

Improving In-Theater Maintenance for the Bundeswehr

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The German Federal Defense Force faces many maintenance issues that are similar to those faced by U.S. forces. The author offers a possible solution to maintaining newly fielded equipment for which military mechanics have not received training and technical manuals have not been published.

Even though a final evaluation still needs to be conducted on the implications, particularly for maintenance, of establishing the Joint Support Service (Streitkräftebasis) in the German Bundeswehr (Federal Defense Force), a broad range of insight can be gained from past years' deployment operations. The phrases "train as you fight" and "think operational" are often used with utter conviction, but whether they have been appropriately implemented in all facets is doubtful.

This article aims at drawing possible conclusions for maintenance from an operational point of view, based on accounts of the current conditions in various theaters of operations, with special emphasis on Afghanistan as the current, most complex, and most diverse mission. This will hopefully become a stimulant for evolving concepts, starting with the operational level but also including other levels and areas of responsibility. The focus lies on ground-based systems, which currently constitute the backbone of missions.

It would be a mistake to consider the situation in Afghanistan, where Germany is the third largest International Security Assistance Force troop contributor, as a blueprint for all future conflicts and thus the sole yard-



German military mechanics change the engine of an armored infantry fighting vehicle at a provincial reconstruction team logistics base in Afghanistan.

stick for the further development of the German forces. However, the experience gathered in Afghanistan is unquestionably a valuable indicator in the evaluation of current military maintenance capabilities and shortfalls and their far-reaching implications for how to organize maintenance assets in a combat environment.

Situation in Afghanistan

Thinking about Afghanistan brings to mind the various factors that place both man and machine under



Construction work is conducted as part of the ongoing upgrade of this main vehicle maintenance facility, which houses work pits and vehicle shelters at an operating base in Afghanistan.

extremely arduous conditions. The rather poor infrastructure (according to western standards), extreme and vastly fluctuating temperatures, and the fine dust that forces its way through the smallest gaps in equipment subject deployed materiel to maximum stress and accelerate degradation. For some vehicle types, the maintenance effort in theater is twice as high as it is in Germany. Repairs often have to be carried out under adverse working conditions since fully equipped maintenance halls with workshop pits and overhead cranes are seldom available.

Because of combat activities, which have significantly increased since 2008, maintenance units are faced with new damage patterns. An extended presence throughout the area, such as in a forward operating base (FOB), creates new challenges and requirements. For example, the need will increase for battle-damage repair to restore at least limited operational capability, as will the level of workmanship required from military maintenance personnel.

Another indicator of the complex maintenance challenge in theater is the approximately 1,300 armored vehicles of roughly 125 types and modifications that are currently deployed in Afghanistan. Just imagine the different qualifications of maintenance personnel and diverse toolkits required to maintain the various vehicles.

Equipment Standardization

To alleviate this situation, the call to standardize equipment is understandable from a technical and logistics point of view. However, the reality of operations has given rise to a vast number of specialized and individualized equipment designed to best meet the

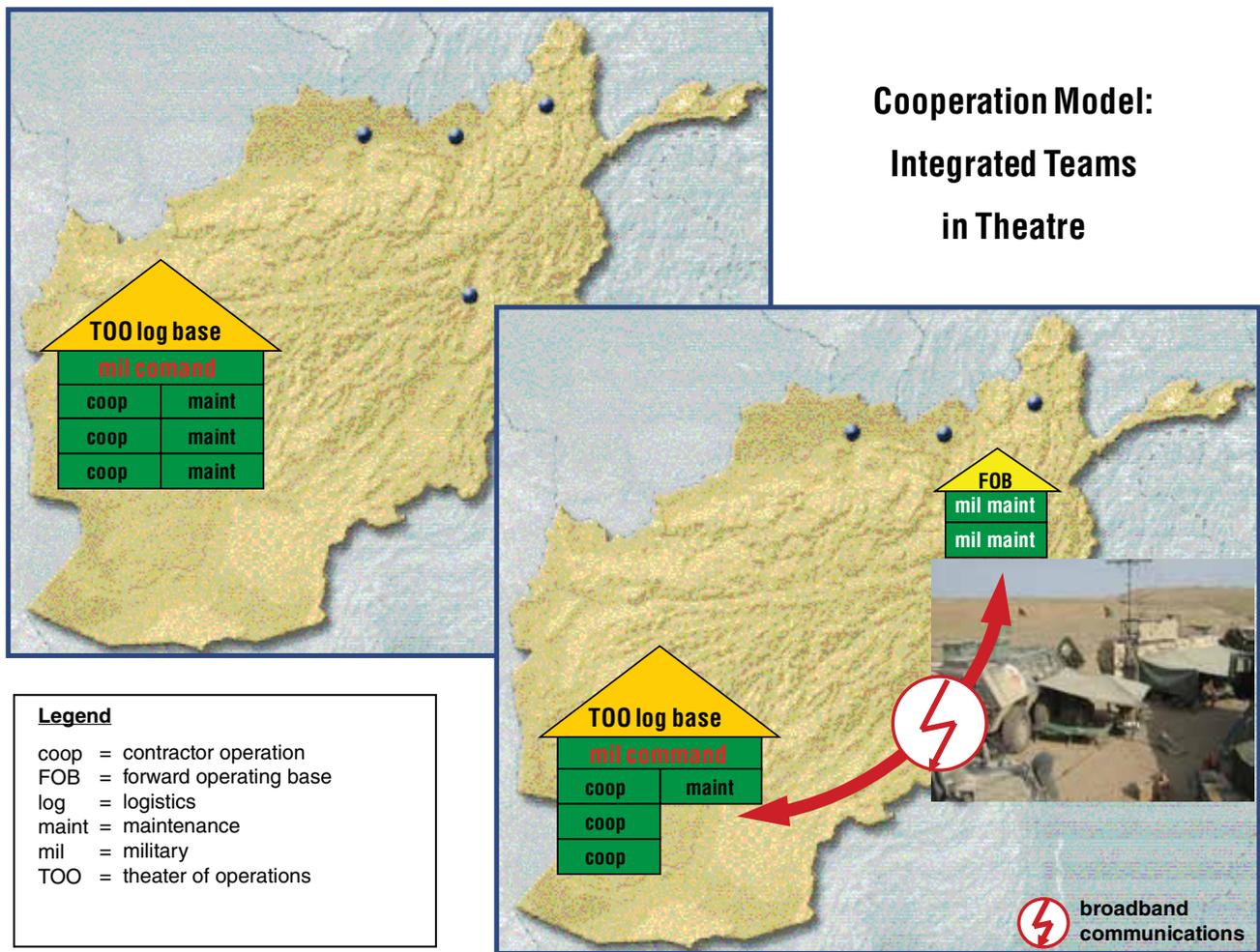
different operational requirements, and providing maximum protection for deployed Soldiers is paramount.

Fully operationally ready and logistically supportable defense materiel has proved useful in peacetime Bundeswehr operations. This is even more vital for deployed operations. However, the operational reality has shown that, especially for longer missions, soldiers often need new, or at least modified, equipment that is more suitable for the combat situation. This results in immediate fielding of equipment without waiting for logistics supportability to be established in a lengthy, mostly cumbersome process. Fielding operationally ready and logistically supportable materiel would not only require the establishment and availability of an entire set of documentation, stocks of spare parts, the associated workflow, and all necessary special tools, but it would also call for extensive training of military maintenance personnel.

Quickly Fielded Items

Quickly fielding recently developed vehicles to the troops is part of the operational reality in Afghanistan. Logistics supportability by military personnel thus always lags behind, which makes support by civilian industry, however temporary, indispensable. Enhancing and preserving military technical knowledge is complicated by the very dynamic technological innovation process in the civilian sector, which affects military goods but does not necessarily contribute to durability and simplicity in operations. This oversophistication is also the reason for the increasing number of different equipment configurations within the forces and makes it even more difficult to establish full operational readiness and logistics support.

Cooperation Model: Integrated Teams in Theatre



The chart illustrates how the civilian/military theater of operations logistics base can provide maintenance support to a forward operating base.

Another problem is that delivered preproduction models or initial batches often require subsequent upgrades in several steps until full operational readiness has been established. With the proven instrument of urgent operational requirement, materiel can be purchased off the shelf within 12 months. However, complete operational readiness often must be established subsequently. This kind of materiel faces the same technology and logistics challenges as preproduction models or initial-batch items.

From a budgetary point of view, it would make little sense to establish full logistics supportability for preproduction models or initial-batch items. The same applies to the rapidly changing number of different configurations, such as the increasing integration of electronic components in vehicles. Given these conditions, resorting to civilian industry, at least temporarily, seems mandatory.

Furthermore, the increasing restriction to military core capabilities, as is the case with routine duty in the German homeland, increases dependence on industrial support and eventually diminishes technical expertise

within the forces. This widens the gap in military capabilities desperately needed for operations abroad.

Civilian Maintenance Services

In recent years, the Afghanistan mission has seen a continuous increase in the number of contracts awarded to civilian maintenance services. The number of armored vehicles in the German International Security Assistance Force contingent has more than doubled in the last 4 years, and the amount of contracted services has almost quadrupled in the same period. This undermines all efforts to save maintenance funds. Alternative measures can hardly be taken in the short term since a shift toward military capacities is impossible at present. This is mainly due to mandated personnel ceilings and the lack of logistics supportability.

The present division of competencies between the military user and the civilian supplier and the distribution of materiel management responsibilities among several users often cause additional delays in establishing operational readiness and logistics support. The capability approach, as the underlying concept of cus-



At this typical logistics base in Afghanistan, civilian- and military-run maintenance and supply facilities are located next to each other.

former product management (the German procurement process for military equipment), has still not been fully implemented as competencies within a system have been split up without assigning an overall system manager (in-service manager) with full executive authority.

Partial reliance on civilian support for new equipment in theater is indispensable not just because full logistics support has not yet been achieved but also because of the limits to the military logistics footprint in theater. Use of company know-how in theater not only requires the services of civilian mechanics but also company documentation, test equipment, special toolkits, and company-owned spare parts and exchange parts. Already in Afghanistan today, more than a dozen civilian contractors with 1 to 30 employees are working in the field of maintenance.

On the other hand, particularly during highly intense military operations, mobile operations, or operations from a FOB, extensive military capabilities are cru-

cial. It is often on these occasions that equipment that was procured on short notice and fielded for a specific purpose is employed even though logistics support had not yet been planned.

Development Perspectives

If the described situations are accepted as unalterable realities, the question arises: Which creative possibilities are left to make a “virtue out of necessity” and shape reality with a goal of satisfying military requirements?

Industry has an interest in cooperating with deployed forces, and it can recruit enough civilians willing to work in an environment of “limited but defined security,” as is the case in a theater of operations logistics base. Working in field conditions, even on a FOB, is not an option for either civilian employees or the troops who would be responsible for the safety and security of the civilians.

Civilian contractors work on armored vehicles in Afghanistan.

This leaves only military personnel to provide maintenance on a FOB, although they might not be fully qualified to work on newly introduced equipment. On the other hand, operations that are conducted outside of a FOB involve increased maintenance efforts since the materiel is often stressed to its limits. Under such conditions, it is imperative to establish broadband communications between the civilian experts available at the theater of operations logistics base and the military maintenance personnel located at a FOB.

Most military maintenance personnel have general technical knowledge of certain equipment but often have not been trained on the particulars of special versions of the equipment. It should be possible for the military mechanics to consult civilian experts online in order to conduct a damage assessment or damage control under field conditions or, in a best-case scenario, conduct damage repair. Depending on the particular operational scenario, even damage assessment and damage control might be sufficient to return a vehicle to defined and limited operations.

Military and Civilian Maintenance Teams

More flexible options for employing civilian mechanics in a theater of operations logistics base seem conducive to further developing effective cooperation between civilian and military maintenance personnel in theater. Adjusting contracting practices (for example, discontinuing special service contracts tied to special vehicle types or tasks in favor of open-ended repair contracts for on-site repair abroad) in order to consolidate the tasking and management of all maintenance personnel present under a single military lead would be a possibility.

This would allow level-2 maintenance and repair to be provided by integrated civilian and military teams. Technical know-how would be exchanged automatically on site between civilian and military personnel. Even before deployment, this could partly compensate for deficits on the military side caused by a lack of central training.

For an upcoming mobile deployment from a FOB, the military maintenance personnel could be detached from an integrated team and moved to the FOB. If necessary, the military team members at the FOB could obtain help from the civilian team members using video and electronic diagnostics.

In contrast to the current situation, if increasing threat levels required a withdrawal of civilian employees, much better military fallback positions for dealing with new vehicle types could be established through integrated teams. In those cases, at least limited operability



of new vehicles could be ensured, even under adverse conditions, through modern communications between team members in the home country and in theater.

The German Army School of Land Systems Engineering and Army School of Engineering is pursuing the ongoing development of information and communication relations between the theater of operations and the home country. It will be crucial to start with an 80-percent solution and allow iterative development to be based on real-life experience gained in the field. Striving for absolute perfection in the conceptual stage, as too often is the case, is detrimental to improving the capabilities of the units in the field.

Close cooperation in theater can offer industry new opportunities to gain new insights and knowledge, which may subsequently be incorporated in the further development of existing or entirely new products and thus contribute to commercial success.

It will be important to systematically place the focus on mission-related efficiency when planning future capabilities and structures. A credible limitation to logistics core capabilities must be thoroughly considered and, from the very beginning of conceptual planning, include military fallback positions for extreme conditions. One key to success when contracting civilian services is intelligent and cooperative conditions that also clearly take into account military requirements.

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