Marine Corps

Functional Concept for Marine Air
Ground Task Force Fires

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Foreword

The Commandant of the Marine Corps reminds us in the Marine Corps Operating Concept (MOC) of our primary purpose. Marine Corps forces exist to defeat our Nation’s enemies. History and geo-political realities make it clear that the Corps can expect to be called upon to fight again. When we fight, we must win. The skillful application of fires has provided the Marine Corps the competitive edge in every conflict since the founding of the Corps. We cannot afford to let this edge dull.

This Marine Corps Functional Concept for Marine Air Ground Task Force (MAGTF) Fires expands on the ideas presented in the MOC and the Navy-Marine Corps concept for Littoral Operations in a Contested Environment. It further develops the challenges and tasks described in the MOC, specific to the fires warfighting function, and is intended to generate professional debate and discussion about these challenges. Its fundamental purpose is twofold. First, it seeks to inform and guide the Marine Corps Capabilities Based Assessment process by identifying the fires capabilities the Marine Corps will require to achieve the vision described in the MOC. Second, it seeks to provide MAGTF commanders with a concept to inform near and mid-term employment of fires in planning, coordination, execution, and assessment.

While the Marine Corps has been engaged in crisis response, counter-insurgency, and small wars operations over the last two decades, our Nation’s adversaries have studied how the United States joint forces operate. They have adapted to develop capability and capacity to challenge our dominance on land, at sea, in the air, in space and within the information environment, to include a substantial expansion and refinement of capabilities in the electromagnetic spectrum, cyberspace, and human perception. Defeating our Nation’s enemies that possess these advanced capabilities will require the Marine Corps to act as part of an integrated joint team that conducts simultaneous and sequential operations across all four physical domains and the information environment. The cross-domain integration of lethal and nonlethal capabilities will serve as a critical enabling function as Marine Corps forces face these threats.

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“We must be a Lethal Force with a 21st century approach to combined arms that integrates information warfare and seeks to destroy and defeat our enemies across five domains- air, land, sea, space, and cyberspace.”

Introduction

This Marine Corps Functional Concept for Marine Air Ground Task Force (MAGTF) Fires complements the capstone Marine Corps Operating Concept (MOC), and supports the criteria set forth in the subordinate operating concept Littoral Operations in a Contested Environment (LOCE) and the developing ideas grouped as “Expeditionary Advanced Base Operations” (EABO). It describes the employment of organic MAGTF fires capabilities, with naval capabilities and other available means, to support sea control and sea denial, and allow freedom of maneuver for naval and joint forces within a littoral operating environment and subsequent operations ashore. The principle function of fires is to produce desired effects in support of mission objectives. MAGTF Fires are normally used to help shape the battlespace, setting conditions for decisive action. Fires within the littoral operating environment serves to enable littoral maneuver, which is understood to include the positioning and freedom of movement of forces at sea and ashore within the littorals. Integration of fires and effects across all four physical domains and the information environment will be crucial to operational success. That is, cross-domain integration of fires presents a deliberately designed set of military actions aimed at achieving the commander’s objectives in a mutually supporting fashion, and in such a manner as to present a wide-ranging set of dilemmas that overwhelms an adversary’s ability to respond and regain the initiative. In the twenty-first century cross-domain battlespace, MAGTFs will be challenged to employ their fires warfighting function capabilities in an increasingly uncertain and ill-defined battlespace, often characterized by an Anti-Access/Area Denial (A2/AD) environment, and in response to adversaries’ attempts to create fait accompli situations. In order to fight and win in these operations, we must innovate and continue to adapt.

JP 3-09 defines fires as the “use of weapon systems to create a specific lethal or nonlethal effect on a target.” MCDP 1-0, Marine Corps Operations, further explains Marine Corps fires as including actions that “harass, suppress, neutralize, or destroy in order to accomplish the targeting objective – whether to disrupt, delay, limit, persuade, or influence. Fires include the collective and coordinated use of target acquisition systems, direct and indirect fire weapons, armed aircraft of all types, and other lethal and nonlethal means.” MCDP 1, Warfighting, tells us that “war is characterized by the interaction of physical, moral, and mental forces…” and that “…the greatest effect of fires is generally not the physical destruction they cause, but the effect of that physical destruction on the enemy’s moral strength.” MCDP 1-0 continues along this conceptual groundwork and demonstrates the continuity of Marine Corps warfighting philosophy up through and including the MOC, in that it defines maneuver as being understood “to include taking action in any dimension, whether temporal, psychological, or technological, to gain an advantage.” Since Marine Corps fires are employed in conjunction with maneuver in order to set the conditions for decisive

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1 Marine Corps Operating Concept, Purpose and Context, p.4
2 A Navy-Marine Corps concept for EABO is currently in development with publication anticipated in the fall of 2017.
3 Integration in the sense used here is defined in the DOD Dictionary of Military and Associated Terms as “the arrangement of military forces and their actions to create a force that operates by engaging as a whole.”
5 MCDP 1, Warfighting, Chapter 1 “The Nature of War”, pgs. 15-16
action, it is therefore incumbent upon Marine Corps commanders and staffs to strive to increase and improve full integration of all elements of fires in order to destroy an adversary’s capabilities and capacities, confound his ability to understand the operational environment, and ultimately break his will to resist.

As described in the MOC, and reiterated in LOCE and EABO, the future security environment drives the Marine Corps to assess how we organize, train, and equip the force to execute its assigned functions, roles, and responsibilities, and calls for the development, assessment, and validation of operating and functional concepts suitable for that environment. EABO addresses up front a “growing concern with the proliferation of long range precision fires capabilities among...competitors...” and the “closing technical gap” between the US forces and those potential adversaries. The development of A2/AD threats, and the increasing range of actors capable of influencing conflicts through use of informational instruments of power, coalesce to present specific challenges in integration of lethal and nonlethal effects facilitated through the fires function. The existing understanding of fires tasks, missions, and processes requires review, revision, and expansion to account for new challenges and emerging opportunities that should lead to a comprehensive operationalization and integration of fires in support of both military and national objectives in future conflicts.

Fundamental Problem

A comparative shift in capabilities between the US and our potential adversaries complicates the twenty-first century battlespace. We no longer enjoy presumptive sea control nor can we assume we will be able to establish air superiority prior to beginning a maneuver campaign. The advancements and proliferation of long range precision fires by our opponents will no longer allow large groups of ship formations to loiter relatively close to the shore and maneuver unimpeded in order to be in position for the launch of maneuver forces on the surface or in the air. Current and future threat weapons systems will force our naval and joint forces to maneuver in dispersed formations from much longer ranges than our current doctrine dictates. Further, the depth and effectiveness of adversary integrated air defense systems, and the realities of threat anti-air systems promise to frustrate our attempts to achieve air superiority and execute our doctrinal air assault tactics. Peer and near-peer competitors have cyberspace and information related capabilities that equal or perhaps exceed our own, and possess the will to employ them. These conditions present Marine Corps forces with an operational environment wherein the legacy paradigm for applying force through the fires warfighting function is insufficient for enabling the defeat of our adversaries.

The Marine Corps faces an era in which tension and conflict are exacerbated by technological proliferation, intensifying urbanization, global access challenges, and the empowerment of state and non-state actors to prosecute sophisticated agendas contrary to our national interests. The MOC recognizes this, stating that the Marine Corps must be naval, expeditionary, agile, and lethal to win across the range of military operations in the twenty-first century. The lethal capabilities of individuals, armed groups and other non-state actors, and potential adversary states are increasing. Concurrently, support from US partners can be expected to be strained by resource limits. Within this environment, information and disinformation has an increasing power to destabilize and incite regional and major conflicts.7

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7 Ibid, pg. B-3
8 Expeditionary Advanced Base Operations: Considerations for Force Development, Draft of 1 June 2016
9 The conditions discussed here are described in considerable detail in the Marine Corps Intelligence Activity’s publication 2015-2025 Future Operating Environment: Implications for Marines.
The integration of fires remains a challenge due to its interdisciplinary nature, spanning all elements of the MAGTF, with no single subordinate commander charged with fires as a mission. Practically every commander at every level and in each element of the MAGTF conducts fires and is responsible for structure and assets that enhance the MAGTF's capability and capacity. Whereas the Army in their *Functional Concept for Fires* posits future “fires units” that will “…deliver… fires through multiple domains in time and space,” the Marine Corps places responsibility for integration on the MAGTF commander, with the integration function executed by the MAGTF staff. Twenty-first century combined arms and our integration of lethal fires and nonlethal actions is a Service vexing problem where potential adversaries are rapidly developing capabilities that challenge our current fires integration practices.

**Central Idea**

The MOC identifies enhancing our ability to maneuver and operate with resilience in a contested-network environment as critical tasks, with establishing a broader concept of combined arms and networking for rapid and precise fires as contributing issue areas. To accomplish this, the Marine Corps must evolve a twenty-first century combined arms approach. The key element of this approach is a multi-domain perspective that crosses warfighting functions, wherein MAGTF officers are better developed and educated to handle multi-domain and cross-functional problems with agility, and wherein MAGTF fires are integrated and interoperable within a maritime and joint operational environment. Evolution of organizations, systems, process, personnel and training will contribute to the enhancement of MAGTFs with the following characteristics:

- A unified and supported fires and effects integration activity or coordination center within the MAGTF headquarters, capable of enabling naval integration and joint interoperability.
- A robust command and control (C2) system that enables full participation in naval and joint networks and offers the MAGTF commander full access to joint capabilities in all four physical domains and the information environment.
- An inclusive approach to targeting and target acquisition that employs and integrates all battlespace sensors across the Marine Corps ISR Enterprise (MCISRE), and is effectively linked to available weapon systems and other means to conduct counterfire or other preemptive actions against threat systems.
- Complementary lethal and nonlethal capabilities fully integrated into fires planning and (deliberate and dynamic) targeting and engagement processes, including:
  - Information environment operations (IE Ops) that by nature have nonlethal first order effects, to include electromagnetic spectrum operations and those within the space domain and cyberspace,
  - Naval fires capable of close, deep, long-range, and accurate fires, operationally employed within an A2/AD environment,
  - Aviation weapon systems that provide close air support and deep shaping fires, operating both at sea and ashore, and fully integrated into target acquisition and target development processes as part of the broader MAGTF sensor network.

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11 The conceptual meaning of twenty-first century combined arms has not been formally defined. The Army-Marine Corps White Paper *Multi-Domain Battle: Combined Arms for the 21st Century* states a need to “evolve” combined arms methodology to include not only those capabilities of the physical domains, but also greater emphasis on space, cyberspace, and other contested areas such as the EMS, the information environment, and the cognitive dimension of warfare.”

12 MOC Critical Tasks 6.3 and 6.4; issue areas 6.3.2 and 6.4.2; pages 17-21.

13 The *MAGTF Information Environment Operations Concept of Employment* (July 2017) defines IE Ops as: “The integrated planning and employment of MAGTF, Naval, Joint, and Interagency information capabilities, resources, and activities that enhance the Marine Corps single-battle concept and provide defensive, offensive, exploitative effects and support in order to operate, fight and win in and through a contested information environment.”
• Ground-based fires systems capable of supporting sea control and sea denial in a littoral operations campaign, as well as providing fires in support of sustained operations ashore.

• Marines and leaders organized, trained, educated, and equipped with the right tools, processes, and understanding to effectively utilize and implement the full functionality of organic and supporting capabilities.

Supporting Ideas

A. Fires Integration

The principle of unity of command points to the imperative to execute integrated lethal and nonlethal actions in support of the commander’s objectives through the simplest means and at the headquarters best staffed, equipped, and positioned to do so. The MAGTF headquarters is the most practical command for this task, as command and control of the breadth of assets to be integrated first converges at the MAGTF commander. Though subordinate commanders may be responsible for the employment of a preponderance of the capabilities within a given domain, (Air Combat Element (ACE) commander in the air domain; Ground Combat Element (GCE) commander in the land domain) the MAGTF commander typically retains the authorities to, and the responsibility for integration of the array of MAGTF capabilities across the four physical domains and the information environment. This is affected by the MAGTF commander’s staff, principally under the direction of the operations officer and through the agency of a fires and effects coordination cell or center, depending upon the specific task-organization and scope of the MAGTF. Effective integration of MAGTF fires and effects requires comprehensive staff interaction, reaching across disciplines and functions in order to translate the commander’s guidance into staff actions. In execution, integrated fires and effects actions will be guided by common targeting objectives that incorporate supporting tasks accomplished by lethal and nonlethal means.

Marine Corps fires must be able to continue to accomplish those tasks traditionally associated with fire support. Fires systems must be flexible, robust, logistically supportable, mobile, and capable of providing close, deep, responsive, all-weather fires, around the clock, in all types of military operations, and in a wide range of tactical and operational situations. A combination of precision guided munitions and accurately delivered variety of non-precision munitions will provide an optimal mixture of lethal engagement options.

In addition to maintaining and improving conventional fires capabilities, the Marine Corps must be able to effectively integrate fires and nonlethal actions in order to increase the overall effectiveness of the force. Situations will exist in the future where the employment of indirect fires may be severely restricted due to the possibility of unacceptable collateral damage, or other negative impacts physical destruction may cause relative to the operational commander’s objectives. At all times, the effectiveness of physical destruction on the adversary’s moral strength will be enhanced by adept integration of this destruction with nonlethal actions. Therefore IE Ops planning, coordination, execution, and assessment considerations must be considered integral to the MAGTF’s fires capabilities.

Within the MAGTF’s boards, bureaus, cells, centers, and working groups (B2C2WG) plan, a process is developed to ensure that the MAGTF shaping effort skillfully incorporates the range of organic lethal and non-lethal capabilities. Through this process, a senior integrator will direct or facilitate the external coordination required to access non-organic capabilities, providing the MAGTF commander a single point of integration control for Service and Joint supporting actions. Putting the principle of unity of command into action, the MAGTF commander will be assured that shaping activities – lethal and non-lethal, directed at adversary and non-adversary entities – are continuously integrated by regular staff interactions inside of and in support of the daily battle rhythm.

B. Command and Control Systems

Command and control of MAGTF fires requires system integration to ensure the MAGTF is compatible with all elements of the naval force and joint forces. Throughout the entire planning, coordination, execution, and assessment process, all components of the MAGTF fires systems must be physically or virtually collocated and collaborative. The network itself must be characterized by resiliency; that is, the C2 system will be networked but decentralized, perhaps employing a “meshed” or “latticed” form that operates in a self-healing fashion, enabled by unmanned systems and airborne platforms where practical. The robust nature of MAGTF fires C2 systems must enable continuous operations in a contested electromagnetic environment, minimizing our electronic signatures enemy forces can use to target our forces and disrupt operations. C2 systems serve a critical enabling function. As required, they
will utilize the space domain to enable over-the-horizon and long-range communications, and will take full advantage of the depth and dimensionality offered by cyberspace.

C2 of MAGTF fires afloat must be fully interoperable with Navy systems, and compliant with all electromagnetic spectrum requirements peculiar to the shipboard environment. Afloat C2 must be able to effectively integrate concurrent and complementary operations of forces both ashore and at sea. Dependent upon the situational requirements unique to each operation, fires C2 should be able to be maintained afloat for as long as practicable, and should be able to execute a clean transition of control nodes ashore without interruption of services. Above all, USMC fires C2 systems must have the capability to be rapidly installed and subsequently disembarked in support of sustained operations ashore.

MAGTF fires systems must support maneuver elements that require highly responsive fires to attack enemy capabilities in the transitional areas of the littorals. Integration of C2, target acquisition, weapon systems, and information related capabilities (IRCs) will provide the landing force commander with the ability to detect and track enemy actions, engage the enemy with fires, influence and shape adversary cognitive understanding, and protect friendly forces. MAGTF C2 fires systems will permit commanders to direct fires and effects on the basis of the tactical situation, engagement asset availability and response time, authorities, and commander’s fires guidance. To do this, the system will provide integrated information, including both targets and engagement options, in near real time from strategic, operational, and tactical surveillance and reconnaissance systems. It will disseminate this information to all components of the naval expeditionary force and present leaders at all levels with a common and up-to-date picture of the battlespace, facilitating a shared situational awareness that permits commanders to effectively commit resources to influence the action and reduce incidents of fratricide.

C. Targeting and Target Acquisition

Twenty-first century target acquisition will include ground and unmanned airborne sensing capabilities of the MCISRE, as well as ground weapons locating radars, acoustic sensors, ground reconnaissance elements, advanced manned airborne sensor platforms, electronic warfare systems, and relevant space operations and cyberspace operations systems. Through innovative data strategies and information sharing architectures, the breadth and depth of sensors available to the MAGTF will be effectively employed to develop and seamlessly share target-quality data across the force. Organic MAGTF and joint sensors contributing to the target acquisition process must be integrated with MAGTF C2 systems to enhance battlespace awareness and targeting process effectiveness. Fifth generation aircraft will provide an abundance of targeting data that will be required to be integrated into enhanced digital communications architectures. Integrating target acquisition systems with all available MAGTF battlespace systems will serve to more accurately display both friendly and enemy maneuver elements, as well as facilitate target identification, location, analysis, selection, and prosecution functions.

The MAGTF must be able to fully utilize the range of assets available to the naval force, and as a maritime force, must ensure its own capabilities are appropriately integrated into afloat systems architectures and networks. The redundancy of the target acquisition family of systems will provide all elements of the naval force a robust capability under all conditions. Links to theater and strategic assets, both space-based and otherwise, will expand sensing, targeting, and target acquisition support to the MAGTF and enable coordination of the joint targeting effort. Correlation of the data provided by a wide range of collection capabilities, to include those not traditionally associated with target acquisition, will greatly enhance the effectiveness of the MAGTFs own target acquisition assets. Through access to joint and national assets and fusion of all organic sensors, and fully supported by federated data processing and analysis, the MAGTF will be able to support operational and strategic objectives as an enabling force. Capable of operating afloat, ashore, and in a transitional state throughout the littorals, these linkages will ensure the MAGTF is fully integrated into the joint targeting process.

At the MAGTF level the target acquisition system must support proactive counterfire tasks that detect, identify, locate, and destroy or disable adversary systems in advance of effective enemy actions. Here it is helpful to clarify the distinction between counter-fire and counter-battery fires. The former pertains to proactive prosecution of threat platforms and capabilities outside the GCE battlespace, within the MAGTF security area for example, and frequently beyond the ranges physically observable by ground based radar systems; the latter are reactive responses to adversary indirect fires, conducted as a mission of the GCE and facilitated by GCE radar. MAGTF target acquisition systems, and target refinement and engagement processes must be able to provide real time targeting data and in flight updates to platforms and munitions, where applicable.
D. Complementary Lethal and Nonlethal Systems and Actions

The MOC and subordinate operating concepts drive fires requirements that can be met only by integrated, complementary, overlapping, and redundant fires systems. The three complementary elements of traditional fires systems - aviation, naval surface, and ground-based fires – are joined under this conceptual construct with IE Ops and the attendant IRCs. This combination of fires systems and nonlethal actions provides tactical flexibility for the force commander by exploiting the unique capabilities of each. It also yields increased effectiveness through synergistic effects and precludes the commander from having to depend on any single type of weapon system or effects producer, the loss of which – through enemy action, environmental conditions, restrictions in policy, or other causes – might degrade the entire fires effort. As non-lethal capabilities increase with the expansion of IE Ops personnel and capabilities, their effective integration with lethal fires will prove critical to the MAGTF’s success. The integration of these capabilities is best managed through the targeting cycle. Employment of lethal and nonlethal capabilities, either singularly or in a purposely integrated manner, will demand a great appreciation for the MAGTF single battle by both commanders and staffs.

Information Environment Operations

Given that war as described in MCDP-1, *Warfighting*, is principally a battle of wills, the effects produced by IE Ops should be intentionally and skillfully integrated with lethal actions. In keeping with the principle of unity of command, and consistent with the single battle concept, commanders should integrate lethal and nonlethal actions as a single function, rather than as separate efforts. This is perhaps best facilitated by employing a single agency (normally a MATGF center) that serves as an integrator tasked to plan, coordinate, synchronize and direct lethal and nonlethal actions. This agency or center will be composed of, shaped and advised by subject matter experts in each of the integrated disciplines. In addition, MAGTFs must implement a logical, standardized methodology to ensure unity of effort. This methodology should include establishing common objectives to focus lethal and nonlethal actions; conducting battle rhythm forums to facilitate fires and effects integration; and assessing actions to determine progress toward attaining desired end-state conditions. At all times, the integration agency and associated methodology must support the MAGTF commander’s objectives.

In the lead-in to maritime campaign, the MAGTF must be engaged with the supported component command, taking advantage of the IE Ops running estimate and the strategic plan-to-tactical actions facilitation this relationship enables.14 Throughout all phases of the campaign, IE Ops can serve as both shaping and decisive actions, consistent with the commander’s objectives. Integration within the naval task force and interoperability with joint assets will make the difference that enables Joint Force Commander operational success. An understanding within the MAGTF staff and amongst its commanders regarding authorities is an enabling condition. The availability of tactical IE Ops options enabled by scaled authorities is required in order for the considerable effects of the IRCs to be most effectively employed in a manner that involves the full range of MAGTF capabilities. Utilization of IRCs in support of the MAGTF commander’s common targeting objectives is contingent upon appropriate access and authorities being clearly understood by the MAGTF staff. Specific capabilities that enable this supporting idea will be described more fully in other focused functional concepts and concepts of employment.

Naval Fires

Naval surface weapons must provide close, deep, long-range, and accurate fires from over the horizon, supporting both vertical assault and surface assault forces with precise, high-volume, suppressive, neutralizing, and destructive fires. These systems must include long-range capabilities in response to the proliferation of A2/AD threats and to support operational surprise, maintaining a flexibility of options for the supported commander. Naval fires assets may be facilitated by employment from Expeditionary Advanced Bases that are task-organized as ‘firebases’ or ‘fire-support bases’ within a contested littoral environment. In the transitional littoral spaces where an adversary’s A2/AD capabilities call for a substantial stand-off distance for high-value US assets, naval surface fires may be provided by

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14 The *MAGTF Information Environment Operations Concept of Employment* (July 2017) describes this relationship and the role of the IE Ops running estimate in greater detail.
advanced technology gun systems or missiles, or may be delivered by purpose-built fires vessels intended to operate within the threat ring.

In the execution of a maritime campaign, with forces afloat or ashore, the USMC has substantial equity in the air and missile defense (AMD) battle that under previous conceptual frameworks has been left to the other Services. USMC support to the Navy and Army missions to provide AMD in the seaward and landward zones of the littorals may involve an investment in capabilities that are currently limited or not in the USMC inventory. Whether the Marine Corps or the Navy provides the preponderance of AMD assets in support of MAGTF operations, MAGTF commanders and staffs will require an increased understanding of the challenges and tactics associated with the AMD fight.

Traditional fires doctrine assumes as a planning factor for amphibious operations the availability of one naval surface fire support (NSFS) unit in a direct support (DS) role for each maneuver battalion conducting a landing or operations ashore. Given the restructuring of the Navy’s fleet, the changes in surface fires technologies, and the current and anticipated operational environment, this construct must be reassessed. Future NSFS platforms will be capable of achieving greater ranges and volumes of fire; allocating a NSFS unit in a DS role to a single maneuver battalion will not maximize her effectiveness in support of littoral operations. Although each operational scenario will have its own character, a planning factor of a minimum of two NSFS units in a general support (GS) role for a Marine Expeditionary Brigade sized or larger landing force may provide operational effectiveness and asset redundancy and reliability, as well as take advantage of planned long-range fires capabilities. The transition from DS to GS roles may call for greater involvement by the MAGTF effects integration activity or coordination center as allocation of assets over a larger battlespace and geographically dispersed force proves challenging for more narrowly focused and maneuver-oriented C2 nodes.

Aviation Fires

Aviation weapons systems will continue to provide both close air support of ground forces and deep fires in support of the commander’s efforts to shape the battlespace. Close coordination with littoral forces, both embarked and aboard various ship-to-shore connectors, will be a critical contributor to enabling the transition of forces ashore as well as the protection of the naval force itself from a variety of A2/AD threats. Seabasing of aviation forces enables expeditionary forces to take advantage of seabased logistical support, while reducing the requirement to establish and defend large aviation facilities ashore. Naval air (USMC and USN) projects power from successive maritime echelons, supported from the Carrier Strike Groups deep, expeditionary advanced bases (EABs) forward in the contested littoral space, and forward arming and refueling points in the vicinity of objective areas.

The availability of ground-based joint air will be an important factor in the allocation of fires resources in the MAGTF fight. Other Services may provide capabilities that will enhance both the range and depth of both lethal and nonlethal effects available to the MAGTF commander. Large unmanned aircraft systems operated from both home station and expeditionary locations have the potential to provide support with a variety of platforms and payloads, some of which will be configurable and re-configurable as required in response to changes in the operational environment in and on the way to the objective area. Finally, the integration of naval and joint airborne early warning systems into the fires and target acquisition C2 systems will be an enabling capability for the MAGTF.

Ground based Fires

Ground based fires systems provide a vital complement to naval surface and aviation fires, and provide a credible physical projection of power that tends to tip the balance in a struggle of wills initiated by IE Ops. These weapon systems must have the following general characteristics:

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15 Since these operational scenarios will typically involve an amphibious force consisting of more than two maneuver battalions, this change in planning factor is likely reduce the overall requirement for number of NSFS units aligned to a given operation, while capitalizing on the increased flexibility offered by the greater range of future NSFS platforms.
• Compatibility with future surface connectors in order to ensure rapid transition of combat power ashore; this must include the capability to maintain positional control while in transit and may also include the capability to be employed from these surface connectors while in transit;

• Take full advantage of autonomy, within the limits of technology, while utilizing man-in-the-loop or man-on-the-loop processes to ensure operational safety and compliance with the commander’s objectives;

• Capability to deliver fires whether sea-based or ashore, in support of sea control and sea denial in a littoral operations campaign; this may involve establishment of an EAB ‘fire-base’ employing ground-based systems to generate effects on maritime target sets;

• Mobility commensurate with the requirement to provide fires in support of sustained operations ashore and improve system survivability;

• Able to achieve enhanced range, comparable to or exceeding threat systems;

• Possessing a family of munitions with scalable effects, allowing commanders effective means of engaging area and point targets with accuracy, precision and volume, as well as an armor-penetrating capability; and

• Maximization of commonality of logistics with other ground-based systems.

Embarked forces and those operating in and out of EABs will have the firepower and operational flexibility to consistently and reliably contribute to the Navy’s sea control/sea denial mission, and once ashore in the vicinity of the objective area will retain the same flexibility. The amount of fires systems brought ashore will be decided by the force commander based on the tactical and operational situation, including distance to the objectives, the potential impact of environmental conditions on other available fires systems, and the specifics of the adversary’s A2/AD capability retained after landing operations are commenced. Ground based fires systems play a critical role in increasing the firepower available to the maneuver force commander and ensure the availability of close, deep, responsive, day and night, all-weather, suppressive, neutralizing, and destructive fires – especially if the mission transitions to sustained operations ashore.

The Marine Corps Operating Concept envisions “precision fires that routinely displace and move immediately after firing in order to enhance survivability while providing uninterrupted support to maneuver forces.” Current rocket and missile artillery systems have the ability to fire and immediately displace. Cannon artillery and target acquisition systems currently planned and in use today, however, are not designed with this requirement of rapid mobility in mind. The mobility and survivability found in our current rocket and missile systems will serve as a model for future ground-based systems requirements. The ability to process missions on the move, communicate with higher firing agencies (headquarters) at great distances, move via both surface and air means, and deliver fires from dispersed locations is the essence of what the MOC envisions. Future ground-based fires systems will have enhanced mobility and survivability, as well as a long range communications architecture that provides the ability to mass or deliver fires from dispersed locations. This will be accomplished through the development of a system of systems with common mobility, targeting fusion, fire control, and long range communications capabilities.

Logistics supportability is crucial to all military operations, and will be the key to success in expeditionary operations. To operate in austere environments, MAGTF ground based fires systems must have a have a low mean failure rate. Ideally, systems should possess a commonality with other Marine Corps and joint systems in order to reduce parts block issues and facilitate integration with theater logistics. In addition, the ability to rapidly resupply all classes of supply in a distributed operating environment will be required, especially in an air contested environment, where surface platforms will have an increased requirement to prosecute targets. These systems must be compatible (i.e., embarkable and deployable) with naval expeditionary shipping and connectors. Additionally, systems must all be C-130 compatible (or other strategic lift platforms) to facilitate enhanced deployment options.

E. Training

The foundation of the effective planning and execution of MAGTF fires is training and education of the individual Marine and leadership. To support this requirement a systematic building block approach to training of lethal and nonlethal capabilities, C2, and fires processes within the MAGTF, as well as maritime and joint environments, will be employed. Appropriate elements of the supporting establishment and the operating forces will support the identification of possible gaps and required training updates to better meet the needs of MAGTF fires training. This begins with a solid foundation in doctrine. In the near term the Marine Corps will continue to update its own doctrine and will work within the joint community to update doctrine as required to effectively execute emerging capabilities. Corresponding updates to specified Marine Corps tasks, training, and resources available must follow, with the ultimate goal being the operating forces enabled to conduct sustainment training to meet operational requirements.
In order to take full advantage of current and emerging fires capabilities, our Marines must leverage the full functionalities of fires C2 systems, have a solid understanding of each MAGTF element’s roles and responsibilities, and incorporate best practices and fires processes that integrate all warfighting functions. This will support the flexibility of the MAGTF to develop and adjust fires C2 architectures to meet challenges in planning, coordination, execution, and assessment of fires.

Improvements in the training and education of fire support personnel, and the professional military education of both enlisted Marines and officers, must reflect the paradigm shift involved in the operational integration of lethal and nonlethal actions. Of paramount importance is the development and enhancement of agile thinking amongst leaders and led. A re-establishment of the “fire support rehearsal” as critical to the planning process must be ingrained in the development of the future force. A necessary corollary to these changes will be a reassessment of appropriate levels of access to information and capabilities, and the assignment of sufficiently cleared personnel to billets involved in the planning, coordination, execution, and assessment of this more broadly understood concept of MAGTF fires.

**Required Capabilities**

These required capabilities are generated from the ideas and proposed solutions found in this concept. These capabilities are closely interrelated, and potential DOTMLPF solutions may simultaneously fulfill more than one capability. Additionally, similarities exist between these capabilities and those that are required for implementation of emerging concepts supporting maneuver and information environment operations, and potentially among others. This list is provided to support the force development process, and will inform the Marine Corps Capabilities Based Assessment (CBA) for the near term, as the force implements the changes called for in the MOC and intrinsic to Marine Corps Force 2025.

The following capabilities are required to develop, prepare, and equip Marines and Marine Corps organizations at all echelons to execute the central and supporting ideas of this functional fires concept, in order to fulfill the Marine Corps’ primary purpose of defeating out Nation’s enemies.

Marine Corps forces require:

a. The ability to enable over the horizon fires for amphibious operations through an integrated command and control system or systems that are characterized by joint interoperability

b. The ability to integrate aviation, naval surface/sub-surface, and ground-based fires in a responsive fires network

c. The ability to provide precise and accurate point and area fires, to include capability and capacity for high-volume fires, and with a variety of effective and flexible munitions which include armor-penetrating capability and a long-range area denial capability

d. The ability to integrate Navy and Marine Corps lethal and nonlethal effects from afloat and ashore (e.g. EAB) to support sea control and power projection

e. The ability to integrate Navy-Marine Corps sensors and weapons systems for air defense

f. The ability to provide sufficient mobility for ground based fires systems to support the ground maneuver element

g. The ability to provide effects at ranges sufficient to protect the force and shape the battlespace with ground based fires systems

h. The ability to minimize logistics support requirements through commonality between vehicles and support equipment organic to fires organizations and other elements of the GCE

i. The ability to integrate, correlate, and fuse sensing data derived from the MCISRE maneuver units, and joint sensor assets across the MAGTF

j. The ability to disrupt adversary command and control, movement, maneuver, and intelligence capabilities and to protect our own by employing synchronized Navy and Marine Corps lethal and nonlethal effects

k. The ability to provide land-based support to sea denial and sea control operations, to include the development of Marine Corps land-based anti-ship capabilities that can be integrated with Navy surface combatant sensors and weapons systems.
Conclusion

This concept outlines challenges for the Marine Corps in the employment of fires in the twenty-first century, as well as some operational requirements that our fires capabilities must meet in order to fight and win. Recently published and future functional concepts will address the specifics of capabilities related to fires detailing employment of certain operational aspects, such as IE Ops and C2 of IRCs. This concept provides context for how the full range of Marine Corps capabilities fits in to the fires warfighting function.

Force developers must consider these central and supporting ideas, and required capabilities during follow-on force development activities, which may include a Marine Corps CBA, as well as a host of pre-CBA activities such as wargames, experiments, and exercises.

Finally, this concept is not intended to completely address all possible aspects of and contingencies related to application of fires. Operations in communications and technology degraded environments will be especially challenging and calls for a full treatment in its own right as it affects the whole range of MAGTF operations. Instead, this concept is intended to serve as a touchpoint from which will depart professional discussions, and development of follow-on concepts and other documents.
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Appendix A - References

Guidance
National Security Strategy, February 2016

Concepts
Marine Corps Operating Concept; How an Expeditionary Force Operates in the 21st Century, September 2016
US Army Functional Concept for Fires 2020-2040, February 2017
“Expeditionary Advanced Based Operations: Considerations for Force Development” (draft of 1 June 2016)
Littoral Operations in a Contested Environment (classified) 27 Feb 2017
MAGTF Information Environment Operations Concept of Employment, 6 July 2017

Doctrine
Marine Corps Doctrinal Publication 1, Warfighting, 20 June 1997
Marine Corps Doctrinal Publication 1-0 (w/change 1), Marine Corps Operations, 26 July 2017

Other
Marine Corps Intelligence Activity (MCIA) Future Operating Environment (2015-2025)