TC 3-20.31-9

ARMOR PLATOON SERVICES

JULY 2024

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ARMOR PLATOON SERVICES

Contents

Page

Preface v
Introduction vii
CHAPTER 1 1
OVERVIEW AND ORGANIZATION 1
Section I — Purpose Of Services 1
Section II – Leadership During Services 2
Leadership 2
Battalion Level 2
Company Level 3
CHAPTER 2 7
PLANNING FOR SERVICES 7
Section I – Determining What To Service 7
Section II – Scheduling Services With Battalion 7
Section III –Forecasting Material Requirements 9
Section IV – Managing Personnel Requirements 11
Section V - Gathering Required Publications 12
CHAPTER 3 15
TRAIN THE TRAINERS 15
Section I – Certification Strategies for Leaders 15
Section II – Training Resources 18
Training And Courses 18
AGT1500/ Hydro-Mechanical Power Transmission Course 18
Installation Executive Officer Course 18
Command Maintenance Evaluation and Training 19
Maneuver Leader Maintenance Course 19
Section III – Service Packets 19

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(1) DA Form 7928—Scheduled Service Cover Sheet 20
(2) DA Form 7929—Schedule Service Induction Checklist 20
(3) DA Form 5988-E—From Initial—10/-20 PMCS 21
(4) DA Form 5987-E—From Initial Road Test 21
(5) DA Form 5988-E—Used to Track Actions During Services 21
(6) DA Form 7930—M1/M2 Scheduled Services Execution Checklist 21
(7) Finalized 5988-E 21
(8) DA Form 5987-E From Final Road Test 22
(9) Completed DA Form 5990-E 22
CHAPTER 4 23
RECON THE SITE 23
Section I – Lift Requirements 23
Section II – Environmental Considerations 24
Section III – Access To Tools And Special Tools 24
Section IV – Command and Control Structure 26
Section V – Support from Higher Level Assets 26
Battalion Armament Shop 26
Company Communications Shop/ Battalion S-6 27
B Company/Brigade Support Battalion and NGATS/ Electronics Maintenance 27
Field Service Representatives 27
Logistics Assistance Representatives 27
Battalion ERPS Section, Parts Room, and the Supply Support Activity 27
CHAPTER 5 29
ISSUE ORDERS 29
Section I –Services Operations Orders 29
Section II – Platoon Service In-Brief 29
Section III – Reporting Requirements 30
Section IV – Induction Standards 30
CHAPTER 6 33
REHEARSE 33
Section I – Terrain Walk 33
Section II – Confirmation and Backbriefs 33
CHAPTER 7 35

EXECUTION **35**
Section I – Time Allocation During Services **35**
Allocating and Understanding Time 35
Techniques for Daily Command and Control 39
Section II – Supervision of Execution **41**
Section III – Adjusting to Ensure Standards are Met **44**
Section IV – Ancillary and Personnel Services **45**
CHAPTER 8 ..... **47**
EVALUATE THE TRAINING **47**
Section I – DA FORM 5988-E Updates **47**
Section II – Service Out-briefs **48**
Section III – Knowledge Management **48**
APPENDIX A **51**
EXAMPLE SERVICES IN-BRIEF **51**
APPENDIX B **55**
SERVICES OUT-BRIEF **55**
APPENDIX C **57**
USING ELECTRONIC TECHNICAL MANUALS **57**
APPENDIX D **59**
EXAMPLE SERVICE PACKET **59**
APPENDIX E **63**
M1A2 SEPV2/SEPV3 SERVICE TIMELINES **63**
Source Notes **91**
Glossary **93**
References **97**
Index **101**

Figures

Figure 2-1. Services and the 8-step training model 8
Figure 2-2. Services and T-week planning framework 9
Figure 2-3. PMCS, semiannual, hull 10
Figure 3-1. DA Pam 750-3, service packet crosswalk 20
Figure 7-1. Sample maintenance allocation chart 36
Figure 7-2. Standard service week (hull) example 37
Figure 7-3. Standard service week (turret) example 37
Figure 7-4. Example daily platoon FRAGORD 39
Figure 7-5. Example daily task tracking board format 41
Figure E-1. Day 1 hull PMCS schedule 63

Figure E-2. Day 2 hull PMCS schedule 65
Figure E-3. Day 3 hull PMCS schedule 67
Figure E-4. Day 4 hull PMCS schedule 68
Figure E-5. Day 5 hull PMCS schedule 69
Figure E-6. Day 6 hull PMCS schedule 70
Figure E-7. Day 1 turret PMCS schedule 70
Figure E-8. Day 2 turret PMCS schedule 72
Figure E-9. Day 3 turret PMCS schedule 74
Figure E-10. Day 4 turret PMCS schedule 75
Figure E-11. Day 1 hull PMCS schedule 75
Figure E-12. Day 2 hull PMCS schedule 77
Figure E-13. Day 3 hull PMCS schedule 79
Figure E-14. Day 4 hull PMCS schedule 80
Figure E-15. Day 5 hull PMCS schedule 81
Figure E-16. Day 6 Hull PMCS Schedule. 83
Figure E-17. Day 7 turret PMCS schedule 83
Figure E-18. Day 8 turret PMCS schedule 85
Figure E-19. Day 9 turret PMCS schedule 88
Figure E-20. Day 10 turret PMCS schedule 89

Tables

Table 2-1: Example of commonly required services parts and POL 11
Table 3-1. Certification 15
Table 4-1. Potential lift capabilities 23
Table 4-2. Example of special tools for M1 and M2 services 25
Table 7-1. Example duties and quality assurance/quality control 42
Table 7-2. Ancillary services week schedule example 46

Preface

TC 3-20.31-9 provides a training strategy for Armored Platoons using the operations process, 8-step training model, applicable Army doctrine, regulations, and technical manuals to plan, prepare, execute, and assess services. Services are regulated by AR 750-1, with applicable technical manuals, unit standard operating procedures, and commanders' guidance. Without a coherent training strategy there is a great variation in execution by the operational force.

The principal audience for TC 3-20.31-9 is all members of the profession of arms. Commanders and staffs of Army headquarters serving as joint task force or multinational headquarters should also refer to applicable joint or multinational doctrine concerning the range of military operations and joint or multinational forces. Trainers and educators throughout the Army will also use this publication.

Commanders, staffs, and subordinates ensure that their decisions and actions comply with applicable United States, international, and in some cases host-nation laws and regulations. Commanders at all levels ensure that their Soldiers operate in accordance with the law of war and the rules of engagement. (See FM 6-27, AR 750-1, DA Pam 750-1, DA Pam 750-3, DA Pam 750-8.)

TC 3-20.31-9 uses joint terms where applicable. Selected joint and Army terms and definitions appear in both the glossary and the text. Terms for which TC 3-20.31-9 is the proponent publication (the authority) are italicized in the text and are marked with an asterisk (*) in the glossary. Terms and definitions for which TC 3-20.31-9 is the proponent publication are boldfaced in the text. For other definitions shown in the text, the term is italicized, and the number of the proponent publication follows the definition.

TC 3-20.31-9 applies to the Active Army, Army National Guard/Army National Guard of the United States and United States Army Reserve unless otherwise stated.

The proponent of TC 3-20.31-9 is the United States Army Maneuver Center of Excellence. The preparing agency is the Doctrine and Collective Training Division, Directorate of Training and Doctrine, United States Army Maneuver Center of Excellence. Send comments and recommendations on DA Form 2028 (*Recommended Changes to Publications and Blank Forms*) to Commander, United States Army Maneuver Center of Excellence, Doctrine and Collective Training Division, Directorate of Training and Doctrine, ATTN: ATZB-TDD (TC 3-20.31-9), 1 Karker Street, Fort Moore, GA 31905-5410; by email to usarmy.moore.mcoe.mbx.doctrine@army.mil; or submit an electronic DA Form 2028.

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Introduction

TC 3-20.31-9 provides a training strategy for Armored Platoons using the operations process, 8-Step training model, applicable Army doctrine, regulations, and technical manuals (TMs) to plan, prepare, execute, and assess services. Services are regulated by AR 750-1, with applicable TMs, unit SOPs, and commanders' guidance, and without a coherent training strategy there is a great variation in execution by the operational force.

As the DOTMLPF-P proponent for the M1 Abrams and M2 Bradley, the Armor School identified collective level platoon services, rather than piecemealed platforms, is the most efficient and effective way to train and perform the services mission. TC 3-20.31-9 is training strategy to achieve a predictably high-quality result and establishes minimum planning considerations and for M1 Abrams /M2 Bradley platoon services to ensure leaders at platoon, company, and battalion level have a standardized expectation of the requirements for a successful platoon service window. The principal audience for TC 3-20.31-9 is tank platoon, mechanized Infantry platoon, and scout platoon leaders and noncommissioned officers. The audience also includes commanders, staffs, officers, maintenance managers and noncommissioned officers serving in combined arms battalions. Trainers and educators throughout the Army will also use this publication.

TC 3-20.31-9 is written using the 8-step training model from FM 7-0. This publication applies to all Armor proponency platforms, specifically to the M1 Abrams and M2 Bradley family of vehicles. This publication includes all the planning and preparation required for planning, preparing, executing, and assessing a successful service density for Armored platoons. Where techniques covered in this training circular conflict with the TMs, the readers should follow the techniques in the applicable TM.

The following paragraphs provide a brief introduction of chapters and appendixes.

Chapter 1, Overview and Organization, describes the concept of platoon services and explains why they are important for maintaining readiness and achieving the mission of the Armored Force. It also lists key stakeholders of platoon services and explains the importance of leadership to the platoon services process.

Chapter 2, Planning for Services, describes how leaders plan platoon services as a deliberate training event requiring synchronization of efforts from the battalion to platoon level. It details how a platoon should determine what equipment they need to service and how they determine service requirements for that equipment. Using that information, platoon leaders should forecast and create a plan for servicing the equipment that is integrated with the battalion and company operational timelines.

Chapter 3, Train the Trainers, discusses the importance of training the leaders who will supervise the execution of platoon services, provides strategies for training those leaders, and verifies that leaders are trained to the requisite level before beginning services. It also discusses the importance of the service packet as a tool for driving services.

Chapter 4, Recon the Site, discusses important variables that platoons consider during their recon of the services site, including the lift capabilities available, environmental considerations, access to tools, options for the command and control structure, and support required from higher echelon maintenance assets. This chapter also discusses the variety of locations to conduct services.

Chapter 5, Issue Orders, describes considerations platoon leaders should take from their higher headquarters, company, and battalion operations order for services. This chapter also discusses the services in-brief and considerations for induction standards and reporting requirements that must be included in published orders.

Chapter 6, Rehearse, describes rehearsals conducted prior to platoon services. The chapter describes rehearsal methods that are most effective for building shared understanding of the services plan, such as terrain walks, which are covered in section I, and back briefs, which are covered in section II.

Chapter 7, Execution, discusses the execution of services. This chapter provides a recommended schedule for accomplishing M1 Abrams and M2 Bradley platoon services windows respectively, describes how leaders

should supervise their subordinates to ensure standards are met, and covers methods leaders can use at the platoon level to keep services on the published schedule and planning considerations for ancillary and personnel services.

Chapter 8, Evaluate the Training, combines steps seven and eight from the 8-step training model to cover actions that must take place after services are complete to accurately record their results for use by the system of record, how to conduct the services out-brief and how it is used to assess how well a platoon performed services, and covers knowledge management methods.

Appendix A, Example Services In-Brief, contains a recommended agenda for the platoon's services in-brief to their battalion commander.

Appendix B, Services Out-Brief, contains a recommended agenda for the platoon's services out-brief to their battalion commander.

Appendix C, Using Electronic Technical Manuals, contains detailed step-by-step instructions for accessing and using the most up to date electronic TMs.

Appendix D, Example Service Packet, contains information on how to create a service packet using the proponent forms. Appendix D contains information about three new forms: DA Form 7928, DA Form 7929, and DA Form7930.

Appendix E, M1A2 SEPV2/SEPV3 Service Timelines, contains information for time required to perform services on M1 Abrams or the Bradley family of vehicles.

Chapter 1
Overview and Organization

Chapter 1 describes the purpose of Armored platoon services and explains why they are important to the Armored Force's mission and maintaining. It also identifies key roles and responsibilities in the planning, preparing, and execution of platoon services while highlighting the critical importance of leadership throughout the services process.

Maintaining complicated M1 Abrams and M2 Bradley family of vehicles (FoV) to the Army maintenance standard defined in AR 750-1 standards throughout their service life can be a daunting challenge for armored units. This manual will cite the Army maintenance standard as defined by -10 series and -20 series technical manuals (TMs), hereafter referred to as the commonly used term "-10/-20 standard," in addition to the appropriate or applied technical data plans. Treating scheduled services as a mission, not a task, executed at the platoon level is the bedrock upon which leaders can build a robust maintenance culture and program. Platoon services are a mission and training event that require commanders and leaders from the platoon to brigade level to understand and deliberately execute the operations process (see FM 3-0) during their unit training management (see FM 7-0).

SECTION I — PURPOSE OF SERVICES

1-1. ATP 4-33 and AR 750-1 state the purpose of Army maintenance operations is to ensure unit readiness. *Readiness is the ability of forces to fight and meet the demands of assigned missions* (JP 1, Vol 2). The Army approach to maintenance divides all maintenance activities into two levels, which are sustainment or field:

- Sustainment-level maintenance is performed at the national level, away from operational units.
- Field maintenance is all maintenance performed by operational units, namely brigade combat teams and their subordinate units.

1-2. This training strategy will cover the planning, preparation, execution, and assessment of scheduled maintenance at the platoon level for the Abrams or Bradley FoV. When maintaining Army equipment, particularly complex systems like Abrams tanks or Bradley FoV, unceasing attention from every echelon of the Army is required to ensure that necessary readiness levels are achieved.

1-3. The framework this training circular uses for field-level maintenance is to break down all maintenance actions into those that are scheduled versus unscheduled (See DA Pam 750-3 for more information about field maintenance operations.). ***Scheduled maintenance*** **is the performance of field maintenance actions in accordance with a set schedule provided by the equipment's original manufacturer.** Scheduled maintenance programs are designed by the equipment's manufacturers to both identify and prevent potentially catastrophic faults in the equipment and to replace parts, fluids, or components that are subject to high wear, which decreases the likelihood of a major fault developing.

1-4. ***Unscheduled maintenance*** **are maintenance tasks that must be prioritized and conducted to ensure equipment is fully mission capable but are reactionary in nature, and units cannot plan these tasks in advance**. Crews often experience this when identifying a fault during operation or while conducting before, during, or after preventive maintenance checks and services (PMCS). When a piece of equipment suffers a fault that prevents it from being able to accomplish its assigned mission, it is considered not mission capable (known as NMC). When Army equipment is NMC, it is the owning unit's responsibility ensure the fault is diagnosed, parts are ordered as required, and the equipment is repaired immediately to return it to fully mission capable status. Major faults rarely align well with a unit's operational calendar, but that is no excuse for delaying repair of the affected equipment. Unscheduled maintenance and the associated disruptions to the unit's operational calendar can be prevented by a firm adherence to the full PMCS system.

1-5. The foundation of field-level maintenance is the system of PMCS. The PMCS system is a prescriptive set of maintenance actions performed at specific intervals or under specific conditions for all Army

equipment. PMCS procedures are found in the -10 and -20 TMs for all Army equipment. PMCS is considered scheduled maintenance as it takes place at predictable intervals and can be planned around.

Maintenance

Maintenance is everyone's business. Maintenance does not just belong to the mechanics in your formation. Maintenance does not belong to the executive officer. As a commander or small unit leader, you are responsible for the condition of your equipment, but you must make maintenance the business of every member of your organization. If first sergeants are more worried about fulfilling red cycle tasks than they are the condition of your equipment, you have a problem. If you are willing to place staff duty requirements above managing the work schedule for your maintainers and supply personnel, you have a problem. Commanders must remove organizational maintenance distractors to every extent possible. Nobody cares more about your equipment than you (at least, nobody should). If your stuff is broken, you cannot perform your wartime mission and your unit is not ready.

Mission Command is central to a solid maintenance program. At the brigade or battalion levels, you cannot centrally manage your maintenance program. Brigade maintenance meetings do not fix vehicles. They merely establish priorities, identify problems, coordinate resources, and hold subordinates accountable. A solid maintenance program requires a "team of teams" approach. Just like any other task, every echelon's operators', mechanics', and supervisors' maintenance efforts require educated Soldiers, skilled leaders, and supervisors willing to prioritize efforts, enforce standards, and hold subordinates accountable.

BG Michael J. Simmering
54th Chief of Armor

SECTION II – LEADERSHIP DURING SERVICES

LEADERSHIP

1-6. Platoon services require active involvement from informed and competent leaders at echelon if they are to be successful. *Leaders who are knowledgeable about their platform and the services process, and who are actively involved in shaping the operation to fit the situation and meet their commanders' intent, are the most important factors in determining how well services are conducted*. Leaders at echelon need to be technically competent and understand the role of services within the Army's maintenance system for them to be effective.

1-7. The echelons that are most important in Armored platoon services are listed in paragraphs 1-8 through 1-21. Their general responsibilities in the successful execution of platoon services are described but are not all inclusive. The following is an example organization for the execution of platoon services. Commanders often change this organization to account for the mission variables.

BATTALION LEVEL

1-8. The battalion level includes the battalion commander, the battalion executive officer (XO), the battalion command sergeant major (CSM), and the battalion maintenance control section (known as MCS).

BATTALION COMMANDER

1-9. The battalion commander is overall responsible for the battalion's maintenance readiness and maintenance operations. The battalion commander makes clear their intent for platoon services and conducts checks as required to ensure that it is being met. The battalion commander is also responsible for assigning windows to companies in which they are to conduct their services. The battalion commander also assesses the ability of their subordinate platoons to plan and execute services on their equipment.

BATTALION EXECUTIVE OFFICER

1-10. The battalion XO directs, coordinates, supervises, trains, and synchronizes the work of the staff to ensure the battalion's maintenance readiness and to ensure the efficient execution of maintenance operations. The XO is responsible for providing oversight of the overall battalion maintenance status. The XO ensures the staff implements the commander's intent for maintenance operations, monitors the status of all subordinate units, and ensures that status is provided to the commander. The XO synchronizes the battalion's service plan within the battalion's sustainment operations and supervises execution by subordinate units. The XO establishes the battalion's planning timelines including integration of the services plan through the battalion's integration cells.

BATTALION COMMAND SERGEANT MAJOR

1-11. The battalion CSM is the senior noncommissioned officer (NCO) in the battalion and is responsible for providing the commander with personal, professional, and technical advice on enlisted Soldier matters and the NCO corps. The battalion CSM is expected to advise the battalion commander with platoon-level collective training, including services. During services the CSM focuses on Soldier welfare and individual training and on how well the battalion carries out the commander's decisions and policies. The CSM plays a key role in the sustaining efforts as the sustaining troubleshooter for the battalion. This includes ensuring the battalion's personnel and key military occupational specialties (MOSs) such as mechanics, master gunners (known as MGs), equipment record parts specialists (known as ERPS), and vehicle crews are available and focused on services while Soldiers not conducting services preform additional required duties such as staff duty. Successful services include CSM involvement throughout the conduct of sustainment planning, rehearsals, and operations.

BATTALION MAINTENANCE CONTROL SECTION

1-12. The battalion MCS is responsible for managing the execution of all maintenance operations in the battalion and deconflicting scarce resources held at the battalion level, such as maintenance bay space, lift assets, Class IX, and Class III. The MCS is also responsible for obtaining resources from outside the battalion to support services. This includes Class IX, additional lift assets, and field service representative (known as FSR) support. The MCS conducts quality assurance (QA) of service packets to ensure that they meet the standards defined by Army regulation and unit policy.

COMPANY LEVEL

1-13. The company level includes the company commander, the company XO, the field maintenance team (known as FMT) chief, platoon leader (known as PL), platoon sergeant (known as PSG), MGs), tank and Bradley commanders (vehicle commanders [known as VCs]), and operators.

COMPANY COMMANDER

1-14. The company commander is overall responsible for the company's maintenance readiness and maintenance operations. The commander will assign platoons service windows based on the service plans' due dates and the service windows specified by higher headquarters order. Commanders will ensure services are executed efficiently. The company commander deconflicts between platoons and ensures that PLs are executing the mission they are given within the battalion commander's intent.

COMPANY EXECUTIVE OFFICER

1-15. The company XO in M1 Abrams- and M2 Bradley-equipped companies is directly involved in all company maintenance activities. In conjunction with the commander and FMT chief, they develop the company's maintenance priorities and assign resources such as parts, mechanics, and time to support them. During services, the XO supervises all platoons undergoing services to ensure that they have the resources necessary to accomplish their tasks on time and to standard.

FIELD MAINTENANCE TEAM CHIEF

1-16. The FMT chief is responsible for assigning the mechanics on the FMT and is the subject matter expert on the platform undergoing services. The FMT chief uses their expert knowledge of the platform to help

FMTs diagnose faults and constantly perform QA checks on mechanics as they are completing services. The FMT chief works with the battalion's ERPS clerks to ensure that maintenance records are accurately recorded in Global Combat Support System-Army (GCSS-A) in a timely manner.

PLATOON LEADER

1-17. The PL is ultimately responsible for the readiness of all equipment and personnel in their platoon. The readiness of the platoon's equipment, especially that of their major combat platforms, directly correlates to success in combat and is a key indicator of the state of discipline and training of the platoon. It is the direct responsibility of the PL to establish priorities of work that will accomplish the services mission. The PL must constantly supervise their platoon during services to ensure that they are on track to complete their mission and to ensure that they will meet their commanders' intent. The PL tracks the status of the platoon towards the completion of services using the data derived from each vehicle's service packet and reports this information to the company XO and commander. (See ATP 3-20.15 [chapters 1 and 6] for detailed description of tank PL responsibilities, including maintenance.)

PLATOON SERGEANT

1-18. The PSG supervises the platoon's maintenance, administration, and logistics and is responsible for assisting the PL in ensuring that the platoon is completing services to standard. The PSG manages personnel requirements to meet the mission as laid out by the PL. The PSG is responsible for the supervision of all Soldiers in the platoon to ensure they are on task and working efficiently to accomplish the services mission. (See ATP 3-20.15, chapters 1 and 6, for a detailed description of tank PSG responsibilities, including maintenance.)

MASTER GUNNER

1-19. The MG is an NCO who advises and assists unit leaders in planning, preparing, executing, and assessing gunnery training programs. MGs train combat vehicle crews and leaders in techniques and procedures to engage the full capability of their weapon platforms in precision direct fire engagements and support unit level maintenance on Abrams or Bradley fire control and weapons systems. Bradley MG or Abrams MG is an additional skill identifier granted to NCOs who have graduated from a platform's MG school. MGs can serve in formal positions at any echelon or may exist inside a formation while serving as a VC or other roles. They supervise operator-level maintenance performed by vehicle crews and work alongside maintenance Soldiers during services. They are responsible for recording and entering data for the M256 Abrams main gun or the Bradley's M242 chain gun.

TANK AND BRADLEY COMMANDERS (VEHICLE COMMANDERS)

1-20. Tank and Bradley commanders, referred to as VCs, are responsible for their crews and their vehicles. They are the vehicle's subject matter expert who train and supervise the tank or Bradley on the maintenance and accountability of assigned equipment, as well as the tactical employment of the tank or Bradley. Their primary responsibility during services must be ensuring that services are conducted in accordance with (IAW) the Army maintenance standard on their assigned vehicle. VCs must do this by supervising their subordinate crew members to ensure that they are performing their tasks to standard. They assist other crewmembers as necessary to train and ensure each operator task is performed to standard IAW applicable TMs. VCs use services as a training exercise to train their crew about their platform and how to maintain it. VCs must monitor all maintenance that takes place on their vehicle during services and ensure that it is accurately recorded on the DA Form 5988-E *(Equipment Maintenance and Inspection Worksheet)* or DA Form 7930 *(M1/M2 Scheduled Services Execution Checklist)*. During the ancillary portion of services, VCs are responsible for ensuring the medical and administrative readiness of their crew. (See ATP 3-20.15, chapters 1 and 6 for detailed description of tank commander (TC) responsibilities, including maintenance).

OPERATORS

1-21. Tank and Bradley operators include the entire crew of the tank or Bradley including the VC, gunner, loader and driver for the M1 Abrams, and the gunner and driver for the M2 Bradley. As operators of the tank or Bradley, their primary place of duty during services is with their assigned vehicle. They are responsible for performing -10 level PMCS and installing parts or assisting FMT mechanics with parts installation. Operators require close supervision from their VCs and platoon leadership to ensure that they are performing

checks correctly and adhering to the published timeline. Services is a training event where operators actively learn about how their equipment works and how to maintain it. Operator roles and responsibilities for maintenance during services includes, but is not limited to the—

- Gunner who:
  - Is responsible to the VC for the immediate supervision of and assisting with the overall maintenance of the entire vehicle and accountability of all equipment.
  - Maintains the communications and internal control systems.
  - Is responsible for the turret maintenance of the tank or Bradley.
  - Assists other crewmembers as necessary.
- Loader (M1 Abrams) who:
  - Ensures communication equipment is inspected and is operating properly.
  - Ensures maintenance of loader's machine gun and mount.
  - Is responsible for the turret maintenance of the tank.
  - Assists other crewmembers as necessary.
- Driver who:
  - Is responsible for the maintenance of the tank and is assisted by other crewmembers.
  - Is responsible for monitoring the drivers integrated display and notifying the VC of any cautions, warnings, or mechanical issues that arise and, also. keeps track of fuel levels and quantity of fluids added.
  - Assists other crewmembers as needed.

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Chapter 2

Planning for Services

Chapter 2 covers how platoon services should be planned as a deliberate operation requiring synchronization of efforts from the battalion to platoon level. It details how a platoon determines what equipment they need to service and how they determine service requirements for that equipment. PLs then create a plan for servicing this equipment and nesting the plan with the battalion and company operational timelines. PLs forecast the resources required to execute their plan and begin acquiring those resources as soon as possible. The outcomes of a successful planning phase of platoon services are a clear understanding of what is being serviced, when it will be serviced, how it will be serviced according to the applicable TM, and the material requirements to support that service.

SECTION I – DETERMINING WHAT TO SERVICE

2-1. As described in chapter 1, section I, services are performed to keep equipment up to the Army maintenance standard. Services are conducted either at set intervals, when a specific condition is met, or as needed determined by the commander. Operators perform weekly PMCS, typically on the first duty day of the week. Scheduled services are part of the same PMCS process. Most Army equipment will have a variety of service intervals with different checks for each interval. Some common intervals are before use, during use, after use, daily, weekly, monthly, quarterly, semiannually, annually, and biennial. Most Army equipment will have service requirements at some combination of the above intervals. Armored fighting vehicles like the M1 Abrams and M2 Bradley are complicated machines and have detailed checks required at each of the intervals. Services can also be required once a certain condition is met. Most commonly on-condition services are tied to a certain amount of usage, such as mileage or rounds fired, that triggers a specific set of checks associated with that condition.

2-2. Determining what equipment a platoon is required to service is a critical part of successfully planning for services. The required company/platoon service schedule can be found in GCSS-A, based on the service intervals specified in applicable Army Regulations and the equipment's TMs. The battalion MCS creates service plans in GCSS-A for all equipment requiring regularly scheduled services. Equipment with a service plan input into GCSS-A appears on the services tracker with the type of service to be conducted, the serialized item to be serviced, and the due date. Since GCSS-A is the Army's system of record for maintenance readiness, it is very important to ensure that a platoon's GCSS-A service schedule is accurate. PLs should ask their company XO or FMT chief for their platoon's service schedule if they do not have access to GCSS - A.

2-3. In addition to equipment listed on the platoon's service schedule, platoons will also be responsible for overseeing or conducting services on a wider range of assigned equipment. The platoon is responsible for ensuring that assigned equipment is adequately serviced. While that platoon may not be physically conducting the service, it is still the responsibility of the PL to ensure that the service is conducted on time and to standard. Equipment that might fall into this category is a platoon's assigned weapons, communications equipment, medical equipment, and chemical, biological, radiological, and nuclear (CBRN) gear. PLs can ensure they are accounting for all assigned equipment in their services plan by reviewing their sub-hand receipt and master authorization list (known as MAL) and ensure they have planned to perform services on every item on both documents during the platoon services window. For an example of an ancillary service schedule, refer to table 7-2 on page 46.

SECTION II – SCHEDULING SERVICES WITH BATTALION

2-4. Platoon services will take place during a designated period on the battalion's training calendar. Where this period falls is generally determined by a combination of when services are due on pacing equipment, battalion and brigade mission requirements, and the availability of parts and other resources required for

services. Battalions plan the services window to account for the minimum amount of time it will take to service all the required equipment to standard. Company commanders nest their company service window inside the time allocated by battalion and assign platoons within their company service plan.

2-5. *Service windows are determined at the battalion level, but PLs are responsible for developing a plan to ensure all the equipment they need to service is serviced to the standards published in the TM during that window.* The allocation and understanding of time are important factors in the execution of services. Units generally allocate three weeks for services broken down into one week of hull, one week of turret, and one week for ancillary equipment and Soldier readiness services. Throughput is determined by factors such as the number of mechanics, availability of overhead lift, status of the equipment, and level of training of the crews and maintainers. Chapter 7 goes into greater detail in the factors that go into the time it takes to execute services. PLs are responsible for ensuring that they will have adequate time to perform the required services tasks during their assigned window and coordinate with their XO, company commander, and FMT chief. (See chapter 7 for a further discussion on determining the amount of time required to conduct services on M1 Abrams or M2 Bradley). Platoons also need to account for the relative experience level of Soldiers in their platoon and on the FMT who will be servicing their equipment. PLs can get help in making this assessment from their commanders, first sergeant, and FMT chief.

2-6. Once a PL has accurately assessed how long it will take their platoon to conduct services on all their equipment, it is that PL's responsibility to develop a plan that accomplishes all services tasks within the assigned window. Services are a very time and labor-intensive training event. Personnel conducting services will not be assigned to other duties to the maximum extent possible during the services window, and platoons in services should not conduct other training concurrently. If a PL is concerned that they will be unable to accomplish all assigned services during a given window, they should raise the concern with their commander. There are several ways a PL can increase efficiency or find more time during the services window to ensure that all equipment is properly serviced. (See chapter 7, section III for details.) (See figure 2-1 and table 2-1 on page 11 for an explanation of the suggested methodology for using the operations process to plan for platoon services.) Table 2-1 on page 11 describes the relationship between the content of TC 3-20.31-9 and the 8-Step training model. Figure 2-1 shows the relationship between the operations process and the 8-step training model aligned against the T-week planning framework (see figure 2-2).

SUGGESTED T-WEEK TIMEFRAME	T-12 TO T-7	T-8 TO T-2	T-6 TO T-2	T-4 TO T-2	T-3 TO T	T TO T+3	T TO T+4	T+4 TO T-12
STEP OF THE 8-STEP TRAINING MODEL (FM 7-0)	(1) PLAN	(2) TRAIN THE TRAINER	(3) RECON THE SITE	(4) ISSUE ORDERS	(5) REHEARSE	(6) EXECUTE	(7) EVALUATE	(8) RETRAIN
TC 3-20.31-9 ARMORED PLATOON SERVICES PLANNING TASKS AND CHAPTERS	CHAPTER 2 • DETERMINE WHAT TO SERVICE • GATHER REQUIRED PUBLICATIONS • SCHEDULE SERVICES • FORECAST MATERIAL AND PERSONNEL	CHAPTER 3 • REVIEW AND PREPARE SERVICE PACKETS • CERTIFY LEADERS ON SERVICES TASKS	CHAPTER 4 • IDENTIFY AND MITIGATE ENVIRONMENTAL CONSTRAINTS • CREATE LIFT PLAN • COMMAND POST PREPARATION • GATHER TOOLS AND SPECIAL TOOLS	CHAPTER 5 • PUBLISH OPERATIONS ORDERS • ESTABLISH INDUCTION STANDARDS • CONDUCT SERVICES IN-BRIEF	CHAPTER 6 • INDUCTION PREPARATON • SERVICES TERRAIN WALK • SERVICES BACK BRIEFS • ESTABLISH SERVICES COMMAND POST	CHAPTER 7 • HULL SERVICES WEEK • TURRET SERVICES WEEK • ANCILLARY AND PERSONNEL SERVICES WEEK	CHAPTER 8 • SERVICE PACKET REVIEW • CONDUCT SERVICES OUT-BRIEF • SYSTEM-OF-RECORD UPDATES • SUPERVISE AND REFINE	CHAPTER 8 • CONDUCT KNOWLEDGE MANAGEMENT

LEGEND

FM FIELD MANUAL TC TRAINING CIRCULAR

Figure 2-1. Services and the 8-step training model

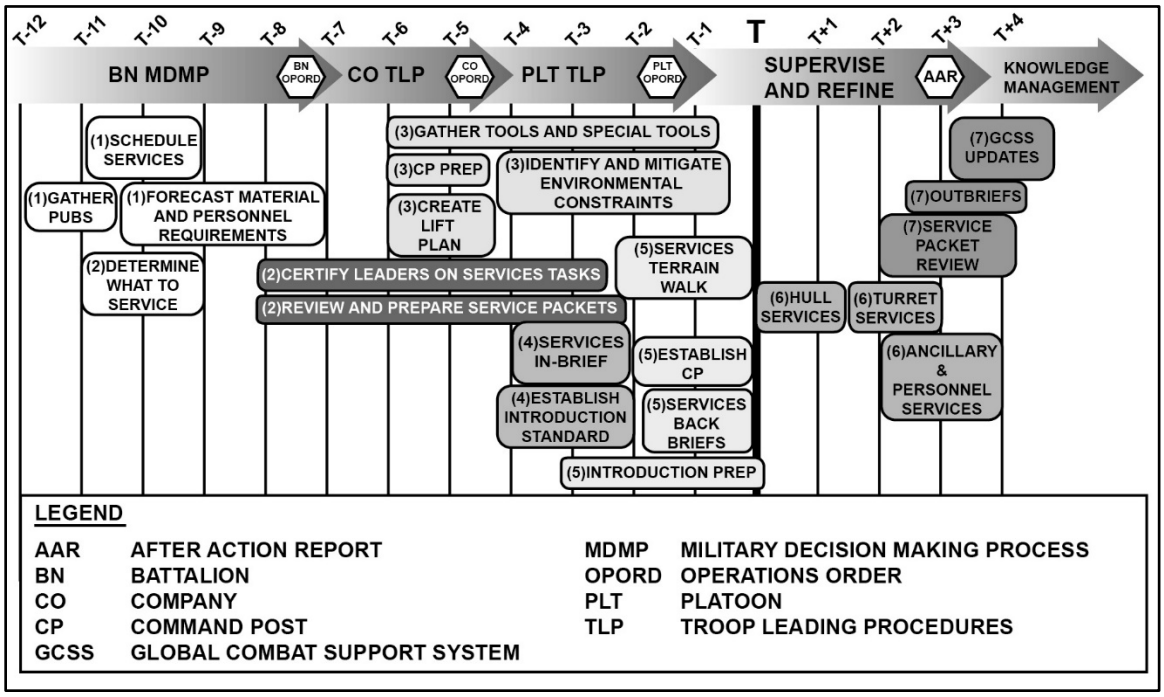

Figure 2-2. Services and T-week planning framework

SECTION III –FORECASTING MATERIAL REQUIREMENTS

2-7. Services require a variety of specific tools, parts, or lubricants that a platoon will need to gather prior to conducting the service. Required resources for services are always listed in the service section of the TM for the equipment to be serviced. (See figure 2-3 on page 10 for an example reference.)

MAINTAINER MAINTENANCE

PREVENTATIVE MAINTENANCE CHECKS AND SERVICE (PMCS), SEMIANNUAL - HULL

INITIAL SETUP:
TOOLS
GENERAL MECHANIC'S TOOL KIT (GTMK)
(VOL. 12, WP 1817, ITEM 258)
DRAIN PAN (VOL. 12, WP 1817, ITEM 162)
REFRACTOMETER (VOL. 12, WP 1817, ITEM 179)
MATERIALS
ANTIFREEZE TEST KIT (VOL. 12, WP 1816, ITEM 150)
ANTISIEZE COMPOUND (VOL. 12, WP 1816, ITEM 21)
AUTOMOTIVE AND ARTILLERY GREASE (GAA)
(VOL. 12, WP 1816, ITEM 67)
CORROSION INHIBITOR (VOL. 12, WP 1816, ITEM 70)
DISPOSABLE GLOVES (VOL. 12, WP 1816, ITEM 64)
ENGINE OIL (VOL. 12, WP 1816, ITEM 80)
WIPING RAG (VOL. 12, WP 1816, ITEM 157)
PERSONNEL REQUIRED
BFVS SYS MAINTAINER 91M
REFERENCES
WP 0133
WP 0180
WP 0210
WP 0211
WP 0242
VOL. 3, WP 0339
VOL. 3, WP 0340
VOL. 3, WP 0358
VOL. 3, WP 0370
VOL. 3, WP 0372
VOL. 3, WP 0395
VOL. 3, WP 0400
VOL. 4, WP 0412
VOL. 4, WP 0413
VOL. 4, WP 0474
VOL. 5, WP 0558
VOL. 5, WP 0627
VOL. 6, WP 0732
VOL. 6, WP 0769
VOL. 6, WP 0782
VOL. 6, WP 0783
VOL. 6, WP 0800
VOL. 6, WP 0801
VOL. 6, WP 0803
VOL. 6, WP 0807
VOL. 6, WP 0808
VOL. 7, WP 0917
VOL. 7, WP 0920
VOL. 7, WP 0942
VOL. 10, WP 1459
VOL. 12, WP 1822
EQUIPMENT CONDITION
TURRET SHUT DOWN (TM 9-2350-438-10-2)
ENGINE STOPPED (TM 9-2350-438-10-1)

LEGEND

BFVS	**BRADLEY FIGHTING VEHICLES**	**TM**	**TECHNICAL MANUAL**
M	**METER**	**VOL**	**VOLUME**
SYS	**SYSTEM**	**WP**	**WORK PACKAGE**

Figure 2-3. PMCS, semiannual, hull

2-8. It is the PL's responsibility to ensure that the required resources are on hand during their services window, but PLs do not order these resources for their platoons independently. It is the responsibility of the battalion's MCS, in conjunction with the individual company XOs, and FMTs to forecast and order the Class IX material and Class III petroleum, oils, and lubricants (POL) requirements for services. PLs will work with their company supply sections to order Class II requirements. PLs must ensure they accurately inventory and report the amount of POL and Class II items that are on hand prior to requisitioning additional material. PLs will check with their XO and FMT chief to ensure that sufficient quantities of required materials will be on hand in time to support services. If a PL identifies a potential shortcoming in resourcing for services, they should notify their XO and FMT. Table 2 - 1 is a list of material service requirements (Class II, Class III, and Class IX) that PLs must consider and discuss with their company XO and FMT during service planning.

Table 2-1: Example of commonly required services parts and POL

Description	*Usage*	*Class (CL) of Supply*	*Ordered by*
M1 Abrams Annual Service Kit*	M1 annual services.	CL IX	Designated ERPS/MCS
M1 Semiannual Service Kit*	M1 semiannual services.	CL IX	Designated ERPS/MCS
M2 Bradley Annual Service Kit*	M2 annual services.	CL IX	Designated ERPS/MCS
Hatch Seals*	Useful for replacing damaged hatch seals during services.	CL IX	Designated ERPS/MCS
Turboshaft*	Required for M1 services and operations.	CL IIIP	Designated ERPS/MCS
FRH*	Required for M1 and M2 services and operations.	CL IIIP	Designated ERPS/MCS
15W40*	Required for M1 and M2 services and operations.	CL IIIP	Designated ERPS/MCS
Coolant*	Required for engine cooling system on M2.	CL IIIP	Designated ERPS/MCS
RTV	Required for various maintenance tasks on M1 and M2.	CL IIIP	Designated ERPS/MCS
Anti-Seize	Required for various maintenance tasks on M1 and M2.	CL IIIP	Designated ERPS/MCS
Rags	Rags used by crews to clean out the engine and fighting compartments of M1s and M2s during services.	CL II	Supply
Hand Soap	Having enough soap is important for ensuring Soldiers are easily able to switch between maintenance tasks and tracking those tasks administratively.	CL II	Supply
Spray Paint	Spray paint is useful for touching up the paint on vehicles' exteriors and repainting the vehicles interior. Having clean interiors and exteriors allows the crews to spot future faults more easily.	CL II	Supply
Dry Sweep	Dry sweep is required to clean up spilled petroleum, oils, and lubricants (POL).	CL II	Supply
Broom	Brooms are required for cleaning up dry sweep and cleaning out engine compartments.	CL II	Supply
Squeegee	Squeegees are useful for cleaning out engine compartments of liquid after pressure washing or steam cleaning.	CL II	Supply
***Note.** See assigned technical manual and/or lubrication order for prescribed national stock number (NSN) and quantity			
Legend: CL—class; ERPS—enterprise resource planning; MCS— maintenance control section			

SECTION IV – MANAGING PERSONNEL REQUIREMENTS

2-9. While planning services, PLs need to work with their PSGs to mitigate manning conflicts to ensure that they will have the greatest possible manpower available to conduct services. While having the greatest number of Soldiers present for a mission allows for a greater overall capacity, it is more important to ensure that the right Soldiers and leaders are present at the right times. For example, if the only armorer in the platoon is not present on the day planned for cleaning weapons or if a TC is not present while their tank is undergoing

hull services, the entire platoon's plan is desynchronized. PLs and PSGs should identify this sort of conflict between scheduled services and other requirements and work to mitigate them as early as possible. While the PL is responsible for determining the mission and its requirements, it is the PSG's responsibility to determine how to man against those requirements.

2-10. Determining who the right leaders and Soldiers are for each event in the platoon's services plan can be difficult, especially for a new PL who may not be familiar with all members of their platoon and the maintenance team. As a general guide, all Soldiers assigned to any piece of equipment should be present to assist in servicing that equipment to the maximum extent possible. Specific considerations for manning during platoon services are listed below.

- Per DA Pam 750-3, operators and crew are present for all maintenance that occurs on individually assigned equipment:
  - The crew should be performing crew level checks, assisting the maintainers, and learning about their platform during services.
  - The vehicle's TC should be performing constant quality control (QC) of everything happening on their vehicle during services.
- For ancillary equipment, the Soldier assigned to use the equipment should be the Soldier servicing the equipment or at least be present to assist qualified maintainers as their equipment is serviced.
- Small arms repair Soldiers (91F) are responsible for borescope and commendation of an M256 gun.
  - The maintenance warrant officer validates condemnation of any gun tube.
  - It is best practice to have an Abrams MG present to assist operators with -10 level services in tasks related to weapons and fire control systems.
- 91F Soldiers also conduct gauging of the M242 Bushmaster during Bradley FoV services, which are verified by the maintenance warrant officer.
- Bradley MG should assist operators with -10 level services on the M242 Bushmaster.

2-11. Once PLs and PSGs have determined which Soldiers and leaders will be required for each event on the services plan, they should begin working immediately to align those Soldiers' schedules with the services plan. PSGs should work with their first sergeant and CSM to ensure the staff duty and charge-of-quarters schedules do not prevent NCOs and Soldiers from performing services on their platforms. Medical appointments that can wait should be scheduled in one of the windows set aside for them in the ancillary services week. PLs and PSGs should identify replacements for leaders who will not be present during services and train them on their additional service requirements as early as possible.

SECTION V - GATHERING REQUIRED PUBLICATIONS

2-12. It is impossible to perform services without having the appropriate TM that dictates the standards for the service to be performed. PLs should already have access to the -10 TMs for all equipment hey are assigned. However, services above the monthly interval are often found in the equipment's - 20 TM. If a platoon does not have the appropriate manual to conduct services on a piece of equipment, the best place to find it is electronic technical manuals (known as ETMs). Appendix C contains instructions for gaining access to and using ETMs. The publications most relevant for conducting M1 Abrams and M2 Bradley services are -10/-20 TMs and lubrications orders (known as LOs).

2-13. Platoons should have physical copies of their platform's -10 TMs on hand as part of their basic issue item (known as BII). The -20 TMs for the M1 Abrams and M2 Bradley are used by the maintainers on the company's FMT to perform nearly every field maintenance task on the vehicle. The -20 manual contains more detailed information on maintenance than the -10 manual, such as specific instructions for troubleshooting and repairing most faults on the vehicle, the maintenance allocation chart (known as MAC), a listing of all National Item Identification Numbers for all parts on the vehicle, and the detailed theory of operation. Maintainers generally reference -20 TMs using interactive electronic technical manuals (known as IETMs), which are a special digital version of TMs installed on maintenance support devices (known as MSDs) (special laptops used for field-level maintenance). IETMs have a number of advantages over the normal print versions of manuals, including the ability to easily search across several volumes of both the -10 and -20 TMs at once, detailed illustrations, and a self-linking troubleshooting feature. *An up-to-date IETM installed on an MSD is the standard for maintainers conducting services checks. If the supporting FMT is*

not using MSDs while conducting service checks, the PL must bring this to the attention of the company commander.

2-14. LOs can be in specific manuals, separate from the TM, or within a TM. They detail what, how, and when to lubricate every part of the equipment that requires lubrication. They also provide directions as to what lubricant should be used for each part. Performing all tasks on the LO at the required interval is an induction requirement for services. LOs can be found on ETM, or in the equipment's IETM, and must be adhered to rigidly.

Note. See appendix C for directions on using IETMs on a Non-Classified Internet Protocol Router (NIPR) laptop.

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Chapter 3

Train the Trainers

Chapter 3 discuss the importance of training the leaders who will supervise the execution of platoon services, provides strategies for training those leaders and verifying that they are trained to the requisite level before beginning services, and discusses the importance of the service packet as a tool for driving services. Training the Trainers ensures that a planned training event will have the desired outcomes. This starts with understanding the Army standard for the training's outcomes, which are listed in the serviced equipment's -20 TM for platoon services.

SECTION I – Certification Strategies for Leaders

3-1. Commanders are responsible for establishing an effective leader training and certification program for the unit (see FM 7-0). Certification accomplishes two goals. First, it provides confidence to the commander and other unit leaders that the leader being trained and certified is professional and competent in training and evaluating others. Secondly, it provides the training audience confidence that trainers know their craft, building trust and confidence not just in the trainer, but in themselves and the unit (see FM 7-0, chapters 3 - 13). For services, certification confirms that leaders within the platoon have the minimum professional knowledge required to lead others through the service process and follow the standards laid out in the appropriate TM. *Failure to establish a standard of technical knowledge for leaders prior to services may allow a well-meaning but misinformed Soldier to do lasting harm to their assigned equipment*.

3-2. The goal of pre-services leader certification is to ensure that leaders have the requisite knowledge to conduct services to standard and are familiar with finding and using the tools that track that the services have been executed to standard (See chapter 7, section I for a discussion of the QA/QC flow in services.) Familiarity with the platform's TM and the ability to find information within it, a baseline understanding of the theory of operation of the vehicle and its subsystems, and a firm understanding of the service packet and its contents are skills leaders need to meet the standard during services. *PLs ensure that all leaders in the platoon meet their unit's established standard of technical knowledge before beginning services.*

3-3. The standards of knowledge required by each echelon of a platoon to successfully execute services are outlined in table 3-1 on pages 15 through 17. (See STP 17-19K1-SM and STP 17-19K24-SM-TG.)

Table 3-1. Certification

Echelon	*Evaluator*	*Tasks*	*Evaluation TTPs*
Operator/ SL1	VC/ SL3	**171-19K-1149** Conduct Preventive Maintenance Checks and Services (PMCS) on an M1-Series Tank	**Driver's training—**This is the foundation for the operation and maintenance of Army tracked vehicles. During unit drivers' training, all Soldiers are trained and assessed on the ability to properly perform maintenance on their vehicle. AR 600 - 55 and TC 21-306 describe the maintenance requirements as they relate to the unit driver training program. All Soldiers in the platoon need to have completed drivers training prior to services. Leaders should place special emphasis on the maintenance portion of the driver's training curriculum.

Table 3-1. Certification (continued)

Echelon	*Evaluator*	*Tasks*	*Evaluation TTPs*
NCO/ SL2	PL/PSG SL4	**171-19K-2002** Supervise Preventive Maintenance Checks and Services on an M1-Series Tank **171-309-0650** Inspect DA Form 5988-E or DA Form 2404 **171-19K-2001** Perform Operator Maintenance on the 120mm Breechblock Assembly on an M1-Series Tank	**Technical manual (TM) familiarity test—**A test of familiarity with the TM. This brief exam will ask the leader to find specific technical information within the TM. This tests the ability of the leader to find and refer to published standards when doing QC of services on their assigned equipment. **Mission Requirements Check—**A unit-specific test that addresses specific areas of concern for that unit. An example would be cold-start procedures for units deployed in a cold environment.
VC/ SL3	Company Commander/ 1SG	**171-19K-3101** Perform Diagnostics Mode Maintenance on the Improved Commander's Display Unit on an M1A2 Sep Tank	**Service Packets**—A test of familiarity with the various components of their vehicle's service packet and what functions they fill. This test should be an oral exam with a qualified leader who verifies that the tested leader can explain the purpose of every item in the service packet and their responsibilities associated with every item. This assessment should give the PL confidence that their VCs can use the service packet to drive the execution of services and QA/QC checks on their vehicle. **Theory of Operation**—This should be a written or oral examination that evaluates the leader's ability to describe in plain English how the major subsystems of the vehicle work.
PL&PSG/ SL4	Battalion Commander/ CSM	**171-19K-4102** Supervise Scheduled Services on an M1-Series Tank **171-19K-4101** Supervise Tank Platoon Maintenance	**In-Brief**—This brief gives the battalion commander an opportunity to assess the platoon Leadership's planning ability prior to executing services and allows adjustments to their plan prior to stepping off. **Out-Brief**—This brief assesses how well the platoon achieved the stated goal of services and gives battalion commanders a chance to direct retraining if they felt the platoon did not meet the standard in some way.

Table 3-1. Certification (continued)

Echelon	*Evaluator*	*Tasks*	*Evaluation TTPs*
Maintainer SL1 and 2	Maintainer SL 3+	**091-91A-0044** Perform Scheduled Services of the M1 Series Track Vehicle **091-91A-0049** Borescope the 120MM Main Gun of the M1 Series Track Vehicle	**-20 Technical Manual (TM) Familiarity Test—**A test of familiarity with the -20 TM. This should be a brief exam where the Soldier is asked to the work package for specific maintenance tasks or other information in the -20 TM. The Soldier must then explain how they would use the information they found to perform the maintenance task in question. **Opportunity Training**—In conjunction with a -20 TM familiarity test, the maintainer also performs the maintenance task after finding the information in the technical manual. This should only be done if there is a real need to correct a fault. Faults should not be induced in equipment to perform this type of training. This type of training is most useful for training maintainers on highly technical maintenance tasks that address faults that do not commonly occur.
Legend: 1SG—first sergeant; CSM—command sergeant major; DA—Department of the Army; NCO—noncommissioned officer; PL—platoon leader; PSG—platoon sergeant; QA—quality assurance; QC—quality control; SL—skill level; TTP—tactics, techniques, and procedures; VC—vehicle commander;			

Example of Theory of Operation Test Question

Developing tests that assess the correct tasks for the echelon they evaluate is an important skill in training management covered in detail in FM 7-0. For platoon services, the tests should be narrow in scope, easily repeatable, and apply only to platform knowledge relevant to scheduled services. Below is an example of test question that assesses a VC's familiarity with how their platform works.

An M1 Abrams TC is asked to explain the theory of operation of their tank's drivetrain. The TC responds that air enters through the air intake and is filtered by the precleaner and V-packs before being introduced into the combustion chamber. The combustion chamber has a constant spray of fuel which ignites and spins the output shaft on the engine, which is connected to the transmission. The transmission provides power to the final drives, which spin the sprockets, driving the tracks.

This response demonstrates familiarity with how the system works and the components that make up the system. This familiarity would allow the leader to identify any potential faults in the system during services. A leader who cannot demonstrate this level of general familiarity with how their assigned platform functions is likely to make errors stemming from their poor understanding that could damage the equipment. For example, the TC above would be unlikely to store BII on top of their vehicle's precleaner because they understand its role in filtering the air, whereas an uninformed leader may allow their crew to store items on top of the precleaner, and these items could travel through the precleaner and damage their engine.

SECTION II – TRAINING RESOURCES

TRAINING AND COURSES

3-4. Training Soldiers to meet the standard required by services demands that leaders take a proactive approach. In addition to training, retraining, and assessing Soldiers on the basic maintenance tasks laid out in table 3-1, pages 15 through 17, Leaders should also look for opportunities to send their Soldiers to more advanced maintenance training. There are also a wide variety of courses available on most installations that can give additional maintenance expertise to an organization if Soldiers are given the opportunity to attend them. Listed below are courses which would increase maintenance readiness.

AGT1500/ HYDRO-MECHANICAL POWER TRANSMISSION COURSE

3-5. Higher headquarters maintenance elements may contract at individual installations for course that provide in-depth training on the function of the AGT1500 gas turbine engine found in M1 Abrams or the hydro-mechanical power transmission (known as HMPT) found in M2 Bradleys. Some installations have a formalized version of this found in the Army Training Requirements and Resources System (ATRRS), but if your installation does not, classes can easily be scheduled through the local FSRs that support those items. These courses are highly beneficial to any Soldier serving on or around the platform and help prevent mistakes that result in damage to these costly components of vehicles.

INSTALLATION EXECUTIVE OFFICER COURSE

3-6. Major Army installations will run an XO course through their troop schools. This course focuses on teaching officers who are going to take a company XO position or have recently taken one the technical skills required to fill the role. These courses cover maintenance actions in GCSS-A from the commander's representative role in detail. Understanding the actions an XO can take in GCSS-A and how to find important information about supplies and equipment in the system are important skills that this course covers thoroughly.

COMMAND MAINTENANCE EVALUATION AND TRAINING

3-7. All Army divisions have Command Maintenance Evaluation and Training (COMET) teams that serve to support logistics operations within the division and train logistics elements to perform their duties more effectively. If a company or battalion is struggling with a particular maintenance function they should contact the COMET team. The COMET team can inspect the unit's operations and provide suggestions or training to help rectify the systemic problems. COMET teams commonly help units that have difficulty accounting for recoverable parts, disorganized parts rooms, or frequent property accountability errors.

MANEUVER LEADER MAINTENANCE COURSE

3-8. The Maneuver Leader Maintenance Course is a course for platoon to company level maneuver officers and NCOs focused on maintenance operations at the battalion and below level. It gives a broad overview of the maintenance processes that the battalion maintenance programs use and how companies and platoons interact with them. The course is best for officers and NCOs who are unfamiliar with maintenance operations in Armored brigade combat teams (ABCTs) and Stryker brigade combat teams (SBCTs) and for those who are pending assignment to those formations. The course is also beneficial for company-grade officers who are about to take a company XO position in a mounted formation.

SECTION III – SERVICE PACKETS

3-9. After their platform's TM, the most important tool that leaders must be familiar with before beginning services is their platform's service packet. The service packet is the comprehensive record of what happened to a piece of equipment during a given service. It contains documents that track the condition of the equipment before services, work performed on the equipment during services, and a record of its status after finishing services. Commanders and PLs must specify who has responsibility to assemble and review individual vehicles service packets. This process should mirror the certification strategy described in section I of this chapter as well as the section describing supervision roles and responsibilities in chapter 7. Service packets are a powerful tool for ensuring that the standard has been met and are the document of record that communicate to the Army and future leaders in the unit that the standard was met during a particular scheduled service.

3-10. DA Pam 750-3, paragraph 7-2 states that when field maintenance personnel perform scheduled services on a piece of equipment, they should complete and return the following forms as part of the service packet:

- (1) A current completed DA Form 5988-E used for field-level PMCS with signatures and corrective action initials, which operators are to submit with equipment to be serviced. DA Form 5988-E must include all actions that were performed at a minimum. This does not include all checks completed, only actions.
- (2) The original DA Form 5988-E used for QA/QC to close out service with signatures and corrective action initials.
- (3) An updated DA Form 5988-E with all uncorrected faults and parts required entered in GCSS–A upon completion of the scheduled service.
- (4) A copy of the closed DA Form 5987-E *(Motor Equipment Dispatch)* or DD Form 1970 *(Motor Equipment Utilization Record)* for initial and final road tests upon completion of the scheduled service (for motor vehicles only).
- (5) A completed work order as part of service packet (DA Form 2407 *[Maintenance Request]* or DA Form 5990-E [*Maintenance Request]).*

3-11. In addition to the forms prescribed in DA Pam 750-3, M1-series tanks must have their DA Form 2408- 4 *(Weapons Record Data*) updated after exercising the recoil or borescope test and updated on the 1452 TACOM Unique Logistics Support Applications (TULSA). The Bradley FoVs include the DA Form 5988-E documenting the service for the M242 25 mm gun IAW TM 9 - 1005-200-23&P.

3-12. The USAARMS recommends the completion of a standard service packet for M1 Abrams and M2 Bradleys which contains the following items (see appendix D for example):

- (1) DA Form 7928 (*M1/M2 Scheduled Service Cover Sheet*).
- (2) DA Form 7929 (*M1/M2 Scheduled Service Induction Checklist*).

- (3) DA Form 5988-E from initial -10/-20 PMCS.
- (4) DA Form 5987-E from initial road test.
- (5) DA Form 5988-E is used to track actions during services.
- (6) DA Form 7930.
- (7) Updated DA Form 2408-4.
- (8) M242 25 mm gun serviced IAW TM 9-1005-200-23&P.
- (9) Borescope and recoil updated in TULSA website (M1).
- (10) DA Form 5988-E, which reflects final updates after checks complete.
- (11) DA Form 5988-E, which reflects parts ordered during services.
- (12) DA Form 5987-E from final road test.
- (13) Finalized DA Form 5990-E.

3-13. Figure 3-1 Explains the relationship between the requirements for a service packet as outlined in DA Pam 750-3 and the example service packet provided in appendix D. An explanation of each item in the service packet is included in paragraphs 3-14 through 3-22.

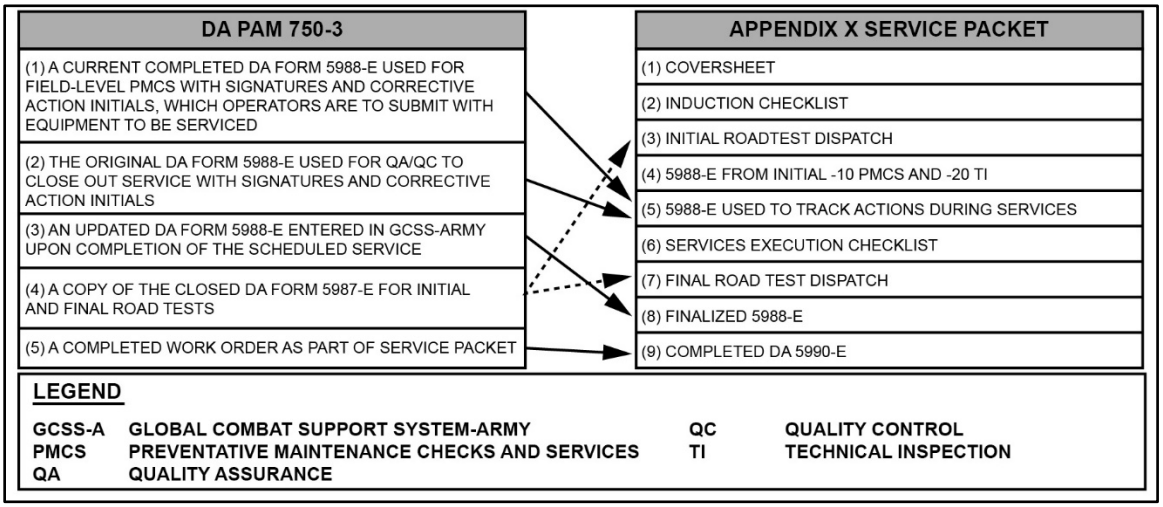

Figure 3-1. DA Pam 750-3, service packet crosswalk

(1) DA FORM 7928—SCHEDULED SERVICE COVER SHEET

3-14. The cover sheet provides administrative information about the vehicle's service. It covers technical information about the vehicle itself so that anyone referencing the service packet can determine exactly what vehicle the packet pertains to and, also, provides information about who serviced the vehicle. The cover sheet contains the table of contents for the service packet, with boxes that the VC must initial to indicate that each item is present. When all items are present in the service packet and the vehicle has met the standard required in the TM to complete services, the TC then signs in the approval table to indicate they have verified the contents of the service packet are complete and accurate. The approval table contains signature blocks from the VC to battalion level. A service packet, and the service it was created to track, is not considered complete until the approval table section is endorsed by all required echelons.

(2) DA FORM 7929—SCHEDULE SERVICE INDUCTION CHECKLIST

3-15. The induction checklist provides a set of conditions a platform must meet to begin services. Platoons must establish the induction standards during the issue orders phase of the 8-step training model to ensure that vehicle crews have enough time to bring their vehicles up to those standards. The induction checklist serves as proof that platoons have met the standard to begin services. The induction standards should be designed to ensure a vehicle is in the condition required by the TM before beginning services. The induction checklist included in appendix D should be modified at the unit level to meet specific mission requirements. (See chapter 5, section IV for details about induction checks.)

(3) DA FORM 5988-E—FROM INITIAL—10/-20 PMCS

3-16. The highest-level operator service will be performed once month prior to the start of services and recorded on a DA Form 5988-E. This form is included in the service packet as a reference of the vehicle's status before it began induction checks and to prove that parts were ordered at least 30 days in advance of services. This form is also included on the induction checklist. An example of best practice is to conduct a joint operator and maintainer PMCS through the monthly interval at least one month prior to services provides time for the supply system to provide the parts required to fix any faults that would prevent the vehicle from accomplishing services.

(4) DA FORM 5987-E—FROM INITIAL ROAD TEST

3-17. The DA Form 5987-E is the dispatch used to conduct the vehicle's initial 5-mile road test. The initial road test should meet the conditions laid out in the vehicle's TM for the service being conducted, but the DA Form 5987-E included in the service packet should be for a one-day dispatch made specifically for the mission requirement of a services road test. This form is included in the service packet as a record of the date and conditions in which the road test took place. The initial 5-mile road test must take place no earlier than 72 hours prior to beginning services on the vehicle.

(5) DA FORM 5988-E—USED TO TRACK ACTIONS DURING SERVICES

3-18. This DA Form 5988-E accurately reflects the vehicles maintenance status and administrative information immediately before the vehicle begins services. It should differ from the 30-day PMCS DA Form 5988-E as some faults identified in the 30-day PMCS should have been fixed and the vehicle's mileage will have likely changed. This is the DA Form 5988-E that is used to generate the DA Form 5987-E for the initial road test and is included in the service packet as a reference for the status of the vehicle immediately before services. During services, this DA Form 5988-E is used to log all maintenance performed on the vehicle. It is not a log of who performed every check in the service but only of faults or maintenance performed. Copies of this form should be printed as necessary for writing space, to include using separate copies for the crew and maintainers, but all copies should be stored in the service packet as a deliberate knowledge management effort. Any check that requires installation of a part, adjustment of a component, or any check does not meet the "PASS" criteria in the TM is recorded on the DA Form 5988-E. As the service is completed this DA Form 5988-E functions as a log of who performed maintenance on the vehicle and of maintenance due outs stemming from "FAILED" checks that must meet "PASS" criteria before the vehicle can finish services. When all services checks have been completed, the information from this DA Form 5988-E is input into GCSS-A, and operators conduct a daily PMCS to generate the finalized DA Form 5988-E, item (7) of the service packet.

(6) DA FORM 7930—M1/M2 SCHEDULED SERVICES EXECUTION CHECKLIST

3-19. The DA Form 7930 tracks the progression of a vehicle through services and assists leaders in deliberately managing the QA/QC of services checks made on that vehicle. As Soldiers conduct services checks and tasks, they initial in the "completion" column when the task is done and meets the "PASS" criteria. Whoever is responsible for QC of that Soldier per table 7-1 on page 42 then initials in the 'QC' column when they have reviewed that Soldier's work and concur that the check is a "PASS." When both the "completion" and "QC" columns are initialed, the QA authority for whoever originally completed the check will verify that the task has been completed correctly and sign in the "QA" column. Tasks are not considered complete until all three columns are initialed. Vehicles are not considered complete with services until all checks are complete. Tasks that are not complete because they do not meet the "PASS" criteria are tracked on the vehicle's running DA 5988-E, item (5) in the service packet.

(7) FINALIZED 5988-E

3-20. The Final DA Form 5988-E included in the service packet should digitally reflect any changes in the maintenance status of the vehicle made during services. It is the result inputting the data from the

DA Form 5988-E used to track actions during services (5) and then conducting an operator PMCS through daily checks. This 5988-E is used to generate the DA Form 5987-E for the final road test (8).

(8) DA FORM 5987-E FROM FINAL ROAD TEST

3-21. The DA Form 5987-E is the dispatch used to conduct the vehicle's final road test. The final road test should meet the conditions laid out in the vehicle's TM for the service being conducted, but the DA Form 5987-E included in the service packet should be for a one-day dispatch made specifically for the mission requirement of a services road test. The vehicle's TC and FMT chief ensure the DA Form 5987-E is included in the service packet as a record of the date and conditions in which the road test took place.

(9) COMPLETED DA FORM 5990-E

3-22. The DA Form 5990-E is a work order generated by GCSS-A. The DA Form 5990-E included in the service packet is the one associated with the services work order for that equipment. It is included in the service packet as evidence that the service was closed in the system of record. This form can be thought of as the final "receipt" that indicates completion of the service to standard in the Army's system of record.

Chapter 4

Recon the Site

Chapter 4 covers important variables that Platoons need to consider during their recon of the services site. When conducting recon of a services site, the PL should consider lift capabilities available, environmental considerations, access to tools, options for the command and control structure, and support from higher echelon maintenance assets. Services can be conducted in a variety of locations, including a unit's own motor pool, a different unit's motor pool, or even in the field. Wherever a unit does services, the location itself will impose constraints that will need to be accounted for in the plan.

SECTION I – LIFT REQUIREMENTS

4-1. One of the most important things to keep in mind when conducting a recon of the services site is access to lift assets. The powerpack (engine and transmission together) must be removed from the vehicle for semiannual M1 Abrams services and annual M1 Abrams and M2 Bradley services. Removing the pack requires heavy lift assets, qualified operators, and enough space for them to use them. PLs must understand the primary, alternate, contingency, and emergency (known as PACE) plan that details how, where, and when all packs in their platoon are going to be removed. This is a key step in developing a realistic plan for services. The PACE plan for lift will involve assets that are not organic to the platoon in, so it is usually developed at the company or battalion level, but the PL must be familiar with how it will affect their platoon when implemented. The availability of lift assets will also play a key role in determining where services will take place and how many vehicles can be serviced at concurrently. Table 4 - 1 on pages 23 and 24 provides a list of the potential lift capabilities available in most ABCTs.

Table 4-1. Potential lift capabilities

Name	***Where it is Found***	***Pros***	***Cons***
10-Ton Indoor Crane	Most modern motor pool maintenance facilities.	• Can pull M1/M2 powerpack. • Can pull an M2 turret. • Located indoors. • Fastest, safest, and most reliable.	• High competition for use. • Limited bay space available.
30-Ton Indoor Crane	Brigade support battalion's motor pool maintenance facility.	• Can pull an M1 turret.	• Controlled by brigade. • Normally used for major repairs outside of services.
Field Repair System (FRS)	Company field maintenance team (FMT).	• Easy access to tools. • Is mobile and can be set up on any firm, level ground.	• Limits throughput to two packs pulled at a time. • Requires space in the motor pool.

Table 4-1. Potential lift capabilities

Name	*Where it is Found*	*Pros*	*Cons*
M88A2 Armored Recovery Vehicle	Company FMT or battalion service and recovery section.	• Can be used on any level ground. • Can pull powerpacks one at a time on various surfaces.	• Requires space in the motor pool. • Slowest method for pulling packs.
M984 Wheeled Wrecker	Battalion service and recovery section.	• Can be used anywhere.	• Slow. • Supports recovery missions that are managed at the battalion.

4-2. All lift assets require annual load testing to ensure they are safe for use. Load testing is an annual requirement performed by safety inspectors and scheduled by the battalion MCS. Once certified, the new due date is spray painted on the equipment for easy reference. The PL should verify lift assets have been load-tested prior to use.

SECTION II – ENVIRONMENTAL CONSIDERATIONS

4-3. Damage to the environment is an inherent risk of maintenance operations that platoons must carefully mitigate. The U.S. Army mitigates this risk by adhering to all host nation, federal, state, and local regulations. To ensure that subordinate units are following these regulations, all installations have an environmental compliance team that inspects maintenance operations for compliance and provides resources to help bring delinquent units into compliance. These teams will order a unit's maintenance operations to halt if that unit is in violation of environmental protection requirements. To avoid these disruptions, the battalion environmental program is usually directly managed by the MCS. PLs must ensure that their plan for services is not in violation of any environmental regulations before they begin. Although considerations vary widely at different times and locations, PLs should always plan to prevent uncontrolled POL leaks and quickly clean up those that do. To learn more about local environmental requirements, platoons should send Soldiers to their installation's Environmental Officer Course and ask their MCS directly.

4-4. Just as services can have an impact on the environment that needs to be planned for, the reverse is also true. Certain environmental factors can have a severe detriment to the work done during services if they are not adequately planned for. The two greatest concerns are unwanted dust and moisture being introduced into the vehicle from the environment. Allowing dirt into an M1 Abrams' air induction system is a sure way to cause foreign object damage to the engine. Ground-hopping an M2 pack in standing water is sure to cause electrical faults. Conducting services on dry and level ground, covering exposed components with tarps when not being worked on, and using a serviceable ground-hop filter are good practices for protecting vehicles from the elements during services, but may not be enough. Platoons should always consider how the environment will affect their operations and plan to mitigate the negative effects.

SECTION III – ACCESS TO TOOLS AND SPECIAL TOOLS

4-5. Successful services start with having the tools on hand to properly conduct each service task. The tools required for operator-level service checks are part of the vehicles' BII. Platoons must have all BII present, serviceable, and accessible during services. Maintainers generally have access to their own toolkits that have the remainder of the common tools required by most services tasks. PLs will ensure that their platoons are accountable for their BII and that it is serviceable. There are also certain expendable items, like rags and spray paint, that are important for services. (See table 2-1 on page 11 for a list of these expendable items to consider.)

4-6. In addition to the normal tools that are required to perform services tasks there are also several special tools for both the M1 Abrams and M2 Bradley that are required for specific tasks in the -20 TM. It is impossible to perform services to standard without access to these tools. PLs verify early that these tools are on hand with the FMT and make it known to the company commander if they are not. If the special tools required are not on hand, it is generally the responsibility of the company XO or battalion MCS to acquire them. Failure to use correct tools and equipment could result in injury to personnel or damage to equipment. A list of the special tools required for M1 Abrams and M2 Bradley services can be found in table 4-2 or in the "initial setup" section of the service work package in the TM (see figure 2-3 on page 10) (see table 4 - 2).

Table 4-2. Example of special tools for M1 and M2 services

Item	***Requirement***
M1 or M2 Pack Sling	This is tool is needed to remove the pack for M1 Abrams services and M2 Bradley annual services
3-Point Sling	While not explicitly require for services, this tool is useful for lifting heavy components on both vehicles
Purge Kit	The purge kit is used to purge moisture from inside optics. It is a required task for both annual and semiannual M1 and M2 services. Units should pay special attention that both the correct nozzles and nitrogen tanks are on hand to use the purge kit.
Borescope	Borescopes are used in M1 services to check the integrity of the 120mm gun tube.
Recoil Test Kit	The recoil test kit is used to check the proper functioning of the M1's 120mm recoil mechanism
Torque Wrench	Torque wrenches are used for various tasks in both M1 and M2 services. Torque wrenches come in various sizes, and all must be calibrated by TMDE. Units should make sure that at least a 1,000-pound rated torque wrench that has been tested by TMDE is on hand before beginning services.
M2 Transmission Lifting Sling	This tool is required for removing the deck on the M2.
TOW Simulator	This tool is required for testing the proper functioning of the TOW System Evaluation Missile (TSEM) launcher on the M2.
M1 or M2 Ground Hop Kit	Ground hop kits are required for testing the operability of both vehicles powerpacks when they are not installed in the vehicle. It is helpful to have multiple functional ground hop kits in a company to support services. Each FMT must have a minimum of one functional ground hop kit.
Fire Suppression Test Kit	The fire suppression test kit is required by both the M1 and M2 to test that the fire suppression sensors are properly functioning
Refractometer	The refractometer is used to test the alkalinity of the coolant on the M2
Battery Charge Stations	Battery charge stations are used by both the M1 and M2 to maintain the vehicles batteries when they are removed from the vehicle during services. Each FMT should have at least two.
Pressure Washer / Steam Cleaner	Pressure washers are useful for cleaning out the engine compartments of both vehicles while the packs are removed. They are interchangeable with steam cleaners.
Note. Refer to applicable technical manual for full listing of required tools.	
Legend: FMT—field maintenance team; mm—millimeter; TOW—tube launched, optically tracked, wire guided;	

SECTION IV – COMMAND AND CONTROL STRUCTURE

4-7. While conducting their reconnaissance, the PL and company commander should consider where they will establish their command posts (CPs) for the duration of services and what they will look like. The importance of a well-run command post, where leaders can control and track the execution of services while near the work being done, cannot be overstated. (See ATP 6-0.5 for information about CP functions directly related to assisting commanders in understanding, visualizing, describing, directing, leading, and assessing operations.) Functions common to all CPs include —

- Conducting knowledge management and information management.
- Building and maintaining situational understanding.
- Controlling operations.
- Assessing operations.
- Coordinating with internal and external organizations.
- Performing CP administration.

4-8. During a services operation, CPs must perform these same functions. Commanders must establish clear expectations of how the CP will be established during services. Generally, it is best to establish CPs at echelon in the same manner as any other operation. This method allows multiple echelons to train on CP operations and establish their CP near the services site. A CP's primary role during services is the knowledge management of a platoon's progress towards the completion of services as they are tracked through individual service packets. This information can be tracked on status boards and updated by PLs to ensure their accuracy and serve as a method for maintaining accountability (See chapter 7, section II for more information on the supervision and tracking of services). Command teams and platoon leadership in the CP make decisions based on the information recorded in this CP and compile and send reports to the battalion headquarters.

Services Command Post Example

Leaders will always have various responsibilities competing for their time and attention. Platoon and company leadership are simply unable to be always at the point of execution during services, as both echelons will have other duties to perform. Despite this, it is imperative that leaders place the proper command emphasis on services by spending as much time as possible directly overseeing their execution.

A proven technique to demonstrate this emphasis is by moving the platoon or company headquarters to the services site for the duration of services. This allows the leader to quickly move back and forth between overseeing services and other responsibilities and clearly shows where the leader's focus is during that time.

SECTION V – SUPPORT FROM HIGHER LEVEL ASSETS

4-9. During reconnaissance of the site leaders should also consider the availability of support from higher level assets that may be required. Higher echelons, generally battalion or brigade control several different assets that are either required to complete platoon services or increase their efficiency. A non-inclusive list of these assets, their function, and considerations a PL should make during their recon is discussed in paragraphs 4-10 to 4-15.

BATTALION ARMAMENT SHOP

4-10. The battalion's qualified weapons maintainers are found in the armament shop. Soldiers with military occupational specialty 91F are the only personnel authorized to perform services and install parts on small arms. To perform quarterly or higher services on weapons, companies need to coordinate with the armament shop. The armament shop is also responsible for certain functions on other weapons, such as bore-scoping M1 Abrams gun tubes and mortars, and servicing M242s. Coordination with the armament shop is generally done by the company XO. PLs should check with their XO to ensure that armament will be present as required

to support their services. PLs also need to consider the company armorer's schedule when planning to service their weapons, as the armorer controls all access to the company arms room.

COMPANY COMMUNICATIONS SHOP/ BATTALION S-6

4-11. Coordinating to have qualified communications maintainers present to assist in servicing and troubleshooting the platoon's communication equipment is one of the most commonly overlooked steps in services. Communications equipment is critical to the platoon's mission and notoriously difficult to troubleshoot. PLs should make a deliberate plan prior to beginning services for bringing qualified 25-series Soldiers to bear on communications equipment problems. Without a deliberate plan for maximum support during a specified time frame, the platoon will only receive communication help as S-6 is available, which is likely to result in unaddressed communication problems remaining after services. PLs should work with the S-6 and their company communication representative to solve problems with radios, JBCP, DAGRs/ED3s, combat vehicle crewman helmets, and the VIC-3 systems in their vehicles.

B COMPANY/BRIGADE SUPPORT BATTALION AND NGATS/ ELECTRONICS MAINTENANCE

4-12. Certain equipment, like line-replaceable units (known as LRU) from M1 Abrams and M2 Bradleys or night vision goggles, requires highly technical diagnostic equipment to work on it. This equipment, and the low-density MOSs trained to use it, is found in the brigade support battalion's (BSB's) bravo (B) company. The most relevant sections of B/BSB to M1 Abrams or M2 Bradley platoons are the electronics maintenance section and Next Generation Advanced Testing System (NGATS). The electronics maintenance section has equipment for maintaining and diagnosing sensitive electronic equipment like radios and night vision goggles. NGATS has equipment for diagnosing and repairing several LRUs on M1 Abrams and M2 Bradleys. It is rare that platoons have cause to interact with either of these sections but very likely that some of their equipment will be serviced by them. PLs should be familiar with the process their FMT/XO uses to evacuate items to the BSB for maintenance.

FIELD SERVICE REPRESENTATIVES

4-13. FSRs are civilian contractors who are subject matter experts on various pieces of equipment. FSRs are often able to perform advanced troubleshooting and repair that is not normally authorized at the field level. FSR support is often managed at the brigade level, and platoons or companies in need of FSR support to solve a particularly difficult issue should work through their battalion's MCS to arrange for that support.

LOGISTICS ASSISTANCE REPRESENTATIVES

4-14. Logistics assistance representatives (known as LARs) are MSC-provided subject matter experts on all ground combat system platforms (see AR 700-4). LARs are assets to assist commanders in identifying trends and solving readiness issues at the unit level. They elevate issues that cannot be solved at the unit to the next appropriate command/agency. They assist the commander in analyzing equipment readiness, identifying problems, determining responsibility for resolution and, when appropriate, assisting in the resolution. They use the AMC-approved standardized reporting system that provides actionable outputs to assist the unit commanders and the Army Enterprise Systems Integration Program (AESIP) in resolving readiness, training, safety, availability, and reliability issues. LARs are a division-level and below asset that represent the TACOM commander.

BATTALION ERPS SECTION, PARTS ROOM, AND THE SUPPLY SUPPORT ACTIVITY

4-15. Parts flow is one of the most important considerations in the efficiency of maintenance in Armored formations. The battalion MCS is devoted to finding and getting the right parts for equipment as fast as possible. The maintenance control sergeant and ERPS section have the greatest control over the flow of parts. ERPS clerks are assigned to respective maintenance teams to ensure parts are ordered in a timely manner. Most battalions have secure space where parts received from the supply support activity are stored until processed and issued to the vehicle that requires them. The supply support activity is a section of the BSB that receives all supplies from national depots and processes them for distribution to the supported battalions.

Most units will not issue parts until all parts required to fix a fault have arrived and a person qualified to install them has signed for them. Platoons should be familiar with where their parts room is, who is responsible for it, and their unit's procedures for signing for parts. Some units will allow operators to sign for parts that can be installed at the operator level, but others always require maintainers to sign for parts.

Suggested Crew Parts Flow Technique

Allowing crews to sign for their own parts allows them to make repairs at their level more efficiently and fosters a culture of ownership. The following process is a technique for allowing crews to sign for and install their own parts while mitigating the risk of lost or improperly installed parts.

1) A crew notes that their DA Form 5988-E indicates that the parts required to fix a fault are on hand.
2) The crew finds the portion of the TM with the instructions for how to install that part and fix the fault and verifies that it can be accomplished at the operator level.
3) The crew shows the DA 5988-E and relevant portion of the TM to a maintainer, who then signs the DA Form 5988-E, which indicates to the parts room that that crew is allowed to sign for that part.
4)The crew draws the part, installs it, and has their work QAd/QCd by a maintainer NCO who then consumes the part in GCSS-A and updates the DA Form 5988-E.

Chapter 5

Issue Orders

Chapter 5 describes company and battalion operations order (OPORD) considerations for Armored platoon services, discusses the platoon services in-brief between platoons and the battalion commander, and includes considerations for induction standards and reporting requirements.

SECTION I –SERVICES OPERATIONS ORDERS

5-1. The company services OPORD directs tasks to subordinate platoons, establishes the execution timeline, and provides the commander's overall intent for the services. Platoon services rely on the company OPORD to give subordinate PLs clear guidelines for planning that are nested within the battalion's overall plan. The order also serves as a well-understood starting point for any alterations to the plan during execution. Company commanders should begin executing troop leading procedures for services in parallel to the battalion's military decision-making process for services planning. (See figure 2-1 on page 8 for a timeline of the parallel planning process that includes when orders should be published in relation to one another.)

5-2. Publishing a mission order emphasizes to subordinates the results to be attained, not how they are to achieve them (see ADP 6-0). Mission orders direct subordinates on what to do and why to do it without prescribing exactly how to do it (see FM 5-0). The company and battalion services OPORDs establish services as a mission rather than a crew or maintainer task to be completed among many others. Platoon services often fail in the absence of a published order because there is no synchronized effort to focus the time and resources necessary to accomplish each successive platoon service to standard.

SECTION II – PLATOON SERVICE IN-BRIEF

5-3. Before beginning services, PLs must brief their plan to their company and battalion commanders. These briefs are commonly referred to as services in-briefs and cover the platoon's plan for the execution and command and control of services, as well as being a more general meeting to discuss the maintenance readiness of that platoon. The meeting should be held as close to the services site as possible and typical attendees include the battalion commander, battalion XO, battalion maintenance officer, battalion maintenance technician, MCS/maintenance control officer, company commander, company XO, PL, and PSG. Platoon services are an opportunity for battalion leadership to directly assess a platoon's ability to execute TLPs. The services in-brief is often the most important opportunity for the battalion leadership to assess and the platoon to demonstrate proficiency in planning.

5-4. There are a variety of topics that are appropriate to be discussed at the services in-brief depending on the mission requirements of a particular unit. Some of the general topics that are most common in services in-briefs are:

- The platoon's mission statement for services, nested within their commander's intent.
- The overall schedule the platoon will be following for the entire services window, nested with the company and battalion training calendar.
- A status check of the platoon's progress in using the 8-step training model to plan for services.
- An in-depth review of the readiness of each combat platform in the platoon.
- A review of the platoon's ancillary equipment and personnel readiness.
- The platoon's troops-to-task for the weeks the platoon will be executing services.
- The daily battle rhythm the platoon will be following and how it nests with company and battalion reporting requirements.
- An in-depth plan for each week of services that details what checks will be done at what time, and this plan usually provides detail to the hourly level for all days that the platoon is conducting services.
- Anticipated resource shortfalls.

- A risk assessment with risks to mission and risks to force categorized separately.

5-5. Other common topics addressed in the services in-brief include:

- The status of each vehicle towards meeting the induction criteria.
- The status of the PL on gathering the publications required to service all of the identified equipment.
- Status of leader certification within the platoon.
- Coordinating instructions the platoon is either dictated in the company or battalion order or that the platoon has set out.
- The PACE plan for lift assets during services.
- A map that provides a visual reference for the platoon's plan to deconflict services in time and space.

Note. An example of a services in-brief slide deck can be found in appendix A.

SECTION III – REPORTING REQUIREMENTS

5-6. Communication between echelons is the key to achieving effective synchronization in any military operation. During services, this most commonly takes the form of daily reports, flowing from the bottom up. The reporting requirements for a services window are laid out in the battalion and company OPORDs. The goal of the reports is to build a common operating picture of how close each platoon is to completing their services mission and any challenges that they are facing. This provides the information that leaders at higher echelons need to make the decisions required to mitigate risks to the services mission and meet their commanders' intent.

5-7. Reports come from the crew level, with each TC and mechanic reporting to their platoon leadership the tasks that they completed each day. Before beginning services each day, the PL must brief their platoon about what reports they expect to receive and when they are required to be submitted. A detailed discussion of how to track task completion during services, as well as a sample daily battle rhythm that includes a model for reports, is included in chapter 7, section I. The platoon aggregates these reports by a set time each day and creates a platoon report that details everything accomplished that day, everything to be accomplished the next day, and any resourcing challenges anticipated that require attention. The company compiles the platoon reports and passes them on to battalion, and the battalion passes to brigade.

5-8. The company and battalion OPORDS will also provide platoons with certain conditions that require separate reports of their own. *A commanders critical information requirement) is specific information identified by the commander as being essential to facilitate timely decision making* (JP 3-0). Commander's critical information requirements (CCIRs) are linked to common or anticipated decisions identified by the commander during the planning process (see FM 3-0, chapter 8 for details on CCIR). Common CCIR during platoon services are any event that risks disrupting the published services plan by more than a specified threshold. These CCIRs provide information that company and battalion commanders need to make decisions to manage the services mission, such as adjusting work hours or reallocating resources such as parts and mechanics to maintain the published timeline. All members of the platoon should be familiar with the CCIRs that are published in the company OPORD.

SECTION IV – INDUCTION STANDARDS

5-9. The induction standards are a set of conditions a given platform must meet to begin services. Commanders must establish the induction standards through the orders process during the issue orders phase of the 8-step training model to ensure that vehicle crews have enough time to bring their vehicles up to those standards. The induction standards are designed to ensure a vehicle meets the condition required by the applicable -10/-20 TMs before beginning services (See AR 750-1 for the one Army maintenance standard). Once a vehicle passes the induction checks, it should immediately begin services.

5-10. Induction checks are important to quality services because they ensure that the vehicles being serviced are in the state required by the TM for that type of service, and they set conditions for a successful service by identifying faults that would disrupt services early and give the supply system time to provide the parts required to fix those faults before the vehicle beings services. Failure to perform adequate induction checks

will result in crew members and mechanics spending valuable time during the services period on tasks that are not tracked in the services packet, services beginning with a lack of adequate resources, and vehicles being inducted that do not meet the requirements in the TM to begin services.

5-11. Induction checks are heavily mission dependent but usually contain some standard for cleanliness and operability and have a series of prerequisite actions that must have been done. (See appendix D for an example of an induction checklist included as part of the standard service packet.) The following is a list of common considerations for induction checks that may be included on the induction requirements for an individual service:

- GCSS-A generated service schedule.
- Minimum of 5-mile road test.
- Serviceability and accountability of BII, components of end items and current TM.
- Activity address codes.
- Operators perform -10 monthly PMCS and annotate deficiencies on DA Form 5988-E.
- Operators perform -10/20 PMCS on all ancillary equipment and annotate deficiencies on DA Form 5988 - E.
- Service packet preparation.
- All non-deadlining parts have been installed.
- Identification of any outstanding maintenance work orders or safety of use messages.
- General cleanliness.

5-12. Preparing vehicles for induction should be an ongoing effort on the part of the platoon as it approaches the services start date. The final induction checks should be a deliberately planned event that coincides with the start of a platoon's given services window. The induction checks should be done at the platoon level and then given the final QA check by the company FMT chief and the battalion MCS. A vehicle may not begin services until the company commander approves its induction checklist.

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Chapter 6
Rehearse

Chapter 6 covers rehearsals conducted prior to platoon services. Rehearsals are the important final step in the preparation for services. They are the final chance for a PL or commander to build shared understanding across the formation before execution begins. Rehearsals allow leaders to assess their subordinates' preparations and identify areas that require more supervision (see FM 5-0). Leaders conduct rehearsals to—

- Practice essential tasks.
- Identify weaknesses in the plan.
- Coordinate subordinate element actions.
- Improve shared understanding of the concept of operations.
- Foster confidence among Soldiers.

Company and smaller-sized units use five types of rehearsals including confirmation brief, backbrief, combined arms rehearsal, support rehearsal, and battle drill or standard operating procedure rehearsal (See FM 5-0). This chapter will discuss three rehearsal methods that are effective for building shared understanding of the services plan: terrain walks (a form of support rehearsal) covered in section I and confirmation briefs and back briefs covered in section II.

SECTION I – Terrain Walk

6-1. The terrain walk is the best form of rehearsal for services. A terrain walk is a physical tour of locations specified in the services order or that will be key terrain for the services. Terrain walks not only ensure that all subordinates are familiar with the space in which services will take place, but also give leaders the opportunity to discuss tasks and standards within the context of the sites where they will take place. Key inputs for a successful terrain walk are a detailed OPORD that specifies the platoon area of operations and company key terrain for the services. Using this, PLs can develop a route plan for the terrain walk that includes all relevant sites. At those sites, the PL should lead discussions about the tasks that will be performed there to ensure all subordinate elements leave with a shared understanding of the standards for those tasks and the methods that will be used to enforce those standards.

6-2. When executed well, the terrain walk allows a platoon a practice run of the entire services window without any moving parts (literally and figuratively). Feedback from TCs and crew members during the terrain walk will identify friction points to be addressed before services begins. This feedback should be deliberately sought out by encouraging subordinates to critique the plan and by conducting the rehearsal with as large an audience as is manageable. By encouraging feedback during the terrain, walk the PL also increases buy-in from their subordinates by giving them input in the planning process.

6-3. A successful terrain walk ends with all members of the platoon having a firm understanding of the plan for the execution of services, the standards to be met and how they are being enforced, and their role in meeting that standard. Terrain walks, and other rehearsals, are a great opportunity for introducing new leaders and Soldiers to what the ideal execution of platoon services should look like before friction is introduced during execution. Even if the plan is altered significantly once the services begin, there is a positive impact from creating a shared understanding amongst junior leaders of what the ideal standard to strive for is in reference to platoon services.

SECTION II – CONFIRMATION AND BACKBRIEFS

6-4. Confirmation briefs and backbriefs are essential to ensuring the successful execution of services. Confirmation briefs are typically held immediately after the OPORD brief, and backbriefs and may be included in a terrain walk or planned as a separate event. *A confirmation brief is a brief subordinate leaders*

give to the higher commander immediately after the order is given to confirm understanding (ADP 5-0). While the terrain walk and OPORD serve as tools for building shared understanding of the plan, back briefs confirm that the requisite level of understanding has been reached. Commander's intent is disseminated through confirmation briefs. Without a confirmation brief, leaders have no way of knowing that their intent is properly understood, creating the possibility for subordinates to act in a way that could be counterproductive to the mission.

6-5. Services confirmation briefs at the platoon level should focus on understanding the specific requirements made by the OPORD, as well as the standards for various phases of the operation. Subordinate leaders within the platoon need to understand the standards and QA/QC measures for induction checks, daily tasks in the services packet, services on ancillary equipment, and reporting requirements to the platoon level. Ensuring that subordinates can demonstrate a firm understanding of these standards to their leadership gives the leadership confidence that the standards will be upheld and better allows them to enforce those standards.

6-6. The services backbrief differs from the confirmation brief in that subordinates are given time to complete their plan (see FM 5-0). The difference between a backbrief and a confirmation brief is the level of detail. A services backbrief communicates the service plan from start to finish, describing each phase of the service plan. A backbrief can be conducted during a terrain walk which allows leaders and Soldiers to share a common understanding of the concept of the operation. When conducting a terrain walk rehearsal, a backbrief may include an explanation of the maintenance and service areas, flow of vehicles from the induction inspection to the maintenance bay, and location of key leaders throughout execution.

Chapter 7
Execution

Chapter 7 discusses the execution of services. The goal of services is to perform all actions as required by the appropriate TM to ensure that equipment is serviceable and ready for combat. This chapter provides recommendations on how to account for the time it takes to accomplish all tasks during an M1 Abrams or M2 Bradley platoon services window respectively and uses this as a basis for discussing how leaders should supervise their subordinates to ensure standards are met. Chapter 7 also covers methods leaders can use at the platoon level to keep services on the published schedule and planning considerations for ancillary and personnel services.

SECTION I – Time Allocation During Services

ALLOCATING AND UNDERSTANDING TIME

7-1. The allocation and understanding of time are important factors in the execution of services. Units generally allocate three weeks for services broken down into one week of hull, one week of turret, and one week for ancillary equipment and Soldier readiness services. It can be difficult to quantify exactly how long a given vehicle will take due to many variables. Factors that will influence the duration services and the scale of services that are executed simultaneously include:

- The maintenance status of the equipment going into services—has it met induction criteria and is - 10/-20 standard?
- The number and experience of mechanics—is the FMT at full or reduced strength?
- The number and experience of the crew—is the crew at full or reduced strength?
- The amount of time in the day that is dedicated to the service mission versus competing requirements—are services the unit's place of duty?
- Number of critical special tools, such as ground hop kits.
- Number and severity of new faults found, and the supply status of parts needed to repair.
- The number of lift assets and suitable space.

Note. As discussed in chapter 4, units can execute services in different environments often with trade-offs in efficiency.

7-2. There are several considerations leaders can put in place to ensure the most effective execution of the platoon's service mission. Commanders plan to provide the personnel and time allocation necessary to complete this mission. At the battalion level, the commander can make the decision to ensure the FMTs are at the highest strength possible. The task organization of crews and mechanics can affect the efficiency. Leaders can excuse mechanics from the duty roster for the published service period shown on the training calendar. A crewmember's place of duty is the service line, with only deliberate exceptions granted. An example is each tank or Bradley in hull service is assigned a designated mechanic while each tank or Bradley in turret service gets a designated turret mechanic. In addition, the tanks or Bradleys will have a senior mechanic supervising the hull and turret services, respectively. With this organization for the service, it is possible to execute a full service without being at full mechanic strength.

7-3. In allocating all required tasks within the service window, leaders should become familiar with the most current -10/-20 TMs for their equipment and key components such as the evaluation of the cannon tube (M1 Abrams), low-profile Common Remote Operating Weapon Station (CROWS) (M1 Abrams) and M242 chain gun (M2 Bradley). Maintenance -10/-20 series manuals identify operator/crew and mechanic tasks. Leaders, informed by their senior mechanics, should become familiar with the MAC for every piece of assigned equipment to ensure they allocate enough time to the task.

7-4. A unit's FMT have the authorization to perform all maintenance tasks coded "C;" and "F" as outlined in the equipment TM's maintenance activity chart when skilled maintainers; required sets, kits, and outfits (known as SKO); tools; test, measurement, and diagnostic equipment (known as TMDE); and other necessary resources are available to perform the maintenance task.

7-5. Sustainment maintenance organizations have the authorization to perform maintenance tasks coded "C," "F," and "H" as outlined in the equipment TM maintenance allocation charts when skilled maintainers, required SKO tools, TMDE, and other necessary resources are available to perform the maintenance task. Only depot maintenance organizations and AMC-designated sustainment maintenance activities have the authorization to perform the full range of maintenance tasks (coded "C," "F," "H," "L," and "D" as outlined in the equipment TM maintenance allocation charts). Those that possess skilled labor, industrial facilities, equipment, SKO, tools, TMDE, and other necessary resources have authorization to perform the maintenance task. (See figure 7-1 for a sample of a maintenance allocation chart.)

(1)	(2)	(3)	(4) Maintenance Level				(5)	(6)
			Field		Sustainment			
Group Number	Component Assembly	Maintenance Function	Crew C	Maintainer F	Below Depot H	Depot D	Tools and Equipment Reference Code	Remarks Code
00	TSEC/ST-34	Inspect	0.1					A
		Service	0.2					B
		Replace	0.4				1	C, D
		Test	0.3					E
		Repair		1.0			1,2	F
		Repair			2.0		1,2,3,4,5	G, H
		Repair				2.0	1,2,3,4,5,6,7,8	I
		Overhaul				10.0	1,2,3,4,5,6,7,8	J
01	Power Unit, STP-34	Inspect	0.1					A
		Test	0.3					E

LEGEND

STP-34 POWER UNIT TSEC/ST-34 COMPONENT ASSEMBLY

Figure 7-1. Sample maintenance allocation chart

7-6. The weekly schedule for hull and turret maintenance is based on the tasks defined in the -10 and -20 TMs. M1 Abrams scheduled services planning factors vary by model. Leaders should always consult the most up to date TM obtained from the AESIP website as described in appendix C. (See figures 7-1 and 7-2 for general planning factors for the M1 Abrams.) Likewise, the M2 Bradley scheduled services planning factors vary by model. Leaders should always consult the most up-to-date TM obtained from AESIP as described in appendix C. (See figures 7-1 and 7-2 for general planning factors for the M2 Bradley.) A weekly schedule can combine both vehicle services and ancillary services to maximize the platoon's time. This schedule, in concert with the standard service packet found in appendix D, will ensure a platoon moves through services efficiently. Figures 7-2 and 7-3 provide example standard weekly by-day schedules for hull and turret tasks for a tank or mechanized platoon. These figures serve as starting points for PLs as they conduct analysis with the company FMT leader and company XO to determine the exact sequence of tasks by day based on the applicable TM and conditions described in paragraph 7-1, page 35.

SCHEDULED SERVICE WEEK 1 (HULL)					
	DAY 1	DAY 2	DAY 3	DAY 4	DAY 5
VEHICLE SERVICES	AOAP SAMPLES ROAD TEST FILTER SEALS BATTERIES BRAKES AIR CLEANER FUEL SYSTEM STEERING LINKAGE LUBE ORDER		NBC SYSTEMS COOLING SYSTEMS FIRE SUPPRESSION SYSTEM GROUND HOP FINAL DRIVES TRACK ADJUSTER PERSONNEL HEATER RIGHT ANGLE DRIVE GEAR BOX FINAL ROAD TEST		
INDIVIDUAL EQUIPMENT	NIGHT VISION DEVICES INDIVIDUAL WEAPONS OPTICS/LASERS PLATOON SPECIAL EQUIPMENT PRT				

LEGEND

AOAP	ARMY OIL ANALYSIS PROGRAM	PRT	PHYSICAL READINESS TRAINING
NBC	NUCLEAR, BIOLOGICAL AND CHEMICAL		

Figure 7-2. Standard service week (hull) example

SCHEDULED SERVICE WEEK 2 (TURRET)					
	DAY 1	DAY 2	DAY 3	DAY 4	DAY 5
VEHICLE SERVICES	TOW SPUR GEAR SELECTOR (M2) TOW ELEVATION DRIVE (M2) SIGHTS GUN SPUR GEAR (M2) TRAVERSE DRIVE LINKAGE GUN ELEVATION DRIVE CHECK WEAPONS DATA CARD CDR'S HAND STATION BOOT HATCH SEALS		TURRET WIRING HARNESS TURRET TEST COAX MG MOUNT TEST AMMO CAN ROLLER AND ROLLER RETAINER RECOIL AND BORESCOPE (M1)		
INDIVIDUAL EQUIPMENT	NIGHT VISION DEVICES INDIVIDUAL WEAPONS OPTICS/LASERS PLATOON SPECIAL EQUIPMENT PRT				

LEGEND

AMMO	AMMUNITION	MG	MASTER GUNNER
CDR	COMMANDER	PRT	PHYSICAL READINESS TRAINING
COAX	COAXIAL	TOW	TUBE-LAUNCHED, OPTICALLY-TRACKED, WIRE-GUIDED

Figure 7-3. Standard service week (turret) example

7-7. In constructing the daily battle rhythm for their service mission, leaders should ensure it will—

- Be comprehensive: the battle rhythm must allocate the time required for the crew and maintainers to execute to standard, and leaders time to supervise.
- Provide time for crewmembers and mechanics to “pay attention to detail.”
- Be a living document.

- Involve key members (MG and the maintenance technician) who are often consumed doing other tasks.
- Be preventative in nature by anticipating problems and looking for trends.
- Include time and a system allocation in which QA/QC exist.

7-8. Every day, the PL should use the weekly plan and data from the previous day to create and publish a fragmentary order (FRAGORD). The daily FRAGORD is the fighting product that a platoon uses to set expectations and synchronize their efforts. The daily FRAGORD should be formatted using the standard five-paragraphs of an OPORD and include a list of everything that needs to be accomplished that day by platform, requirements for all meetings that day, and be nested with higher echelons' schedules. The daily FRAGORD is generally built from the platoon's weekly schedule, which identifies which tasks in the service packet need to be done by what day. The exact time to complete services tasks will vary based on crew experience, mechanic experience, maintenance status of the equipment at induction into services, and unit manning. An example of a platoon's daily FRAGORD, using day 2 of an M1 Abrams's hull services from the standard weekly schedule, can be found in figure 7-4.

1/B/4-54AR

15FEB24 FRAGORD (Example)

SITUATION
1/B Continues to conduct hull services on their M1 tanks in the 4-54 AR BN motor pool. All tanks are inducted into services and prepared to begin check 1.

MISSION
1/B Conducts hull checks 1-24 on their M1 tanks to standard NLT 1700 to increase maintenance readiness of the platoon and set conditions for follow-on missions.

Key Tasks:
[ ] Hull Checks 1-24 done.
[ ] Service packet approved by PL/PSG.
[ ] Staged for hull checks 24-48.

EXECUTION

0900—Work call/ leader sync.
1200-1230—Lunch in motor pool/platoon status check.
1500-1515—Platoon status check.
1630-1700—Platoon daily sync/daily QA.
1700—Release if key tasks accomplished.

Coordinating Instructions:
--C CO must have the crane from 1500-1600
--B33 has priority for final QA/QC to allow SGT Doe to pick up son from school.

SUSTAINMENT

Additional five gallons cans of 15w40 are available in the POL storage shed.
Lunch will be provided in the motor pool near Bay 3 by the FSC's field feeding section.

COMMAND AND SIGNAL

Legend:
AR—ARMORED REGIMENT
B—BRAVO
BN—BATTALION
CO—COMPANY
FSC—FORWARD SUPPORT COMPANY
NLT—NOT LATER THAN
PL—PLATOON LEADER
POL— PETROLEUM, OILS, AND LUBRICANTS
PSG—PLATOON SERGEANT
QA—QUALITY ASSURANCE
QC—QUALITY CONTROL
SGT—SERGEANT

Figure 7-4. Example daily platoon FRAGORD

TECHNIQUES FOR DAILY COMMAND AND CONTROL

7-9. Daily sync meetings, platoon status checks, key tasks, and coordinating instructions are used to help ensure service is properly completed. (See figure 7-5 on page 41 for an example of a daily task tracking board format.)

DAILY SYNC MEETINGS

7-10. Assessments and feedback are important aspects to training and leadership, and it is no exception for the execution of services. Each day should begin and end with a service huddle involving key maintenance leaders. These meetings should be held at a minimum with PL, PSG, and TC, but should also include the company XO and a representative from the FMT. They are a chance for the PL to establish priorities of work and hear concerns from subordinates before the day starts. They are referred to as sync meetings because everyone should leave them with a clear idea of the mission for the day. The focus of the sync is to determine what has been accomplished to date and what is programmed to be performed during the next 1-2 days of the service. ***Daily sync meetings*** **should prevent surprises, maximize resources, and enable critical maintenance decisions relative to the service**. It gives the leaders the ability to set the conditions and prepare for the next day's activities with respect to resources (tools, diagnostic equipment, supplies, parts, personnel, and so forth.).

PLATOON STATUS CHECKS

7-11. ***Platoon status checks*** **occur when each crew in the platoon reports their status on that day's services checks to the platoon leader.** At status checks each crew in the platoon reports their status on that day's services checks to the PL. The PL then assesses whether the platoon is on track to accomplish their mission that day as laid out in the schedule. If the PL determines that the platoon is not likely to accomplish their mission on time these status checks are a time for them to make decisions to bring the platoon back on track or request resources from their commander to help.

KEY TASKS

7-12. *Key tasks are those significant activities the force must perform as a whole to achieve the desired end state* (ADP 6-0). They are what must be accomplished that day before the daily mission can be considered complete. If a platoon will not accomplish these by the end of the day, then the PL needs to inform their commander or adjust internally to complete the key tasks. A best practice is to post the required service tasks and battle track their completion (see figure 7-5).

COORDINATING INSTRUCTIONS

7-13. These are any other notes for deconfliction of resources or synchronization of execution. These should be notes that everyone in the platoon should be aware of to use in their own planning process.

		VEHICLE				
	TURRET DAY 1	__6	__7	__8	__9	QA/QC
1	SAFETY BRIEFING					PL OR PSG
2	COMPLETE TM-20 LEVEL TECHNICAL INSPECTION TO INCLUDE IDENTIFICATION OF NEW WELDING/TAPPING REQUIREMENTS AND UPDATE VEHICLE WELDING MATRIX					SERV TM CHIEF
3	HYDRAULIC RESERVOIR FILTER **USE HULL SEMI-ANNUAL KIT (HYDRAULIC FILTER MANIFOLD; PN5705135)**					SERV TM CHIEF
4	INSPECT AND SERVICE ELEVATION MECHANISM **USE HULL SEMI-ANNUAL KIT (KIT, FILTER ELEMENT: PN5911304)**					SERV TM CHIEF
5	INSPECT AND SERVICE TRAVERSE MECHANISM **USE HULL SEMI-ANNUAL KIT (KIT, FILTER ELEMENT: PN5911304)**					SERV TM CHIEF
6	CHANGE TURRET DISTRIBUTION FILTERS **USE HULL ANNUAL KIT (DAMPENER-FLUID: PN12273464)**					SERV TM CHIEF
7	INSPECT ALL TURRET WIRING HARNESSES/ASSEMBLIES					SERV TM CHIEF
8	CLEAN WORK ENVIRONMENT, DISPOSE OF WASTE/HAZMAT MATERIALS					CO MNT TM CHIEF
9	CONDUCT NIGHTLY SERVICE HUDDLE, PREPARE FOR NEXT DAY					CO XO

LEGEND

CO	COMPANY	PSG	PLATOON SERGEANT
MNT	MAINTENANCE	SERV	SERVICE
PL	PLATOON LEADER	TM	TECHNICAL MANUAL
PN	PART NUMBER	XO	EXECUTIVE OFFICER

Figure 7-5. Example daily task tracking board format

SECTION II – SUPERVISION OF EXECUTION

7-14. *Leaders must supervise their subordinates during the execution of the services mission in order to ensure that all checks are being done to the standard in the equipment's technical manual*. Step 8 of the troop leading procedures, supervise and refine, directs leaders to ensure that the work their formation is doing is accomplishing the mission and adjust as necessary. In services, and maintenance operations generally, supervision is usually referred to as QA and QC. Company commanders are responsible for establishing strict QA/QC procedures to ensure a vehicle's service progression is verified. It must be fully integrated throughout the service, not just performed when the service has been completed. An example is to designate a senior mechanic as a "service chief" whose primary responsibly is to performs QA for the service. The service chief and qualified maintenance NCOs must be appointed in writing as QA/QC inspectors to ensure services are conducted properly IAW the equipment TM. QA/QC inspectors will not be the same Soldiers who performed the service.

7-15. The objective of QA is to produce high-quality work the first time (see ATP 4-33). QA focuses as an independent set of eyes on products and processes that verify the work that has been done meets expressed standards. QA can be thought of as a final check that is made by a senior reviewer before a task is considered completed to standard. QC is separate and distinct function. It is a leadership function that should be applied to all aspects of unit operations, including initial, in-process, and final inspections (see ATP 4-33). QC is the ongoing supervision and refinement of subordinates' efforts by their supervisors that allows for QA, which is the verification that the task has been completed correctly. QA checks cannot take place if the conditions for them are not set by strict QC, and QC alone is not sufficient to ensure tasks have been executed to standard. Due to the sheer number of tasks and their level of detail, the key to a successful QA/QC plan is a firm understanding between the platoon and FMT of who is performing QA/QCs for whom, when, and how. (See table 7-1 on pages 42 and 43 for a generalized scheme of QA/QC during platoon services.)

Table 7-1. Example duties and quality assurance/quality control

Position	*Services Duties*	*Quality Controlled By*	*Quality Assured By*
Driver	• -Support maintainers during all -20 services tasks. • Perform hull -10 level maintenance tasks.	VC	PL/ PSG
Loader	• -Perform hull -10 maintenance tasks and maintain communications equipment. • Assist gunner with turret - 10 maintenance tasks.	VC	PL/PSG
Gunner	• -Perform -10 level maintenance with driver and loader. • Perform -10 level turret maintenance tasks. • Record all faults, maintenance performed, and corrective actions on the vehicle's DA Form 5988-E.	VC	PL/PSG
Vehicle Commander (VC)	• -Supervise and guide crew members as they perform maintenance tasks and support maintainers. • Monitor all maintenance performed on vehicle. • Train crew members to perform -10 level maintenance tasks to standard and supervise them while they perform those tasks to ensure that they are done to standard. • Sign for parts associated with -10 level maintenance tasks. • Sign for and maintain inventory of the vehicle's service kit.	PL/PSG	Senior Mechanic/ FMT Chief
Platoon Leader/Platoon Sergeant	• -Check that services tasks that VCs have approved are done to standard (do QC on VCs). • Ensure that resources required to support services are on hand. • Track and record completion of services in service packets and communicate the status of services with higher echelons. • Establish priorities of work during services and manage the platoon to ensure that all Soldiers are on task and working efficiently to accomplish the services mission.	Company Commander/ Executive Officer (XO)	Battalion Commander
Maintainer	• -Perform all -20 services tasks. • Initial in the "COMPLETE" column of the Services Execution Checklist when tasks meet the "PASS" criteria. • Record all faults, maintenance performed, and corrective actions on the vehicle's DA Form 5988-E.	Maintainer NCO	Senior Mechanic/ FMT Chief

Table 7-1. Example duties and quality assurance/quality control (continued)

Position	*Services Duties*	*Quality Controlled By*	*Quality Assured By*
Maintainer NCO	• Check the work of junior maintainers. • Ensure that all maintainers are performing tasks safely and to standard. • Perform services -20 checks as necessary to maintain throughput.	Senior Mechanic	Senior Mechanic/ FMT Chief
Senior Mechanic / FMT Chief	• -Supervise all maintenance operations. • Perform QA of all -20 services tasks. • Work with the PL to develop a daily schedule to be published in the daily FRAGORD and manage the FMT to support that schedule. • Work with battalion ERP clerks to constantly maintain accurate records in GCSS-A.	Company Commander/XO	Battalion Maintenance Control Section
Company Commander/XO	• -Establish the company services schedule and publish the company services OPORD. • Supervise platoons and the FMT during the execution of services. • Provide administrative support to ensure the smooth flow of services (sign dispatches, manage taskings, and so forth).	Battalion Maintenance Control Section	
Battalion Maintenance Section	• Assist FMTs and platoons with obtaining resources that are not O/H at the battalion level. • Ensure FMTs are completing service packets to standard. • Coordinate FSR support as required.	Battalion Commander/ Designated Representative	
Battalion Commander/Designated Representative	• Act as final approval authority for all maintenance conducted in the battalion.		

Legend:

DA—Department of the Army; ERP—equipment records parts specialist; FMT—field maintenance team; FRAGORD—fragmentary order; FSR—field service representative; GCSS-A—Global combat Support System-Army; NCO—noncommissioned officer; O/H—on hand; PL—platoon leader; PSG—platoon sergeant; QA—quality assurance; QC—quality control

7-16. The execution of services tasks begins and ends with the service packet. See appendix D for a standardized M1 Abrams and M2 Bradley service packet as well as directions for the usage of each form. The two most important documents in the service packet during the execution phase are the DA 5988-E and DA Form 7930. When used in conjunction, these documents provide leaders with a robust system for ensuring that all checks on their vehicles are completed to standard and logging maintenance due outs required before the service can be considered closed.

7-17. The DA Form 5988-E used during the services process must have been updated based on the vehicle's status prior to its initial road test. It should accurately reflect the vehicles maintenance status and administrative information before the vehicle begins services. During services, the DA Form 5988-E (or as many copies of it as needed for space) are used to log all maintenance performed on the vehicle. It is not a log of who performed every check in the service but only of faults or maintenance performed. As the vehicle's crew or maintainers perform any check that requires installation of a part, adjustment of a component, or any check does not meet the criteria to pass it is recorded on the DA Form 5988-E. As the service is completed this allows the DA Form 5988-E to serve as a log of who performed maintenance on the vehicle so that hours

can be logged appropriately, and it functions as a list of maintenance due outs stemming from failed checks that must be rectified before the vehicle can finish services.

7-18. The DA Form 7928 serves as tool for tracking the progression of a vehicle through services and deliberately managing the QA/QC of checks made on that vehicle. As checks are completed, the Soldier completing the check initials in the "completion" column that the check is done and meets the "PASS" criteria. Whoever is responsible for QC of that Soldier per table 7-1 on pages 42 and 43, then initials in the "QC" column when they have reviewed that Soldier's work and concur that the check is a "PASS." When both the "completion" and "QC" columns are initialed the QA authority for whoever made that check then verifies that the task has been completed correctly. *Tasks are not considered complete until all three columns are initialed. Vehicles are not considered complete with services until all checks are complete. Tasks that are not complete because they do not meet the "PASS" criteria are tracked on the vehicle's DA Form 5988 - E.*

7-19. Leaders should pay special attention to their QA/QC systems to make sure that they are having the intended effect of ensuring that all tasks are performed to standard. A poorly executed QA/QC program can instead have the opposite effect, where Soldiers are merely initialing boxes because the boxes are there, and the standards seem like a moving target unless there is insufficient coordination between QA and QC.

Common Indicators of Trouble with QA/QC

Some things Leaders should watch out for as indicators of trouble with the QA/QC system are:

- Mechanics and Soldiers doing checks without using a TM/MSD.
- Checks being conducted without anyone initialing as they are completed on the execution checklist in the service packet.
- Soldiers initialing all of the boxes on the execution checklist at the end of the day rather than as the checks are done or initialing several boxes at once by drawing an arrow through them.
- Frequent disagreements between echelons regarding the standards for a task.
- Soldiers working without a QC element present to supervise them.

SECTION III – ADJUSTING TO ENSURE STANDARDS ARE MET

7-20. The sync meetings that are part of the daily battle rhythms are a point where leaders need to gauge whether their platoon will meet the published timeline and make any adjustments necessary to do so. PLs are ultimately responsible for ensuring that services have been completed according to the standard and timeline laid out in the TM and OPORD. If a PL thinks their platoon will be unable to meet the published timeline they must raise this concern with their commander. It is the commander's responsibility to keep the platoon on the published schedule if what is causing them to go off that schedule is outside of that platoon's control. Commanders help PLs deal with challenges stemming from parts availability, the number of mechanics available, and work hours. Generally, these issues are specifically listed as CCIRs in the company or battalion OPORD. If a platoon is not facing one of the above issues, then it's likely that they are not working efficiently enough, which is the PL's or PSG's responsibility to rectify.

7-21. To be efficient is to accomplish the maximum amount of work in each time period. Increasing efficiency should not be considered rushing, as rushing inherently decreases the amount of attention to detail given to each check. A platoon's efficiency is best improved by ensuring that all Soldiers are actively servicing their vehicles for the maximum amount of time during the duty day. The best way a platoon can do this is by eliminating other requirements that take Soldiers away from accomplishing services. Even normal daily events, like medical appointments, eating lunch, and simply goofing off can damage a platoon's efficiency and cause them to go off schedule if not carefully managed. Platoons should not try to prevent these necessary everyday occurrences, merely to mitigate their effect on the schedule. Soldiers still need to see the doctor, eat meals, and take breaks. Having a plan or policies to manage these will increase daily efficiency and keep a platoon on schedule.

Managing Platoon Efficiency

Every platoon's tactical situation will be different and demand prudent analysis of the mission variables before implementing any efficiency control measure. Below are some example practices PLs can consider if their platoon is struggling to meet the published timeline:

- Once the platoon's service window is identified on the battalion's calendar, the platoon schedules appointments during the personnel services week.
- Work with the battalion's field feeding section or the brigade's Dining Facility Administration Center (DFAC) to have meals served at the services site. Losing one and a half hours (11:30 a.m. to 1 p.m.) every day is one of the biggest detractors during a standard services duty day as Soldiers change uniforms, leave, eat, come back, and change uniforms again.
- Tie breaks to status updates at the platoon CP that allow the PL to move resources around to keep everyone on schedule.
- Set expectations and conditions so that the entire duty day can be spent at the services site, with no requirement to leave to get additional resources or conduct other business. Anyone needing to leave needs to be approved by the PL/PSG.

SECTION IV – ANCILLARY AND PERSONNEL SERVICES

7-22. Ancillary and personnel services are equally important to readiness as platform services. Despite this, they are frequently overlooked because they are less resourced and time intensive to conduct. To ensure that all platoon's equipment and Soldiers receive the required attention to meet mandated readiness levels requires a deliberate plan.

7-23. Ancillary services cover the services on all equipment that is not directly a part of the platoon's combat platforms. It encompasses all the equipment the PL identified as needing to be serviced in chapter 2, minus their combat platforms. Ancillary services include weapons, communications equipment, medical equipment and CBRN equipment, including completion of any existing maintenance work orders or safety of use messages on this assigned equipment. Personnel services tasks include counseling packets, medical readiness, financial records review, Organizational Clothing and Individual Equipment inspection and exchange, and barracks inspection. Many units will allocate a week for platoons to conduct both ancillary and personnel services. When planned in detail a week is enough time to perform a thorough service of all a platoon's ancillary equipment and to get all personnel up to date on administrative requirements. A recommended plan for the week of ancillary services is included in table 7-1 on pages 42 and 43. This plan includes all the equipment an Armored platoon is likely required to service during ancillary services and is not listed in any order.

7-24. A tank platoon must consider its organic breaching assets during the ancillary services week. The M1 Abrams track-width mine plow and mine rollers are important assets for the platoon that are required for the platoon to be able to achieve all its assigned battle tasks. These items will normally have their own service plans that are separate from the platoon's M1 Abrams service plans. These items are also normally the property of the battalion headquarters and headquarters company. Despite this, tank platoons are responsible for ensuring that their plows and rollers are serviced, serviceable, and have all required BII and components of end items. At minimum, platoons plan to perform PMCS on and inventory their plows and rollers during their ancillary services week if they are not directly assigned to servicing them. If the platoon is directly responsible for servicing the plows and rollers they should work with the XO and FMT to find time during the ancillary or hull services week to support that service with maintainers.

7-25. Much of the ancillary equipment does not have a semiannual service plan or has services that the platoon is not authorized to conduct, so the platoon will simply do PMCS through the highest interval included in the TM. The platoon's weapons services schedule is controlled by the company XO and armorer, and the quarterly and higher services are conducted by Soldiers from the battalion's armaments shop. *During*

ancillary services week of platoon services, the platoon should clean their weapons, perform PMCS through the highest operator interval, and ensure that the mounts for those weapons are functional. (See table 7-2).

Table 7-2. Ancillary services week schedule example

	Day 1	***Day 2***	***Day 3***	***Day 4***	***Day 5***
AM	Platform BII layout and inspection	Weapons cleaning and PMCS	Commo PMCS with commo rep/S - 6 (including comms checks)	Drivers' license updates	OCIE inventory/PMCS
PM	Inventory and PMCS medical equipment	CBRN SVCs medical appointments	Plow and roller PMCS and inventory	S-1 rodeo (scheduled with S-1)	

Legend:
AM—morning; BII—basic issue item; CBRN—chemical, biological, radiological, and nuclear; commo—communication; OCIE—Organizational Clothing and Individual Equipment; PM—afternoon/evening; PMCS—preventative maintenance, checks and services; rep—representative; S-1— battalion or brigade personnel staff officer; SVC—service

Chapter 8

Evaluate the Training

Chapter 8 covers actions that must take place after services are complete to accurately record their results for use by the system of record. Section I discusses updating the DA Form 5988-Es for equipment services and how doing so drives all other actions. Section II discusses how to conduct the services out-brief and how it is used to assess how well a platoon performed services. Section III covers knowledge management methods that are required to record lessons learned during platoon services and safeguard them for future use.

SECTION I – DA FORM 5988-E Updates

8-1. As crews identify faults and mechanics repair them over the course of services, these actions must be captured on the equipment's DA Form 5988-E. After services are complete, TCs must ensure that any changes made on their platform's DA Form 5988-E during services are input in GCSS-A, which is the Army system of record for maintenance that provides commanders with detailed information on the readiness of their equipment and creates demand signals for supplies. To accurately capture this information after a services window, platoons must conduct a deliberate reconciliation of their DA Form 5988-E copies, as reflected on GCSS-A, and the DA Form 5988-E copies from their service packets that reflect the reality of the equipment after completing services.

8-2. *When crewmembers or mechanics discover faults needing repair during services, they will address them immediately if the parts required are on hand. Fixing faults during services will not desynchronize the overall services mission*. If mechanics are unable to repair a fault during services because there is not enough time to fix it or parts will not be available on time, the PL must inform their chain of command. If a vehicle leaves the services window with major maintenance still required, a PL must have scheduled that maintenance before the service out-brief. When scheduling future maintenance, a PL must account for the availability of parts, maintainer schedules, and higher headquarters' mission. It is preferred to do as much extra maintenance as possible before and during services to ensure that the unit is ready for follow-on missions.

8-3. The DA Form 5988-E is the permanent record of maintenance actions performed on Army equipment (see ATP 4-33). Conducting PMCS IAW with equipment's TM and deliberately reviewing all of the information on a piece of equipment's DA Form 5988-E (or "scrubbing it") for accuracy is the best starting point updating GCSS-A records. After services have been completed on all of a platoon's equipment, the PL should then schedule a meeting with each crew individually to check the accuracy of their DA Form 5988-E as tracked in GCSS-A against any changes made to the equipment during services. During this meeting, every piece of data on the form, from the serial number to the last fault reported, must be verified. This method ensures that the PL gets the best information from the source most familiar with the equipment and allows them to record it correctly on a fresh DA Form 5988-E in a way that will make it easiest for the battalion's ERPS clerks to input it into GCSS-A

8-4. Once a PL has verified all of the information on all of the platoon's DA Forms 5988-E copies, they then need to schedule an appointment with the battalion's ERPS clerks to input all of the updates into GCSS-A. Updating a large number of DA Forms 5988-E copies on GCSS-A takes clerks a long time and may be done inaccurately if the clerks are not closely supervised by someone with detailed knowledge of the equipment. The PL or a trusted subordinate should stay with the clerk as they input the updates to answer the clerk's questions about the content of the DA Forms 5988-E copies and ensure all information is updated accurately. This method will ensure that all of the work done by a platoon during their services window is captured on GCSS - A.

8-5. In addition to the update to the DA Form 5988-E, all M1-series tanks must have their DA Form 2408- 4 updated after exercising the recoil or borescope test and updated on the TULSA website.

8-6. The outcome of the DA Form 5988-E scrub is the accurate reflection of the status of a platoon's equipment in GCSS-A. To complete a service in GCSS-A, the equipment's service packet must have been

approved by the appropriate QA check. For combat platforms, this final QA check of the service packet is performed by the battalion commander at the service out-brief. Once the battalion commander has given final approval to a platoon's services, the PL can then schedule an appointment with the clerks to update the information in GCSS-A. No vehicle's service is considered complete until the battalion commander or a designated representative has approved the service packet, and the information is recorded accurately in GCSS-A.

SECTION II – SERVICE OUT-BRIEFS

8-7. **The *service out-brief* is a detailed report on the updated readiness of the platoon after platoon services.** It is an opportunity for the battalion and company commanders to evaluate and assess the execution of the platoon services mission and provide feedback or direct further action or retraining. The out-brief is not an after action review (AAR), which is conducted separately. The out-brief is a summary of the work the platoon conducted presented to the battalion commander for assessment and final approval. The battalion commander or their representative will establish the minimum requirements for the platoon out-brief. A standard example of an out-brief slide deck is included in appendix B. Topics normally covered in the services out-brief are:

- An in-depth review of the readiness of each combat platform in the platoon, with differences from before services clearly annotated.
- A review of the platoon's ancillary equipment and personnel readiness, with differences from before services clearly annotated.
- A review of the actual schedule the platoon followed during services, with differences from the planned schedule annotated.
- A status check of the platoon's progress in using the 8-step training model to plan for services.
- A list of any maintenance requirements that are outstanding and the plan for addressing them.
- AAR comments for the services that the platoon has vetted and recorded at the battalion level.

8-8. The service out-brief is the final QA check of the platoon's services. Platoons must bring their service packets with them to the service out-brief for final approval by their battalion commander. Because the service packet is the document of record for services and acts as a log of everything that happened to a piece of equipment during scheduled services, it must be completely accurate and reviewed and approved at echelon. Before the out-brief, platoons must have reviewed their service packets and had them approved by all echelons below the battalion commander. At the service out-brief, PLs present their service packets to the battalion commander for final approval. If their battalion commander, or a designated field-grade, approves the packets the PL can then schedule an appoint with the MCS to close out their vehicles' services in GCSS - A. If the battalion commander rejects the service packets, the PL must make the corrections and then schedule a later appointment with the battalion commander to receive their endorsement before closing the services on GCSS-A.

SECTION III – KNOWLEDGE MANAGEMENT

8-9. Once services are completed, following the services out-brief and once all updates are made to GCSS - A, the platoon must conduct an AAR to record lessons learned for the next services. The goal of services knowledge management is to record all of the technical information, lessons learned, and AAR comments in one location that will be easily accessible before the next services. Services windows in Armored units generally take place far enough apart for there to be a high turnover of leaders in a platoon from one services window to the next and an accompanying outflow of services knowledge. After services are complete, it is the PL's duty to ensure that lessons learned are recorded for the benefit of the platoon. Failure to deliberately plan for knowledge management will result in future leaders relearning well known best practices or making easily avoidable mistakes.

8-10. Some important items that PLs must have a deliberate plan for preserving are:

- The service packets themselves (all inclusive).
- Deliberately recorded notes from the platoon and company services AAR.
- A written narrative of the services the platoon performed and the conditions in which they took place.

- The overall services window schedule and the daily battle rhythm the platoon used to conduct the services.
- An updated services schedule.

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Appendix A

Example Services In-Brief

Appendix A contains a recommended agenda for the platoon's services in-brief to their battalion commander. It also contains specific recommendations for the order the content should be presented in and how to display the information for the battalion commander.

SECTION I– SERVICES IN-BRIEF CONCEPT

A-1. There are a variety of topics that are appropriate to discuss at the services in-brief depending on the mission requirements of a particular unit. Services in-briefs should cover at least the following topics and are arrayed in the recommended order for briefing:

- (1) The platoon's mission statement for services, nested within their commander's intent.
- (2) The overall schedule the platoon will be following for the entire services window, nested with the company and battalion training calendar.
- (3) A status check of the platoon's progress using the 8-step training model to plan for services.
- (4) An in-depth review of the readiness of each combat platform in the platoon.
- (5) A review of the platoon's ancillary equipment and personnel readiness.
- (6) The platoon's troops-to-task for the weeks the platoon will be executing services.
- (7) The daily battle rhythm the platoon will be following and how it nests with company and battalion reporting requirements.
- (8) An in-depth plan for each week of services:
  - The plan details what checks will be done at what time.
  - The plan usually provides detail to the hourly level for all days that the platoon is conducting services.
- (9) Any resource shortfalls that the platoon anticipates.
- (10) A risk assessment with risks to mission and risks to force categorized separately.

A-2. PLs should also be prepared to discuss the following topics in the recommended order:

- (11) The status of each vehicle towards meeting the induction criteria.
- (12) The status of the PL on gathering the publications required to service all of the identified equipment.
- (13) Status of leader certification within the platoon.
- (14) Coordinating instructions the platoon is either dictated in the company or battalion order or that the platoon has set out.
- (15) The PACE plan for lift assets during services.
- (16) A map that provides a visual reference for the platoon's plan to deconflict services in time and space.

A-3. An example slide deck for presenting this information can be found at the Armored Force on the Maneuver Center of Excellence page on milSuite.

SECTION II— SERVICES IN-BRIEF CONTENT

(1) PLATOON MISSION STATEMENT

A-4. This must cover the platoon's mission statement. The briefing PL should be able to show that their mission statement is properly nested with the company and battalion missions and their commanders' intent.

(2) PLATOON SERVICES WINDOW SCHEDULE

A-5. This should cover how the platoon's services window integrates with their company's services window and the battalion's long range training calendar. It should show at a minimum what training weeks the services

window will take place in and should differentiate between what weeks will be spent on hull, turret, and ancillary and personnel services.

(3) STATUS OF PLATOON ON 8-STEP TRAINING MODEL

A-6. The briefing platoon must show that they have adhered to the 8-step training model while planning for services. They should be able to show their progress on all 8-steps of the training model. For steps that the platoon has already completed, the briefer should be able to say when the step was completed and by whom. For steps that are not yet complete, the briefer should be able to articulate when those steps are anticipated to be complete. Reference table 2-1 on page 11 for the requirements for this item.

(4) PLATFORM READINESS REVIEW

A-7. This section should be a detailed review of the readiness of each combat platform in the platoon. How this information is presented depends heavily on the preferences of the commander receiving the briefing. It is good practice to focus on each vehicle in the platoon individually and to discuss the vehicle's footprint on the Equipment Status Report, the most recent 5988-E that the crew filled out, and any other faults or issues affecting the combat readiness of that vehicle but not captured on documents of record. This commonly includes faults that have been identified but not completely troubleshot yet.

(5) ANCILLARY AND PERSONNEL READINESS REVIEW

A-8. This section should be a detailed review of all the other equipment that the platoon identified that it was responsible for servicing. It should discuss any systemic readiness issues in the platoon's ancillary equipment or Personnel Readiness as well as measures the platoon will take to address those issues during services. Personnel readiness information should be displayed in a manner consistent with how the battalion receives it in command and staff meetings. Tank platoons must make sure to cover the readiness of their M1 mine plows and rollers during this section. These critical breaching assets should be covered in as much detail as the combat platforms which they support.

(6) PLATOON’S TROOPS-TO-TASK

A-9. This section should be a day-by-day troops-to-task for the platoon throughout the services window. It serves as an opportunity for the PSG to highlight any manning challenges that could affect the timely execution of services. It also allows commanders to see that the platoon has a plan in place for ensuring the right leaders will be present at the right times to supervise the execution of services.

(7) PLATOON'S DAILY BATTLE RHYTHM AND INTEGRATION OF BATTALION AND COMPANY REPORTING REQUIREMENTS

A-10. This section covers the platoon's suggested daily battle rhythm during the services window. This is where the platoon proposes their work hours during services and their rationale behind that proposition. Commanders should adjust the platoon's proposed schedule according to their priorities. The platoon's battle rhythm should mention at a minimum when the platoon will begin work, when the PL will publish the daily FRAGORD, when and how the platoon will submit reports to higher as required by the OPORD, and how the platoon will manage release criteria each day. The platoon should brief a coherent plan to their commanders that clearly shows what the platoon will be doing during each hour of the duty day.

(8) PLATOON'S HOURLY PLAN FOR EACH WEEK OF SERVICES

A-11. This section will cover the hour-by-hour plan for each week of services, hull, turret, and ancillary/personnel. It should specify which tasks will be completed by platform, by day, by hour. This schedule should be built using the calculator included in appendix F and the information in chapter 7, section I.

(9) ANTICIPATED RESOURCING SHORTFALLS

A-12. The platoon should highlight any resourcing shortfalls they have identified as potentially affecting the plan they briefed in the previous section. Platoons should explain the potential effects of each shortfall they've identified, when they expect the shortfall to impact the plan, and any suggested mitigation measures. (See tables 2-1 on page 11 and 4-1 on page 23 for examples of potential resources that platoons should consider when planning for services.)

(10) RISKS TO MISSION AND RISKS TO FORCE

A-13. The platoon should brief any anticipated risks to the services mission or their Soldiers that have not already been covered in this section. As with any risk briefing, the risks should be categorized as a risk to the mission or to the force, and include mitigation measures the platoon will adopt. (See ATP 5-19 for risk management strategy.)

(11) VEHICLE INDUCTION STATUS

A-14. The platoon should be prepared to brief the status of each vehicle toward being prepared for induction into services. Induction criteria should be defined in the company and battalion OPORDs, and the PL should be able to show the status of each vehicle according to those criteria.

(12) PUBLICATIONS GATHERED

A-15. The PLs should be able to brief their status towards obtaining the most up-to-date TMs for all equipment they will be servicing. They should be able to show what TM they will use to service all of their equipment, the date that manual was published, and whether or not they have gained access to the TM.

(13) LEADER CERTIFICATION STATUS

A-16. The PL should be able to brief that status of leader certification for all leaders in their platoon. Companies and battalions will have different requirements for leaders prior to beginning services. The PL should be able to show the level of certification each subordinate leader in their platoon has achieved according to their unit's standards.

(14) COORDINATING INSTRUCTIONS REVIEW

A-17. The PL should be prepared to backbrief their commanders on how they plan to adhere to any coordinating instructions published in the company and battalion OPORDs, as well as any coordinating instructions they will publish to their platoons. This section should serve as a confirmation that the platoon understands the published coordinating instructions and their plan for following them meets the commanders' intent.

(15) LIFTING ASSETS PACE PLAN

A-18. The PL should be prepared to brief the lifting assets PACE plan as it will apply to them. The lift PACE plan is likely determined at the company or battalion level, but the PL needs to understand how it will apply to them. PLs briefing this section should demonstrate a firm understanding of the plan, when to apply it, and who to report to when executing it.

(16) SERVICES AREA OF OPERATIONS MAP

A-19. The PL should be prepared to show a graphical map that shows where services will take place in time and space. This should be a visual reference for any locations mentioned at other points in the brief.

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Appendix B

Services Out-Brief

Appendix B contains a recommended agenda for the platoon's services out-brief to their battalion commander. It also contains specific recommendations for the order the content should be presented in and how to display the information for the battalion commander.

SECTION I– SERVICES OUT-BRIEF CONCEPT

B-1. There are a variety of topics that are appropriate to discuss at the services out-brief depending on the mission requirements of a particular unit. Services out-briefs should cover at least the following topics, and they are arrayed in the recommended order for briefing:

- (1) An in-depth review of the readiness of each combat platform in the platoon, with differences from before services clearly annotated.
- (2) A review of the platoon's ancillary equipment and personnel readiness, with differences from before services clearly annotated.
- (3) A review of the actual schedule the platoon followed during services, with differences from the planned schedule annotated.
- (4) A status check of the platoon's progress in using the 8-step training model to plan for services
- (5) A list of any maintenance requirements that are outstanding and the plan for addressing them.
- (6) AAR comments for the services that the platoon has vetted and should be recorded at the battalion level

B-2. An example slide deck for presenting this information can be found at the Armored Force on the Maneuver Center of Excellence page on milSuite.

SECTION II— SERVICES OUT-BRIEF CONTENT

(1) COMBAT PLATFORM READINESS AND SERVICE PACKET REVIEW AND CHANGES

B-3. This section of the brief should be the majority of the content for the platoon's out-brief. It should follow the same format as the in-brief's combat readiness review. The PL will brief details about the combat readiness of each platform in their platoon. The brief should include a representation of the vehicles on the Equipment Status Report and should make frequent reference to the vehicle's 5988-E. The most important aspect of this section is to highlight changes in combat readiness that resulted from the execution of platoon services.

B-4. This portion of the brief is also an opportunity for the battalion commander or their designated representative to review that platoon's service packets. As the final QA authority for the service packet, the service cannot be considered complete until the battalion commander or their representative has signed the packet. This portion of the out-brief is a good opportunity for the battalion commander to assess the outcome of the services for each platform and approve the results by endorsing the service packet or to issue additional guidance before doing so.

(2) ANCILLARY AND PERSONNEL READINESS REVIEW AND CHANGES

B-5. This section should cover the ancillary and personnel readiness of the platoon in the same format as the in-brief. The briefing platoon must take special care to highlight changes in readiness compared to their in-brief. The purpose of this slide is to inform the platoon's commanders of how much platoon services has improved their readiness,

(3) PLATOON SERVICES SCHEDULE REVIEW

B-6. This section should be a brief review of the original plan and schedule for the execution of platoon services compared to the actual execution. The purpose of this section should be to highlight any faulty planning assumptions that were made and to record those errors so that they can be avoided in the future. This portion of the brief also gives the platoon's commanders an opportunity to assess how well the platoon adapted to changing circumstances during the execution of services.

(4) 8-STEP TRAINING MODEL STATUS CHECK

B-7. This section should have the same format as the in-brief 8-step training model status check. The purpose of this section is for the executing platoon to demonstrate how they adhered to all steps on the 8-step training model while planning and executing platoon services. It is also an opportunity for that platoon to bring any issues they had applying the 8-step training model to platoon services to their commanders' attention so that they can be addressed in future iterations.

(5) OUTSTANDING MAINTENANCE REQUIREMENTS

B-8. This section should focus on any outstanding maintenance requirements that were not discussed in the readiness review. The platoon should brief what incomplete maintenance requirements remain, what equipment they apply to, why the maintenance has not yet been completed, and when the platoon plans to complete it. Common reasons for outstanding maintenance existing after services are long-lead parts, equipment needing evacuation or code-out, or non-deadlining faults that will be fixed according to the schedule of high-demand maintainers (such as welders tapping bolts).

(6) AFTER ACTION REVIEW COMMENTS

B-9. This section should follow the unit's standard operating procedure for AAR comments. The platoon should brief AAR comments that they think are beneficial for the whole battalion.

Appendix C

Using Electronic Technical Manuals

Appendix C contains detailed step-by-step instructions for accessing and using the most up-to-date electronic TMs. These instructions apply to accessing electronic TMs as of the date of publication of TC 3-20.31-9. Visit the Armored Force in the Maneuver Center of Excellence page on milSuite for updated instructions if these instructions no longer work as intended. (See references in the back of this manual for the milSuite link.)

SECTION I– ACCESSING ELECTRONIC TECHNICAL MANUALS

C-1. Go to the AESIP Hub Identity Management (IDM) Registration website. (See references in the back of this manual for the website link.)

C-2. Select Army User.

C-3. Verify info is correct and select AESIP. Click Register.

C-4. Once the confirmation email is received, click on the link to get to the AESIP Hub Identity Management (IDM) website.

C-5. Select "My Information."

C-6. Input all required information.

C-7. For supervisor, select the magnifying glass and search for the company commander.

C-8. Click reassign security officer, update security officer, and search for the company XO.

Note. Once a security officer or supervisor is selected, a different one cannot be selected until access to EMT is approved. Ensure that both individuals have access to the AESIP Hub Identity Management (IDM) website before selecting them.

C-9. Once information is updated, click submit.

C-10. Go back to home page.

C-11. Select “Request Access.”

C-12. Search “Basic” and add the role to the cart.

C-13. Search “ETM access” and add it to the cart.

C-14. Click Next at the top of the page.

C-15. Enter anything in the justification box and click submit.

C-16. Enter the requested dates.

C-17. Click below the calendar to the left of the request dates.

C-18. Upload your annual cyber awareness certificate and Army information technology acceptable use policy (AUP) on the tab beneath the date range.

C-19. Individuals will be notified via email once both the supervisor and security officer have approved the request.

C-20. Once approved, go to the AESIP website.

C-21. Select “DAC Sabre.”

C-22. Select “Publications” on the left-hand side of the screen.

C-23. Select “ETM/IETM.”

C-24. Select search type from drop down box on left.

Note. Searching by line item number (LIN) is the most direct way to find the applicable publications for a given piece of equipment. PLs can find the LIN for equipment by looking on their sub-hand receipts or asking unit supply personnel.

C-25. Enter search criteria in the box and click search.

C-26. Click the links to download the appropriate manuals.

SECTION II— READING ELECTRONIC TECHNICAL MANUALS

Note. IETMs can only be read using appropriate software. There are two formats of IETM, Interactive Authoring and Display Software (IADS) and ETM. IADS files are newer and can be read using Interactive Authoring and Display Software on any government computer system approved to handler CUI. ETM files can only be read using Electronic Maintenance Support-Next Generation (EMS-NG). EMS-NG can only be installed on MSDs. To install a new ETM on an MSD consult with your unit's MCS.

C-27. To install IADS on a NIPR laptop, go to IADS4 - Interactive Authoring and Display Software on the U.S. Army website.

C-28. Select Download from the options bar at the top of the page.

C-29. Download whichever version you would like. The "online" version is recommended as it updates automatically and does not require an administrator to install it on NIPR computers.

C-30. Once installed, click file -> open and select the .IADS file you downloaded from ETM. This will load the IETM for use.

C-31. If the IETM you downloaded does not contain an IADS file, it needs to be read on EMS-NG. EMS-NG is only installed on MSDs. Talk to your MCS or FMT about using their MSDs to read your TM.

Note. The IETM Sustainment Report is a list of IETMs that can be read using IADS and is found at the Logistics Data Analysis Center website. Use your browser’s “find” function to search for “IADS.” Older IETMs are regularly updated to use IADS.

Appendix D

Example Service Packet

Appendix D describes how to compile a complete service packet and the use of DA Forms 7928, 7929, and 7930 to augment service requirements outlined in DA PAM 750 - 3. Units must complete items in the service packet in sequence. This appendix describes the use of each form discussed in chapter 3, section III. The service packet included uses standard DA forms to manage the execution of platoon services. These forms are designed to augment, and not replace, the use of applicable TMs, and they augment but do not supersede requirements outlined in DA Pam 750-3. (See chapter 3, section III of this training circular for a discussion on the supporting relationship between the proponent recommended service packet and the requirements prescribed in DA Pam 750-3.)

SECTION I– PROPONENT RECOMMENDED SERVICE PACKET

D-1. The service packet is the critical record of actions completed during services. It is created and updated as an individual vehicle progresses through the services. The standard service packet includes three new forms: DA Form 7928, DA Form 7929, and DA Form7930. Together, these forms make up the service packet which serves as a record for the condition of a vehicle before, during, and at the conclusion of services. Once complete, this packet will be added to the service record of the M1 Abrams or M2 Bradley. The required components of the service packet are listed below, and descriptions of DA Forms 7928, 7929, and 7930 are in the following sections:

- (1) DA Form 7928.
- (2) DA Form 7929.
- (3) DA Form 5988-E from initial -10/-20 PMCS.
- (4) DA Form 5987-E from initial road test.
- (5) DA Form 5988-E used to track actions during services.
- (6) DA Form 7930.
- (7) Updated DA Form 2408-4.
- (8) M242 25 mm gun serviced IAW TM 9-1005-200-23&P
- (9) Borescope and recoil updated in TULSA website (M1 Abrams).
- (10) DA Form 5988-E reflecting final updates after checks completed.
- (11) DA Form 5988-E reflecting parts ordered during services.
- (12) DA Form 5987-E from final road test.
- (13) Finalized DA Form 5990-E.

SECTION II– DA FORM 7928 (M1/M2 SCHEDULED SERVICE COVER SHEET)

D-2. The DA Form 7928 is the first page of the service packet and serves to inform the reader of the packet at a glance on the completeness of the packet, who is responsible for the vehicles, and if the chain of command has verified the status and completion of the packet. DA Form 7928 also contains signature fields for the VC, PL, company commander, and battalion commander to ensure all members of the chain of command retain situational awareness of a vehicle's service status.

D-3. The DA Form 7928 is a cover sheet that has three general components: administrative data, service packet contents, and certification signature blocks. The administrative data records vehicle information, such as administrative number, crew roster, serial number, and type of service for an individual vehicle. The service packet contents list each of the DA PAM 750-3 requirements and proponent-recommended documents that make up a complete service packet, along with a column for the vehicle commander to initial, verifying they have a completed copy of each form in the packet. The certification signature block is where members of the chain of command, or their designated representatives, sign after verifying the service packet is complete and the vehicle was serviced to the standards of the appropriate technical manual. Of note, many of these forms are completed and verified by maintainers or MGs. However, the proponent recommends the

vehicle commander is responsible for ensuring completeness of the packet for their vehicle and the routing of the packet before it is signed over to maintenance managers for historical records.

SECTION III— DA FORM 7929 (M1/M2 SCHEDULED SERVICE INDUCTION CHECKLIST

D-4. The DA Form 7929 is the second required form of the service packet. As discussed in chapter 5, section IV, service induction is the first inspection of a vehicle to record its condition at intake, prior to being serviced. It contains the same administrative data as the cover sheet, in addition to several requisite checks to be completed by a vehicle's crew and certified by the owning commander. A vehicle must pass the induction standards prior to service, and this document certifies those standards have been met.

D-5. The DA Form 7929 has three general components: administrative data, induction checklist, and the vehicle's owning commander's signature block. The administrative data records vehicle information, such as administrative number or bumper number, crew roster information, serial number, and type or interval of service being conducted on the vehicle. The next section, the minimum induction checklist, contains the checks the vehicle's crew must complete to ensure it is ready to be inducted into services. Vehicles should not be inducted into services until these minimum checks are met and each of the leaders designated on the form have verified and initialed on this section of the form. Once the induction checklist is complete the company commander must endorse the DA Form 7929 before it enters into services. Of note, the checks designated on DA Form 7929 are recommended by the USAARMS as the minimum induction requirements for M1 Abrams and M2 Bradley services. However, unit commanders may adjust the induction criteria to account for specific mission variables and environments. The final section of the form is a remarks section that allows unit commanders to note any changes or guidance modifying the induction criteria

SECTION IV— DA FORM 7930 (M1/M2 SCHEDULED SERVICES EXECUTION CHECKLIST)

D-6. The DA Form 7930, M1/M2 Scheduled Services Execution Checklist, bridges the gap between the induction DA Form 5988-E and the running DA Form 5988-E which annotates all faults found during services. As a vehicle undergoes the inspections defined in both the -10 and -23&P TMs, the item number and task are recorded on the execution checklist by either the operator or the mechanic. These item numbers are certified by the appointed QA/QC inspectors. For a description of QA/QC inspectors, see paragraph 7 - 14. As opposed to the 5988-E, all item numbers and tasks listed in the TM are captured on this form regardless of technical status. This form will serve as the record and certification that services tasks are performed to standard.

D-7. DA Form 7930 has three general components: administrative data, instructions for the use of the form, and the fillable contents that make up the service execution checklist. The administrative data sections records vehicle information, type of service, the required technical manual information, and start and finish date of the service. Key to this section is the TM information the user used to derive the contents of the execution checklist, which must be annotated. This portion of the form is fillable to ensure the user verifies they are using the correct version of the TM and publication date to ensure accuracy. The next section provides instruction on how to use the form. The final section requires the user to list all the required checks from the most up to date technical manual. This form enables the user and their chain of command to track the status of individual service tasks at a glance and provides a method for maintainers and supervisors to comprehensively perform their quality control and quality assurance role by initialing after their verification of the completed service task.

D-8. Instructions for completing the DA Form 7930:

- Maintainer and crew must us the most up to date TM or MSD to conduct all checks and perform all required actions. All tasks listed on the DA Form 7930 must be listed from the applicable TM or MSD with the nomenclature and publication date annotated on the form's administrative data section.
- The vehicle crew and maintainer conduct all tasks together.

- The Soldier conducting the task initials each task as complete on the execution checklist as soon as that task meets the criteria to PASS.
- Any checks that FAIL or require installation of a part are annotated on the vehicle's DA Form 5988 - E. This DA Form 5988-E acts as the running log of maintenance action on the vehicles during services and as the list of faults that need to be completed before the vehicles can complete services. The DA Form 7930 complements but does not replace the DA Form 5988-E.
- After a task PASSES, the Soldier's supervisor (quality control authority) initials in the QC column after they inspected the work and agree that it is completed to standard.
- In accordance with the unit's quality assurance plan for the service, the quality assurance authority for the check then initials after they have inspected the original work to confirm it was completed to standard.
- Tasks are not considered complete until all three columns are initialed.
- Task completion must be reported as each item number is completed on the DA Form 7930 to ensure an accurate status of the vehicles during the execution of services.
- Vehicles are not considered complete with services until the following conditions are met:
  - All tasks are complete on the execution checklist and deficiencies corrected from the running DA Form 5988-E.
  - The battalion commander or designated representative has approved the completed service packet.
  - The maintenance control section has closed the services in GCSS-A.

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Appendix E

M1A2 SEPV2/SEPV3 Service Timelines

Appendix E contains an example of an M1A2 SEPV2 and M1A2 SEPV3 daily task and time calculation. This appendix shows an example of each form discussed in chapter 7, section I. The time calculation includes maintenance task and time according to Project Manager Abrams (TACOM) This chart is designed to augment, and not replace, the use of applicable TMs, and they augment but do not supersede requirements outlined in DA Pam 750-3. (See chapter 7, section I for a discussion on time allocation for services.)

SECTION I– M1A2 SEPV2

E-1. M1A2 SEPV2 services are divided into two PMCS efforts. Hull PMCS takes six days to complete and 75.1 man-hours. The charts provided show the item number, current service interval, recommended service interval, check to be performed and the clock and man-hours to complete each check. Turret PMCS takes four days to perform and 41.9 MAC hours. The chart is organized the same as hull. In total, the complete service time for an annual service of both hull and turret is 116.60 man hours. The actual hours to complete these checks may not necessarily reflect the hours in the chart. They are meant to act as a general planning factor as variables will differ by unit and installation.

E-2. . Figure E-1 contains checks performed during day 1 of a 10-day service plan and the hour breakdown for each maintenance action (see figure E-1 on pages 63 and 65).

Hull PMCS Day 1 (Example)							
Original Item #	***Current Service Interval***	***Recommended Service Interval***	***Item to be checked or serviced***	***Schedule***	***(Actual Time) Total clock time (Minutes)***	***Personnel Required***	***MAC Time (Total Man Hours)***
1	6	8	Powerpack	Day 1	30	5	2.5
New	6	8	After changing the hyd o-rings, remove hyd pump	Day 1	2	1	0.1
2	6	8	Engine compartment	Day 1	180	1	3.0
30	12	8	Air induction system	Day 1	80	1	1.4
3(A)	6	16	Air induction system (plenum box rectangle seals)	Day 1	10	1	0.2
5	6	8	Accessory gearbox	Day 1	5	1	0.1

Figure E-1. Day 1 hull PMCS schedule

Hull PMCS Day 1 (Example)							
Original Item #	***Current Service Interval***	***Recommended Service Interval***	***Item to be checked or serviced***	***Schedule***	***(Actual Time) Total clock time (Minutes)***	***Personnel Required***	***MAC Time (Total Man Hours)***
6	6	8	Fuel nozzle	Day 1	20	1	0.1
14	6	8	Fluid filter element (engine inline (last chance) filter)	Day 1	15	1	0.3
7	6	8	Combustor heat shield	Day 1	5	1	0.1
10	6	8	Electro-mechanical fuel system	Day 1	10	1	0.2
8	6	8	Power turbine stator (PTS) cylinder assembly	Day 1	20	1	0.4
11	6	8	Inlet guide vane (IGV) actuating cylinder	Day 1	5	1	0.1
12	6	8	IGV feedback control quick-release pin	Day 1	15	1	0.3
9	6	8	Compressed air tube assembly and PJS base adapter, fittings, and tube	Day 1	5	1	0.1
17	6	8	Engine compartment nuclear, biological, chemical (NBC) system	Day 1	5	1	0.1
20	6	8	Engine starter	Day 1	10	1	0.2
18	6	8	Engine harnesses	Day 1	30	1	0.5
19	6	8	Engine AC generator	Day 1	20	1	0.4

Figure E-1. Day 1 hull PMCS schedule (continued)

Hull PMCS Day 1 (Example)							
Original Item #	***Current Service Interval***	***Recommended Service Interval***	***Item to be checked or serviced***	***Schedule***	***(Actual Time) Total clock time (Minutes)***	***Personnel Required***	***MAC Time (Total Man Hours)***
23	6	8	Fan shroud seals and exhaust seals	Day 1	10	1	0.2
				Total mins	477		
				Total hours	7.95	**MAC Time**	10.6
Legend: #—number; AC—air conditioner; hyd—hydraulic; MAC—maintenance allocation chart; mins—minutes; PJS—pulse jet system; PMCS— preventive maintenance checks and services							

Figure E-1. Day 1 hull PMCS schedule (continued)

E-3. . Figure E-2 contains checks performed during day 2 of a 10-day service plan and the hour breakdown for each maintenance action (see figure E-2 on pages 65 and 66).

Hull PMCS Day 2 (Example)							
Original Item #	***Current Service Interval***	***Recommended Service Interval***	***Item to be checked or serviced***	***Schedule***	***(Actual Time) Total clock time (Minutes)***	***Personnel Required***	***MAC Time (Total Man Hours)***
47	6	8	Recuperator	Day 2	10	1	0.2
15	6	8	Precleaner air exhaust hose assembly	Day 2	2	1	0.1
16	6	8	Tubeaxial fan assembly (inspect)	Day 2	30	1	0.5
42	6	8	Transmission	Day 2	2	1	0.1
New(A)	12	24	Engine air inlet screen inspection o-ring replacement (FOD screen o-ring)	Day 2(A)	5	1	0.1
3	6	8	Engine and transmission oil cooling system	Day 2	130	1	2.2

Figure E-2. Day 2 hull PMCS schedule

Hull PMCS Day 2 (Example)							
Original Item #	***Current Service Interval***	***Recommended Service Interval***	***Item to be checked or serviced***	***Schedule***	***(Actual Time) Total clock time***	***Personnel Required***	***MAC Time (Total Man Hours)***
4	6	8	Engine and transmission oil cooling system (continued)	Day 2	10	1	0.2
1(A)	12	16	Engine fluid filter element and oil tank filter assembly	Day 2(A)	20	1	0.4
8(B)	24	24	Transmission filter	Day 2(B)	20	1	0.4
13	6	8	Smoke generator system	Day 2	5	1	0.1
27	6	8	Fuel system (change fuel filters)	Day 2	60	2	2.0
24	6	8	Right side/main battery compartment	Day 2	150	1	2.5
25	6	8	Left side/auxiliary battery compartment	Day 2	120	1	2.0
				Total mins	564		
				Total hours	9.4	**MAC Time**	10.8

Legend:
#—number; FOD—foreign object debris; MAC—maintenance allocation chart; mins—minutes; PMCS—preventive maintenance checks and services

Figure E-2. Day 2 hull PMCS schedule (continued)

E-4. . Figure E-3 contains checks performed during day 3 of a 10-day service plan and the hour breakdown for each maintenance action (see figure E-3).

Hull PMCS Day 3 (Example)							
Original Item #	***Current Service Interval***	***Recommended Service Interval***	***Item to be checked or serviced***	***Schedule***	***(Actual Time) Total clock time (Minutes)***	***Personnel Required***	***MAC Time (Total Man Hours)***
26	6	8	Hydraulic system heat exchange	Day3	5	1	0.1
21	6	8	Disconnect panel box	Day3	5	1	0.1
22	6	8	Engine compartment harnesses	Day3	20	1	0.4
28	6	8	Fuel system (fuel cap & engine compartment checks)	Day3	90	1	1.5
2(A)	12	16	Fuel filler cap (breather replacement)	Day3(A)	20	1	0.4
29	6	8	Sponson fuel tank	Day3	30	1	0.5
41	6	8	Hydraulic reservoir (access plate inspection)	Day3	5	1	0.1
43	6	8	Final drive (inspect)	Day3	2	1	0.1
New		8	Change final drive oil	Day3	60	2	2.0
52	6	8	Brake controls (parking brake actuator & locking mech)	Day3	60	1	1.0
36	6	8	Fire extinguisher system (part 1, crew and engine compartment 1st shot)	Day3	140	2	4.6
				Total mins	437		
				Total hours	7.28	**MAC Time**	10.8
Legend: #—number; MAC—maintenance allocation chart; mins—minutes; PMCS—preventive maintenance checks and services							

Figure E-3. Day 3 hull PMCS schedule

E-5. Figure E-4 contains checks performed during day 4 of a 10-day service plan and the hour breakdown for each maintenance action (see figure E-4).

Hull PMCS Day 4 (Example)							
Original Item #	***Current Service Interval***	***Recommended Service Interval***	***Item to be checked or serviced***	***Schedule***	***(Actual Time) Total clock time (Minutes)***	***Personnel Required***	***MAC Time (Total Man Hours)***
44	6	8	Ground hop powerpack	Day 4	90	4	6.0
45	6	8	Turbine exhaust duct seal (recuperator to exhaust duct)	Day 4	5	1	0.1
46	6	8	Tubeaxial fan assembly (inspect during ground hop)	Day 4	1	1	0.1
36 (New)	6	8	Fire extinguisher system (part 2, 2nd shot while engine is running)	Day 4	10	2	0.4
33	6	8	Shift controls	Day 4	21	1	0.4
New		8	Steering cable inspection in drivers' station	Day 4	5	1	0.1
34	6	8	Throttle steering assembly	Day 4	15	1	0.3
59	6	8	DECU backup battery test	Day 4	20	1	0.4
New		8	Install powerpack	Day 4	30	5	2.5
48	6	16	Battle override system	Day 4	90	2	3.0
				Total mins	287		
				Total hours	4.78	**MAC Time**	13.3

Legend:
#—number; DECU—digital electronic control unit; MAC—maintenance allocation chart; mins—minutes; PMCS—preventive maintenance checks and services

Figure E-4. Day 4 hull PMCS schedule

E-6. Figure E-5 contains checks performed during day 5 of a 10-day service plan and the hour breakdown for each maintenance action (see figure E-5).

Hull PMCS Day 5 (Example)							
Original Item #	***Current Service Interval***	***Recommended Service Interval***	***Item to be checked or serviced***	***Schedule***	***(Actual Time) Total clock time (Minutes)***	***Personnel Required***	***(MAC Time) Total Man Hours***
49	6	8	Nuclear, biological, chemical (NBC) system (minor disassembly)	Day 5	120	1	2.0
4(A)	12	16	NBC system (major disassembly)	Day 5(A)	360	1	6.0
New		8	NBC sponson box leak test	Day 5	20	2	0.4
New		8	NBC overpressurization test	Day 5	10	2	0.2
53	6	8	Idler wheel hub and arm assembly	Day 5	15	1	0.3
New		8	Track (break track & reconnect to facilitate following tasks)	Day 5	120	4	8
54	6	8	Track support roller assembly	Day 5	40	1	0.7
				Total time mins	685		
				Total hours	11.41	**MAC Time**	17.6
Legend: #—number; MAC—maintenance allocation chart; mins—minutes; PMCS— preventive maintenance checks and services							

Figure E-5. Day 5 hull PMCS schedule

E-7. Figure E-6 contains checks performed during day 6 of a 10-day service plan and the hour breakdown for each maintenance action (see figure E-6 on page 70).

Hull PMCS Day 6 (Example)							
			Hull PMCS		Actual Time	Personnel Required	MAC Time
Original Item #	Current Service Interval	Recommended Service Interval	Item to be checked or serviced	Schedule	Total clock time (Minutes)		Total Man Hours
55	6	8	Final drive and sprocket wheel	Day 6	120	3	6.0
New		8	Change hub oil	Day 6	240	1	4.0
58	6	8	Road test and inspection	Day 6	60	2	2.0
				Total mins	420		
				Total hours	7	**MAC Time**	12.0

Legend:
#—number; MAC—maintenance allocation chart; mins—minutes; PMCS— preventive maintenance checks and services

Figure E-6. Day 6 hull PMCS schedule

E-8. Turret services are conducted in the same manner as hull services and the figures below illustrate a 4-day service allocation. Figure E-7 shows the checks performed during day 1 of a 4-day service plan (see figure E-7 on pages 70 through 72).

Turret PMCS Day 1 (Example)							
Original Item #	Current Service Interval	Recommended Service Interval	Item to be checked or serviced	Schedule	(Actual Time) Total clock time (Minutes)	Personnel Required	MAC Time (Total Man Hours)
1	6	8	Elevating mechanism	Day 7	15	2	0.5
3	6	16	SW 4.6.2/4.6.3 turret drive and stabilization system filters	Day 7	40	2	1.4
4	6	16	SW 4.7.3/4.8.2 turret drive and stabilization system filters	Day 7	20	2	0.7
2(A)	12	24	Hydraulic system (fluid dampeners)	Day 7(A)	30	1	0.5

Figure E-7. Day 1 turret PMCS schedule

Turret PMCS Day 1 (Example)							
Original Item #	***Current Service Interval***	***Recommended Service Interval***	***Item to be checked or serviced***	***Schedule***	***(Actual Time) Total clock time (Minutes)***	***Personnel Required***	***MAC Time (Total Man Hours)***
New		8	Turret hydraulic lines (Inspect)	Day 7	15	1	0.3
31	6	8	Hydraulic reservoir	Day 7	40	1	0.7
32	6	8	Hydraulic filters, lines, clamps, and fittings (inspection)	Day 7	20	1	0.4
6	6	16	Hydraulic filters, lines, clamps, and fittings (filters change)	Day 7	45	1	0.8
17	6	8	Turret harness assemblies	Day 7	20	1	0.4
12	6	8	Nuclear biological chemical (NBC) system (turret)	Day 7	60	1	1.0
50	6	8	Crew compartment NBC system, (driver)	Day 7	60	1	1.0
51	6	8	Hydraulic lines, fuel lines, clamps, and fittings (sub turret)	Day 7	60	1	1.0

Figure E-7. Day 1 turret PMCS schedule (continued)

Turret PMCS Day 1 (Example)							
Original Item #	***Current Service Interval***	***Recommended Service Interval***	***Item to be checked or serviced***	***Schedule***	***(Actual Time) Total clock time (Minutes)***	***Personnel Required***	***MAC Time (Total Man Hours)***
37	8	8	Personnel heater (A20 Global/Hunter only)	Day 7	30	1	0.5
7(A)	12	24	Personnel heater fuel water separator	Day 7(A)	10	1	0.2
				Total mins	495		
				Total hours	8.25	**MAC Time**	9.9

Legend:
#—number; MAC—maintenance allocation chart; mins—minutes; PMCS— preventive maintenance checks and services; SW—software

Figure E-7. Day 1 turret PMCS schedule (continued)

E-9. Figure E-8 contains checks performed during day 2 of a 4-day service plan and the hour breakdown for each maintenance action (see figure E-8 on pages 72 through 74.

Turret PMCS Day 2 (Example)							
Original Item #	***Current Service Interval***	***Recommended Service Interval***	***Item to be checked or serviced***	***Schedule***	***(Actual Time) Total clock time (Minutes)***	***Personnel Required***	***MAC Time (Total Man Hours)***
2	OC	16	Traversing mechanism (change oil)	Day 8	30	1	0.5
18	6	8	Turret lock assembly	Day 8	5	1	0.1
22	6	8	Ammunition doors	Day 8	10	1	0.2
25	6	8	Ammunition door hardware	Day 8	15	1	0.3
23	6	8	Safety switch, disable switch, and ammunition door safety switch	Day 8	30	1	0.5
24	6	8	Turret ammunition rack stops	Day 8	20	1	0.4

Figure E-8. Day 2 turret PMCS schedule

Turret PMCS Day 2 (Example)							
Original Item #	***Current Service Interval***	***Recommended Service Interval***	***Item to be checked or serviced***	***Schedule***	***(Actual Time) Total clock time (Minutes)***	***Personnel Required***	***MAC Time (Total Man Hours)***
35	6	8	Hull ammunition compartment	Day 8	60	1	1.0
14	6	8	Breech ring contact group	Day 8	90	1	1.5
3	6	8	Improved turret motor (ITM) accumulator SW 4.7.3/4.8.2 (service ITM accumulator)	Day 8	15	2	0.5
New	6	8	Main accumulator service	Day 8	15	2	0.5
New	6	8	Hand pump accumulator service	Day 8	15	2	0.5
New	6	8	Parking brake accumulator service	Day 8	15	2	0.5
6	6	8	Gunner's primary and auxiliary sights, commander's independent thermal viewer sight module, and commander's extension (purge)	Day 8	45	2	1.5
7	6	8	Biocular image control unit (purge)	Day 8	15	2	0.5
8	6	8	Laser rangefinder (purge)	Day 8	15	2	0.5
New	6	8	CROWS LP VIM/TIM (Purge)	Day 8	20	2	0.4

Figure E-8. Day 2 turret PMCS schedule (continued)

Turret PMCS Day 2 (Example)							
Original Item #	***Current Service Interval***	***Recommended Service Interval***	***Item to be checked or serviced***	***Schedule***	***(Actual Time) Total clock time (Minutes)***	***Personnel Required***	***MAC Time (Total Man Hours)***
10	6	8	Crosswind sensor	Day 8	10	1	0.2
27	6	8	Cooling system (VCSU/AHU)	Day 8	90	2	3.0
				Total mins	515		
				Total hours	8.58	**MAC Time**	12.6

Legend:
#—number; AHU—air handling unit; CROWS LP—Common Remote Operating Weapon Station—Low-Profile; MAC—maintenance allocation chart; mins—minutes; OC—on condition; PMCS—preventive maintenance checks and services; VCSU—vapor compression system unit

Figure E-8. Day 2 turret PMCS schedule (continued)

E-10. Figure E-9 contains checks performed during day 3 of a 4-day service plan and the hour breakdown for each maintenance action (see figure E-9).

Turret PMCS Day 3 (Example)							
Original Item #	***Current Service Interval***	***Recommended Service Interval***	***Item to be checked or serviced***	***Schedule***	***(Actual Time) Total clock time (Minutes)***	***Personnel Required***	***MAC Time (Total Man Hours)***
20	6	8	Turret bustle	Day 9	3	1	0.1
18	6	8	Smoke grenade launcher	Day 9	30	2	1.0
9	6	8	Collimator assembly	Day 9	20	1	0.4
13	6	8	120mm gun cannon to include borescope and recoil	Day 9	120	2	4.0
11	6	8	Commander's Weapon Station (CROWS LP)	Day 9	180	2	6.0
				Total mins	353		
				Total hours	5.88	**MAC Time**	11.5

Legend:
#—number; CROWS LP—Common Remote Operating Weapon Station—Low-Profile; MAC—maintenance allocation chart; mins—minutes; PMCS— preventive maintenance checks and services

Figure E-9. Day 3 turret PMCS schedule

E-11. Figure E-10 contains checks performed during day 4 of a 4-day service plan and the hour breakdown for each maintenance action (see figure E-10).

Turret PMCS Day 4 (Example)							
Original Item #	***Current Service Interval***	***Recommended Service Interval***	***Item to be checked or serviced***	***Schedule***	***(Actual Time) Total clock time (Minutes)***	***Personnel Required***	
2(A)	12	16	Commander's Weapon Station (CROWS LP)	Day 10(A)	160	2	5.4
New	6	8	Bleed air from hydraulic system	Day 10	45	2	1.5
26	6	8	System test	Day 10	60	1	1.0
				Total mins	265		
				Total hours	4.41	**MAC Time**	7.9
Legend: #—number; CROWS LP—Common Remote Operating Weapon Station—Low-Profile; MAC—maintenance allocation chart; mins—minutes; PMCS— preventive maintenance checks and services							

Figure E-10. Day 4 turret PMCS schedule

SECTION II– M1A2 SEPV3

E-12. M1A2 SEPV3 services are divided into two PMCS efforts. Hull PMCS takes six days to complete and 85.2 MAC hours. The charts provided show the item number, current service interval, recommended service interval, check to be performed and the clock and man-hours to complete each check. Turret PMCS takes four days to perform and 40.1 MAC-hours. The chart is organized the same as Hull. In total, the complete service time for an annual service of both hull and turret is 125.3 MAC hours. The actual hours to complete these checks may not necessarily reflect the hours in the chart. They are meant to act as a general planning factor as variables will differ by unit and installation.

E-13. The following checks are performed during day 1 of a 10-day service plan. Figure E-11 contains the hour breakdown for each maintenance action (see figure E-11 on pages 75 through 77).

Hull PMCS Day 1 (Example)							
Original Item #	***Current Service Interval***	***Recommended Service Interval***	***Item to be checked or serviced***	***Schedule***	***(Actual Time) Total clock time (Minutes)***	***Personnel Required***	***MAC Time (Total Man Hours)***
1	6	8	Powerpack	Day 1	30	5	2.5
New		8	After changing the hyd o-rings, remove hyd pump	Day 1	2	1	0.1
2	6	8	Engine compartment	Day 1	180	1	3.0

Figure E-11. Day 1 hull PMCS schedule

Hull PMCS Day 1 (Example)							
Original Item #	***Current Service Interval***	***Recommended Service Interval***	***Item to be checked or serviced***	***Schedule***	***(Actual Time) Total clock time (Minutes)***	***Personnel Required***	***MAC Time (Total Man Hours)***
33	6	8	Air induction system	Day 1	80	1	1.4
33(A)(New)	12	16	Air induction system (plenum box rectangle seals)	Day 1 (A)	10	1	0.2
7	6	8	Accessory gearbox	Day 1	5	1	0.1
8	6	8	Fuel nozzle	Day 1	20	1	0.4
16	6	8	Fluid filter element (engine inline (last chance) filter)	Day 1	15	1	0.3
9	6	8	Combustor heat shield	Day 1	5	1	0.1
12	6	8	Electro-mechanical fuel system	Day 1	10	1	0.2
10	6	8	Power turbine stator (PTS) cylinder assembly	Day 1	20	1	0.4
13	6	8	Inlet guide vane (IGV) actuating cylinder	Day 1	5	1	0.1
14	6	8	IGV feedback control quick-release pin	Day 1	15	1	0.3
11	6	8	Compressed air tube assembly and PJS base adapter, fittings, and tube	Day 1	5	1	0.1

Figure E-11. Day 1 hull PMCS schedule (continued)

Hull PMCS Day 1 (Example)							
Original Item #	***Current Service Interval***	***Recommended Service Interval***	***Item to be checked or serviced***	***Schedule***	***(Actual Time) Total clock time (Minutes)***	***Personnel Required***	***MAC Time (Total Man Hours)***
19	6	8	Engine compartment nuclear, biological, chemical (NBC) system	Day 1	5	1	0.1
22	6	8	Engine starter	Day 1	10	1	0.2
20	6	8	Engine harnesses	Day 1	30	1	0.5
21	6	8	Engine AC generator	Day 1	20	1	0.4
25	6	8	Fan shroud seals and exhaust seals	Day 1	10	1	0.2
				Total mins	477		
				Total hours	7.95	**MAC Time**	10.6
Legend: #—number; AC—air conditioner; MAC—maintenance allocation chart; mins—minutes; PJS—pulse jet system; PMCS— preventive maintenance checks and services;							

Figure E-11. Day 1 hull PMCS schedule (continued)

E-14. The following checks are performed during day 2 of a 10-day service plan. Figure E-12 contains the hour breakdown for each maintenance action (see figure E-12 on pages 77 and 78).

Hull PMCS Day 2 (Example)							
Original Item #	***Current Service Interval***	***Recommended Service Interval***	***Item to be checked or serviced***	***Schedule***	***(Actual Time) Total clock time (Minutes)***	***Personnel Required***	***MAC Time (Total Man Hours)***
62	6	8	Recuperator	Day 2	10	1	0.2
17	6	8	Precleaner air exhaust hose assembly	Day 2	1	2	0.1
18	6	8	Tubeaxial fan assembly (inspect)	Day 2	30	1	0.5
56	6	8	Transmission	Day 2	2	1	0.1

Figure E-12. Day 2 hull PMCS schedule

Hull PMCS Day 2 (Example)							
Original Item #	***Current Service Interval***	***Recommended Service Interval***	***Item to be checked or serviced***	***Schedule***	***(Actual Time) Total clock time (Minutes)***	***Personnel Required***	***MAC Time (Total Man Hours)***
58(A)(New)	12	24	Engine air inlet screen inspection o-ring replacement (FOD screen o-ring)	Day 2 (A)	5	1	0.1
3	6	8	Engine and transmission oil cooling system	Day 2	130	1	2.2
5	6	8	Engine and transmission oil cooling system (continued)	Day 2	10	1	0.2
4(A)	12	16	Engine fluid filter element and oil tank filter assembly	Day 2 (A)	20	1	0.4
6(B)	24	24	Transmission filter	Day 2 (B)	20	1	0.4
15	6	8	Smoke generator system	Day 2	5	1	0.1
28	6	8	Fuel system (change fuel filters)	Day 2	60	2	2.0
26	6	8	Battery compartment	Day 2	270	1	4.5
				Total mins	564		
				Total hours	9.4	**MAC Time**	10.8

Legend:
#—number; FOD—foreign object debris; MAC—maintenance allocation chart; mins—minutes; PMCS—preventive maintenance checks and services

Figure E-12. Day 2 hull PMCS schedule (continued)

E-15. The following checks are performed during day 3 of a 10-day service plan. Figure E-13 contains the hour breakdown for each maintenance action (see figure E-13).

Hull PMCS Day 3 (Example)							
Original Item #	***Current Service Interval***	***Recommended Service Interval***	***Item to be checked or serviced***	***Schedule***	***(Actual Time) Total clock time (Minutes)***	***Personnel Required***	***MAC Time (Total Man Hours)***
27	6	8	Hydraulic system heat exchange	Day 3	5	1	0.1
23	6	8	Disconnect panel box	Day 3	5	1	0.1
24	6	8	Engine compartment harnesses	Day 3	20	1	0.4
30	6	8	Fuel system continued (fuel cap & engine compartment checks)	Day 3	90	1	1.5
29(A)	12	16	Fuel filler cap (breather replacement)	Day 3 (A)	20	1	0.4
31	6	8	Sponson fuel tank	Day 3	30	1	0.5
34	6	8	Hydraulic reservoir (access plate inspection)	Day 3	5	1	0.1
57	6	8	Final drive (inspect)	Day 3	2	1	0.1
New		8	Change final drive oil	Day 3	60	2	2.0
68	6	8	Brake controls (parking brake actuator and locking mech)	Day 3	60	1	1.0
39	6	8	Fire extinguisher system (part 1, crew and engine compartment 1st shot & APU)	Day 3	200	2	6.7
				Total mins	497		
				Total hours	8.28	**MAC Time**	12.9

Legend:
#—number; APU—auxiliary power unit; MAC—maintenance allocation chart; mins—minutes; PMCS—preventive maintenance checks and services

Figure E-13. Day 3 hull PMCS schedule

E-16. The following checks are performed during day 4 of a 10-day service plan. Figure E-14 contains the hour breakdown for each maintenance action (see figure E-14 on pages 80 and 81).

Hull PMCS Day 4 (Example)							
Original Item #	***Current Service Interval***	***Recommended Service Interval***	***Item to be checked or serviced***	***Schedule***	***(Actual Time) Total clock time (Minutes)***	***Personnel Required***	***MAC Time (Total Man Hours)***
59	6	8	Ground hop powerpack	Day 4	90	4	6.0
60	6	8	Turbine exhaust duct seals (recuperator to exhaust duct)	Day 4	5	1	0.1
61	6	8	Tubeaxial fan assembly (inspect during ground hop)	Day 4	1	1	0.1
39 (New)	6	8	Fire extinguisher system (part 2, 2nd shot while engine is running)	Day 4	10	2	0.4
36	6	8	Shift controls	Day 4	21	1	0.4
New		8	Steering cable inspection in drivers' station	Day 4	5	1	0.1
37	6	8	Throttle steering assembly	Day 4	15	1	0.3
76	6	8	DECU backup battery test	Day 4	20	1	0.4
New		8	Install powerpack	Day 4	30	5	2.5
63	6	16	Battle override system	Day 4 (A)	90	2	3.0
46	6	8	Auxiliary power unit (APU) assembly	Day 4	30	1	0.5
47	6	8	APU Compartment	Day 4	30	1	0.5

Figure E-14. Day 4 hull PMCS schedule

Hull PMCS Day 4 (Example)							
Original Item #	***Current Service Interval***	***Recommended Service Interval***	***Item to be checked or serviced***	***Schedule***	***(Actual Time) Total clock time (Minutes)***	***Personnel Required***	***MAC Time (Total Man Hours)***
53	6	8	APU engine coolant	Day 4	40	3	2.0
54	6	8	APU cooling fan (inspect)	Day 4	6	1	0.1
51	6	8	APU engine valve clearance	Day 4	30	1	0.5
48	6	8	APU engine air filter (replace)	Day 4	6	1	0.1
50	6	8	APU engine fuel filter	Day 4	30	1	0.5
				Total mins	459		
				Total hours	7.65	**MAC Time**	17.5
Legend: #—number; DECU——digital electronic control unit; MAC—maintenance allocation chart; mins—minutes; PMCS— preventive maintenance checks and services;							

Figure E-14. Day 4 hull PMCS schedule (continued)

E-17. The following checks are performed during day 5 of a 10-day service plan. Figure E-15 contains the hour breakdown for each maintenance action (see figure E-15 on page 81 and 82).

Hull PMCS Day 5 (Example)							
Original Item #	***Current Service Interval***	***Recommended Service Interval***	***Item to be checked or serviced***	***Schedule***	***(Actual Time) Total clock time (Minutes)***	***Personnel Required***	***MAC Time (Total Man Hours)***
49	6	8	APU engine oil and oil filter	Day 5	60	1	1.0
52	6	8	Ground hop APU	Day 5	36	3	1.8
64	6	8	Nuclear, biological, chemical (NBC) system (minor disassembly)	Day 5	120	1	2.0

Figure E-15. Day 5 hull PMCS schedule

Hull PMCS Day 5 (Example)							
Original Item #	***Current Service Interval***	***Recommended Service Interval***	***Item to be checked or serviced***	***Schedule***	***(Actual Time) Total clock time***	***Original Item #***	***Current Service Interval***
65(A)	12	16	NBC system (major disassembly)	Day 5 (A)	360	1	6.0
New		8	NBC sponson box leak test	Day 5	20	2	0.7
New		8	NBC overpressuri-zation test	Day 5	10	2	0.2
70	6	8	Idler wheel hub and arm assembly	Day 5	15	1	0.3
New		8	Track (break track & re-connect to facilitate following tasks)	Day 5	120	4	8.0
71	6	8	Track support roller assembly	Day 5	40	1	1.4
				Total mins	781		
				Total hours	13.02	**MAC Time**	21.4

Legend:
#—number; APU—auxiliary power unit MAC—maintenance allocation chart; mins—minutes; PMCS— preventive maintenance checks and services

Figure E-15. Day 5 hull PMCS schedule (continued

E-18. The following checks are performed during day 6 of a 10-day service plan. Figure E-16 contains the hour breakdown for each maintenance action (see figure E-16).

Hull PMCS Day 6 (Example)							
Original Item #	***Current Service Interval***	***Recommended Service Interval***	***Item to be checked or serviced***	***Schedule***	***(Actual Time) Total clock time (Minutes)***	***Personnel Required***	***MAC Time (Total Man Hours)***
72	6	8	Final drive and sprocket wheel	Day 6	120	3	6.0
New		8	Change hub oil	Day 6	240	1	4.0
75	6	8	Road test and inspection	Day 6	60	2	2.0
				Total mins	420		
				Total hours	7	**MAC Time**	12.0
Legend: #—number; MAC—maintenance allocation chart; mins—minutes; PMCS— preventive maintenance checks and services —							

Figure E-16. Day 6 Hull PMCS Schedule.

E-19. Turret services are conducted in the same manner as hull services and the figures17 through 20 on pages 83 through 89 illustrate a 4-day service allocation. Figure E-17 shows the checks performed during day 7 of a 10-day service plan (see figure E - 17 on pages 83 and 84).

Turret PMCS Day 7 (Example)							
Original Item #	***Current Service Interval***	***Recommended Service Interval***	***Item to be checked or serviced***	***Schedule***	***(Actual Time) Total clock time (Minutes)***	***Personnel Required***	***MAC Time (Total Man Hours)***
1	6	8	Elevating mechanism	Day 7	15	2	0.5
3	6	16	Turret drive and stabilization system filters	Day 7	40	2	1.4
25(A)	12	24	Hydraulic system (fluid dampeners)	Day 7(A)	30	1	0.5
New		8	Turret hydraulic lines (inspect)	Day 7	15	1	0.3
45	6	8	Hydraulic reservoir	Day 7	40	1	0.7
35	6	8	Hydraulic filters, lines, clamps, and fittings (inspection)	Day 7	20	1	0.4

Figure E-17. Day 7 turret PMCS schedule

Turret PMCS Day 7 (Example)							
Original Item #	***Current Service Interval***	***Recommended Service Interval***	***Item to be checked or serviced***	***Schedule***	***(Actual Time) Total clock time (Minutes)***	***Personnel Required***	***MAC Time (Total Man Hours)***
35.1	6	16	Hydraulic filters, lines, clamps, and fittings (filters change)	Day 7	45	1	0.8
15	6	8	Turret harness assemblies	Day 7	20	1	0.4
10	6	8	Nuclear biological chemical (NBC) system (turret)	Day 7	60	1	1
66	6	8	Crew compartment NBC system, (driver)	Day 7	60	1	1
67	6	8	Hydraulic lines, fuel lines, clamps, and fittings (sub-turret)	Day 7	60	1	1
40	6	8	Personnel heater (A20 Global/ Hunter only)	Day 7	30	1	0.5
41	6	8	Personnel heater fuel pump filter	Day 7	30	1	0.5
42(A)	12	24	Personnel heater fuel water separator	Day 7(A)	10	1	0.2
				Total mins	475		
				Total hours	7.92	**MAC Time**	9.2
Legend: #—number; MAC—maintenance allocation chart; mins—minutes; PMCS— preventive maintenance checks and services							

Figure E-17. Day 7 turret PMCS schedule (continued)

E-20. The following checks are performed during day 8 of a 10-day service plan. Figure E-18 contains the hour breakdown for each maintenance action (see figure E-18 on pages 85 through 87).

Turret PMCS Day 8 (Example)							
Original Item #	***Current Service Interval***	***Recommended Service Interval***	***Item to be checked or serviced***	***Schedule***	***(Actual Time) Total clock time (Minutes)***	***Personnel Required***	***MAC Time (Total Man Hours)***
2	OC	16	Traversing mechanism	Day 8	30	1	0.5
17	6	8	Turret lock assembly	Day 8	5	1	0.1
19	6	8	Ammunition doors	Day 8	10	1	0.2
22	6	8	Ammunition door hardware	Day 8	15	1	0.3
20	6	8	Safety switch, disable switch, and ammunition door safety switch	Day 8	30	1	0.5
21	6	8	Turret ammunition rack stops	Day 8	20	1	0.4
38	6	8	Hull ammunition compartment	Day 8	60	1	1.0
12	6	8	Breech ring contact group	Day 8	90	1	1.5

Figure E-18. Day 8 turret PMCS schedule

Turret PMCS Day 8 (Example)							
Original Item #	***Current Service Interval***	***Recommended Service Interval***	***Item to be checked or serviced***	***Schedule***	***(Actual Time) Total clock time (Minutes)***	***Personnel Required***	***MAC Time (Total Man Hours)***
3 (New)	6	8	Improved turret motor (ITM) accumulator SW 4.7.3/4.8.2 (service ITM accumulator)	Day 8	15	2	
New	6	8	Main accumulator service	Day 8	15	2	0.5
New	6	8	Hand pump accumulator service	Day 8	15	2	0.5
New	6	8	Parking brake accumulator service	Day 8	15	2	0.5
4	6	8	Gunner's primary and auxiliary sights, commander's independent thermal viewer sight module, and commander's extension (purge)	Day 8	45	2	1.5

Figure E-18. Day 8 turret PMCS schedule (continued)

Turret PMCS Day 8 (Example)							
Original Item #	***Current Service Interval***	***Recommended Service Interval***	***Item to be checked or serviced***	***Schedule***	***(Actual Time) Total clock time (Minutes)***	***Personnel Required***	***MAC Time (Total Man Hours)***
5	6	8	Biocular image control unit (purge)	Day 8	15	2	0.3
6	6	8	Laser rangefinder (purge)	Day 8	15	2	0.3
New	6	8	CROWS LP VIM/TIM (purge)	Day 8	20	2	0.4
8	6	8	Crosswind sensor (inspect)	Day 8	10	1	0.2
24	6	8	Cooling system (VCSU/AHU)	Day 8	90	2	3
				Total mins	515		
				Total hours	8.58	**MAC Time**	12

Legend:
#—number; AHU— air handling unit; CROWS LP— Common Remotely Operated Weapon Station-Low Profile; MAC—maintenance allocation chart; mins—minutes; OC—on condition; PMCS— preventive maintenance checks and services; SW software; TIM— thermal camera; VCSU—vapor compression system unit; VIM—day camera

Figure E-18. Day 8 turret PMCS schedule (continued)

E-21. The following checks are performed during day 9 of a 10-day service plan. Figure E-19 contains the hour breakdown for each maintenance action (see figure E-19 on page 88).

Turret PMCS Day 9 (Example)							
Original Item #	***Current Service Interval***	***Recommended Service Interval***	***Item to be checked or serviced***	***Schedule***	***(Actual Time) Total clock time (Minutes)***	***Personnel Required***	***MAC Time (Total Man Hours)***
18	6	8	Turret bustle	Day 9	3	1	0.1
16	6	8	Smoke grenade launcher	Day 9	30	2	0.5
7	6	8	Collimator assembly	Day 9	20	1	0.4
11	6	8	120mm gun cannon to include borescope and recoil	Day 9	120	2	4
9	6	8	Commander's Weapon Station (CROWS LP)	Day 9	180	2	6
				Total mins	353		
				Total hours	5.88	**MAC Time**	11
Legend: #—number; MAC—maintenance allocation chart; mins—minutes; mm—millimeter; PMCS— preventive maintenance checks and services							

Figure E-19. Day 9 turret PMCS schedule

E-22. The following checks are performed during Day 10 of a 10-day service plan. Figure E-20 contains the hour breakdown for each maintenance action (see figure E-20).

Turret PMCS Day 10 (Example)							
Original Item #	***Current Service Interval***	***Recommended Service Interval***	***Item to be checked or serviced***	***Schedule***	***(Actual Time) Total clock time (Minutes)***	***Personnel Required***	***MAC Time (Total Man Hours)***
New	12	16	Commander's Weapon Station (CROWS LP)	Day 10(A)	160	2	5.4
New	6	8	Bleed air from hydraulic system	Day 10	45	2	1.5
23	6	8	System test	Day 10	60	1	1
				Total mins	265		
				Total hours	4.42	**MAC Time**	7.9
Legend: #—number; MAC—maintenance allocation chart; mins—minutes; PMCS— preventive maintenance checks and services							

Figure E-20. Day 10 turret PMCS schedule

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Source Notes

This division lists sources by page number. Where material appears in a paragraph, it lists the page number followed by the paragraph number.

Page 2: “Maintenance is everyone’s business …” BG Michael J. Simmering. “Winning the Maintenance Fight at Pace,” The Company Leader, Leadership Lessons from the Tactical Level of War, https://companyleader.themilitaryleader.com/.

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Glossary

The glossary lists acronyms and terms with Army or joint definitions. Where Army and joint definitions differ, (Army) precedes the definition. TC 3-20.31-9 is the proponent publication (the authority) for five terms or definitions. The proponent publication for other terms is listed in parentheses after the definition.

SECTION I – ACRONYMS AND ABBREVIATIONS

AAR	after action review
ABCT	Armored brigade combat team
AESIP	Army Enterprise Systems Integration Program
AMC	Army Materiel Command
AR	Army regulation
ATP	Army techniques publication
ATRRS	Army Training Requirements and Resources System
BG	brigadier general
BII	basic issue item
BSB	brigade support battalion
CBRN	chemical, biological, radiological, and nuclear
CCIR	commander's critical information requirement
COMET	command maintenance evaluation and training
CP	command post
CROWS	Common Remotely Operated Weapon Station
CSM	command sergeant major
CUI	conversational user interface
DA	Department of the Army
DA Pam	Department of the Army pamphlet
DFAC	Dining Facility Administration Center
DOTMLPF-P	Doctrine, Organization, Training, Materiel, Leadership and education, Personnel, Facilities and Interoperability-Policy
EMS-NG	Electronic Maintenance Support-Next Generation
ERPS	enterprise resource planning
ETM	electronic technical manual
FM	field manual
FMT	field maintenance team
FoV	family of vehicles
FRAGORD	fragmentary order
FSR	field service representative
GCSS-A	Global Combat Support System-Army
HMPT	hydro-mechanical power transmission
IADS	Interactive Authoring and Display Software

IAW	in accordance with
IETM	interactive electronic technical manual
JP	joint publication
LAR	logistics assistance representative
LIN	line item number
LRU	line-replaceable unit
MAC	maintenance allocation chart
MAL	master authorization list
MCS	maintenance control section
MG	master gunner
MSD	maintenance support device
NCO	noncommissioned officer
NGATS	next generation automatic test set
NIPR	Non-Classified Internet Protocol Router
NMC	not mission capable
OPORD	operation order
PACE	primary, alternate, contingency, and emergency
PL	platoon leader
PMCS	preventative maintenance, checks and services
POL	petroleum, oils, and lubricants
PSG	platoon sergeant
QA	quality assurance
QC	quality control
S-6	battalion or brigade signal staff officer
SBCT	Stryker brigade combat team
SKO	sets, kits, and outfits
STP	Soldier training publication
TACOM	United States Army Tank-automotive and Armaments Command
TC	tank commander
TM	technical manual
TMDE	test, measurement, and diagnostic equipment
TULSA	TACOM Unique Logistics Support Applications (TULSA)
USAARMS	U.S. Army Armor School
VC	vehicle commander
XO	executive officer

SECTION II– TERMS

commander's critical information requirment

Specific information identified by the commander as being essential to facilitate timely decision making. (JP 3-0)

confirmation brief

A brief subordinate leaders give to the higher commander immediately after the operation order is given to confirm understanding. (ADP 5-0)

***daily sync meeting**

A daily meeting which prevents surprises, maximizes resources, and enables critical maintenance decisions relative to the service.

key tasks

Those significant activities the force must perform as a whole to achieve the desired end state. (ADP 6 -0)

***outbrief**

A detailed report on the updated readiness of the platoon after platoon services.

***platoon status checks**

Each crew in the platoon reports their status on that day's services checks to the platoon leader.

readiness

The ability of military forces to fight and meet the demands of assigned missions. (JP 1, Vol 2)

***scheduled maintenance**

The performance of field maintenance actions in accordance with a set schedule provided by the equipment's original manufacturer.

***unscheduled maintenance**

Maintenance tasks that must be prioritized and conducted to ensure equipment is fully mission capable but are reactionary in nature, and units cannot plan these tasks in advance.

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Index

Entries are by paragraph number.

A

ancillary services. 7-22

B

backbrief. 6-4

C

command and control during services. 4-7

confirmation briefs. 6-4

D

daily FRAGORD. 7-8

E

environmental considerations. 4-3

F

forecasting service requirements. 2-8

G

GCSS-A service schedules. 2-2

I

induction checks. 5-11

L

leader certification. 3-2

lift requirements. 4-1

lubrication orders. 2-14

P

personnel requirements. 2-9

purpose of services. 1-1

Q

quality assurance and quality control. 7-15

S

service packets. 3-9

service windows and scheduling. 2-5

services in-brief. 5-3

services OPORD. 5-1

services out-briefs. 8-7

standard service week (hull). 7-6

standard service week (tank). 7-6

T

terrain walk. 6-1

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TC 3-20.31-9

10 July 2024

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