_dispatch
- **Key input:** allow_self_approval ("0" or "1")
- **Primary outputs per run:**
 - runs/run_YYYY-mm-ddTHH-MM-SSZ/ directory
 - run_manifest.json
 - environment.json
 - provenance.json
 - gate_decision.yml
 - approval.json
 - SHA256SUMS.txt
 - ATTESTATION.txt (+ .sig, .cert)
 - artifacts/notes/*

v4.2 refers to the **behavioral profile** of the workflow once this test plan is fully executed and all checks pass.

3. Test Phases

Testing is divided into two phases:

1. **Phase A — Canonical Behavior (Runs #1-#6)**
Validate the normal and override paths under ideal conditions.
2. **Phase B — Governance & Integrity Edge Cases (Runs #7-#9)**
Validate ordering, artifact validation, and multi-approval semantics.

All runs MUST be executed against the `main` branch of the repository unless explicitly noted otherwise.

4. Preconditions

Before executing any tests:

- Repository is clean (no uncommitted changes on `main`).
 - `.github/workflows/awo_run_v4.1.yml` passes YAML syntax validation.
 - Schemas in `/schemas/` are up to date.
 - `root-sha256sums.yml` workflow is healthy.
 - Doc Guard passes or has only known, documented warnings.
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5. Phase A — Canonical Behavior (Runs #1-#6)

5.1 Test Set A — Self-Approval Blocked

Intent:

Validate that self-approval is blocked by default and that lack of approval prevents commit.

Run #1 — Normal Approval Required

- **allow_self_approval:** 0
- **Orchestrator:** Account A
- **Approver:** Account B
- **Expected:**
 - Workflow pauses at approval gate until Account B approves.
 - `gate_decision.yml` records a normal, non-override approval.
 - `approval.json` shows Approver = Account B, Orchestrator = Account A.
 - Commit proceeds only after approval.
 - Governance logs record independence satisfied.
 - All required artifacts present and schema-valid.

Run #2 — No Approval Provided

- **allow_self_approval:** 0
- **Orchestrator:** Account A
- **Approver:** none
- **Expected:**
 - Workflow halts at approval gate (no commit).
 - `gate_decision.yml` indicates missing approval / failure.

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- No changes are committed to the repo.
 - A failure state is recorded in `run_manifest.json` or equivalent.
 - Governance logs show run as incomplete / blocked.
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5.2 Test Set B — Self-Approval Allowed (Override)

Intent:

Validate override path and logging when self-approval is explicitly allowed.

Run #3 — Self-Approval with Override

- **allow_self_approval:** 1
- **Orchestrator:** Account A (also Approver)
- **Expected:**
 - Workflow allows Account A to approve their own run.
 - `gate_decision.yml` explicitly records override / self-approval.
 - Governance logs show independence **not** satisfied but override recorded.
 - Commit proceeds after self-approval.
 - All artifacts present and valid.

Run #4 — Override + Governance Inspection

- **allow_self_approval:** 1
 - **Orchestrator:** Account A
 - **Approver:** Account A
 - **Expected:**
 - Same behavior as Run #3, but focus on:
 - Governance log entry in `governance/logs/`
 - Correct run ID cross-references
 - Accurate timestamps and actor identifiers
 - Confirm that this run is clearly distinguishable from non-override runs.
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5.3 Test Set C — Cross-Account Orchestration

Intent:

Validate multi-agent governance with independent orchestrator and approver.

Run #5 — Orchestrator A, Approver B

- **allow_self_approval:** 0
- **Orchestrator:** Account A
- **Approver:** Account B
- **Expected:**
 - Gate waits for Account B approval.
 - `approval.json` and `gate_decision.yml` show distinct orchestrator/approver.

- Governance logs indicate independence satisfied.
- Commit occurs after approval.
- All artifacts present, including `environment.json` and `provenance.json`.

Run #6 — Same Roles, Small Repo Change

- **allow_self_approval:** 0
 - **Orchestrator:** Account A
 - **Approver:** Account B
 - **Repo change:** Small, deliberate modification (e.g., README typo fix).
 - **Expected:**
 - Same behavior as Run #5.
 - `run_manifest.json` and `SHA256SUMS.txt` reflect the change.
 - Non-repudiation validated: it is clear which run produced which change.
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6. Phase B — Governance & Integrity Edge Cases (Runs #7-#9)

6.1 Run #7 — Early Approval (Ordering Test)

Intent:

Ensure approval cannot “race ahead” of manifest finalization.

- **Scenario:** Approver attempts to approve before workflow produces final manifest/artifacts.
- **Expected:**
 - Either the approval is queued until a safe point, or the system rejects premature approval.
 - No commit is allowed until artifacts are generated and validated.
 - `gate_decision.yml` and logs reflect the actual ordering.

Implementation detail may depend on how the manual approval step is wired; the key is that ordering cannot produce an inconsistent run state.

6.2 Run #8 — Invalid Artifact (Schema/Integrity Test)

Intent:

Verify that malformed or incomplete artifacts cause a clean, logged failure.

- **Scenario:** Introduce a controlled error, e.g.:
 - Manually break a field in a generated JSON
 - Or simulate missing `environment.json`
- **Expected:**

- Workflow fails or halts at validation.
- No commit is pushed.
- `run_manifest.json` or logs indicate validation failure.
- Governance logs do not show a successful run.
- Doc Guard and/or schema validation should flag the error.

The specific mechanism (manual edit vs. injected failure) should be documented in the run notes.

6.3 Run #9 — Duplicate Approval (Multi-Approval Semantics)

Intent:

Validate that multiple approvals do not corrupt governance state.

- **Scenario:**

- Orchestrator: Account A
- Approver 1: Account B
- Approver 2: Account C (secondary, possibly redundant approver)

- **Expected:**

- System either:
 - Accepts the first approval and ignores subsequent approvals, or
 - Records all approvals but treats them as non-conflicting.
- No double-commit or extra runs are triggered.
- Governance log clearly shows which approval satisfied the gate.

7. Post-Run Checks

After all runs (#1–#9) are complete:

- Confirm each run directory exists under `/runs/`.
- Validate presence and schema-conformance of:
 - `run_manifest.json`
 - `environment.json`
 - `provenance.json`
 - `gate_decision.yml`
 - `approval.json`
 - `SHA256SUMS.txt`
- Inspect governance/logs/ for:
 - Independence checks
 - Overrides
 - Cross-account approvals
- Run Doc Guard and ensure no new critical warnings.
- Run root `SHA256SUMS` workflow and confirm integrity.

If all checks pass, the workflow behavior may be declared **locked** as v4.2.

8. Lock Criteria for Workflow v4.2

The AWO workflow may be considered behaviorally stable (v4.2) when:

- All nine runs complete with expected behavior.
- No unauthorized commit occurs.
- All governance-relevant events are logged and attributable.
- All required artifacts are present and schema-valid.
- No unexplained failures are observed in CI.

At that point, the workflow file SHOULD be:

- Tagged in version control.
- Referenced in the Architecture and Lifecycle specifications.
- Treated as the behavioral baseline for future revisions.

9. Changelog

- **v1.0 (2025-11-24):** Initial test plan created for AWO workflow v4.2 lock.