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# Army Explosive Ordnance Disposal in Large-Scale Combat Operations

## Summary of Findings and Recommendations

**T**he U.S. Army's explosive ordnance disposal (EOD) mission is complex and cuts across both military and civilian activities. According to Army Regulation 75-15, "Army EOD provides integrated and layered protection support to forces, civil authorities and critical infrastructure" (Army Regulation 75-15, 2019, p. 1). In addition to the Army EOD force's combat missions, defense support of civil authorities (DSCA) missions, in particular, are mandated

### KEY FINDINGS

- The U.S. Army and its explosive ordnance disposal (EOD) forces are changing to address large-scale combat operations (LSCO).
- The planned EOD force structure is too small for EOD forces to execute Army doctrine in LSCO. There will be more demands for EOD forces than they can meet under current doctrine.
- Furthermore, these force structure shortfalls do not account for defense support of civil authorities (DSCA) missions, which include providing protection to the President of the United States and are considered homeland defense missions in wartime.
- Should planned EOD force structure be expanded to meet the demands of LSCO and DSCA, forecasts indicate that the inventory of EOD personnel in the Regular Army will be sufficient to fill the units that would execute these missions.
- In contrast, the forecasted inventory of EOD personnel in the Army National Guard will not be sufficient to support the expanded force structure, with significant shortfalls across all grades, particularly in the senior ranks.
- There is no compelling case for designating EOD personnel as special operations forces. Concerns about how EOD forces support special operations forces can be addressed in other ways.
- There is an argument for making EOD a basic branch, although doing so would require additional resources.

by federal statute and by U.S. Department of Defense (DoD) regulations, policies, and doctrine (Department of Defense Directive [DoDD] 3025.18, 2018; DoDD 3025.13, 2017; Department of Defense Instruction [DoDI] 3025.21, 2019; Joint Publication 3-42, 2016; Pub. L. 94-524, 1976). The threats managed by EOD forces are also both conventional and non-conventional (i.e., chemical, biological, radiological, and nuclear).

During the past 20 years, the Army EOD force has undergone significant changes. The force expanded in size and focused on improvised explosive device missions in support of Operation Enduring Freedom (OEF) and Operation Iraqi Freedom (OIF) but experienced force reductions after those conflicts concluded. As the focus of defense strategy moves away from counterinsurgency operations in the Middle East and back to strategic competition, the Army is examining what it will need to support large-scale combat operations (LSCO) in the future and is actively preparing for—and undergoing—

that transition. These efforts include the Army’s EOD forces.

The EOD branch (G-38) in the office of the Deputy Chief of Staff for Operations, Plans, and Training (G-3/5/7), Headquarters, Department of the Army, asked us to examine the roles the Army EOD force can expect to face in LSCO as a key part of Army and Joint Force multi-domain operations in the fiscal year (FY) 2027–2032 time frame (five to ten years from the inception of the project) and assess whether the planned EOD force will be able to meet future demands. This report highlights the findings and recommendations from that effort. A more-detailed discussion of the research is contained in Lewis et al. (2024).

We focused our analysis on three areas of relevance: (1) whether the Army has the right EOD force structure, (2) whether the force has sufficient personnel, and (3) how the Army can best govern the EOD force. To conduct this analysis, we reviewed Army and DoD policy documents, legal and regulatory documents, and relevant research literature; participated in interviews with current and retired EOD leaders; and conducted various modeling efforts to support force structure and personnel assessments using data from the Explosive Ordnance Disposal Information Management System (EODIMS), Army Human Resources Command, and the Defense Manpower Data Center.

### Abbreviations

ARNG	Army National Guard
ATP	Army Techniques Publication
BCT	brigade combat team
CBRNE	chemical, biological, radiological, nuclear, explosives
COE	center of excellence
CONUS	continental United States
DoD	U.S. Department of Defense
DoDD	Department of Defense Directive
DoDI	Department of Defense Instruction
DSCA	defense support of civil authorities
EOD	explosive ordnance disposal
EODIMS	Explosive Ordnance Disposal Information Management System
FY	fiscal year
GAO	U.S. Government Accountability Office
LSCO	large-scale combat operations
OEF	Operation Enduring Freedom
OIF	Operation Iraqi Freedom
SFG	special forces group
SOF	special operations forces
USASOC	U.S. Army Special Operations Command
VIP	very important person

## Future Demands on the EOD Force

This study centered on the sufficiency of the Army EOD force to perform its mission to support forces conducting multi-domain operations in LSCO, which necessarily includes the demands of DSCA and homeland defense missions.

### EOD in Large-Scale Combat Operations

EOD missions in LSCO are likely to be some version of *back to the future*. In other words, the primary EOD missions in future large conflicts will resemble those in previous large conflicts, such as rendering

safe unexploded military ordnance and providing intelligence on “first seen” military munitions (i.e., munitions that were previously unknown to U.S. forces). EOD command and control doctrine, which drives how EOD support is provided to major commands and maneuver units, grew out of the critical role played by senior EOD commands in countering improvised explosive devices during OEF and OIF.

However, unlike in the OEF and OIF period, during which the U.S. Army faced relatively few military-grade munitions, unexploded ordnance in LSCO will be numerous, and “first seen” ordnance intelligence could be critical. Improvised explosive devices will continue to be a problem but will become less important than other missions. Given the prevalence of unmanned systems on modern battlefields and the requirement for EOD personnel to examine downed unmanned aerial systems, loitering munitions that do not explode could also drive requirements.

The most demanding LSCO contingencies with a peer competitor are, by definition, larger and more demanding than OEF and OIF. The current doctrinal force allocation rules are not realistic for demanding operations with the planned force structure, and there are major missions not considered in the allocation rules, such as rear area security and ammunition supply point support. These missions will need to be performed and will require commanders on the ground to alter the existing allocations in doctrine. Older EOD doctrine envisioned support relationships that did not require formal unit allocation rules and provided EOD commanders with greater leeway on how to employ the force. In sum, the Army has two major sets of variables it can adjust to ensure the EOD force can accomplish its assigned missions: doctrine and force structure. At present, these variables are out of alignment for contingencies in which the force is fully committed.

## Defense Support of Civil Authorities

Both statute and regulation require that DoD EOD forces provide support and assistance to civilian agencies. These agencies include the Department of Homeland Security; the Bureau of Alcohol, Tobacco, Firearms, and Explosives; the Federal Bureau of Investigation; the U.S. Secret Service; and the

Department of State. The overwhelming majority of DSCA incidents to which Army EOD units respond are very important person (VIP) support missions.<sup>1</sup> These missions provide protection to the President of the United States, the Vice President, the First Lady, presidential candidates, and foreign dignitaries, among others. VIP support missions also include EOD support provided during National Special Security Events, such as presidential inaugurations, the State of the Union Address, the United Nations General Assembly, and the Democratic and Republican national conventions (U.S. Secret Service, undated).

In recent years, DSCA missions have been both numerous and man-hour intensive. During FYs 2017–2021, DSCA missions accounted for 16 percent of all Army-led EOD incidents and 44 percent of all man-hours expended during Army-led EOD incidents.<sup>2</sup> These observations are consistent with the findings of a 2022 RAND study and a 2019 U.S. Government Accountability Office (GAO) report (Held et al., 2022; GAO, 2019).

Our discussions with subject-matter experts within the Army EOD and U.S. Secret Service communities suggest that demands from DSCA missions would likely persist during LSCO. While some VIP support missions can be sourced with EOD teams from state and local authorities, DoD EOD teams are strongly favored, if not required, for many VIP support missions—especially those that protect the President of the United States, who serves as the Commander in Chief of the armed services. Furthermore, when the nation is at war, DSCA missions performed within the United States are synonymous with EOD’s role in homeland defense, a mission DoD has prioritized per the 2022 National Defense Strategy (DoD, 2022).

## Sufficiency of Planned EOD Force Structure

The planned EOD force structure is not sufficient in the LSCO environment if the Army operates according to its current doctrine, on which our analysis was based. Army doctrine has EOD forces supporting major commands and large maneuver and special operations forces (SOF) units, with EOD units allo-

cated according to well-defined allocation rules. These allocation rules, if rigorously applied, have strong implications for how the EOD force will operate in future contingencies.

Three categories of deployment for LSCO are possible:

- The conflict is significant enough to require the deployment of all available forces—specifically, forces do not rotate into theater, as they did in OEF and OIF, but rather deploy and stay there.
- The conflict is not large enough to require the deployment of the full force but is large enough to require forces to rotate at the maximum rates stipulated in DoD policy (Directive Type Memorandum 21-005, 2022).
- The conflict is small enough that either no rotation is necessary (i.e., the conflict ends before rotations are needed) or rotation happens at rates slower than the maximum rates stipulated in DoD policy.

Our analysis assumes one of the first two categories applies because they best capture the likely demand and illustrate the limits of the proposed force structure. Specifically, we assume that multi-domain operations in LSCO with a peer competitor would be significantly more demanding than the operations the Army experienced during OEF and OIF.

An examination of the allocation rules and planned structure of EOD forces (Table 1) suggests that all EOD teams, which reside in EOD companies, will be dedicated to brigade combat teams (BCTs), special forces groups (SFGs), or the Ranger Regiment. However, unlike in OEF and OIF, during which most of the area of operations was “owned” by a BCT, there will be large parts of the battlefield outside the assigned areas of responsibility for BCTs in LSCO. The implication is that if current doctrine were rigorously followed, there would be no EOD companies or teams assigned to handle such critical missions as ammunition supply point assistance, corps and division rear area support, and support to theater-level assets, such as ports. These are critical missions that must be accomplished.

Fortunately, doctrine provides flexibility to senior EOD commanders in the form of command relationships. EOD companies will remain under the command of EOD battalions in most cases, and EOD battalions are under EOD groups. These relationships allow senior EOD commanders to manage forces in theater. Because these missions must be performed, EOD leaders could allocate support from the units available in theater. However, this would leave some of the doctrinally supported commands without dedicated EOD support, even though the allocation rules suggest the commands could expect such support.

TABLE 1  
EOD Doctrinal Allocation Rules, EOD Group Within Theater of Operations

EOD Organization	Modeling Rule of Allocation	Supported Organization
EOD group	<ul style="list-style-type: none"> <li>• 1 per theater army</li> <li>• 1 per corps</li> <li>• 1 per joint task force (JTF)</li> <li>• 1 per combined JTF</li> <li>• 1 per homeland defense</li> <li>• 1 per 2–6 EOD battalions</li> </ul>	<ul style="list-style-type: none"> <li>• Theater army</li> <li>• Corps</li> <li>• JTF</li> <li>• Combined JTF</li> </ul>
EOD battalion	<ul style="list-style-type: none"> <li>• 1 per division</li> <li>• 1 per JTF</li> <li>• 1 per combined JTF</li> <li>• 2 per homeland defense</li> <li>• 1 per 3–7 EOD companies</li> </ul>	<ul style="list-style-type: none"> <li>• EOD group</li> <li>• Division</li> <li>• JTF</li> <li>• Combined JTF</li> </ul>
EOD company	<ul style="list-style-type: none"> <li>• 1 per BCT</li> <li>• 1 per SFG (Airborne)</li> <li>• 1 per Ranger Regiment</li> <li>• 8 per homeland defense</li> <li>• 1 per 1–5 EOD platoons</li> </ul>	<ul style="list-style-type: none"> <li>• EOD battalion</li> <li>• BCT</li> <li>• Maneuver enhancement brigade SFG (Airborne)</li> </ul>

SOURCE: Reproduced from Army Techniques Publication (ATP) 4-32, 2022, Table 1-1.

Detailed analysis of how doctrine could address these shortfalls—assuming the force structure was available to execute it—is not straightforward because the geometry of the battlefield would be different, for example, for LSCO in the U.S. European Command than in the U.S. Indo-Pacific Command. We offer no recommended changes to doctrine other than to note that past approaches, which offered more flexibility in providing EOD support, might be worth revisiting.

The bottom line is that there will be more demands for EOD forces than a direct application of the allocation rules would account for and that planned EOD forces, already too small for LSCO contingencies in which the force is rotating at maximum speed or deployed in whole, will need to adapt for these situations. In the words of one retired EOD senior leader, current EOD doctrine “will not scale” given planned force structure.

## Estimating the Shortfall in Planned EOD Force Structure

In our effort to estimate the demand for EOD forces over the next five to ten years, the EOD force planned

for FY 2028 for the Regular Army and the Army National Guard (ARNG), presented in Table 2 under the heading “Planned Force,” provided a useful starting point.

### Large-Scale Combat Operations Mission

To comply with doctrinal allocation rules, given the major units EOD forces support, significant additional force structure would be needed to meet the expected demands of LSCO, as shown under the heading “Doctrinal Force” in Table 2. If the entire force were deployed for a large war, the Regular Army would need an additional eight groups, four battalions, and one company. A total of ten EOD groups would be needed to support the five theater armies, Eighth U.S. Army, and the four corps; a total of ten battalions would be needed to support the ten Regular Army divisions; and a total of 37 companies would be needed to support the 31 BCTs, five SFGs, and one Ranger Regiment in the Regular Army. The continental United States (CONUS) Support company, which supports homeland defense, and the

TABLE 2  
EOD Force to Support the Army Under Doctrinal Allocation Rules and Provide Defense Support of Civil Authorities, FY 2028

Supported Unit Type	EOD Unit Type	Planned Force		Doctrinal Force		Doctrinal Force with DSCA Supplement	
		Regular Army	ARNG	Regular Army	ARNG	Regular Army	ARNG
Theater (or field) armies, corps	Group	2	1	10	0	10	0
Division	Battalion	6	3	10	8	10	8
BCT, SFG, Ranger Regiment	Company	36	14	37	29	37	29
N/A	WMD company	1	0	1	0	1	0
Homeland defense	Group	0	0	0	1	0	1
	Battalion	0	0	0	2	0	2
	Company	1	0	1	7	6	7

SOURCES: Analysis of force structure decisions provided by Army G-3/5/7 to the authors on August 11, 2022; Army Technical Publication 4-32, 2022, Table 1-1; and EODIMS.

NOTE: WMD = weapons of mass destruction. We include Eighth U.S. Army, the major Army command in the Republic of Korea, even though it is not included in the supported force structure for 2028. The allocation of additional units between the components does not reflect doctrinal differences between Regular Army and ARNG EOD forces. Rather, the allocation resulted from assumptions we made to facilitate the analysis, including that (1) EOD forces will support forces of the same component whenever possible and (2) EOD forces in each component at each level will not be fewer than those indicated in the planned force without specific justification.

WMD company are carried over from the planned EOD force.

The ARNG would need an additional seven battalions and 22 companies. A total of ten battalions would be needed to support the eight ARNG divisions and homeland defense, and a total of 29 companies would be needed to support the 27 BCTs and two SFGs in the ARNG. A total of eight companies would be needed to satisfy the homeland defense requirement, but we reduced the total to seven because the EOD force planned for FY 2028 includes one company in the Regular Army supporting homeland defense (i.e., the CONUS Support company).

Army doctrine requires that there be one EOD group for every two to six EOD battalions (ATP 4-32, 2022, Table 1-1). With a total of ten EOD battalions (eight supporting ARNG divisions and two supporting homeland defense), the ARNG doctrinal force should include two EOD groups.

### Defense Support of Civil Authorities Missions

The estimated shortfall in force structure to support LSCO does not account for DSCA, and these demands will likely persist not only in peacetime but also in wartime. Our discussions with subject-matter experts in the Army Force Management community revealed that the Total Army Analysis process does not account for the demands imposed by DSCA.<sup>3</sup> The reason offered was that LSCO will likely consume EOD units to such an extent that DSCA missions will be of lesser priority and, accordingly, relegated to non-DoD EOD teams.

While DoD regulations, policies, and doctrine direct the department to evaluate requests for support to civil authorities in relation to their effects on military readiness, our discussions with subject-matter experts within the Army EOD and U.S. Secret Service communities indicated that DoD EOD teams are strongly favored for many VIP support missions, especially those that protect the President.

Providing sufficient support to civil authorities during LSCO would require more units than those listed in Table 2 under the “Doctrinal Force” heading; specifically, five additional companies in the Regular Army supporting homeland defense. For the Regular Army, the omission of DSCA missions from the Total

Army Analysis process accounts for a large share of the gap between the EOD force planned for FY 2028 (i.e., the planned force in Table 2) and the EOD force needed to support LSCO and perform DSCA missions (i.e., the doctrinal force with DSCA supplement in Table 2).

## Sufficiency of EOD Personnel

Looking at the inventory of EOD personnel and its ability to fill the units needed to both support LSCO and perform DSCA missions, we found areas in which the number of personnel is not sufficient, as depicted in Figure 1.

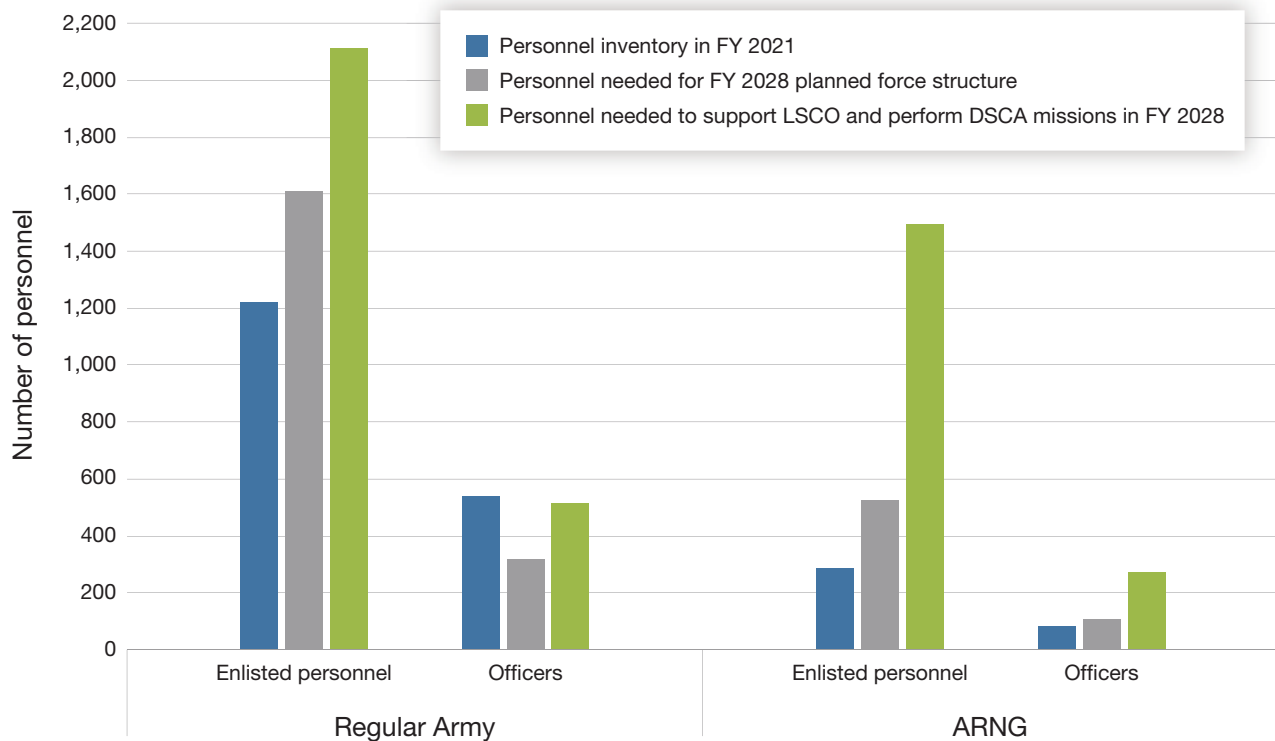
For the Regular Army, the planned increase in enlisted personnel—32 percent growth between FYs 2021 and 2028 (percentage increase from the blue bar to the gray bar in Figure 1)—is not sufficient. To provide the Regular Army with the enlisted personnel it needs to both support LSCO per doctrinal allocation rules and perform DSCA missions as required by statute and regulations (green bar), the inventory of enlisted personnel would need to grow by 73 percent (percentage increase from the blue bar to the green bar). The Army plans to reduce the number of active-duty officers by 41 percent between FYs 2021 and 2028, but this reduction is too severe. If the EOD force must support LSCO and perform DSCA missions, the reduction should be closer to 5 percent, with cuts concentrated at the O-3 grade.

The Army plans to increase the size of the ARNG’s EOD force by a significant margin. Between FYs 2021 and 2028, the ARNG expects to raise the number of enlisted personnel by 83 percent and the number of officers by 27 percent. However, these increases are not sufficient to meet the demands imposed by LSCO and DSCA and would leave the ARNG with shortages across all grades. Our analysis indicates that the requisite increases in the size of the ARNG are quite a bit larger: The inventory of enlisted personnel would need to grow by a factor greater than five, and the officer inventory by a factor greater than three.

Of particular concern are the projected personnel shortages in the ARNG’s senior ranks. Our forecasts indicate that, if current policies and trends

FIGURE 1

FY 2021 Inventory Army EOD Personnel Compared with EOD Personnel Needed to Support LSCO and Provide DSCA in FY 2028



SOURCES: Analysis of force structure decisions provided by Army G-3/5/7 to the authors on August 11, 2022; ATP 4-32, 2022, Table 1-1; EODIMS; the Total Army Personnel Database; and the Defense Manpower Data Center Reserve Master File.

NOTE: Regular Army personnel counts include enlisted EOD personnel who fall within chemical, biological, radiological, nuclear, and explosives (CBRNE) companies identified in force structure decisions provided by Army G-3/5/7 to the authors on August 11, 2022, as well as margins for personnel in Table of Distribution and Allowances (TDA) and Trainees, Transients, Holdees, and Students (TTHS) units. ARNG personnel counts include margins for personnel in TDA units; TTHS margins were set to zero because the reserve component does not have a TTHS account.

continue, there would be no colonels or lieutenant colonels in the ARNG’s inventory of EOD personnel to fill the authorizations planned for FY 2028. This would leave senior ARNG EOD command and staff positions vacant, which raises questions about the viability of the ARNG EOD force and its ability to field groups and battalions.

Our analysis shows that, for the Regular Army’s enlisted force, the omission of DSCA from the Total Army Analysis process accounts for 62 percent of the gap between the planned EOD force (gray bars) and the EOD force needed to execute the full complement of EOD missions (green bars). For officers, the omission accounts for 19 percent of the gap. The omission of DSCA creates shortfalls in the ARNG as well. This

omission accounts for 39 percent of the gap for the enlisted force and 18 percent of the gap for officers.

Two prior studies, one published by GAO and another by RAND, have recommended that service-level manpower guidance across DoD be updated to ensure that force structure calculations for EOD personnel include DSCA missions (GAO, 2019; Held et al., 2022). This recommendation is made more critical by the elevated importance of the homeland defense mission in the 2022 National Defense Strategy (DoD, 2022). Our analysis provides additional support for including DSCA missions in EOD manpower planning processes and suggests that, for the Army, the change would have a significant impact on the enlisted force in particular.

## Governance of the Army EOD Force

The Army EOD force's experiences over the past 20 years have led to questions about its organization and governance. The institutional Army creates, trains, and modernizes forces of all types through its branches and centers of excellence (COEs).<sup>4</sup> Branches fall under a COE. EOD is currently part of the Ordnance branch, which falls under the Sustainment COE.

Our examination of key governance issues raised by members of Congress considered several alternatives: specifically, whether the Army EOD force should

- be designated as a special operations activity
- be a separate branch, as directed by Congress
- remain in the Ordnance branch or be moved to another branch.

In addition, we considered how the force should be managed if additional force structure is created for DSCA missions—which remain a requirement even during wartime.

The Branch Proponent, typically the Chief of the Branch, is responsible for institutional training, doctrine development, and other related matters, and the operational units associated with a branch are modernized by its Force Modernization Proponent, typically the commander of the COE that oversees the branch. These two actors—the Branch Proponent and the Force Modernization Proponent—have

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We found no compelling evidence to support designating EOD as a special operations activity; indeed, the evidence to the contrary seems greater.

large, if not primary, effects on modernization, leader development, and personnel.

It is in the context of these institutional Army constructs and organizations that EOD forces are trained, designed, developed, and modernized and that doctrine is developed. Where EOD forces are placed in the Army force structure can have significant implications for how EOD might be supported and modernized.

## Should EOD Be Part of Special Operations Forces?

Members of Congress have expressed interest in designating EOD as a special operations activity because they are concerned that EOD personnel supporting SOF might not have the requisite skills to do it well and with minimum risk to EOD soldiers (see Pub. L. 116-283, 2021, Section 593). We found no compelling evidence to support designating EOD as a special operations activity; indeed, the evidence to the contrary seems greater.

The administrative challenges the designation would create, not least of which is the de facto requirement for EOD to be established as a stand-alone branch within U.S. Army Special Operations Command (USASOC), would be significant. EOD as part of USASOC would probably imply that USASOC would take on force modernization proponentcy and that the new branch would fall under the John F. Kennedy Special Warfare Center and School, creating complex arrangements similar to those experienced by Civil Affairs.

In the early 1990s, the Civil Affairs branch was moved under USASOC; in 2006, the U.S. Army Reserve Civil Affairs unit, which did not support SOF units, was moved from USASOC to U.S. Army Reserve Command, a subordinate command of U.S. Army Forces Command, and no longer designated as SOF. However, USASOC still retained proponentcy over Civil Affairs even though most of its forces were under U.S. Army Forces Command. This arrangement led to challenges for the Civil Affairs branch and forces. USASOC was unable to carry out some functions that a force modernization proponent would normally conduct because it could not spend



funds designated for SOF on general purpose forces, but no other agency could, either. While much of this issue has been resolved, challenges remain, and the experience is a caution to designating EOD as SOF.

Another important consideration is that the functions that EOD personnel perform are not inherently special operations functions; they are important to SOF in the same way they are important to other Army units and commands. Most of the EOD force supports general purpose forces; there is currently only one EOD company designated to support SOF (the Ranger Regiment). Rather than leading to greater integration with the force it primarily supports, designating EOD as SOF would create bureaucratic challenges and split the force. Civil affairs soldiers called the split in its forces between USASOC and U.S. Army Reserve Command “the great divorce.”

The benefit of designating EOD as SOF is that it would force the Army to train and prepare EOD units and personnel to better support SOF. However, the Army could gain many, if not all, of these benefits by (1) organizing EOD such that the units that support USASOC commands have habitual support relationships, as has been done with the Ranger Regiment, (2) placing EOD billets in SOF units, or (3) further emphasizing the existing training EOD provides to its units and soldiers that support SOF.

Placing EOD under USASOC, likely as a separate branch, would not make it easier for EOD to fulfill its missions or support the Army broadly. In addition to creating the need for a separate branch and incurring the costs that move would entail (discussed below), placing EOD under USASOC would generate problems similar to those confronted by Civil Affairs. The split between where proponenty is located and where the majority of forces operate would, at a minimum, create significant coordination and management challenges for EOD to overcome and could affect force modernization and effectiveness.<sup>5</sup> This perspective aligns with how other services handle their EOD forces: No other service views its EOD forces as SOF.

## Should EOD Be a Separate Branch?

Congress has directed the U.S. Army to make EOD a basic branch by October 1, 2025 (Pub. L. 115-91, 2017, Section 582, para. (a); updated by Pub. L. 116-283,

2021, Section 593). The legislation was a response to significant reductions in the size of the Army’s EOD force following the wars in Iraq and Afghanistan—reductions that some members of Congress believed would not have occurred if the EOD community had better representation in the Army’s institutional structure (Crawford, 2017). EOD leaders we interviewed thought that a general officer branch chief could have positively affected the Army’s understanding of, and planning for, EOD missions.

In our interviews with senior officer and enlisted EOD leaders, none thought that establishing a separate EOD branch was a good idea, though some retired EOD personnel did.<sup>6</sup> The primary objection was that an EOD branch would be very small and need significant additional manning and resources to function. New billets would be needed to conduct the branch functions, and it would take time to grow the additional field grade officers and senior noncommissioned officers to fill those billets.

However, what EOD does is distinct from what other branches do in important ways. Its missions are focused on those aspects of explosive ordnance that EOD personnel alone do: that is, not focused on supplying and maintaining explosive ordnance, as the Ordnance Corps is, nor on implanting explosive ordnance to limit enemy maneuverability or destroying it to improve friendly mobility, as the Corps of Engineers does. That said, there is some overlap with these and other branches. Therefore, it appears that size and resources are the key issues that bear on whether EOD should be a separate branch.

Because what EOD does is unique, there is a good argument for making it a basic branch of the Army. However, doing so would require additional resources. While detailed analysis of the difficulty and cost of such a move was beyond the scope of this study, some important observations are evident. Creating a separate branch associated with the Sustainment COE would be the least disruptive and least expensive option. Because soldiers in all logistics branches are trained at the Army Logistics University, establishing EOD as a basic branch under Sustainment would require little change in EOD training and leader development. Furthermore, in this scenario, EOD soldiers would, like soldiers in other Sustainment branches, be logisticians, which

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If the Army were to resource additional force structure for DSCA, it should consider doing so in a way that fences the units for DSCA missions outside the rotation of forces.

would allow them to fill logistician jobs when not in EOD positions.

One might also argue in favor of moving EOD out of the sustainment warfighting function and COE and into the protection warfighting function and Maneuver Support COE because this COE aligns more closely with the functions EOD actually performs. Positioning EOD in the Maneuver Support COE as its own branch would also reflect how the Army is currently thinking about the use of EOD forces. During the period under consideration for this study (FYs 2027–2032), most EOD forces will reside in units that have protection missions: the 20th CBRNE Command for units that support U.S. Army Forces Command and one battalion under the 83rd Military Police Brigade in U.S. Army Pacific.<sup>7</sup>

However, placing EOD under the Maneuver Support COE would require significant resources to establish an EOD school and develop the ability within the COE to support EOD force modernization. Thus, the personnel and funding needed would likely be significantly larger when compared with leaving EOD under the sustainment warfighting function. This arrangement would also affect developmental and promotion opportunities compared with the Sustainment COE: If EOD moved to the Maneuver Support COE, its soldiers would no longer be logisticians and would not have as many career opportunities outside EOD in logistics units.

With respect to the question of whether EOD is large enough to be an independent branch, the Navy's arrangement suggests that size might not be a limiting factor. In the Navy, EOD is one of only five unrestricted line warfare communities, which is akin to an independent branch in the Army. The Army's EOD force is larger than the Navy's; in fact, it is the largest of any of the services. Accordingly, one might infer that the Army's EOD force is large enough to stand as a separate branch, although doing so would require the dedication of additional resources. On the other hand, EOD is not an independent branch-like entity in either the Air Force or the Marine Corps.

### Should EOD Be Placed in a Different Branch?

The functional arguments about where EOD as a separate branch might be placed—whether in the Sustainment or Maneuver Support COE—also apply to the question of whether EOD should be placed in a different branch if a separate branch were not created. Given the strong belief that what EOD does is a protection function, the branches that fall under the Maneuver Support COE—the Chemical, Biological, Radiological, and Nuclear branch; the Engineer branch; and the Military Police branch—would be logical candidates for absorbing EOD.

Because these are regular branches, command relationships and manpower requirements would need to be developed but likely would be similar to arrangements within the Ordnance branch. Nevertheless, some accommodations would need to be made. The branch school, for example, would need to incorporate EOD training and development doctrine, and the Maneuver Support COE would need to conduct force modernization with assistance from the branch.

Unlike the Sustainment COE, in which several branches matriculate into a collective logistics branch, the Maneuver Support COE maintains separate branches and, accordingly, would likely offer fewer opportunities for savings in shared curriculum and fewer opportunities for EOD soldiers. Placing EOD under the Maneuver Support COE would, for example, require creating a school and perhaps facilities

that do not exist. In addition, decisions would need to be made regarding how EOD force structure would affect the branch's force structure, and vice versa.

## Managing an Increased EOD Force Structure to Address DSCA Missions

As discussed earlier, the Army's current doctrinal allocation rules would require unsustainably high rotation rates for EOD groups and battalions in LSCO, regardless of the DSCA missions. If the Army were to resource additional force structure to address EOD's DSCA responsibilities, it would need to make decisions about how that force structure would operate within the force. For example, would the additional EOD units become specialized DSCA units? Would these units be in the Regular Army or the ARNG?

DSCA missions are manpower-intensive and often require EOD teams to be away from home. This time away not only affects personnel tempo but also detracts from units' ability to conduct individual and collective training. These additional burdens are significant in peacetime but would be a greater problem during LSCO, when large portions of the force would be deployed and those units at home would be recovering from deployments, remanning, and refitting.

If the Army were to resource additional force structure for DSCA, it should consider doing so in a way that fences the units for DSCA missions outside the rotation of forces. This choice would relieve EOD units in the force flow of DSCA responsibilities and permit rotating units at home to focus on training for combat missions rather than preparing for DSCA missions. Permitting units to specialize in DSCA missions would also be in line with DoD prioritization of homeland defense in the 2022 National Defense Strategy. Fencing the additional units for DSCA missions would likely increase readiness in all parts of the EOD force. Placing these units in the ARNG would be consistent with their homeland defense responsibilities but could create challenges for accessing them for federal missions, such as VIP protection.

Should the Army choose to resource additional force structure for DSCA but *not* create specialized

units, it must account for these additional stressors on the force.

## Caveats

The findings summarized in this report rest on several assumptions, some of which have little bearing on the primary results of our analysis. For example, the assumption that "EOD forces will support forces of the same component whenever possible" affects how our demand estimates are distributed between the Regular Army and ARNG at the margin but does not affect our estimates of the aggregate demand for EOD forces and personnel.

However, there are three assumptions that serve as the foundation for our analysis; relaxing these assumptions would alter our findings significantly. These are as follows:

- The conflict will be large enough to either (1) require the deployment of all available forces or (2) require forces to rotate at the maximum rates stipulated in DoD policy.
- When managing its EOD forces, the Army will follow its doctrine, particularly the allocation rules articulated in ATP 4-32.
- Demands from DSCA missions will persist during LSCO, and the workload associated with these missions will equal the average annual number of man-hours expended during Army-led DSCA missions over FYs 2017–2021.

Relaxing the first of these assumptions would be equivalent to assuming that a war with a major power would require only a small commitment of forces. Our view is that this scenario is unlikely and inconsistent with experience dating back to World War II. It does not seem to be a reasonable planning assumption.

In making the second assumption, we recognized that although enabler forces are often under-resourced, the reasons are usually associated with budget constraints rather than articulations of need. Since the goal of this study was to estimate the EOD forces *needed* to support the Army, we found it reasonable to set aside budgetary concerns and estimate

the unconstrained demand for EOD forces per current doctrine.

The third assumption is grounded in the Army's recent experience with providing support to civil authorities. While DoD regulations, policies, and doctrine direct DoD to evaluate requests for DSCA in relation to their effects on military readiness, DoD EOD teams are strongly favored for many VIP support missions, especially those that protect the President of the United States, even in wartime. Limiting the DSCA workload only to protection missions for the President would reduce the number of EOD companies needed for homeland defense by about 60 percent.

## Recommendations

The Army should address the disconnect between EOD doctrine and force structure by either providing more force structure so the doctrine can be executed in LSCO or revising the doctrine to permit more-flexible concepts of support. In the most demanding LSCO force employment contingencies—i.e., rotational employment or more general mobilization and employment—the EOD force is not large enough to support major commands and maneuver or SOF units as the doctrine indicates it will. Even if more force structure were provided to permit one-to-one support relationships, there are important missions, such as rear area security, port security, and ammunition supply point support, that EOD will have to perform and that are not accounted for in force allocation rules. Although doctrine gives EOD battalion and group commanders the leeway to use forces as mission demands, it sets expectations by its modeling

rules of allocation that are not achievable under the LSCO assumptions we use in this analysis. The Army should consider revising its doctrine to permit more-flexible concepts of support in addition to the unit allocation rules in place.

The Total Army Analysis process should account for the DSCA mission set—missions that in wartime will be homeland defense and will impose significant demands on the EOD force. These missions are not captured in joint scenarios and planning but are required by legislation and regulation. The omission of DSCA missions from the Total Army Analysis process results in decreased EOD unit readiness and unreasonable stress on the force.

Army leadership must address the personnel shortfalls in the ARNG EOD force, including the lack of senior EOD leaders to command the ARNG group and battalions. This part of the force is critical to the overall EOD effort in LSCO but is unable to perform its mission without resolving significant shortages in personnel. While our analysis did not examine in detail how to address this challenge, a few things are clear. Since it takes years to train EOD-qualified personnel and the expected ARNG shortfalls are most significant at the more senior grades, Army leaders likely need at least a two-pronged approach. To address the shortfalls over the long run, the Army must fill the personnel pipeline with EOD-qualified personnel by recruiting and training effectively. In the short run, the Army should address the problem in the senior ranks by encouraging EOD-qualified personnel who are leaving the Regular Army to serve in the ARNG's EOD force.

The Army should consider options for making ARNG EOD personnel more readily available for

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The Army should address the disconnect between EOD doctrine and force structure by either providing more force structure so the doctrine can be executed in LSCO or revising the doctrine to permit more-flexible concepts of support.

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DSCA missions to relieve stress on the Regular Army force and provide real-world missions to the ARNG force. Because DSCA missions are federal, they must be performed by units operating under Title 10. When not mobilized, ARNG forces operate under State authority or under Title 32, which presents a challenge to accessing them for DSCA. However, DoD has addressed this challenge in other areas, such as the 49th Missile Defense Battalion in the Alaska National Guard and National Guard pilots who fly combat air patrol missions for Operation Noble Eagle.<sup>8</sup>

EOD should not be made a special operations activity. There is no compelling evidence to justify such a designation, and doing so would create dysfunction in EOD and USASOC. Concerns about how EOD supports SOF can be addressed in other ways, such as by creating additional habitual support relationships between EOD units and SOF.

## Notes

<sup>1</sup> Our analysis of EODIMS data indicate that, during FYs 2017–2021, VIP support missions accounted for 81 percent of all Army-led DSCA missions and 96 percent of the man-hours expended on Army-led DSCA missions.

<sup>2</sup> The percentages were computed using data from EODIMS.

<sup>3</sup> However, the planned EOD force includes a company for CONUS Support.

<sup>4</sup> COEs, while part of U.S. Training and Doctrine Command, incorporate both U.S. Training and Doctrine Command and Army Futures Command functions. We will not make these distinctions unless they are needed for the analysis.

<sup>5</sup> The SOF aviation and infantry soldiers in the Ranger Regiment have a form of split proponentcy, too. The soldiers in these units are Army aviators and infantrymen, respectively, rather than some branch that is specifically part of SOF. As such, their branch proponents are the Aviation and Infantry branch chiefs, respectively, but their force modernization proponent, as SOF, is USASOC (i.e., the special training and materiel requirements of the SOF aviation and Ranger units are managed by U.S. Special Operations Command through USASOC).

<sup>6</sup> We interviewed 26 EOD leaders and experts from July through November 2022.

<sup>7</sup> This placement is primarily for training oversight purposes and will apply during peacetime.

<sup>8</sup> The 49th Missile Defense Battalion operates critical capabilities to keep the nation safe from intercontinental ballistic missiles, relying on a mix of active and reserve National Guard soldiers; Operation Noble Eagle relies on special authorities to accomplish its mission. See Congressional Research Service, 2006.

## References

Army Regulation 75-15, *Policy for Explosive Ordnance Disposal*, Headquarters, Department of the Army, December 17, 2019, Not available to the general public.

Army Techniques Publication 4-32, *Explosive Ordnance Disposal (EOD) Operations*, Headquarters, Department of the Army, May 2022.

ATP—See Army Techniques Publication.

Congressional Research Service, *Operations Noble Eagle, Enduring Freedom, and Iraqi Freedom: Questions and Answers about U.S. Military Personnel, Compensation, and Force Structure*, RL31334, January 27, 2006.

Crawford, Rick, “EOD Priorities for the FY2018 NDAA,” testimony before the House Armed Services Committee, April 27, 2017.

Department of Defense Directive 3025.13, *Employment of DoD Capabilities in Support of the U.S. Secret Service (USSS), Department of Homeland Security (DHS)*, Under Secretary of Defense for Policy, October 8, 2010, change 1, May 4, 2017.

Department of Defense Directive 3025.18, *Defense Support of Civil Authorities (DSCA)*, Under Secretary of Defense for Policy, December 29, 2010, change 2, March 19, 2018.

Department of Defense Instruction 3025.21, *Defense Support of Civilian Law Enforcement Agencies*, Under Secretary of Defense for Policy, February 27, 2013, change 1, February 8, 2019.

Directive Type Memorandum 21-005, *Deployment-to-Dwell, Mobilization-to-Dwell Policy Revision*, Under Secretary of Defense for Personnel and Readiness, August 16, 2021, change 1, October 13, 2022.

DoD—See U.S. Department of Defense.

DoDD—See Department of Defense Directive.

DoDI—See Department of Defense Instruction.

GAO—See U.S. Government Accountability Office.

Held, Bruce, Jennifer Lamping Lewis, Douglas C. Ligor, Jeffrey A. Drezner, Grant Johnson, Sale Lilly, Monica Rico, Tucker Reese, Erik Van Hegewald, Christina Panis, and Barbara Bicksler, *Assessment of the Department of Defense’s Explosive Ordnance Disposal Enterprise*, RAND Corporation, 2022, Not available to the general public.

Joint Publication 3-42, *Joint Explosive Ordnance Disposal*, Joint Chiefs of Staff, September 9, 2016.

Lewis, Jennifer Lamping, Terrence K. Kelly, Grant Johnson, Douglas C. Ligor, Anthony Jacques, and Barbara Bicksler, *Army Explosive Ordnance Disposal in Large-Scale Combat Operations: Can the Planned Force Meet Tomorrow’s Requirements?* RAND Corporation, RR-A2078-2, 2024. As of March 12, 2024: [https://www.rand.org/pubs/research\\_reports/RRA2078-2.html](https://www.rand.org/pubs/research_reports/RRA2078-2.html)

Public Law 94-524, Presidential Protection Assistance Act of 1976, October 17, 1976.

Public Law 115-91, National Defense Authorization Act for Fiscal Year 2018; Section 582, Conditional Designation of Explosive Ordnance Disposal Corps as a Basic Branch of the Army, December 12, 2017.

Public Law 116-283, William M. (Mac) Thornberry National Defense Authorization Act for Fiscal Year 2021; Section 593, Postponement of Conditional Designation of Explosive Ordnance Disposal Corps as a Basic Branch of the Army, January 1, 2021.

U.S. Department of Defense, *2022 National Defense Strategy of the United States of America*, October 2022.

U.S. Government Accountability Office, *Warfighter Support: Actions Needed to Improve Explosive Ordnance Disposal Forces Planning*, GAO-19-698, September 2019.

U.S. Secret Service, “Securing Events,” webpage, undated. As of March 7, 2023: <https://www.secretservice.gov/protection/events>

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## About This Report

This report documents research and analysis conducted as part of a project entitled *Explosive Ordnance Disposal Support to Large Scale Combat Operations in Multi-Domain Operations and Defense Support to Civil Authorities for the Army of 2030*, sponsored by the Deputy Chief of Staff G-3/5/7, U.S. Army. The purpose of the project was to describe the roles of Army explosive ordnance disposal forces in the future security environment, with special emphasis on multi-domain operations, and derive implications for Army doctrine, organizations, training, materiel, leader development, personnel, facilities, policy, force structure, and resourcing.

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