

PERFORMANCE MEASUREMENT OF MAINTENANCE USING SRT, AMT, AND TAT

Another in our series of ideas and topics for discussion within the Life Cycle Support community... this time looking at time-based metrics for maintenance repair tasks, oriented towards military equipment maintenance.

Effective maintenance of military equipment is central to force readiness, operational availability, and life-cycle cost control. Defense organizations rely on structured time-based metrics to understand how long maintenance should take, how long it actually takes, and how long equipment remains unavailable to the warfighter. Three complementary measures—Standard Repair Time (SRT), Active Maintenance Time (AMT), and Turn-Around Time (TAT)—can provide a comprehensive view of maintenance performance across planning, execution, and operational impact.

THE ROLE OF TIME-BASED METRICS IN MILITARY MAINTENANCE

Military maintenance operates under unique constraints: dispersed operating environments, mission-critical timelines, complex weapon systems, and strict configuration control. DoD policy emphasizes consistent, measurable maintenance processes across the life cycle. DoD Instruction 4151.18 establishes the requirement for structured maintenance performance management across all components and levels of repair, reinforcing the need for standardized metrics to evaluate readiness and sustainment effectiveness.

Time-based metrics support:

- Predictable planning and scheduling
- Accurate manpower and resource allocation
- Identification of systemic delays
- Sustainment design improvements
- Readiness reporting and decision-making

STANDARD REPAIR TIME (SRT): THE PLANNING BASELINE

Standard Repair Time (SRT) represents the expected duration required to perform a specific maintenance task under normal conditions. In military contexts, SRTs may be derived from OEM technical manuals, engineering analyses, historical performance, and standardized task libraries (e.g., maintenance allocation charts). SRT is used to:

- Estimate labor requirements
- Develop maintenance schedules
- Support manpower modeling
- Benchmark technician performance

Because military systems often have complex fault isolation procedures, SRTs must account for diagnostic steps, tooling requirements, and multi-skill labor. When SRTs are inaccurate or outdated, planning becomes unreliable, leading to cascading delays across units, intermediate shops, and depots.

ACTIVE MAINTENANCE TIME (AMT): MEASURING HANDS-ON WORK

Active Maintenance Time (AMT) captures the actual hands-on time a maintainer spends performing corrective or preventive maintenance. The RMQSI Knowledge Center defines Active Corrective Maintenance Time as *the portion of maintenance during which corrective actions are performed, explicitly excluding logistics and administrative delays such as waiting for parts or shift changes*. AMT is essential for:

- Technician efficiency measurement
- Identifying training or tooling gaps
- Understanding variance from SRT
- Supporting continuous improvement

In military environments, AMT is often tracked through Maintenance information systems (e.g., LMP, NALCOMIS, GCSS-Army), Time charging codes, and automated data collection tools. Comparing AMT to SRT can highlight whether deviations stem from execution inefficiencies or from unrealistic planning standards.

TURN-AROUND TIME (TAT): THE OPERATIONAL READINESS METRIC

Turn-Around Time (TAT) measures the total elapsed time from when an item becomes unavailable due to failure until it is restored and returned to service. The US Warfighter (formerly Defense) Acquisition University defines Repair Turnaround Time (RTAT) as *the elapsed time from component failure to capability restoration, emphasizing its direct impact on system availability and mission readiness*.

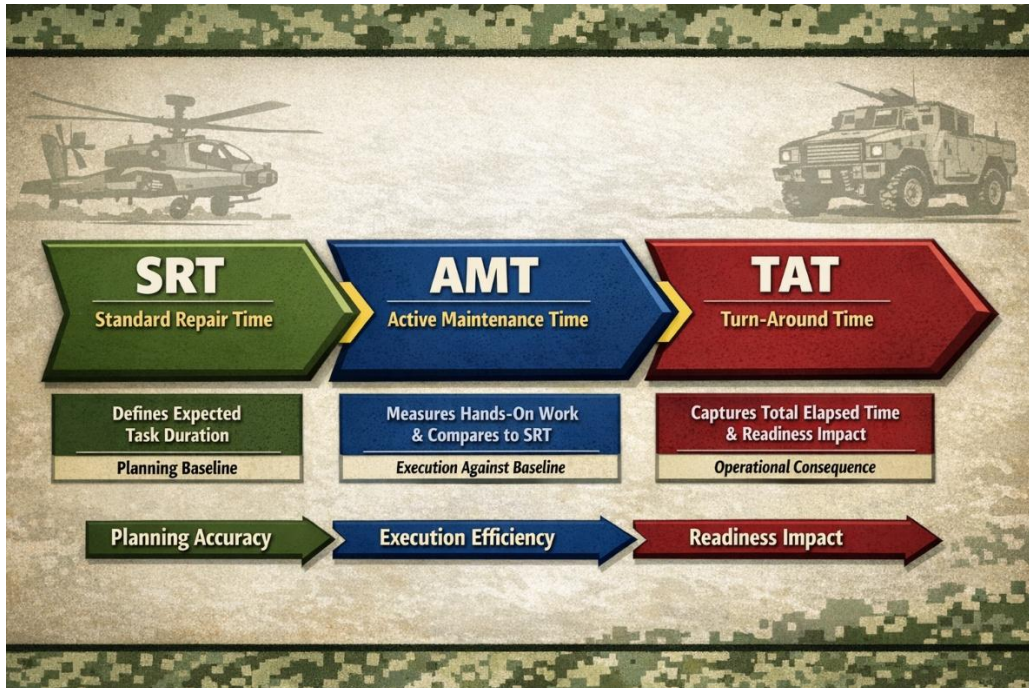
TAT can include time segments attributed to various elements affecting repair task completion, such as:

- Time to deliver equipment to the repair facility
- Queue time at the facility before maintenance begins
- AMT (hands-on work)
- Supply delays (awaiting parts)
- Other administrative delays, such as waiting for a repair bay or specific tools/test equipment
- Quality assurance and testing after repair is completed
- Shipping, transportation or transfer of the equipment back to the customer

TAT is the most comprehensive metric because it reflects the customer/warfighter's experience: how long equipment is actually deemed to be out of service by those who use/need it.

HOW SRT, AMT, AND TAT WORK TOGETHER

A three-tier structure (shown below) illustrates how each metric contributes to measuring maintenance performance and readiness.



Generally, we can say:

- SRT → establishes expectations
- AMT → measures execution against expectations
- TAT → reveals full operational consequences

APPLICATION ACROSS MILITARY MAINTENANCE LEVELS

At the organizational/Unit Level (1st line):

- SRT supports daily scheduling and mission planning.
- AMT, when compared to SRT, can highlight technician skill gaps or equipment access issues, or even poor SRT job estimates.
- TAT reflects the customer operational downtime, which can affect their mission capability. Analyzing non-AMT segments of it to determine dominant causes can highlight maintenance process inefficiencies and areas for improvement.

At an intermediate Level repair facility (2nd line):

- SRT informs shop loading and shift planning.
- AMT may identify inefficiencies in troubleshooting or repair processes.
- TAT reveals supply chain, personnel, facility or test equipment constraints.

At an in-depth Depot Level repair facility (3rd line):

- SRT supports workload planning and industrial base capacity modeling.
- AMT can be used for labor standards, cost accounting, and productivity.
- TAT is critical for managing repair pipelines and meeting readiness goals.

EXAMPLE: APPLYING THE METRICS TO A MILITARY REPAIR SCENARIO

A radar component fails during operations and is removed for repair.

- SRT for the repair is 6 hours based on depot standards.
- AMT recorded by technicians is 5.2 hours.
- TAT is 19 days due to shipping, parts delays, and QA testing.

A possible interpretation from the analysis and comparison of these times may suggest:

- Execution was efficient (AMT < SRT).
- Readiness impact was driven by supply and logistics delays, not technician performance.
- Improvement efforts should target supply chain responsiveness and depot queue management.

WHY THESE METRICS MATTER FOR MILITARY READINESS

As shown, these metrics can:

- Support force availability by reducing downtime.
- Improve sustainment support solution design by identifying maintainability issues early.
- Enable data-driven decisions for resourcing, training, and modernization.
- Support DoD policies requiring measurable, performance-based maintenance management.

SOURCES:

DoD Instruction 4151.18:

<https://www.esd.whs.mil/Portals/54/Documents/DD/issuances/dodi/415118p.pdf>

RMQSI Active Corrective Maintenance Time definition:

<https://www.rmqs.org/glossary/active-corrective-maintenance-time/>

Warfighting Acquisition University - Repair Turnaround Time (RTAT):

[Repair Turnaround Time \(RTAT\) | www.waru.edu](https://www.waru.edu/Repair-Turnaround-Time-RTAT)