

JUNK-PUNK TITAN: COMPREHENSIVE QA TEST SUITE

Target Audience: QA Testers, Game Designers, Playtesters

Objective: To rigorously validate every mechanical, economic, and psychological system in the final production build of Junk-Punk Titan.

Rule of Testing: If the "Expected Result" does not occur exactly as described, log a bug. There is zero room for interpretation.

TEST SUITE 1: INITIALIZATION & THE "HYDRA" ROLES

Goal: Verify that the 3-player asymmetric class system restricts and empowers players exactly as designed.

Test ID	Action / Steps	Expected Result
1.01	Role UI Pop-up: Join a fresh server.	The player is frozen/blinded by a UI overlay demanding they select a role: Scrapper, Fixer, or Enforcer.
1.02	Scrapper Identity: Select "Scrapper". Walk around the map.	Movement speed is noticeably faster (1.4x base). No specialized tools are granted.
1.03	Enforcer Identity: Select "Enforcer". Check inventory.	Movement speed is standard. Player spawns with the Rusty Shotgun in their inventory.
1.04	Fixer Identity: Select "Fixer". Check inventory.	Movement speed is slightly slower (0.9x base). Player spawns with the Wrench in their inventory.
1.05	Tool Restriction: Have a Fixer drop the Wrench, and have an Enforcer attempt to	The Enforcer cannot use the Wrench. A "Role Restricted" UI

	pick it up and use it.	message/sound plays.
1.06	The Legacy Buff: In a 3-player server, have Player 3 disconnect.	The server registers PeakPlayerCount as 3, but current as 2. Players 1 and 2 silently receive the Legacy Buff (+25% Scrap Yield, +15% Interaction Speed).

TEST SUITE 2: THE ECONOMY & BUILD SYSTEM (ZEIGARNIK & SCALING)

Goal: Verify the exponential cost "Wall" and the blueprint ghosting system.

Test ID	Action / Steps	Expected Result
2.01	Ghost Placement: Press '1' (Wall), '2' (Turret), or '3' (Drill). Click on a valid ground location.	A semi-transparent, non-collidable "Blueprint Ghost" appears snapped to the grid. No scrap is deducted yet.
2.02	Invalid Placement: Attempt to place a Ghost floating in the air or clipping inside the Titan Core.	The Ghost turns red and placement is blocked.
2.03	Social Building: Player A (Scrapper) places a Ghost. Player B (Fixer) walks up and holds 'E' to fund it.	The Ghost solidifies into a real building. Player B's (Team) Scrap is deducted.
2.04	Exponential Cost (Math Check): Check the Build Toolbar cost for a Turret (Base: 100). Build 1 Turret. Check the cost for the 2nd Turret. Build it. Check the 3rd.	Turret 1 costs 100. Turret 2 costs 115. Turret 3 costs ~132. The UI must instantly reflect this $\$1.15^n$ scaling.

TEST SUITE 3: AUTOMATION & FIXER MAINTENANCE

Goal: Verify passive income generation and the Fixer's exclusive "Pressure Hiss" mini-game.

Test ID	Action / Steps	Expected Result
3.01	Passive Income: Build 1 Steam Drill. Do nothing for 10 seconds.	Team Scrap Bank increases by exactly 15 Scrap.
3.02	Stability Degradation: Monitor a newly built Drill for exactly 40 seconds.	Stability drops from 100% to 80% (1% every 2 seconds). Output remains at 100%.
3.03	Efficiency Drop: Let the Drill degrade below 80% (e.g., to 79%). Wait for the 10-second tick.	The Drill now only generates 50% Scrap (approx. 7 Scrap).
3.04	Total Clog: Let the Drill degrade below 20%.	The Drill generates 0 Scrap. Thick black smoke VFX emits from the Drill.
3.05	Pressure Hiss (Success): As the Fixer, equip the Wrench and click the smoking Drill. A UI needle bar appears. Click inside the "Sweet Spot".	+40% Stability is instantly restored. A heavy "Clank" and steam hiss audio play. The Drill gains a 30-second "Overclock" (1.2x output).
3.06	Pressure Hiss (Failure): As the Fixer, trigger the mini-game and click OUTSIDE the sweet spot.	The Drill suffers a 5-second "Clog Penalty." It produces nothing during this time, regardless of stability.

TEST SUITE 4: THE SWARM & THEFT MECHANICS (LOSS AVERSION)

Goal: Verify enemy AI prioritizes economic damage and properly executes the "Theft and

Flight" sequence.

Test ID	Action / Steps	Expected Result
4.01	Player Ignorance: Stand directly in the path of a spawned Scrap Rat.	The Rat completely ignores the player and walks around them.
4.02	Targeting Priority: Place a cheap Wall, an expensive Drill, and the Titan Core. Spawn a Rat.	The Rat pathfinds directly to the Drill (most expensive finished building).
4.03	Theft Timer: Let the Rat touch the Drill. Observe the Near-Miss UI.	The Rat stops moving. A red progress bar appears over the Drill, taking exactly 8 seconds to fill.
4.04	The Flight Phase: Let the 8-second timer hit 100%.	The Drill instantly vanishes. The Rat gains a 1.2x speed boost, equips a "Scrap Bundle" visual on its back, and sprints toward the map edge.
4.05	Permanent Loss: Let the fleeing Rat reach the despawn hole at the edge of the map.	The Rat vanishes. The resource is lost forever.

TEST SUITE 5: COMBAT, RECOVERY, & THE SCRAP TAX

Goal: Verify Enforcer mechanics, Loot Fountains, and the Death Penalty.

Test ID	Action / Steps	Expected Result
5.01	Standard Kill: Enforcer shoots a Rat during its approach or dismantling phase.	Rat dies. Screen shake + Muzzle flash. A small Loot Fountain (2-5 Scrap) explodes out and magnetically snaps to the

		player.
5.02	Thief Recovery: Enforcer shoots a fleeing Rat carrying a stolen building.	Rat dies. A massive Loot Fountain triggers. The team receives ~50% of the stolen building's original cost back to the Scrap Bank.
5.03	The Scrap Tax (Death Penalty): Ensure the Team Bank has 1,000 Scrap. Have a player die to an environmental hazard or rat attack.	The player respawns in 5 seconds. The Team Bank is instantly deducted by 15% (150 Scrap). A red "-15%" text floats on the HUD.

TEST SUITE 6: THE RUST-TITAN OBJECTIVE & GAME OVER

Goal: Verify the core objective integrity and the loss condition.

Test ID	Action / Steps	Expected Result
6.01	Titan Targeting: Spawn a wave with ZERO buildings placed on the map.	All rats pathfind directly to the Titan Chassis in the center.
6.02	Core Dismantling: Let a rat reach the Titan Chassis.	The rat begins dismantling. Titan Integrity drops by 1% per second. (Multiple rats drain it faster).
6.03	Game Over Trigger: Let Titan Integrity reach 0%.	A massive "THE TITAN HAS COLLAPSED" UI takes over the screen. All buildings are destroyed. The server resets the session.
6.04	Stage Upgrade: Deposit required Scrap/Steel to upgrade from Stage 1 to Stage 2.	The Titan visual updates. Titan Integrity instantly heals by 25%.

TEST SUITE 7: THE SCRAP STORM & THE 99% FINALE

Goal: Verify the Global Event forces teamwork and the climax triggers correctly.

Test ID	Action / Steps	Expected Result
7.01	Storm Atmosphere: Trigger the Scrap Storm event.	Sky turns dark brown, thick fog limits visibility, howling wind audio overrides ambient music.
7.02	Storm Damage: Observe buildings during an unanchored storm.	Buildings slowly take "Wind Damage."
7.03	Tether Station: In a 3-player server, have 2 players stand on the Tether Station pads.	Nothing happens. The base continues taking damage.
7.04	Tether Activation: Have the 3rd player step on the final pad.	A "Base Anchored" message appears. Wind damage stops completely.
7.05	Rare Loot Spawn: Search the wasteland during an active storm.	"Storm-Hardened Steel" nodes spawn. They can be collected and added to the Team Bank. (They despawn when the storm ends).
7.06	The 99% Stand: Use debug tools to push the Titan's Stage 4 Command Pit to 99% completion.	A permanent, unbreakable Scrap Storm starts. The Wave Timer vanishes. An infinite swarm of Elite Rats spawns from all holes.
7.07	Victory State: Survive the 99% Stand for the hidden 3-minute timer.	Titan hits 100%. A massive shockwave vaporizes all enemies. The "VICTORY" screen rolls with session statistics.

TEST SUITE 8: UI TENSION & SENSORY "JUICE"

Goal: Verify that the UI correctly manipulates player stress levels.

Test ID	Action / Steps	Expected Result
8.01	Wave Timer (Safe): Observe the Wave Timer at 45 seconds.	Text is colored Yellow/Amber. NEXT SWARM: 00:45.
8.02	Wave Timer (Warning): Observe the Wave Timer hit 10 seconds.	Text instantly snaps to Bright Red.
8.03	Wave Timer (Panic): Observe the Wave Timer hit 5 seconds.	The red text begins "Pulsing" (scaling up and down) exactly once per second, mimicking a heartbeat.
8.04	Wave Timer (Siren): Observe the Wave Timer hit 00:00.	A low-frequency mechanical Siren/Horn audio cue plays globally. The rat wave begins spawning.
8.05	Fixer Paranoia: Have a rat dismantle a building on the far side of the base. Play as the Fixer.	The red "Near-Miss" progress bar above the building features a thick, high-contrast, strobing yellow border visible through the environment to catch the Fixer's eye.