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THE HOUSE ARMED SERVICES COMMITTEE

STATEMENT

OF

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COMMANDING GENERAL
MARINE CORPS SYSTEMS COMMAND

BEFORE THE

HOUSE ARMED SERVICES COMMITTEE

TACTICAL AIR AND LAND FORCES SUBCOMMITTEE

ON

MARINE CORPS FORCE PROTECTION EFFORTS - UPDATE

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Chairman Weldon, Congressman Abercrombie, and distinguished members of the Subcommittee, it is my honor to appear before you today to provide an update on the Marine Corps' efforts to provide the most capable force protection systems to our warfighters. But first, on behalf of all Marines and their families, I want to thank you for your continued support of our warfighters during this very challenging time.

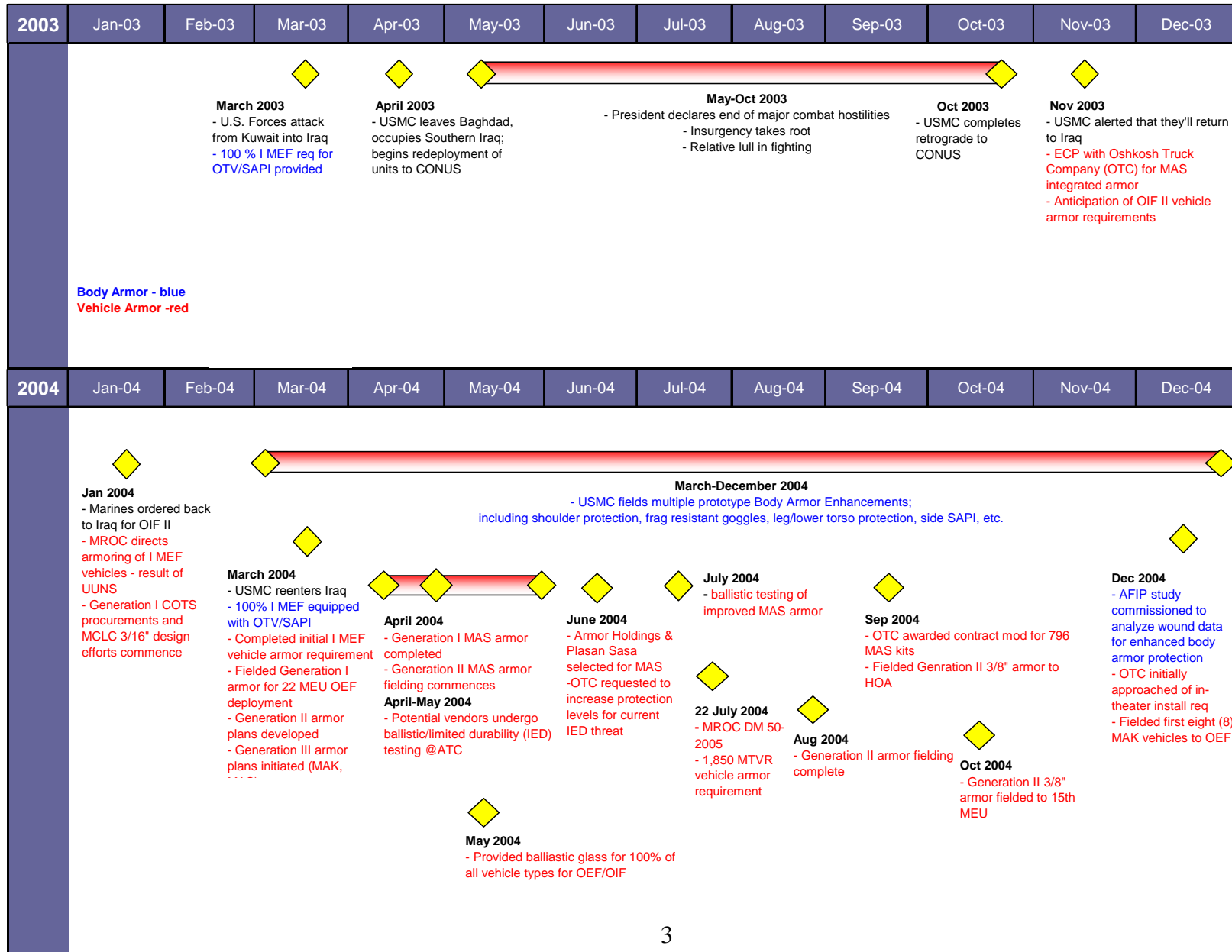
FORCE PROTECTION SYSTEM PROCUREMENT METHODOLOGY

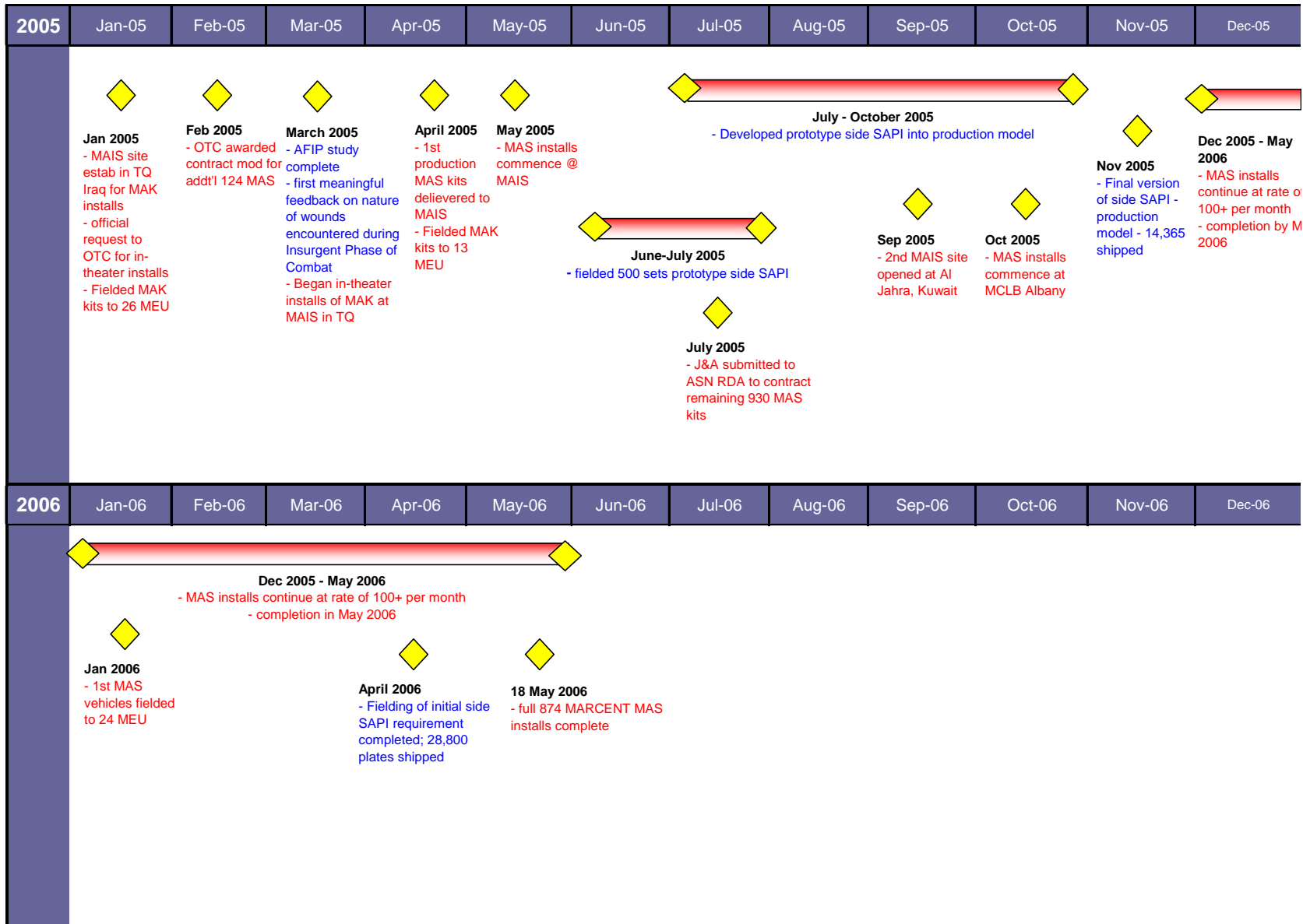
The Marine Corps' over-arching strategy since the start of Operation Enduring Freedom (OEF)/Operation Iraqi Freedom (OIF) has been to ensure that 100 percent of the Marine Corps' force protection requirements are met with the best systems available – and we succeeded. For development and fielding of all of our force protection systems, the Marine Corps has taken a rapid, generational approach. We identify the best systems available that can meet the needs and timelines of our warfighters, conduct rigorous testing on them to ensure the safety of our warfighters will not be compromised, and get those systems that pass our tests fielded as quickly as possible.

We don't stop once we have a system fielded. We continually look for ways to improve our force protection systems; and, they are not developed in isolation. We reach out to industry both here and abroad for design, development, and production assistance, our sister services to identify areas for joint activities and testing, and to the medical community for their expertise in making our systems the safest they can be for our warfighters.

We must also understand the environment in which our fielded systems will operate. By drawing on our intelligence resources for the latest information on the most prevalent devices and weapons our enemy is employing, the expertise of our workforce, and the insights of warfighters who have returned home, we have positioned ourselves to initiate innovative and rapid modifications to our equipment to meet evolving threats and future challenges by orchestrating mixes of solutions to counter changing and growing enemy capabilities. The following charts show how we have incorporated lessons learned from the warfighter since the start of OIF.

Force Protection Systems Timeline (2003 to Present)





PERSONAL PROTECTION

A significant element to any solution we propose or develop has been, and will always be, what the Marine in combat needs. A solution that is effective in one scenario may simply not be applicable in another. The wartime environment constantly changes and there is no one better suited to determine what would be effective in any given situation than the warfighter. That is why we provide solutions that can be configured to meet varying levels of threats. In the case of body armor, local commanders have appealed to higher headquarters for the ability to determine what piece or pieces of equipment their Marines will be required to wear as specific mission and environmental conditions dictate. We have answered that call with the modular design for our ballistic body armoring system.

Vests and Armor Plates

Providing ballistic personal armor protection to our warfighters is no exception to our iterative and Joint-Service cooperation methodology. Our individual protection vest system, known as the Interceptor Body Armor System, includes the Outer Tactical Vest (OTV), the Small Arms Protective Inserts (SAPI), and the Side SAPI. Working together, these individual systems provide the best possible levels of personal protection to known and anticipated threats.

When the Marines entered into Iraq for the first time in March 2003, 100 percent of the I Marine Expeditionary Force's (MEF) requirement for the OTV and SAPI was provided to the Infantry Battalions. This commitment to individual protection has continued through all subsequent Marine rotations into Iraq. For example, upon our return to Iraq for OIF II on March 19, 2004, the Marine Corps fielded to I MEF's ground forces a series of additional body armor components such as extremity body armor, lightweight helmets, and ballistic goggles based upon reports and requirements received from Marines who fought in OIF I.

OEF/OIF I/OIF II is the first time in U.S. history that all wartime casualties have been autopsied by Armed Forces Institute of Pathology (AFIP) to determine a cause of death. Therefore, in December of 2004, the Marine Corps Systems Command contracted the AFIP to evaluate data collected from autopsies performed on Marines in order to corroborate or redress our perception of the threat.

The primary purpose of the report was to analyze casualty data and assess areas of vulnerability in our entire body armor system with the intent of identifying areas for enhancement. The report from AFIP confirmed what we thought to be true, that side torso

protection should be added to our body armor system. We relayed our recommendation for side torso protection to Headquarters Marine Corps and the Fleet Marine Force. Based upon our recommendation, and concurrent with an Urgent Universal Need Statement submitted by II MEF forward, we fielded an interim Side SAPI capability and began developing a production model. As I reported to you in February, there was a requirement for 28,882 Side SAPI sets in theater, and we were successful in satisfying that requirement.

The Marine Corps has been able to continually and immediately provide improved personal protection equipment to our warfighters as more capable systems have been developed by our dedicated manufacturing base in concert with emerging warfighter requirements. As a result, 100 percent of our Marine ground forces have this improved personal protection equipment as they rotate into theater.

QuadGard

The QuadGard system is designed to provide ballistic protection for a Marine's arms and legs when serving as a gunner on convoy duty. This system, which integrates with other personal ballistic protection equipment such as the OTV, the SAPI, and the Lightweight Helmet, reduces minimum stand-off distances from the Marine to ballistic threats, particularly IED fragmentation threats.

Lightweight Helmet

The Marine Corps is committed to providing the best head protection to our warfighters. The reduced weight of the Lightweight Helmet, coupled with the suspension sling, provides the performance and protection capabilities required by our Marines in combat. Ballistics and testing experts at the Soldier System Center in Natick, Massachusetts, have confirmed the superiority of our helmet system when it comes to countering the potentially deadly effects of ballistic projectiles and fragment impacts and penetrations. The Medical Officer of the Marine Corps and an independent neurosurgeon with the Medical College of Wisconsin have also confirmed this fact.

The Marine Corps' Lightweight Helmet provides a high level of combat protection against fragmentation threats (0 degrees and 45 degrees obliquity) and 9mm bullets. Furthermore, the Lightweight Helmet also provides the greatest area of coverage – 15 percent more than the Army's Advanced Combat Helmet (size large). For our mission requirements, the

Marine Corps' focus is on protecting our warfighters from the effects of ballistic projectiles and fragment impacts and penetrations.

To date, the Marine Corps has fielded 130,555 of the required 198,088 Lightweight Helmet systems. In the last eight months alone, there have been three high-profile instances reported of Marines whose lives have been saved by this helmet system when struck directly with small arms fire.

We believe it is important to better understand the effects of ballistic loading when applied to the suspension system of the Lightweight Helmet and determine if this plays a role in peak force transmitted to the skull. Therefore, on behalf of the Marine Corps Systems Command, the Natick Soldier Center awarded a testing, modeling, and simulation contract to the University of Virginia Center for Applied Biomechanics in March 2006. The results should be reported in September 2006. The Army is currently conducting a similar test at their research lab facility in Aberdeen, Maryland. These tests will allow for even greater investigation into this area of study, and may lead to the inclusion of peak head force as a criterion in future helmet specifications.

Personal Protection in Closing

Marines and their families are welcome to individually procure personal protection equipment. However, local Marine commanders in theater will determine, on a case-by-case basis, if that equipment can augment personal protective equipment fielded by the Marine Corps for any mission undertaken. Today, there is no commercial product more capable than the equipment being issued to our Marines by the Corps.

We have always maintained, and will continue to remind you and our Marines in harms' way, that providing more robust personal protection solutions to our warfighters -- and providing these solutions immediately -- is of the utmost importance. The Marine Corps is committed to aggressively matching our equipment to changing threats. Our ability to rapidly modify our body armor system is a testament to this commitment.

TACTICAL WHEELED VEHICLES

The Marine Corps' strategy since the start of OEF/OIF has been to provide immediate armor support to all High Mobility Multipurpose Wheeled Vehicle (HMMWV) variants and all of our other tactical vehicles, such as the 7-ton Medium Tactical Vehicle Replacement (MTVR).

Our aim was to ensure that some level of protection be available to 100 percent of our vehicles. Therefore, we embarked upon an evolutionary, or phased, approach. By incorporating direct warfighter input and lessons learned in-theater, we have arrived at a very effective solution given the current warfighting environment – a solution that has clearly already saved lives.

MAK – Marine Armor Kits

Our non-M1114 variant HMMWVs are currently employed with integrated armor kits, known as Marine Armor Kits (MAK). The MAK system is a modular, bolt-on system that can be installed by Marines of any Military Occupational Specialty. The MAK systems, whose design incorporates lessons-learned from testing and in-theater operations, offer significantly improved protection against the most prevalent threats, including small arms fire, IEDs, and mine blasts up to 4 pounds. Because the MAK is kit armor, it is classified as Level 2 armor. MAK system installations were completed in December 2005.

MAS – MTRV Armor System

Similarly, for our MTRV 7-ton trucks, we developed what is known as the MTRV Armor System (MAS). This armor system is a permanent modification to our MTRVs, and is therefore classified as Level 1 armor. It is designed for the life of the vehicle (21 years). The MAS is capable of withstanding small arms fire, IEDs, and mine blasts up to 12 pounds. It consists of metal/composite panel armor, with separate cab and troop compartment kits, dependent upon cargo or personnel variants of the MTRV.

The MARCENT installation requirement for the MAS was completed in May 2006, nearly five months earlier than originally forecasted. Thus, we have 874 MTRVs with MAS in theater, and our MTRV armoring mission is considered complete.

M1114 - Upgrade

Marine Corps M1114s are currently undergoing an upgrade. The Frag Kit 5 provides for replacement of doors and rocker panel assemblies for the M1114 fleet. The material focuses on the rolled homogeneous armor (RHA)/steel solution used and battle tested with the MAK on the HMMWVA2 fleet, with an emphasis on detailed integration with the M1114. The existing M1114 high hard steel and aluminum rocker panel will be removed and replaced with an RHA/steel rocker panel design, which will structurally tie into the roof support and allow heavier armored doors to perform during day-to-day operations. This upgrade will also provide for

replacing the hinge system on the rear door. During this upgrade, the Marine Corps will continue to evaluate the Army's objective kit development and share information and lessons learned.

Status of Vehicle Armoring

The following charts depict (1) the current state of our vehicle armoring efforts, and (2) where we are going in the future with respect to our vehicle armoring efforts.

MARCENT Current Vehicle Armoring Posture

Since August 2004 all Marine Corps vehicles operating outside the FOBs have been at Level II or better armor protection.

	Vehicle Systems in CENTCOM AOR	OIF O/H	OEF O/H	HOA O/H	Total	Level I	Level II	Level III	Total Unarmored Vehicles not Leaving FOBs
LTV	M1114	1791	16	0	1807	1807			
	HMMWV	2881	6	16	2903	0	2875	13	17
MTV	5-ton	121	0	0	121	0	121	0	0
	MTVR	976	0	0	976	856	120	0	0
HTV	LVS	235	0	0	235	0	235	0	0

Note 1: MNC-I and CJTF-76 have provided 447 M1114s to II MEF (Fwd) in OIF and 6 in OEF respectively

Note 2: 1,376 of the 2272 (446 + 1302 + 524) M1114s under contract have been fielded

Level I: A wheeled vehicle that is manufactured as an armored vehicle

Level II: HQDA and Marine Corps approved Add-on-Armor (AoA) kits

Level III: Hardening of vehicles through fabricated armor (HQDA) approved steel

MARCENT Armor Way Ahead

Currently improving existing HMMWV Level II protection with Level II (plus) protection (MAK) and MTRV Level II protection with Level I protection (MAS).

	Vehicle Systems	OIF Req	OEF Req	HOA Req	MARCENT Req in CENTCOM Theater	Level I	Level II	Level I & II MARCENT Validated Operational Requirement will be Met
LTV	M1114 - M1151/ 52	2270	18	0	2288	2288		Jul 06
	HMMWV	985	0	16	1001	0	1001	Nov 05
MTV	5-ton	122	0	0	122	0	122	Oct 05
	MTRV	920	0	0	920	818	102	May 06
HTV	LVS	236	0	0	236	0	236	Nov 05

Note 1: Total Marine Corps requirement 2,627; 2,288 as the MARCENT requirement and 339 as sustainment and training vehicles

Note 2: M1114; 1,376 total delivered, 0 this week; 0 enroute to TQ; 100 awaiting intra-theater lift; 210 undergoing deprocessing; 119 (Resolve) enroute to KU

Note 3: To date, 874 out of 874 MARCENT MAS kits installed; mission complete.

Note 4: MTRV Wreckers & Dumps cannot be armored w/ MAS; they are armored with MAK for MTRV thus they will remain at Level II

As of 4 Jun 06

Tactical Wheeled Vehicles in Closing

Currently, all of our wheeled tactical vehicles that operate outside Forward Operating Bases are armored at either Level I or Level II. One-hundred percent of our 1,807 M1114s in theater are armored at Level I, and one-hundred percent of our 2,594 HMMWVA2s with MAK in theater are armored at Level II. By the end of July 2006, we will have met the MARCENT requirement of 2,288 Level I M1114s in theater.

The Marine Corps is committed to aggressively matching our equipment to changing threats. Our ability to rapidly modify our vehicle armoring systems is another testament to this commitment.

DEFEATING/COUNTERING IMPROVISED EXPLOSIVE DEVICES

Cougar

In support of critical Explosive Ordnance Disposal (EOD) and combat engineer operations, the Marine Corps has fielded 26 hardened engineer vehicles, also known as Cougars, in support of OIF II. These vehicles provide unmatched protection capabilities for Combat Engineers and EOD teams by withstanding both Armor-Piercing and Anti-Tank mine blasts.

Joint EOD Rapid Response Vehicle (JERRV)

On 21 April 2005, via the Joint Rapid Acquisition Cell, the Deputy Secretary of Defense designated the Marine Corps Systems Command as the joint agent for the procurement of 122 Joint EOD Rapid Response Vehicles (JERRVs) for all joint EOD forces in theater. These vehicles are designed with protection capabilities that are very similar to the Cougar. Thirty-eight of these vehicles are scheduled to be fielded to the Marine Corps. All JERRV production deliveries are expected to occur by June 2006. In addition to the original 122 JERRVs, the Marine Corps Systems Command awarded a contract in May 2006 for an additional 57 systems for our joint EOD forces.

WHERE WE ARE GOING IN THE FUTURE

Recognizing that our enemy is constantly evolving and changing his tactics, we are looking toward the future of force protection for our warfighters, on an individual level, and that of their vehicles, not just to combat the enemy's current capabilities, but also to prepare ourselves for future adaptations in the enemy's tactics.

First and foremost, we will continue to execute our current force protection requirements. The Marine Corps Systems Command is also poised to execute any new, validated requirements or capability needs that are identified by the warfighter. We make every effort to consider all available options as we work to find solutions to new threats, regardless of whether the solution can be found here or abroad, including opportunities to provide capability enhancements and opportunities for shortening delivery schedules.

With regard to our personal protection systems, we've gone about as far as we can go with current technologies. We continue to configure our modular ballistic system in order to enable the individual Marine to construct various Armor Protection Levels to meet specific missions as we also continue to investigate potential breakthroughs in more capable technologies.

The Marine Corps' vehicle armoring future looks promising. The Joint Light Tactical Vehicle (JLTV) is the future of our armored vehicle program. It is a joint program, with the Army, for an enclosed, highly survivable, mobile, family of vehicles capable of performing multiple mission roles. The JLTV will support all tactical operations for a major theater war and/or task associated with Stability and Support Operations.

In the interim, we're moving forward with approvals for the Medium Mine Protected Vehicle (MMPV), which has been requested as a Joint Urgent Operational Need. Various types of IEDs, rocket propelled grenades, and small arms fire in-theater make it necessary for the Marine Corps to field a vehicle capable of surviving these types of attacks, and be able to counter attack. The MMPV provides that increased survivability and mobility. The Marine Corps plans to procure and field 185 MMPVs, which will provide our forces with a modular and scalable system capable of increasing the level of protection in accordance with the type of weapons available to the enemy.

Our future will also see fieldings of Mine Rollers, Material Handling/Construction Equipment Armor, and Marine Corps Transparent Armor Gun Shield (MCTAGS). The "mine roller" system will help protect convoys from the effects of pressure-plate activated mines and victim operated IEDs. The Marine Corps currently owns one mine roller system and will begin to deliver the 23 production systems to Iraq by the end of the summer.

Since the Marine Corps currently has no standard armor protection kits for our material handling and construction equipment, we are pursuing an armor solution. This up-armor will

provide protection from IEDs, indirect fire, and other small arms fire to an operator conducting engineer missions.

The MCTAGS program provides for transparent armor (ballistic glass) and steel plating that allows a gunner continual observation capability and increased security via 360 degree protection. It will protect the gunner from ballistic and IED fragmentation threats when used with the HMMWV, MTRV, Logistics Vehicle System, M1A1, M88, and Cougar/JERRV series vehicles. The MCTAGS adds additional ballistic glass side panels and provides a common system across the platforms.

THE BOTTOM LINE

We are doing everything we can to ensure the safety of our Marines by providing them the best and most effective force protection solutions. The lives of our Marines, sailors, and soldiers are our most precious assets and their preservation through better and more capable equipment has been, and will always be, the singular priority of the Marine Corps Systems Command. Your support for more robust and timely funds will position the Systems Commands throughout the Department of Defense to continue with proactive approaches to ensuring our warfighters' safety.

We cannot afford to lose sight of the lessons we have learned about our enemy, and about our own capabilities, through the loss of American lives. These difficult lessons were purchased with our young warriors' lifeblood. They are too precious to forget and we will remember them as we move forward. With your continued support, we can ensure our Marines are ready for the current fight, as well as any future fights. Thank you.