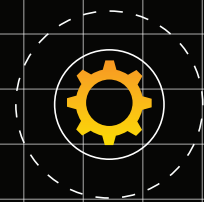




# At the Crux of Readiness



## Why QA/QC Is Essential to Army Maintenance Success

■ By CW5 Sibley S. Haamid II

**A** frequently used acronym in the Army is QA/QC, meaning quality assurance and quality control. The terms are often spoken as if they are interchangeable or have the same meaning and function. This article establishes their discernible differences and where they both fit in the making of Army materiel readiness.

Although this article is aimed at the maintenance community, the QA/QC process serves a role in any functional area that provides a service or produces a product. Whether the area is personnel management, field feeding, maintenance, law enforcement, medical, communications, etc., if there is a customer on the other end, they will want a positive outcome and/or a functioning product.

Just as correctly defining the problem is the first step in problem solving, distinguishing between QA and QC is essential to understanding effective quality management.

QA is a proactive process dedicated to ensuring quality standards are met before a product reaches the end user. Essentially, QA serves as the foundation of a comprehensive quality

management program, encompassing a structured set of activities that uphold product or service specifications and prevent defects before they occur.

QC is a subset of QA and is a primarily reactive process. It focuses on identifying and addressing defects that occurred or were overlooked during the maintenance and repair process. QC ensures that final outcomes align with established standards, correcting any deviations before delivery. In short, it is the inspection function of the quality management program.

With the above in mind, the process of repairing equipment is inherently reactive; it responds to failures that compromise the functionality or safety of equipment. By integrating both QA and QC effectively, units can minimize failures and enhance reliability.

Throughout my years in the maintenance arena, I have found that the QC process is at the crux of a successful materiel readiness program. It ensures equipment is maintained to the highest standards, reducing failures, improving efficiency, and sustaining operational effectiveness. A well-structured QC framework not only catches overlooked issues but also fosters a culture of precision and accountability in every phase of maintenance. QA/QC will be used throughout this article, but it largely refers to the QC process.

### QA/QC During Repair Processes

During the repair process, equipment goes through several

status changes within the Global Combat Support System-Army. E status (awaiting final inspection) is the prime opportunity to apply quality controls before declaring equipment is “full mission capable” and meets Army maintenance standards 10/20. If the equipment fails QC checks, it goes into 8 status for rework. At this point, the QA inspector may want to investigate the cause of the failure. This might determine that more training is required; instructions were unclear; supervision was lacking; the wrong skill level was used for the job; proper tools were lacking; or many other possibilities as the cause. Whatever the reason, the QA inspector must enact measures to prevent repeat failure of the same nature.

### Composition of a QA/QC Team

The unit’s QA/QC team consists of senior maintenance personnel and personnel with the greatest amount of technical knowledge and experience in their field. Two to three experienced maintenance personnel should be enough to run an effective QC program. This section may consist of different maintenance military occupational specialties (MOSs) to have experience covering multiple types of equipment. QA/QC inspectors will continue to gain knowledge and increase their expertise outside their MOS, since exposure to different equipment will create the need for research. One of the members can have a novice to intermediate skill set and assume an apprentice-like position. Training the next generation to carry the torch is a must. QA/QC members

should receive additional training in various improvement methodologies such as Lean, Six Sigma, Kaizen, Total Quality Management, and others. Again, the QA team leader oversees the QC team and conducts spot checks and tests against set benchmarks.

Another effective development technique is assigning onboarding personnel to spend one or two weeks in each maintenance section or commodity shop. This rotational approach enhances their familiarity with diverse systems, workflows, and best practices. Commodity shops — such as automotive, armament, communication and electronics, recovery, and specialized equipment sections — offer hands-on experience tailored to the unit’s operational needs.

This method broadens their technical expertise and fosters adaptability, cross-functional collaboration, and a deeper understanding of the maintenance ecosystem. Over time, personnel develop a well-rounded skill set that strengthens overall readiness and efficiency.

At least one member should be duty exempt because a complete shutdown of this section would bring maintenance production to a halt while waiting for final inspections to be completed. If no member is duty or tasking exempt, scheduling should avoid disruption of maintenance workflow and operations. Shutting down QA/QC sections creates bottlenecks in



the chain, heavily impacting total turnaround time (TAT). TAT is the time equipment is accepted by maintenance as not mission capable until it is repaired and returned to the operator.

Additionally, the QA/QC team leader should attend maintenance and commodity-shop meetings to provide insight into workflow throughput and quality and training issues, and to identify any required corrective measures.

### QA/QC and Operator-Level Parts

QC should be applied with all maintenance transactions. How many times has one heard the term “operator-level parts”? The process for such parts is not exempt from QC. How can the maintenance manager ensure the part was installed correctly or even installed at all, if no one verifies the corrective action before removing faults from the DA Form 5988-E, Equipment Maintenance and Inspection Worksheet or the Equipment Situation Report?

Picture a tactical vehicle rolling through post with one high beam glaring and the other dimly shining on low. It is a familiar sight and a clear sign of a preventable mistake. This happens when a part is handed to an untrained Soldier with the assumption that the installation will be done correctly, without any verification.

Dusting off the trusty TI-84 calculator, let us crunch the numbers

on just how many ways a headlight installation can go wrong. With three wires and three plugs, there are six possible permutations, and only one is correct. That is a one-in-six chance of getting it right for a single headlight. Now, add a second headlight into the mix, and the chance of errors is even higher.

To complicate matters further, 24-volt and 12-volt headlights look identical, which means that even if you nail the wiring, you might still be using the wrong component. All in all, the odds of not making a mistake are stacked against untrained personnel.

Imagine the frustration when a seemingly simple installation turns into a game of trial and error, where every connection is a gamble for untrained Soldiers. It is a reminder that sometimes even the most straightforward tasks can harbor hidden complexities.

Neglecting to perform QC checks on all maintenance work often results in wasted man-hours repeatedly addressing the same fault. Without proper verification, errors go unnoticed, costing time, resources, and operational efficiency.

### Shortening the Learning Curve

Continuous improvement can be seen as a positive second-order effect. As mechanics put effort into passing technical inspections of the QC section with a first-time go, their quality of work will improve. For junior maintenance personnel,

the turn-in and final inspection process can be a challenging experience. They arrive confident that everything is in order, only to be met with a detailed breakdown of overlooked issues. This moment, while frustrating, is also a valuable learning opportunity, helping them understand proper equipment maintenance and documentation. Over time, with experience and mentorship, they develop the innate ability to navigate inspections more smoothly. Additionally, this higher standard reduces the frequency of errors and minimizes the need for rework.

The following excerpt from Army Techniques Publication (ATP) 4-33, Maintenance Operations, further illustrates the Army’s stance on its Total Army Quality Management program:

“Total Army quality management is a management technique used to supplement QC procedures by motivating all personnel to produce high quality work the first time. A functional total Army quality management program becomes evident when Soldiers display the motivation and initiative to inspect their own work and take immediate corrective action to resolve QC problems. Units should always apply total quality management in all functions.”

### QA/QC and the Commander’s Responsibility

A well-designed dispatching policy should incorporate QA and QC measures to safeguard

vehicle operators, other road users, and pedestrians. By systematically identifying faults and preventing breakdowns, these measures enhance safety and improve operational reliability. Ensuring vehicles are in optimal condition increases the likelihood of mission success, reducing mechanical failures and unforeseen issues. In accordance with the recently released Army Regulation (AR) 600-55, The Army Driver and Operator Standardization Program (Selection, Training, Testing, and Licensing), “mechanics conduct a joint inspection (QA/QC) with operators to determine if there are any faults.” QA/QC sections must have a scheduled time to conduct dispatching QC checks, or else their workload will become erratic. Additional planning is required when dispatching convoys or entire units for training exercises. Dispatching large elements is generally a time-consuming event. Mechanics from other sections with the appropriate MOS may be employed when conducting QC checks on numerous vehicles. The major goals are safety and the reduction or elimination of recovery operations throughout the battlespace.

### Under Investigation? Call QA/QC

The QA/QC team’s specialized knowledge in maintenance and equipment operations makes them an invaluable asset when conducting investigations. Their ability to analyze maintenance records, assess component functionality, and understand service histories allows them to provide crucial insights into incidents involving equipment

damage or personnel injuries. Their objective, technical perspective can help uncover root causes, identify preventive measures, and ensure accountability in processes like financial liability investigations of property loss, commander’s inquiries, and inspector general investigations. Their role extends beyond investigation support; they also provide the official estimated cost of damage, which also serves as the initial assessment if there is financial loss to the government. This critical function ensures accurate reporting and helps inform decisions regarding repairs, replacements, and accountability measures. An actual cost of damage is later required if an individual is held liable for government losses.

### Summary

In summary, QA and QC are both integral parts of a holistic quality management program. AR 702-11, Army Quality Program, covers the primary tenets, definitions, and characteristics of the Army’s quality management guidelines.

QA/QC can be applied at various points of the workflow process, such as when validating faults, during the repair process, in stages, and at the final inspection of the job order. QC checks are paramount to any unit’s maintenance program. QA/QC creates the opportunity to catch errors, increase mission success, reduce recovery missions, and enhance mechanic’s knowledge.

If you are a commander — whether at the company, battalion, brigade,

or deputy commanding general — support — I encourage you to visit unit maintenance facilities to assess the effectiveness and functionality of their QA/QC program. Take time to familiarize yourself with sections 4-85 through 4-94 of ATP 4-33 — just two pages that can provide valuable insights.

These sections may help in developing questions to ask QA/QC sections during site visits, maintenance terrain walks, and command maintenance discipline inspections. Strengthening the QA/QC process at the ground level ensures operational efficiency and enhances overall readiness.

Leadership is not just about strategy. It is about visibility and involvement. Will you take the step?

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