

Chapter 5

Patriot Air Defense System

This chapter describes Patriot air defense system. This system is deployed to defend theater and corps commanders' assets.

MISSION

5-1. The mission of Patriot is to provide protection for critical assets and maneuver forces belonging to corps and echelons above corps (EAC) against airborne threats from very low to very high altitudes. The objective of Patriot operations at all levels is to disrupt and destroy the enemy's ability to mount effective air operations.

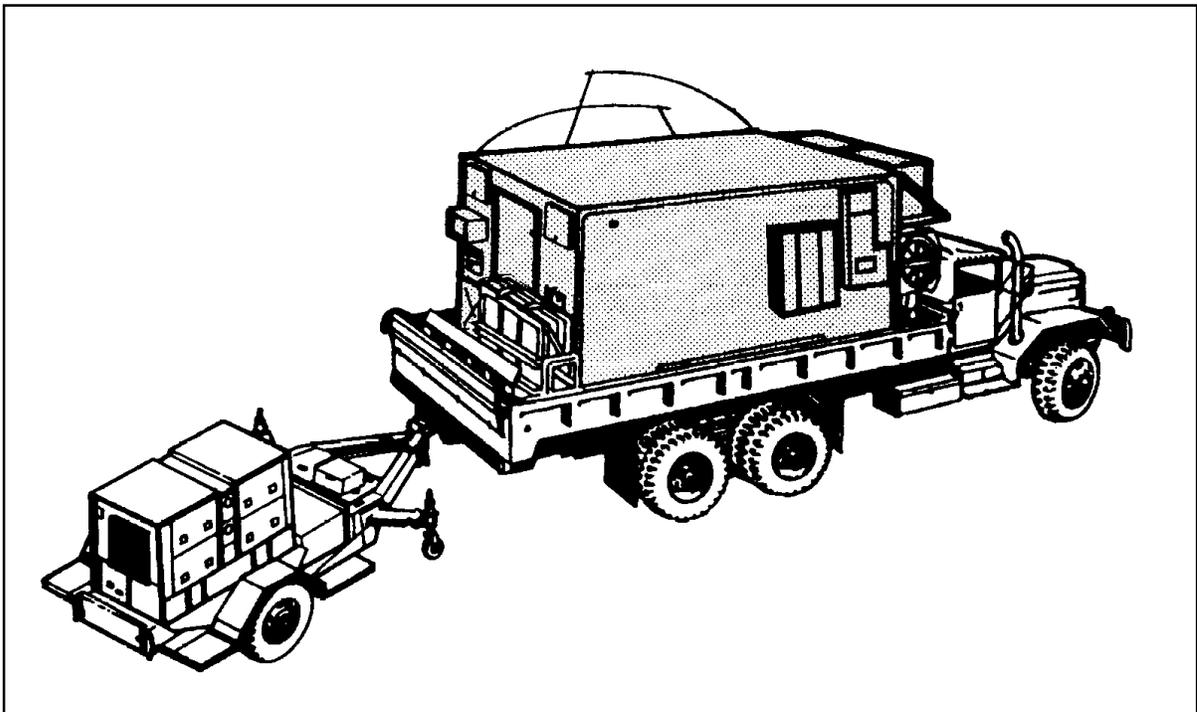


Figure 5-1. Information and Coordination Central

SYSTEM DESCRIPTION – BATTALION FIRE DIRECTION CENTER

5-2. The major end items of the Patriot battalion fire direction center (FDC) are the Information and Coordination Central (ICC) (AN/MSQ-116), Electric Power Unit (EPU II) (PU 789), Communications Relay Group (CRG) (AN/MRC-137) and Antenna Mast Group (AMG) (OE-349/MRC).

INFORMATION AND COORDINATION CENTRAL

5-3. The ICC is the C3 center of the Patriot battalion during AD operations. The ICC consists of a lightweight weather tight shelter mounted on a 5-ton cargo truck (figure 5-1, page 5-1). The shelter provides shielding from radio frequency interference (RFI) and electromagnetic pulse (EMP) radiation. It is equipped with two externally mounted air conditioners that cool, heat, and ventilate the interior. An externally mounted gas particulate filter unit (GPFU) is used in NBC situations to provide clean air for crewmembers.

5-4. The ICC contains two consoles that are manned by the tactical director (TD) and tactical director assistant (TDA). Between the two consoles is an ICC status panel that displays the status of all battalion fire units (FU).

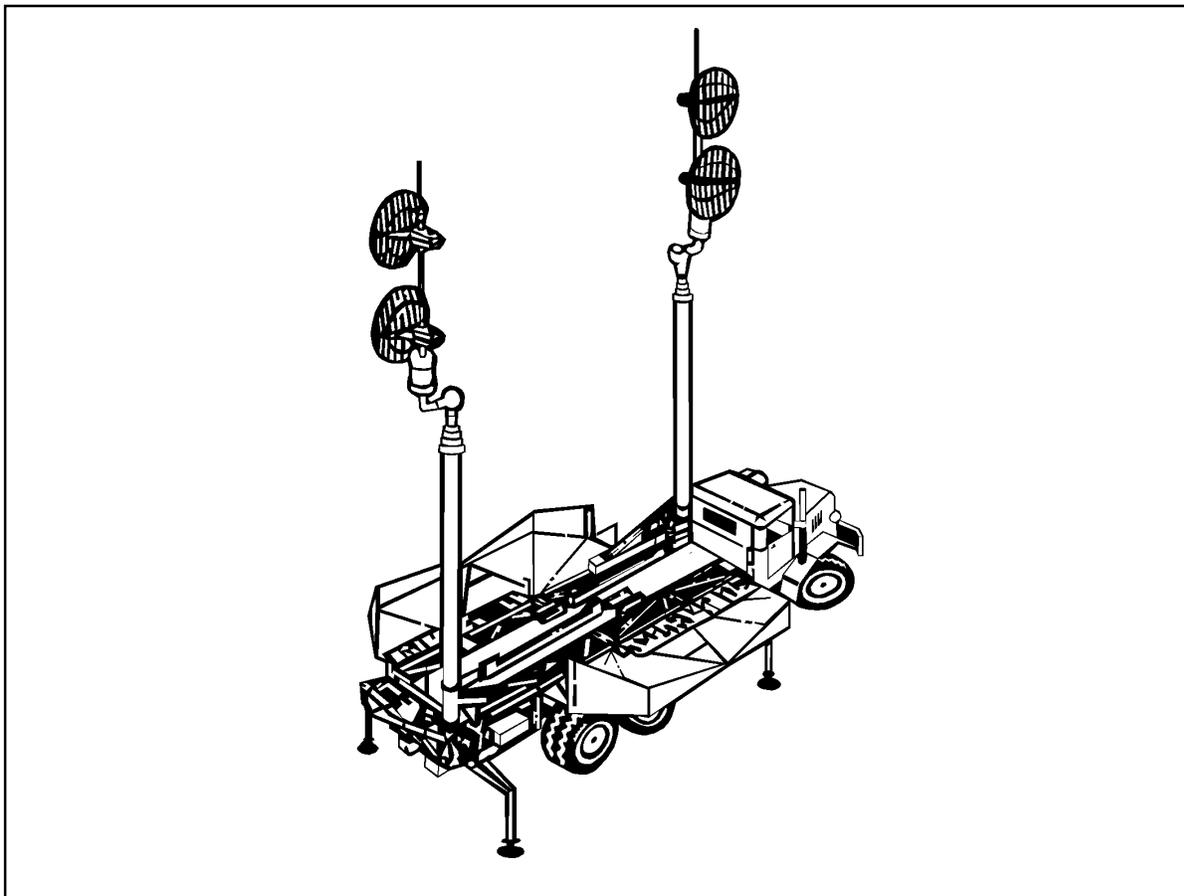


Figure 5-2. Antenna Mast Group Emplaced

ELECTRIC POWER UNIT

5-5. The EPU II is the prime power source for the ICC and CRG. The EPU II consists of a 30 kw, 400 Hz generator mounted on a trailer and towed by the ICC or CRG. Two generators will be used for the ICC and two generators for the CRG.

COMMUNICATIONS RELAY GROUP

5-6. The CRG provides a multirouted secure, two-way data relay capability between the ICC, its assigned fire units, and between adjacent units. The CRG also provides the capability for both data and voice exit and entry communication points with elements that are external to Patriot.

ANTENNA MAST GROUP, TRUCK MOUNTED, OE-349/MRC

5-7. The AMG (figure 5-2, page 5-2) is a mobile antenna mast system used to carry the amplifiers and antennas associated with the UHF communications equipment located in the ECS, ICC, and CRG. Four antennas are mounted in two pairs, are remotely controlled in azimuth, and can be elevated to heights up to 100 feet, 11 inches, above ground level.

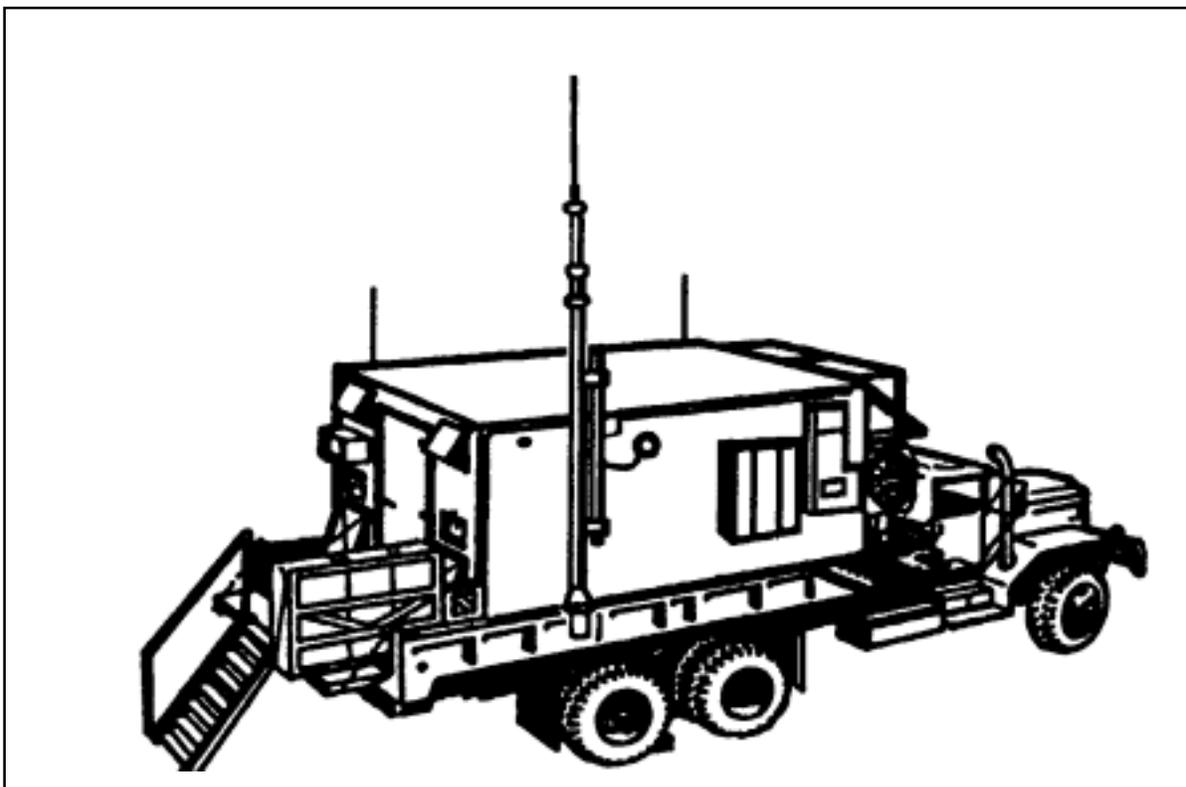


Figure 5-3. Engagement Control Station Emplaced

SYSTEM DESCRIPTION - FIRING BATTERY

5-8. The heart of the Patriot battery is the fire control section and associated launchers. The major end items are the Engagement Control Station (ECS) (AN/MSQ-104), Electric Power Plant (EPP III) (M977EPP), Radar Station (RS) (AN/MPQ-53), eight Launching Stations (LS) (M901) and Antenna Mast

Group (AMG) (OE-349/MRC). A general description of end items including the purpose and characteristics follows.

ENGAGEMENT CONTROL STATION TRUCK MOUNTED AN/MSQ-104

5-9. The ECS is the operational control center of the Patriot FU (figure 5-3, page 5-3). It contains the WCC, man/machine interface and various data and communications terminals. The ECS is air-conditioned and includes protection devices for use in NBC and EMP environments.

5-10. The ECS shelter provides shielding from RFI and is a weather-tight enclosure with appropriate air inlet and exhaust ports for the environmental control systems. The left side as seen from the doorway includes three UHF RRT and a voice communications station. The right side includes the very high frequency (VHF) DLT, radar weapon control interface unit (RWCIU), WCC, an AN/VRC-92A SINCGARS radio, optical disc drives (ODD) and embedded data recorder.

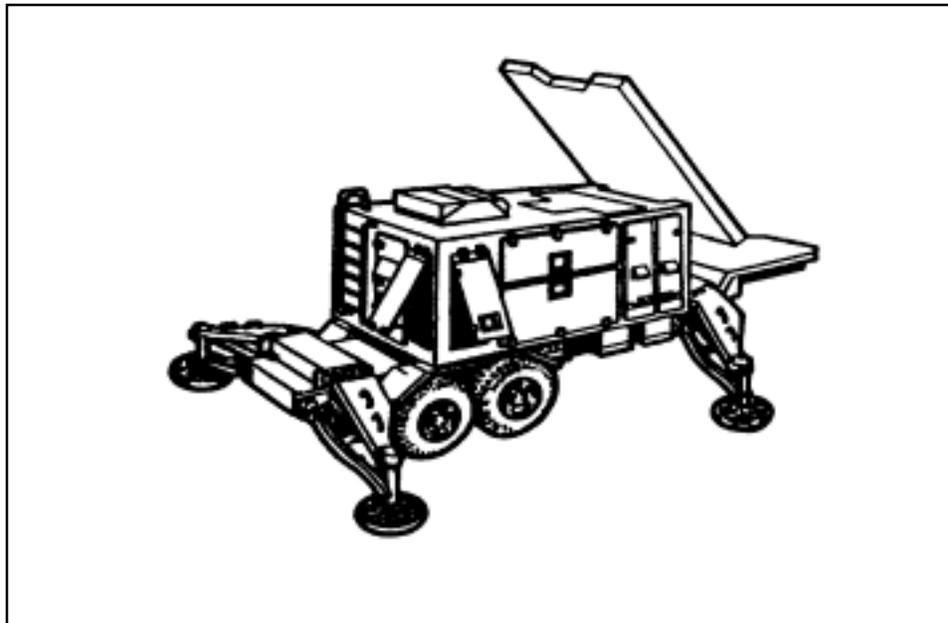


Figure 5-4. Patriot Radar Set

RADAR SET, SEMI-TRAILER MOUNTED, AN/MPQ-53

5-11. The RS consists of a multifunction phased array radar mounted on an M-860 semi-trailer towed by an M983, heavy expanded mobility tactical truck (HEMTT) (figure 5-4). It is monitored and controlled by the ECS via the radar and weapon control interface unit. It performs very low- to very high-altitude

surveillance, target detection, target classification, target identification, target track, missile track, missile guidance, and ECCM functions.

5-12. The radar antenna is positioned at the forward end of the shelter and is erected to a fixed 67.5° angle relative to the horizontal plane during emplacement. Integral leveling equipment on the M-860 semi-trailer permits emplacement on slopes of up to 10°.

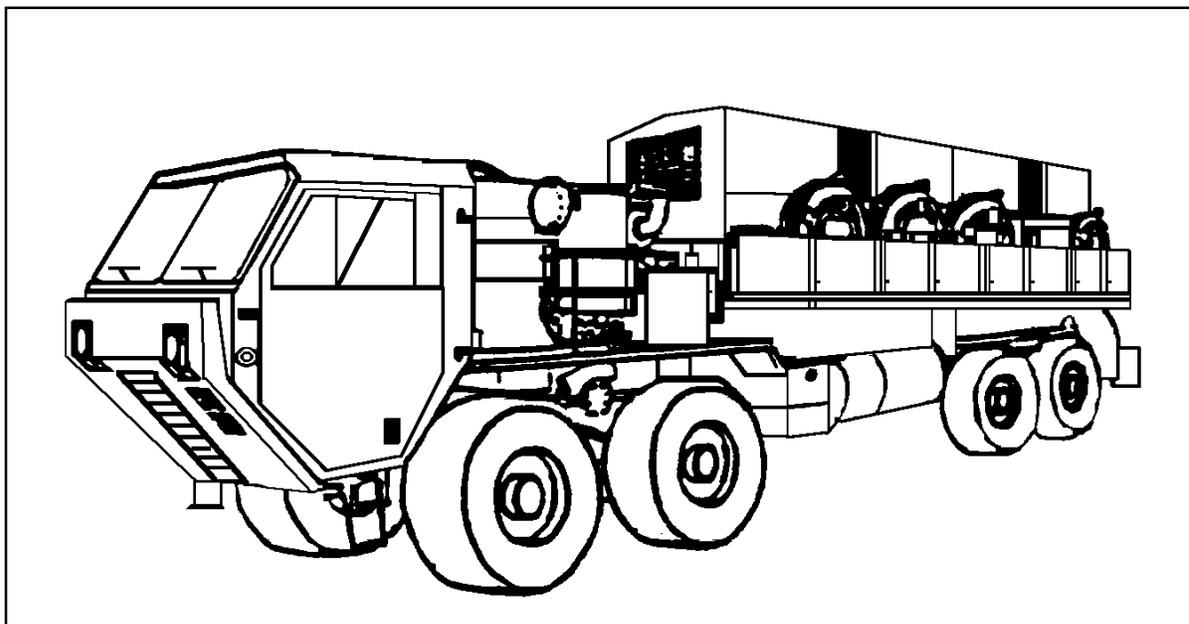


Figure 5-5. Electric Power Plant III

ELECTRIC POWER PLANT

5-13. The Electric Power Plant (EPP III) (figure 5-5) is the prime power source for the ECS and RS. Each EPP consists of two 150 kw, 400 Hz diesel engines that are interconnected through the power distribution unit (PDU) and are mounted on a 10-ton M977 HEMTT. Each EPP contains two interconnected 75-gallon fuel tanks and a fuel distribution assembly with grounding equipment. Each diesel engine can operate more than eight hours with a full fuel tank.

ANTENNA MAST GROUP, TRUCK MOUNTED, OE-349/MRC

5-14. The AMG (figure 5-2, page 5-2) is a mobile antenna mast system used to carry the amplifiers and antennas associated with the UHF communications equipment located in the ECS, ICC, and CRG. Four antennas are mounted in two pairs, are remotely controlled in azimuth, and can be elevated to heights up to 100 feet, 11 inches, above ground level.

5-15. Emplacement consists of stabilizing the AMG, setting the antenna feed and the erection of the antennas by the use of self-contained hydraulic and pneumatic systems and then adjusting the antenna elevation. Connecting cables to the collocated shelter is carried on the AMG and includes RF cables, control cables, and a prime power cable.

LAUNCHING STATION, GUIDED MISSILE SEMI-TRAILER MOUNTED

5-16. The Launching Station (LS) (figure 5-6) is a remotely operated, fully self-contained unit, that has integral onboard power and carries up to four guided missiles (PAC-2), or 16 missiles (PAC-3). Operation is controlled in the ECS via fiber optics or VHF data link. The LS is mounted on an M-860 semi-trailer towed by an M983 HEMTT. Leveling equipment permits LS emplacement on slopes of up to 10°. The LS is trainable in azimuth $\pm 110^\circ$ and elevates to a fixed, elevated, launch position. The LS has to be precisely emplaced and aligned prior to launch. Proper emplacement and alignment is critical for engagement of ballistic missiles.

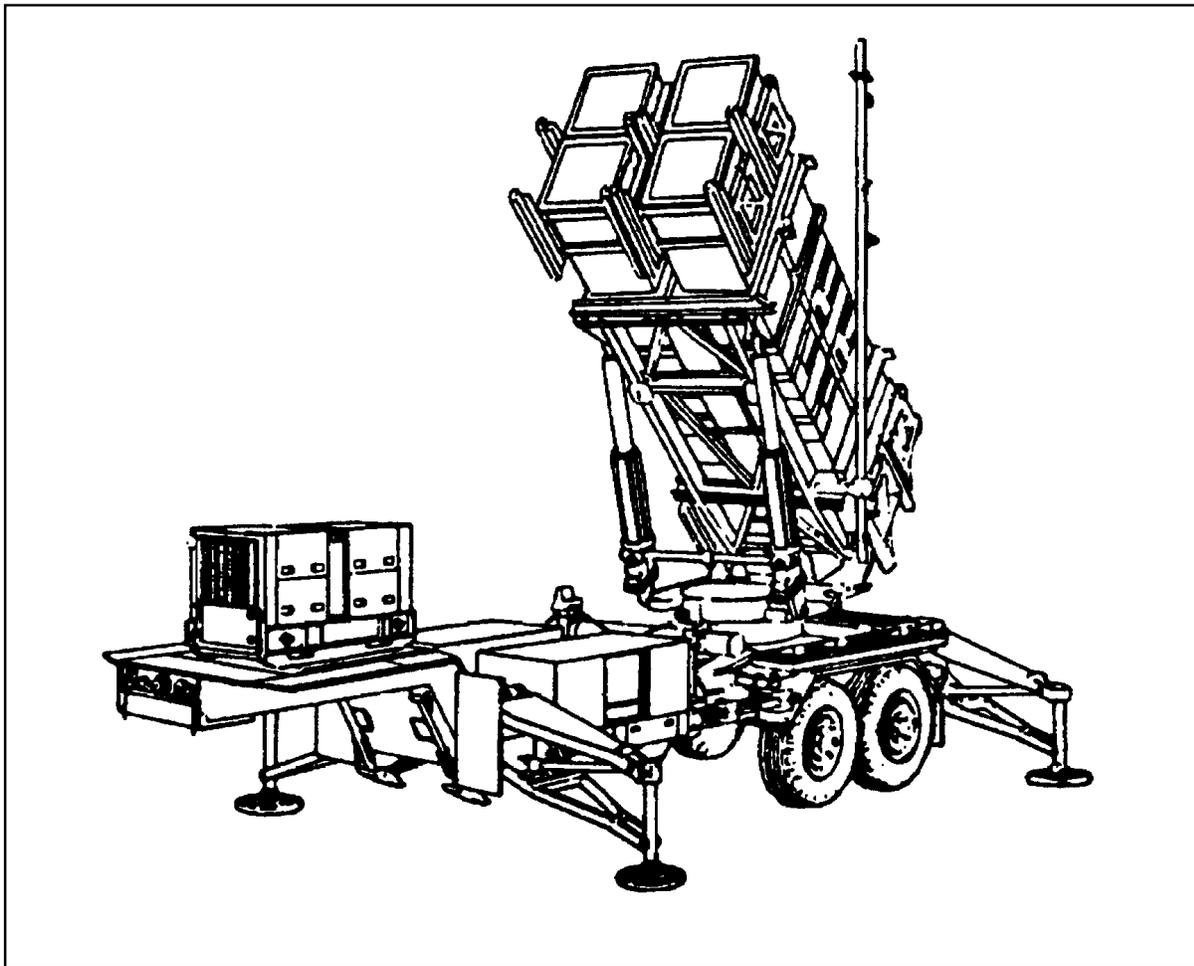


Figure 5-6. Launching Station Emplaced (PAC-2)

5-17. The Launching Station contains four major equipment subsystems. The four subsystems are as follows:

- Launcher generator set: the onboard source of LS electrical power.
- Launcher Electronics Assembly: two trailer-mounted equipment consoles that receive, decode, and execute commands of the ECS.

- Launcher Mechanics Assembly: elevates the guided missiles and contains a data link antenna mast for communications with the ECS.
- Launcher Interconnection Group: interconnects onboard LS equipment and controls the routing of electrical function lines to and from the guided missiles.

5-18. The Generator for the LS is located on the yoke assembly of the trailer and includes a built-in 56.8-liter (15-gallon) fuel tank. It has side-mounted work platforms. The unit is a diesel engine-driven generator, 15 kw, four-wire, 400-hertz, 120/208-volt power.

GUIDED MISSILE INTERCEPT AERIAL, MIM-104

5-19. The missile, from front to rear, consists of a radome, guidance section, warhead section, propulsion section, and control actuator section. The Patriot missile is mounted within a canister (figure 5-7) that functions as a shipping and storage container and as a launch tube. Guided missile canisters are stacked into groups of four per LS (PAC-2).

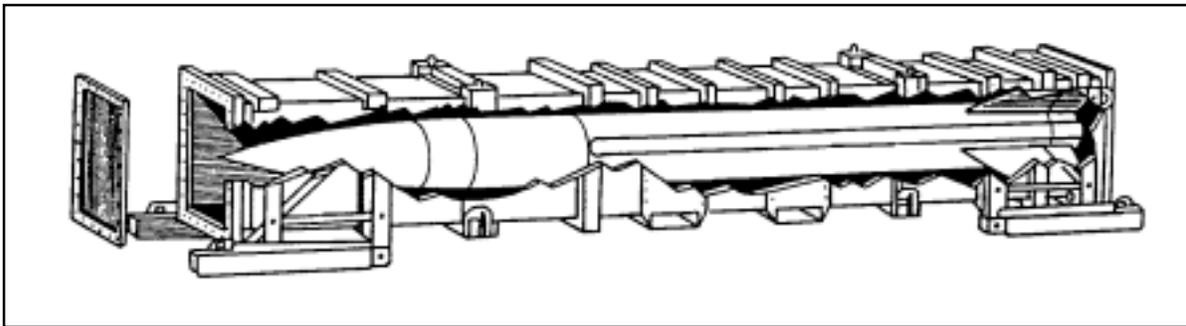


Figure 5-7. Missile Canister

5-20. A desiccant indicator on the aft end of the canister monitors the humidity. A single umbilical cable connection interfaces the canister with the LS and provides the means for status monitoring, preheating, and launching.

5-21. The missile has four clipped-delta, movable, tail-control surfaces, and is propelled by a single-stage, all-boost solid-propellant rocket motor (figure 5-8, page 5-8). BITE checks missile readiness and provides GO or NO-GO logic for successive events in the countdown. A malfunction in any lead-in event in the missile activation and arming sequence will prevent rocket motor ignition. Any defect is automatically reported to the WCC in the ECS.

5-22. The standard Patriot missile (MIM-104) was the first type fielded and contained an analog fuze. This fuze was replaced by a digital version with the fielding of the MIM-104A. Both of these missiles provide excellent performance against ABTs and adequate performance against TBMs.

5-23. To counter the long-range ECM threat the MIM-104B, or standoff jammer countermeasures (SOJC) missile, was fielded in the late 1980's. The guidance and navigation hardware was modified to allow the SOJC missile to fly a lofted trajectory to the jamming source and seek out the strongest emitter during the terminal phase of missile flight. The SOJC missile can fly three times longer than the standard missile without the uplink/downlink

between the RS and missile. The SOJC missile retains the same performance against ABT and TBM as the standard missile.

5-24. The Patriot Advanced Capabilities 2 (PAC-2) missile, MIM-104C, was fielded during Operation Desert Shield and Operation Desert Storm to counter the advanced TBM threat. A new warhead and dual-mode fuze was added to the missile. The new warhead contains a more powerful explosive and larger fragments designed to place sufficient kinetic energy on the warhead section of threat TBMs to achieve a Warhead Kill. The dual-mode fuze allows the PAC-2 missile to retain ABT performance and also optimize performance against TBM. The system software based on the mission selected for the missile sets the fuze mode.

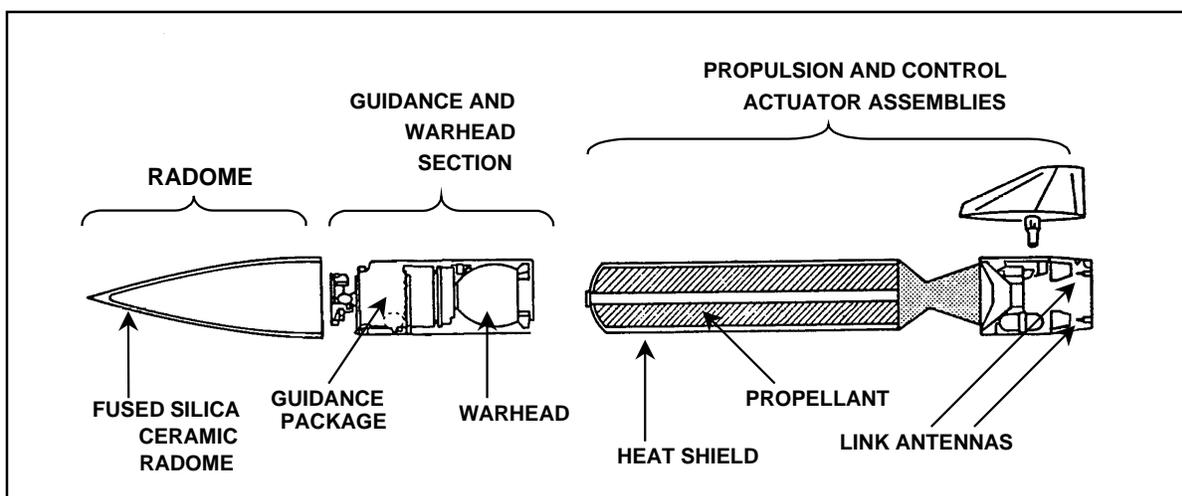


Figure 5-8. Patriot Missile Major Sections (MIM-104C)

5-25. The Guidance Enhancement Missile (GEM) is an improved PAC-2 missile. A Low Noise Front End (LNFE) and improved fuze have increased lethality and expanded TBM engagement volume.

5-26. The Patriot Advanced Capability (PAC-3) missile is to be incorporated into the Patriot air defense system. It will provide defense against tactical ballistic missiles, advanced cruise missiles, and other air-breathing threats in the presence of electronic countermeasures and rough terrain.

5-27. Rather than relying on proximity detonation that can simply redirect or break up an incoming threat, the PAC-3 missile hits the target warhead to assure complete destruction. The PAC-3 missile achieves its hit-to-kill capability through the combination of an extremely accurate seeker coupled with exceptionally rapid airframe response. The missile also utilizes a lethality enhancer that is designed to increase the performance against air-breathing threats. There are 16 PAC-3 missiles per Patriot launcher (versus four PAC-2 missiles per launcher) and eight launchers per Patriot battery.

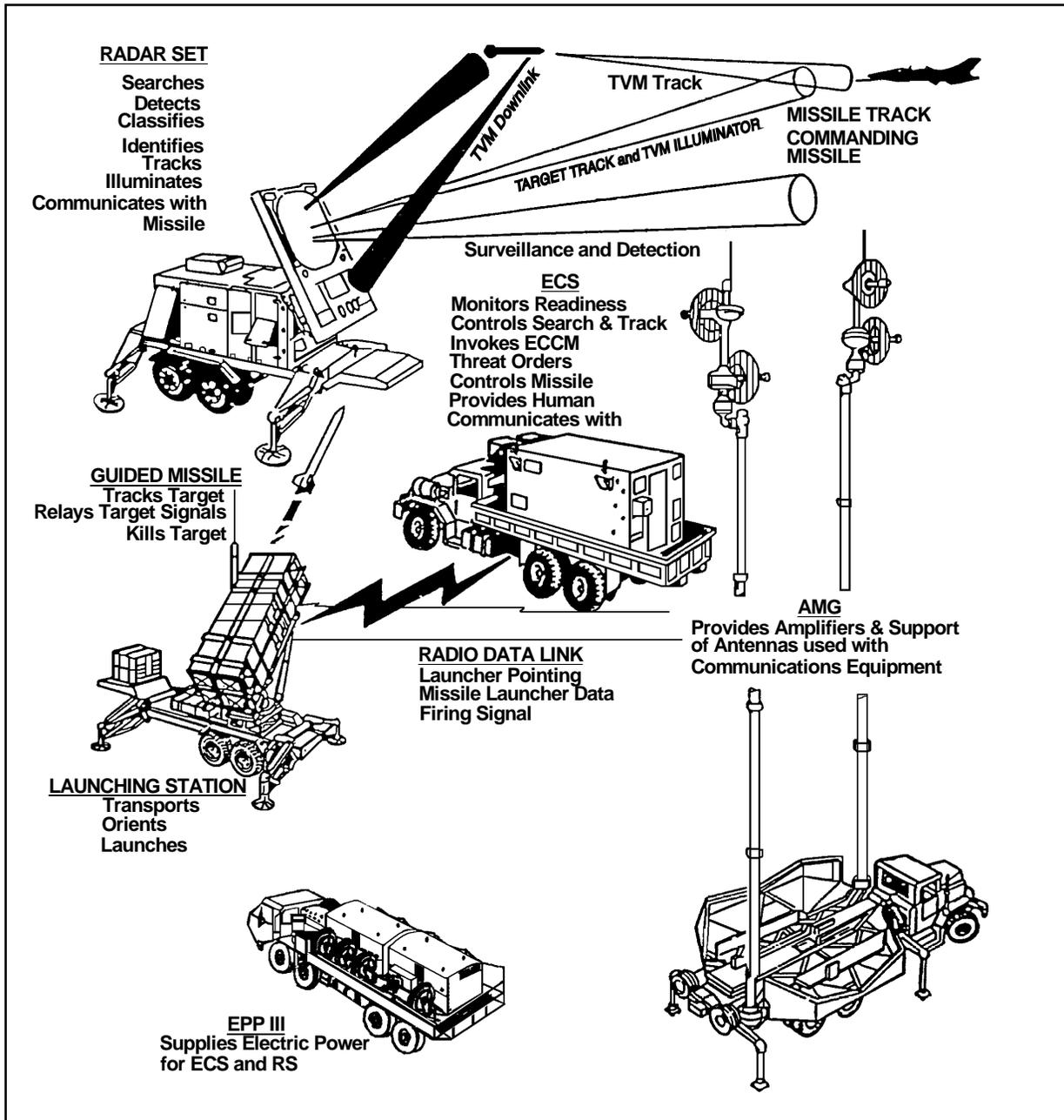


Figure 5-9. Patriot Fire Unit Operations

SYSTEM OPERATIONAL OVERVIEW

5-28. The Patriot system has four major operational functions: communications, command and control, radar surveillance, and missile guidance. These four functions combine to provide a coordinated, secure, integrated, battalion-level, mobile AD system capable of defending designated assets against TBMs and ABTs in an ECM environment.

INFORMATION AND COORDINATION CENTRAL

5-29. The ICC provides the automated data processing (ADP) and communications capabilities that are required to integrate with other AD systems. The ICC communicates with the air defense brigade tactical operation center (TOC-AMDPCS) using either the Army tactical data link-1 (ATDL-1) or tactical digital information link-B (TADIL-B) data link. In the absence of a brigade TOC, the ICC can communicate directly with elements of the USAF Tactical Air Control System/Tactical Air Defense System (TACS/TADS) using either TADIL-A, TADIL-B, or TADIL-J data links.

5-30. The ICC can interface with other weapons surveillance and intelligence systems using communications equipment mounted in the Tactical Command System (TCS). The ICC receives intelligence and early warning information from the CTT-H/R terminal and can establish an UHF TADIL-A data link using the TADIL-A suite of equipment in the TCS.

FIRE UNIT TARGET ENGAGEMENT SEQUENCE

5-31. **Surveillance and Detection.** The RS searches the surveillance area and detects, identifies, tracks, and illuminates targets. The ECS receives target track data from the RS and processes this information within the WCC. Targets are assessed and identified as unknown, friendly, or hostile. When a target has been identified as hostile, it may be engaged once the WCC sends a launch command to the selected LS. The LS receives its launch command from the WCC by way of fiber optic communications or by way of a VHF link, and a selected missile is launched. The RS acquires the launched missile and a two-way data link is established with the ECS WCC through the RS.

5-32. **Track via Missile.** The Patriot missile is commanded to the vicinity of the target by the WCC and then the on-board missile seeker acquires the target. The target is then TVM, while the two-way data link is maintained at an increased rate. The missile moves to the intercept point while the RS illuminates the target.

5-33. **Target Intercept.** At the proper time, the missile proximity fuse is armed. This activates the warhead for target intercept and destruction (figure 5-9, page 5-9).

COMMUNICATIONS EQUIPMENT

5-34. **AN/ARC-187 UHF Radio.** The AN/ARC-187 receive/transmit UHF radio is used for TADIL-A operations. It is used in the TCS and ICC.

5-35. **AN/GRC-103 UHF Radio.** The AN/GRC-103, 12-channel, Band III radio set is used in every ICC, ECS, and CRG. Two corner reflector antennas are used for short-range communications, and the AMG is used for long-range communications. Encryption is provided by the KG-194A.

5-36. **AN/GSQ-240 JTIDS Class 2M Radio.** The AN/GSQ-240 radio is a high-speed data radio that provides jam resistant ground-to-air and ground-to-ground data communications. It operates in a time-shared data network providing subscribers access to theater engagement operations surveillance

and targeting information. JTIDS operates in the 960 MHz to 1215 MHz frequency range.

5-37. **AN/TRC-170 Radio Terminal Set.** The AN/TRC-170 radio provides tactical multichannel digital troposcatter or line-of-sight systems for transmission of analog and digital traffic. It operates in the 4 to 5 GHz ranges with 8 to 144 channels and is housed in a HMMWV mounted shelter. It is used at the ICC for interface with the TCS.

5-38. **Commander's Tactical Terminal/Hybrid Receive Unit.** The Commander's Tactical Terminal/Hybrid Receive Unit (CTT/H-R) is a ruggedized, dual channel terminal capable of receiving and processing broadcasts from the Tactical Information Broadcast Service (TIBS) intelligence network and other communications networks. It operates within the 225 MHz to 1.4 GHz UHF range. It is used in the ICC and TCS.

5-39. **IHFR-AM.** The AN/GRC-193A medium/high power radio set is used at battalion, and brigade CPs primarily as backup communications for C2 when at a static position. The AN/GRC-213 low power radio set is used at firing batteries. Some units are using the AN/GRC-106A radio sets until replaced with AN/GRC-193A or AN/GRC-213 radios.

5-40. **Mobile Subscriber Equipment.** The mobile subscriber equipment (MSE) consists of an interface box at the ICC hardwired to a small extension node (SEN) van which will transmit the signal to other SENs, and various digital secure and non-secure voice telephones. The purpose is to allow the battalion to communicate with higher echelons, other ADA units, and anyone in the net. MSE is not necessarily an organic asset; a supporting signal company may furnish it. It may be used to transmit TADIL-B and ADTL-1.

5-41. **VHF-FM.** At the battalion level, FM radios are used for command, logistics, administrative, intelligence, and operations networks. SINCGARS are the primary radios for the FM networks.

5-42. **Wire.** WD-1 and 26-pair cables are used to connect elements within the battalion and battery for C2, administration, logistics, and CSS. The wire lines are connected with the UHF equipment to communicate with subordinate, higher, and supporting units.

BATTALION COMMUNICATIONS REQUIREMENTS

5-43. The communications system for Patriot battalions must provide reliable, real-time or near real-time information to dispersed Patriot batteries, higher headquarters, adjacent battalions, and supported units. The communications system must be redundant to provide continuous communications even when the primary system fails. To effectively defeat the air threat, the Patriot battalion must maintain communications to support the following functions:

- Control of the air battle.
- Command, administrative, and logistical lines with higher headquarters, subordinate units, and lateral units.
- Liaison with supported units or the units in whose area the Patriot battalion is operating.

5-44. Each Patriot battalion commander is responsible for establishing an effective communications system. He exercises C2 of organic signal assets through his signal officer. Communications are established from higher to lower, left to right, and supporting to supported (see FM 24-1 for more details). The battalion uses multichannel radio and wire nets to maintain external and internal communications. A communications platoon organic to the Patriot battalion provides external and internal communications for the battalion TOC (extended multichannel radio systems) and limited support to the FU.

5-45. The following digital links is used to transmit data:

- PADIL: An internal digital data link for communication between Patriot battalions and batteries. Patriot batteries are PADIL capable only.
- ATDL-1: A secure, full-duplex, point-to-point digital data link that interconnects tactical air control systems and Army or Marine tactical air defense systems.
- TADIL-A: A secure, half-duplex, netted digital data link normally operated in a roll-call mode under control of a net control station to exchange information between land-based, airborne, and shipboard tactical data systems. NATO's equivalent is Link 11.
- TADIL-B: A secure, full-duplex, point-to-point digital data link used to connect Patriot brigades and SHORAD units to the CRC and other points. NATO's equivalent is Link 4.
- TADIL-J: A secure, high capacity, jam-resistant, nodeless data link which uses the Joint Tactical Information Distribution System (JTIDS) transmission characteristics and the protocols, conventions, and fixed-length message formats defined by JTIDS. It is a time-shared net used by airborne, shipboard, and land-based tactical combat operations. NATO's equivalent is Link 16.

EXTERNAL COMMUNICATIONS

5-46. External communications are established with the ADA brigade and adjacent Patriot battalions. The battalion is also capable of communicating with a CRC, SHORAD battalion, THAAD battery, or a Hawk battalion.

5-47. **ADA Brigade.** Communications with the ADA brigade supports air battle C2. It also facilitates administrative, logistical, operational, and intelligence functions. Voice and data links are established via multichannel radio and MSE between brigade and battalion.

5-48. The EAC ADA brigade uses MSE resources to establish and maintain an MSE network between the brigade and subordinate battalions. The corps ADA brigade establishes an MSE network using MSE assets from the corps signal brigade. The primary means of communications with brigade is MSE for all networks (data link, IRR, ADC, brigade command, and brigade admin/log). SINCGARS is the secondary means of communications with the brigade for the ADC, brigade command, and brigade admin/log networks.

5-49. Generally, three dedicated circuits are used for control of the air battle. One circuit is dedicated to automatic data link connectivity that uses either

TADIL-B or ADTL-1. The brigade and battalion tactical directors (TD) use the second circuit for the identification function. This is called IRR and is usually established on party line two. The brigade and battalion tactical director assistants (TDA) use the third circuit for engagement functions. This is called ADC and is usually established on party line one. The brigade command and admin/log networks are accessed via MSE user terminals (DVNT/DSVT) on an as needed dial-up basis.

5-50. IHFR-AM is used as a backup voice system for ADC and IRR. Battalions establish the AM net with brigade to pass messages and facilitate command, control, and coordination with higher echelons. Because of effective communications using MSE and SINCGARS, only a backup AM capability between battalion and brigade is required.

5-51. **Adjacent Patriot Battalions.** A Patriot battalion may establish a UHF multichannel communications system with an adjacent Patriot battalion. Generally, each battalion for this external communications link uses one terminal of a CRG. The EAC ADA brigade can also establish the link. Because the Patriot UHF equipment provides a more effective link, use of a CRG is recommended for interbattalion communications. Battalions can exchange selected information using the Patriot air defense information language (PADIL) at a data exchange rate of 1,200 bits per second. The information is exchanged to improve fire and track coordination.

5-52. **Supported and Supporting Unit.** Patriot battalions establish communications with the supported unit or the unit in whose area the battalion is operating. Supporting units establish communications with the supported unit. Normally, the direct support (DS) Patriot Maintenance Company collocates with or sends a liaison element to the Patriot battalion headquarters. If this is not feasible, the DS Patriot Maintenance Company enters the Patriot battalion VHF-FM administrative and logistics net. All other units that provide support to the Patriot battalion on an area basis normally do not establish communications with the Patriot battalion. The ADA brigade establishes communications with the COSCOM and TAACOM to provide support for Patriot units.

INTERNAL COMMUNICATIONS

5-53. Internal communications are established with each Patriot FU to support the battalion command function. Internal communications also facilitate control of the air battle, administrative, intelligence, operations, and logistics functions, using UHF multichannel and VHF-FM nets.

5-54. **Multichannel Radio Systems.** Patriot battalions use organic resources to establish a multichannel radio network to each subordinate battery. When collocated, an FU can connect via specialty cable directly to battalion. The C² structure is heavily dependent upon communications for efficient operations. To pass real-time air battle and air traffic information, automatic data links must be established.

5-55. To effectively fight the air battle, each FU needs three UHF circuits. One channel on each radio is used for the multirouting of data on the automatic data link circuit. Normally, for standardization, channel four is

used. An engagement voice circuit, called ADC, is established using channel one and party line one. An intelligence and radar reporting (IRR) circuit is established using channel two and party line two. An additional circuit is established using channel three and party line three. This is a maintenance circuit and is not used for control of the air battle. Patriot battery TCA and battalion TDA use the ADC net. Patriot battery TCO and battalion TD use the IRR net.

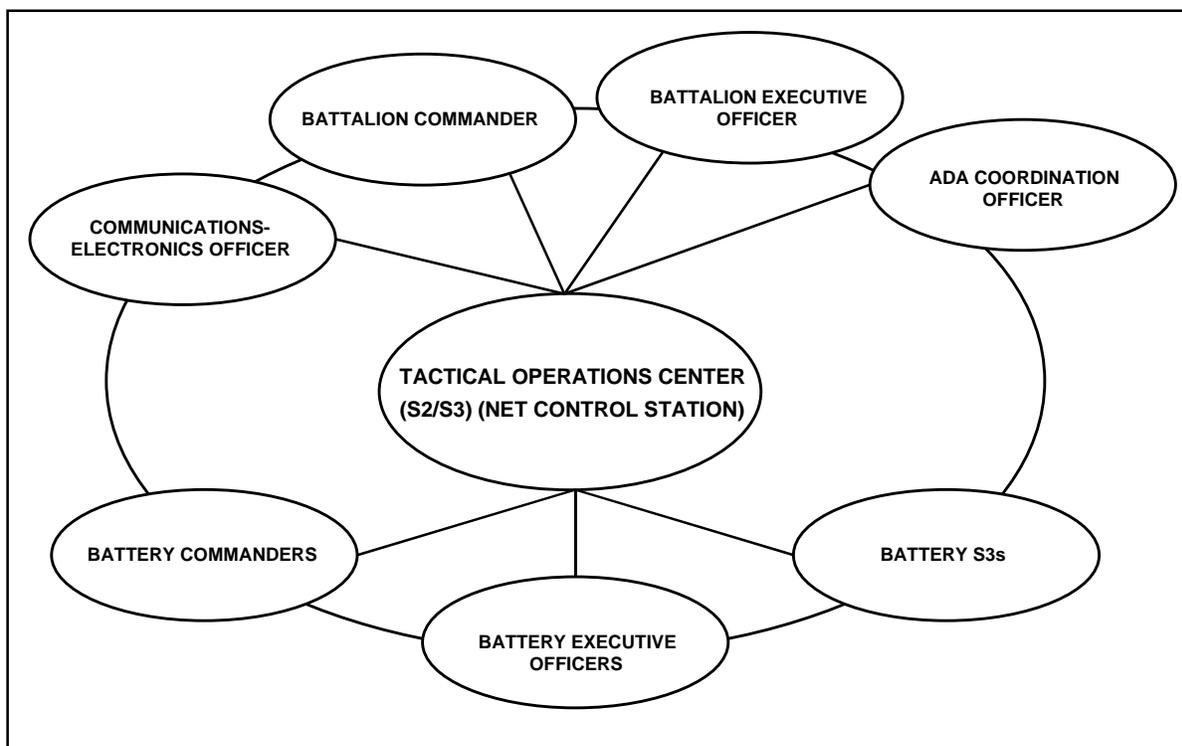


Figure 5-10. Battalion FM Command Net

5-56. **Battalion Command FM Net.** This net provides communications for the command function within the battalion headquarters (figure 5-10). It is used as the primary C2 net during movements and as a secondary net when in a static location.

5-57. **Administration, Intelligence, Operations, and Logistics.** Normally, the UHF system that provides communications for control of the air battle also supports other functions. Since the UHF system is operational most of the time, it is also the primary means for the staff to provide C2 of the FU. The total number of circuits is limited by the 12 external wire connections at the ICC. These 12 circuits must provide connections to brigade and each battery. Generally, each battery has a minimum of one circuit and will frequently have more than one circuit. These UHF circuits are connected to switchboards at the battalion and battery.

5-58. The ICC is linked to the battalion TOC and the Battalion Maintenance Center by wire. This net allows for rapid communications between key elements of the TOC and the ICC. It can be used to cross-tell time-sensitive

air battle data such as a change in the airspace control order (ACO). Maintenance support can also be requested without leaving the ICC.

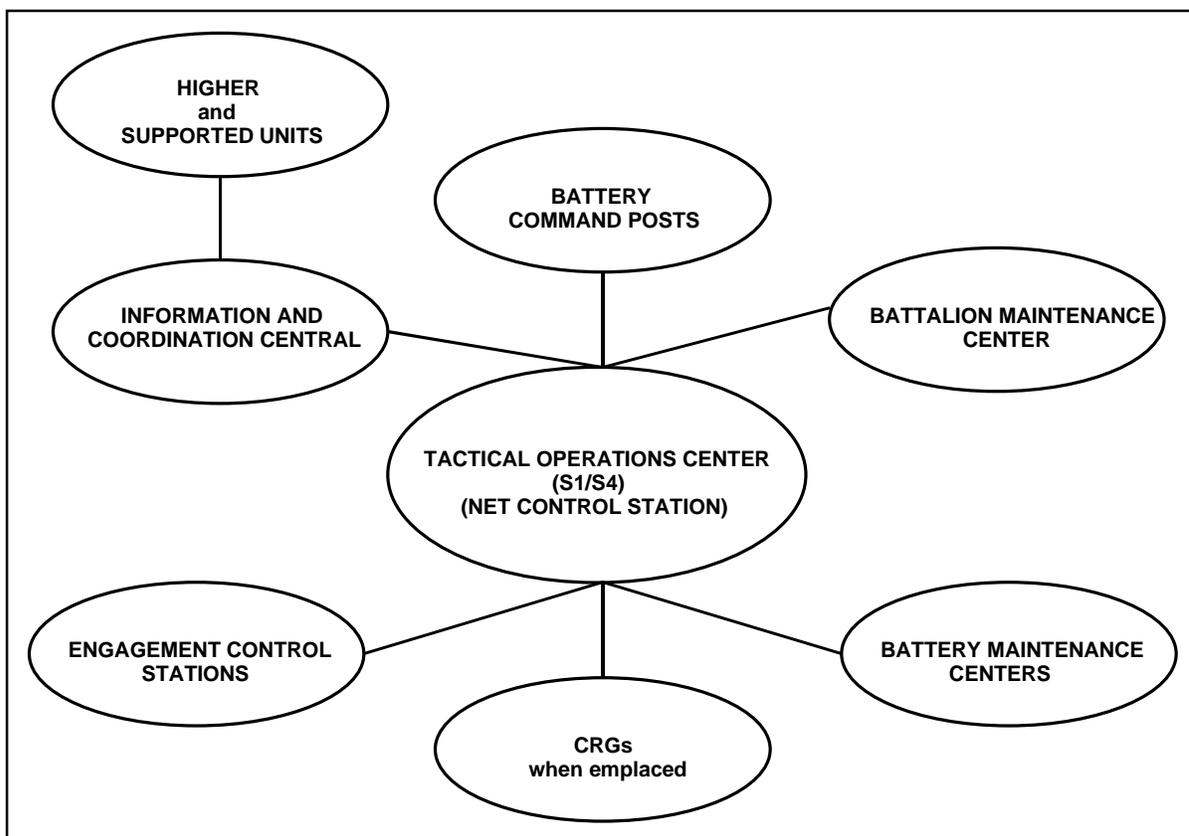


Figure 5-11. Battalion Admin/Log Net (UHF)

5-59. An UHF radio link provides administrative and logistics C2 (figure 5-11). The net control station is located at the S1 and S4 van. Every station in the net is secure. The net is routed through the ICC with UHF links to higher and supported units.

BATTERY COMMUNICATIONS REQUIREMENTS

5-60. The communications system for a Patriot battery is composed of three elements. These elements are the C2 net, data net, and the wire net.

5-61. **Fire Unit Command FM Net.** The purpose of this net is to provide communications for the battery command function (figure 5-12, page 5-16). The net control station is the battery CP. This net is primarily used during unit moves. When the battery is emplaced, the VHF-FM net is used as a secondary means of communications.

5-62. **Fire Unit Operations Net.** This net is used for C2 of the fire unit when it is emplaced. The net control station for the battery operations net is the battery CP. Wire lines connect all elements in the net. A switchboard at the CP provides a means of control for the battery commander (figure 5-13, page 5-17).

5-63. **Patriot Battery Data Net.** Fiber-optic cables link the ECS to the launching stations. This is to launch missiles and to establish availability and status of missiles. Data radio transmissions are used as backup. The net is controlled at the ECS by special purpose radio equipment that provides reliable transmission of low-data rate messages over a short path. All command messages originate at the ECS, requiring a slaved response from the LS in the form of a status message. The LS cannot originate data communications. This is the first net established during battery emplacement.

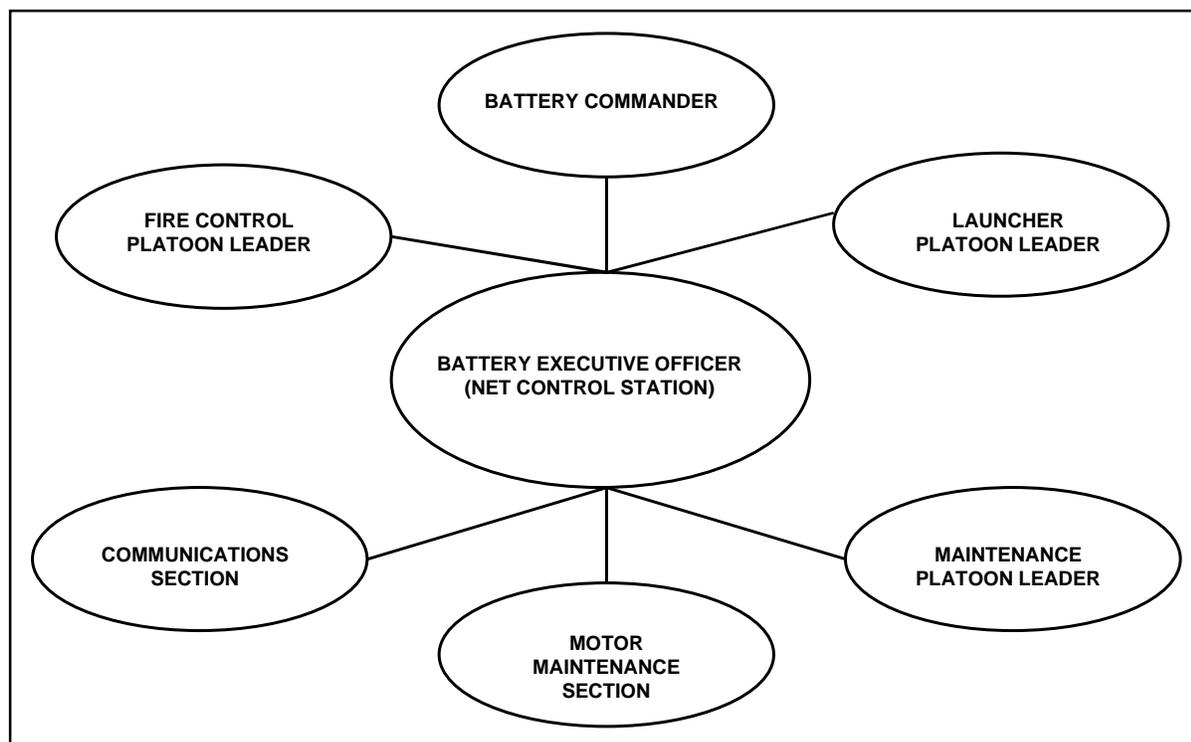


Figure 5-12. Battery Command Net (FM)

5-64. **Battery Communications Means.** Wire is the primary means of communications between elements of the battery. FM radios are used only during movement and until the wire net can be established. A minimum of one circuit to the battalion is available at the switchboard. Normally, the wire lines to the LS connect to ground defense positions.

PATRIOT LOGISTICS SUPPORT

5-65. Organizational level maintenance personnel perform maintenance on Patriot-peculiar equipment in the battalion. This includes preventive maintenance, corrective maintenance and replacement of defective units (called the battery replaceable units (BRU)).

5-66. Organizational maintenance capability is supplemented by Direct support (DS) and General Support (GS) contact teams (formerly intermediate maintenance) to repair problems beyond organizational capability. Standard

Army equipment such as generators, vehicles, and communications equipment in the Patriot system is supported by the conventional Army DS and GS system.

5-67. The Patriot missile is a "certified round" with no field test or repair permitted. If missile maintenance is required, the "certified round" is returned to a Patriot missile facility.

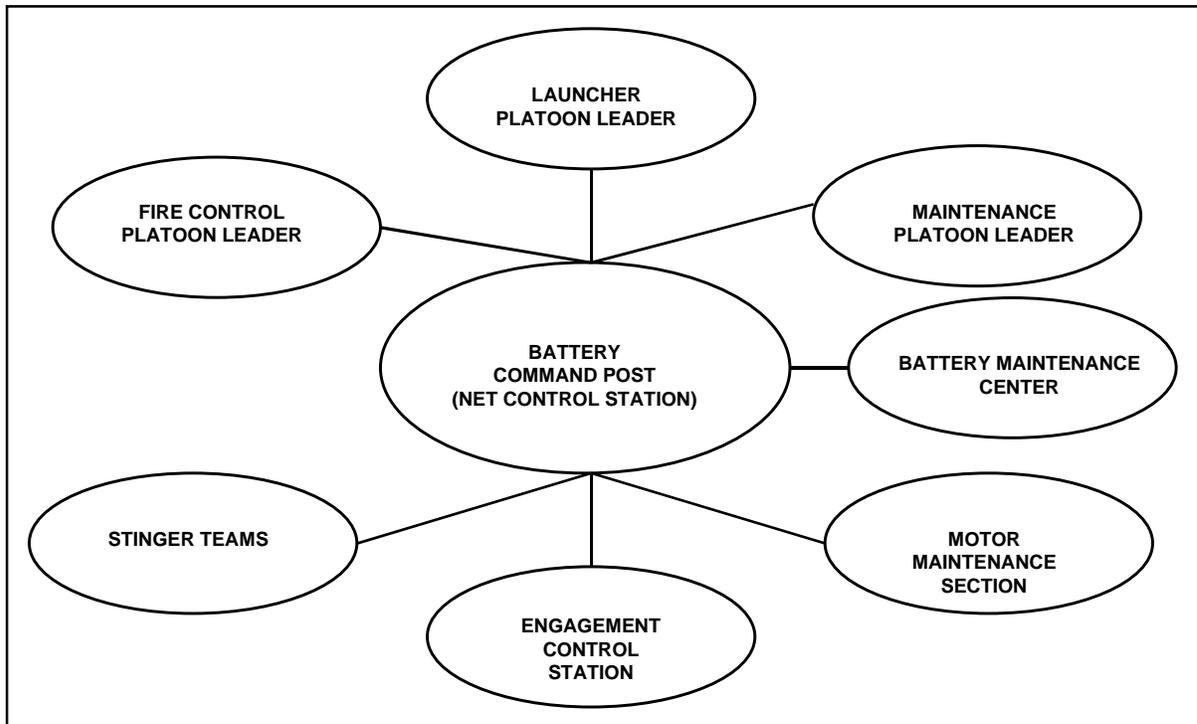


Figure 5-13. Battery Operations Net

PATRIOT AD BATTALION

5-68. Battalion support equipment for Patriot-peculiar equipment at the HHB consists of a battalion maintenance center, and a separately towed power generator. Standard Army support services includes a DS activity for power generation, air conditioning, and communication equipment. For vehicles, theater DS and GS are available.

PATRIOT AD FIRING UNIT

5-69. The Patriot peculiar equipment of the FU is supported with a battery maintenance group (BMG), consisting of maintenance center, small repair parts transporter, large repair parts transporter, and a towed power generator (PU-732/M). Standard Army equipment is supported with portable tools and test equipment stored in the maintenance center.

PATRIOT SUPPORT EQUIPMENT

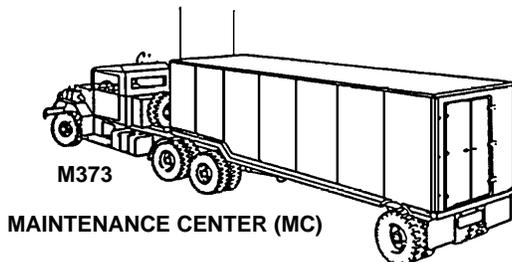
5-70. Patriot support equipment consists of standard Army vehicles that have been modified and equipped for uses with the Patriot system (figure 5-14, page 5-19). They function as the maintenance and supply centers required for Patriot tactical equipment at the battery and battalion headquarters levels. Repair parts, maintainer tools, test and handling equipment, publications, and maintenance and supply records are stored in the vehicles.

5-71. **Maintenance Center.** A maintenance center (MC) is a semitrailer mounted shop van that contains the tools, test and handling equipment necessary to maintain the Patriot system. It is used at battery and battalion levels. The HHB MC has been configured to function as a small repair parts transporter (SRPT). Power is provided by a PU-732M 15 kw, 400 Hz, diesel generator set, trailer mounted. It is towed by a separate vehicle and provides power for the maintenance center and SRPT.

5-72. **Guided Missile Transporter.** A Guided Missile Transporter (GMT) is a modified HEMTT M985. The GMT is used for delivery, recovery, loading, and reloading of Patriot missiles. A heavy-duty materiel-handling crane is attached at the rear of the vehicle.

5-73. **Large Repair Parts Transporter.** A Large Repair Parts Transporter (LRPT) provides a means to transport and store large, heavy repair parts. It consists of a HEMTT M977 cargo truck with a heavy-duty materiel-handling crane.

BATTALION MAINTENANCE EQUIPMENT (BME)



BATTERY MAINTENANCE GROUP (BMG)

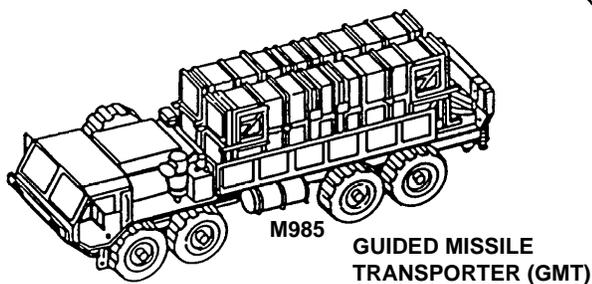
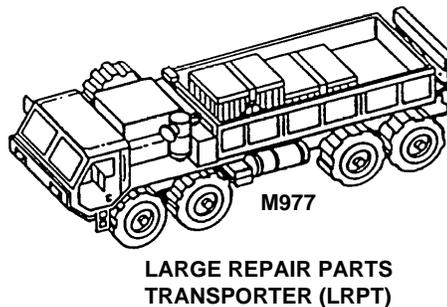
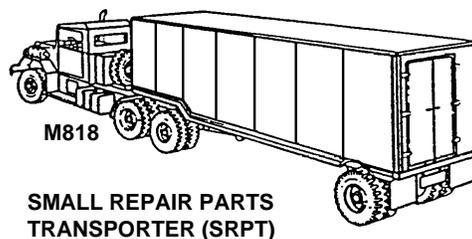
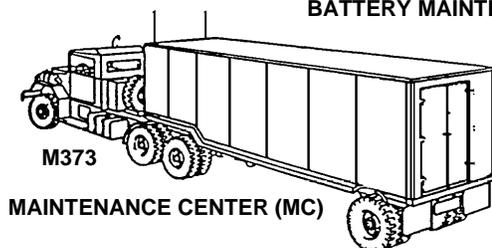


Figure 5-14. Supply and Maintenance Major End Items