

MTTR Clock Analysis Worksheet

Break repair events into clock components, identify the dominant delay, and track repair kit readiness and technician coverage for critical failure modes.

Companion to: *Fix the System*, Chapter 24. **Who uses it:** the maintenance manager, planner, and shift lead. **When to use:** at the start of the MTTR Reduction playbook, then monthly on any event exceeding 4 hours.

Plant / Asset Group: _____ Date: _____ Completed by: _____

PART 1 — Clock Breakdown: Last 5 High-MTTR Events

For each event, reconstruct the time sequence from failure notification to WO closure. Record each component in minutes.

Event	Asset	Failure Mode	Response (min)	Diagnosis (min)	Parts Re-trieval (min)	Repair (min)	Closure (min)	Total MTTR (min)
1								
2								
3								
4								
5								
Average								

Clock Component Definitions:

- **Response** — Failure notification (alarm, call, report) to technician physically on-site with WO.
- **Diagnosis** — Technician on-site to failure mode confirmed (root cause identified, repair scope defined).
- **Parts Retrieval** — Diagnosis complete to all required parts physically in hand at the job site.
- **Repair** — Parts in hand to asset restored and functional.
- **Closure** — Repair complete to WO closed in CMMS with all required information entered.

Dominant Component (highest average): _____

This is the first thing to fix. Do not address all components simultaneously.

PART 2 — Repair Kit Inventory

For each of the top 5 critical breakdown scenarios, assess the current repair kit state.

A repair kit is: a physical case or shelf section containing verified parts, specialized tools, the printed job plan, and the LOTO procedure for one specific breakdown scenario. Staged near the asset or in a designated emergency repair area. Not a CMMS parts list.

Kit #	Asset	Failure Mode	Kit Exists?	Parts Verified (Physical)?	Job Plan Included?	LOTO Procedure Included?	Staged Location	Last Verified Date	Last Used / Restocked
1			Yes No	Yes No	Yes No	Yes No			
2			Yes No	Yes No	Yes No	Yes No			
3			Yes No	Yes No	Yes No	Yes No			
4			Yes No	Yes No	Yes No	Yes No			
5			Yes No	Yes No	Yes No	Yes No			

Rule: Parts in a kit must be physically verified — not confirmed from the CMMS. A kit built from a CMMS list that has not been physically checked may contain wrong specifications or missing items. Verify before sealing. Audit every 90 days.

Kits missing or incomplete: _____ **Action owner:** _____ **Target completion:** _____

PART 3 — Response Time and Escalation Protocol

Document the current response chain for each shift and verify it is functional.

Response Time Target: Technician on-site with WO and repair kit within _____ minutes of failure notification on critical assets.

Shift	On-Call Technician	Contact Method	Response Time Standard	Escalation Contact (if no answer)	Escalation Method	Last Tested
Day		Phone Radio Pager	___ min			
Afternoon		Phone Radio Pager	___ min			
Night		Phone Radio Pager	___ min			
Weekend Day		Phone Radio Pager	___ min			

Weekend Night		Phone Pager	Radio	____ min			
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Gaps identified: _____

PART 4 — Diagnostic Aids Assessment

For each top failure mode, verify a one-page diagnostic aid exists.

A diagnostic aid is: a one-page fault tree or diagnostic sequence listing the three most likely causes in frequency order and the two-minute check that identifies each. Different from a job plan — the job plan tells you how to fix it; the diagnostic aid tells you what it is.

Failure Mode	Asset	Diagnostic Aid Exists?	Last Updated	Cause 1	Cause 2	Cause 3	Action if Missing
		Yes No					
		Yes No					
		Yes No					
		Yes No					
		Yes No					

To write a diagnostic aid: Interview the most experienced technician for each failure mode. Ask: "When you hear this alarm / see this symptom, what's the first thing you check, and what are you looking for?" The three answers become the fault tree branches. Keep it to one page. Laminate it and store it in the repair kit.

PART 5 — Technician Coverage Matrix

Identify coverage gaps for each critical failure mode across shifts.

Target: Minimum 2 technicians per shift who can execute the repair independently (not just assist).

Failure Mode	Asset	Day Shift	Afternoon	Night	Weekend	Gap Shifts	Cross-Train Plan

Cross-training is complete when: the technician executes the repair independently using the job plan, with the experienced tech available but not directing. Document the date of independent completion below.

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Technician	Failure Mode	Completed Training Date	Independent Repair Date	Verified By

PART 6 — Repair-vs-Replace Tracker

For assets with high repair frequency or cost, track cumulative two-year repair cost against replacement value.

Threshold: If 2-year accumulated repair cost exceeds 50% of replacement value, conduct a formal repair-vs-replace analysis.

Asset	Replacement Value	Repair Events (2 yr)	Cumulative Repair Cost (2 yr)	Ratio (%)	Action
					Continue repairing RVR analysis needed
					Continue repairing RVR analysis needed
					Continue repairing RVR analysis needed
					Continue repairing RVR analysis needed
					Continue repairing RVR analysis needed

Note: The 50% threshold is a prompt for the conversation, not an automatic replacement decision. Factors that may justify continued repair: replacement lead time, capital budget cycle, production impact of extended changeover. Document the decision and rationale regardless of outcome.

PART 7 — 90-Day MTTR Tracker

Week							
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	Critical As- set Events	Total MTTR Hours	Avg MTTR (hrs)	Avg Parts Retrieval (min)	Avg Re- sponse Time (min)	Repair Kits Used	Kits Re- stocked?
Week 1							
Week 2							
Week 3							
Week 4							
Week 5							
Week 6							
Week 7							
Week 8							
Week 9							
Week 10							
Week 11							
Week 12							
Week 13							

Benchmarks:

- MTTR >8h: Action threshold. Build repair kits and break the clock immediately.
- MTTR 4-8h: Recovering. Identify dominant clock component and address.
- MTTR 2-4h: Target range. Focus on remaining parts retrieval and coverage gaps.
- MTTR <2h: World-class. Sustain through kit audits and coverage maintenance.

From Fix the System by Ivan Getov. Companion to Chapter 24: Playbook 10 — MTTR Reduction. getov.xyz/toolkit/fix-the-system/ch24/mtrr-clock-analysis. Free. No email required.