

Reserch Article

Maintaining Military Observers in the Middle of the Western Sahara Desert: A Logistic Challenge

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Abstract:

Logistics plays a decisive role in any military campaign, including peacekeeping missions. In this article, we investigated how the United Nations Mission for the Referendum in Western Sahara (MINURSO) logistic system overcome the environmental challenges to support their United Nations Military Observers (UNMOs) deployed on Team Sites (TS) in 2017. Combining field experience with a wide-range analysis of relevant sources, key findings pointed out three critical factors: (a) the unique integration between civilian and military to provide logistic support despite the reduced number of military logisticians at the headquarter (HQ); (b) tactical aviation employment to supply TS, and (c) the use of operational contract support (OCS) to cover a lack of capabilities in the mission area. This work provides an overview of lessons learned about expeditionary logistical efforts for isolated troops. Furthermore, it will broaden the knowledge about supporting forces on the ground in challenging environments.

Keywords: Logistics, Military Campaign; Peacekeeping Missions; Environmental Challenges

I. Introduction

The Sahara Desert in North Africa is a unique place on earth with harsh environmental conditions, the world's largest hot desert. The UN faced many complicated challenges in maintaining a military observer mission in the disputed territory of Western Sahara on the northwest coast of the African continent. Western Sahara is a desert region having borders with the Atlantic Ocean, Morocco, Algeria, and Mauritania. Its geographical characteristic is a flat terrain with some hills providing conditions for forming temporary rivers during the short rainy season. Water is scarce, and the soil is rocky and sandy with dunes. The climate has cold and dry winters, but summers are sweltering (above 122oF even in the shadow). The average rainfall is 45mm, and the other significant problem is the strong winds that move sand and in sandstorms (fig. 1). Some tribes live close to the ocean in these inhospitable conditions, and some Bedouins live in the desert. The terrain and climate were not the only challenges that MINURSO faced; there is also a lack of infrastructure (cities and their facilities) to support UNMOs in the middle of the desert, as illustrated in Figure 1, as follows:



Figure 1- Sandstorm approaching TS Smara

II. Methodology

This article addressed the United Nations Mission for the Referendum in Western Sahara (MINURSO) logistic system regarding the environmental challenges in supporting the United Nations Military Observers (UNMOs), deployed on Team Sites (TS), as the unit of analysis (Yin, 1988). In this research, we combined direct participation, a descriptive single case study, and archival research. We followed an inductive rationale and an interpretive approach. The primary data were collected from January to December 2017.

III. Background

To accomplish operational requirements, the UN established most TS in the conflicted region, exposing them to the presence of mined fields and isolating them as there were no cities close enough to provide any kind of support, another challenge to its Logistics. The region was part of Spain, but in 1976, Morocco claimed it as part of their kingdom. Saharans fought for their independence from Morocco. The hostilities lasted until 1991 when they accepted a UN mission to mediate the peace. However, the Moroccans built a sand wall (a Berm) dividing the region in conflict with mined areas outside the Berm, one of the mission dangers. They occupied the west part and isolated Saharans on the east. The UN had to deploy military observers on both sides to ensure the ceasefire. When planning TS positions, they considered operational requisites such as military units' position, security, and size for the area of responsibility. Finally, they established the MINURSO Headquarters (MHQ) in the city of Laayoune, four TS on the west (*Mahbas, Smara, Oum Driega, and Awsard*), and five TS on the east (*Bir Lahlou, Tifariti, Mehaires, Mijek, and Agwanit*) as seen in figure 2. The biggest challenge for logistics was to deploy TS in the desert with no cities/facilities in the neighborhood, resulting in a complete absence of infrastructure to provide support (paved roads, fuel, electric energy, water, food, hospitals, etc.). *Smara*, a small city with a population of 57,035 in 2014, was located near one of TS. Increasing the challenge to deploy observers in a conflict zone was the presence of Unexploded ordinances (UXO) due to the air war and mined fields that changed positions due to annual flooding. These conditions, combined the UN faced, were enough to characterize the logistic system they implemented as an expeditionary logistic., as depicted in Figure 2, as follows:

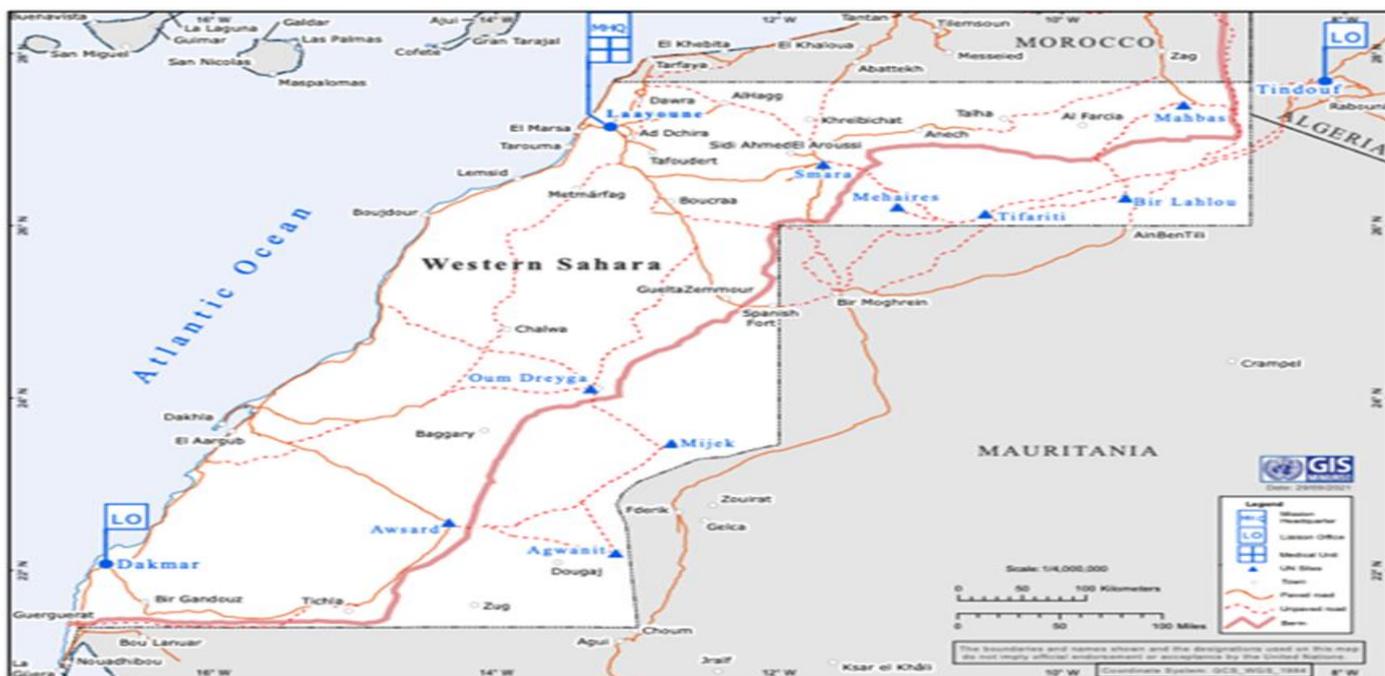


Figure 2 MINURSO map. Source: UN, 2017

Note in Figure 2 that the MINURSO logistic system had an expeditionary characteristic because it provided living and working conditions to military observers from different nationalities deployed to an arid region of conflict. Since ancient times, an army force's outcomes rely on its logistic capabilities. Some outstanding military leaders from history were famous for their skills in supporting troops properly. Scholars recognized Alexander the Great as the first leader to develop a logistic system to keep his army. His logistics worked so well that it did not affect his strategic decisions.

MINURSO: Expeditionary Forces

The US Department of Defense used it similarly when defining expeditionary forces as troops deployed to accomplish tasks abroad. Support troops under these conditions required logistical skills to provide some otherwise typical functions in the face of a dangerous environment. The duties of positioning troops on the ground, opening airfields, and establishing and maintaining operations under threat environments required some expeditionary logistics skills. Therefore, it is possible to claim that MINURSO's logistics are expeditionary. The claim is sound because MINURSO deployed and supported a multinational military

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contingent's operation in a conflict region under threat conditions, including isolation, presence of UXOs, possible ceasefire violations, and inhospitable desertic living conditions. The efficient way the MINURSO logistics system provided complete and sustainable support to its TS, operating in 2017, made it expeditionary and unique.

One of the most significant aims of MINURSO logistics was to keep all TS operational despite the frequent absence of military specialists on the ground (TS) and a reduced number of them on MHQ. Theoretically, every TS should have seventeen to twenty-four unarmed UNMOs at full strength. The reality in 2017 was that, on average there were four fewer men than required on the ground in each TS. The main tasks of these UNMOs were to conduct daily patrols to ensure fulfillment of the military agreements and simultaneously conduct complementary duties to keep TS operational, such as logistics (G4). The G4 on TS counts seven subordinated positions to conduct all logistic matters such as material in general, vehicles, food, fire prevention, and generators. Due to personal restrictions such as observers on leave, some absences on duty, and other reasons, it was not easy to conduct logistic management on TS. This challenge became bigger because the G4 on TS was often not a logistician expert. This occurred because there were no specific background requirements to become a UNMO. On MHQ, things were not significantly different.

Overcoming Challenges

Of all the appointments in the MHQ structure, one position was named Special Military Logistic Advisor (SMLA - U4). This position was the only appointment with a logistics expert, a lieutenant colonel from Egypt. Under his command, there were three supporting appointments: Project and Engineering (Proj/Eng), Supplies and Transport (Sup/Tpt), and Rations (food and water). These three UNMOs assisted him in conducting all military logistical tasks. Usually, to select them, the SMLA interviewed volunteer UNMOs working on G4-related positions on TS and chose one. He considered his previous background, experience on TS, and profile that fit the task for his decision. To improve system efficiency, MHQ conducted G4 (related appointments as food officer) training once per semester for UNMOs to enhance their skills in performing these appointments on TS. This routine training helped to remediate but did not completely solve the deficiency. To solve this gap of military logisticians, the basis of MINURSO's logistics structure on MHQ relied on a civilian component.

The integration between the civilian and military, working to support the TS isolated in inhospitable places of the desert, made the MINURSO logistic system unique and was a critical factor for its efficiency. As the mission's structure did not contemplate a military logistic unit, the civilian component was responsible for the mission's logistics. They dealt directly with all logistic needs for TS such as ration, general supply, fuel, contract management, infrastructure in general, and logistic support. Recognizing the importance of the effort's integration, MINURSO united the civilian component and the military working on logistics tasks in MHQ, creating the Joint Logistics Operational Centre (JLOC). The operational working concept for TS and MHQ interactions with JLOC needed to be simple to enhance efficiency. MINURSO recognized that most military were not logistical experts and logistics was a specialized subject playing an essential role in mission success. Aligned with these ideas, chapter eight of Standard Operating Procedures (SOP) detailed basic logistics attributions for all military in the system (TS and MHQ). MHQ monitored TS logistic issues, reports, and supply levels on all TS. They also received all requests, compiled them, sent them to the civilian component, and monitored the deliveries. The civilians were responsible for all complex jobs. They received the consolidated demand from the military and managed acquisitions, contracts, maintenance, budget control, etc., and liaison with the UN to deal with these matters. They were also responsible for improvements made over thirty years of mission, such as installing containers to replace old tents as installations (offices, kitchen, lodging). The military and civilians' proper coordination improved the system's efficiency and allowed TS to operate autonomously. It worked so well that in 2017 there was no severe impact on TS due to logistics restrictions. Even when one of the helicopters that made the supply distribution once a week faced technical problems and stayed on the ground for two weeks, TS managed their supplies and overcame them. The critical factors for MINURSO logistic system efficiency were communication, integration, and coordination of efforts between TS and JLOC and overcoming the gap of military experts. Another contributing factor to this success was the aerial logistical modal to deliver supplies in the desert.

Supporting the Observers

The tactical aviation support was the primary logistical system used by MINURSO to support their observers deployed on TS. It was tactical because the mission area was a conflict zone, now under a ceasefire agreement. The situation was calm but unpredictable. Scholars have many definitions for the concept of tactical, but this understanding is aligned with the intent that the North Atlantic Treaty Organization used in its documents. Tactical air transport is moving persons or cargo by air logistic support or aeromedical evacuation operations. Even more challenging for these operations was that crews had to fly visual over the Sahara Desert with no detailed aeronautical charts. They also faced the absence of air traffic control, landing on sandy improvised runways or heliports with no specialized ground support. TS isolation and the lack of infrastructure were responsible for these challenges. To mitigate these risks, MINURSO implemented the duty for one observer to check the landing conditions before the arrival of the air support. This military task was to clear the runaway and send meteorological information (temperature, wind speed, direction, etc.) to MHQ. The correct performance of this task was essential for air safety since the crew had no way to know TS conditions. In some cases, flights were canceled or their destination changed because of harsh weather conditions. The resupply flights often stopped because of extreme weather conditions (sandstorms or temperatures permanently above 50 degrees

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Celsius). Communication and integration between the civilian crew, TS in the desert, and the aviation section on MHQ were crucial for the success of the flights. All supporting aircraft used were not military. The UN contracted two civilian companies to provide air support for the mission. MINURSO contracted Air Urga to deploy two fixed-wing aircraft (Antonov-26), accompanied by two complete crews and a maintenance package. They were established in Laayoune and made the liaison to load helicopters in Smara (North) and Award (South). The second contract was with Abakan Air which chartered two helicopters (Mi-8) with three complete crews and a maintenance package. They were established in Smara (north) and Awsard (south) and flew mainly to reach the four TS where the AN-26 could not land. This integration between airplanes and helicopters was essential to support all TS properly because their position in the desert made it hard to accomplish with ground convoys.

Tactical aviation employment was crucial to support Team Sites because of their location in the desert and the risks of arriving there by ground. All TS, except one, were isolated in the middle of the desert. There was no infrastructure to provide complimentary supplies or missing items nearby, so TS needed to work autonomously. Planning a convoy by ground meant driving long distances, mainly on unpaved roads, crossing some sandy areas, where even experienced drivers in 6x6 vehicles can get stuck. In addition to the route's challenges, there were climatic threats and UXO's risks along the way. Moving supplies was not easy because, in the desert, only a few roads were paved or in good condition, compounded by long distances; therefore, the food was mainly delivered to the team sites via air support. The fixed-wing aircraft and helicopters were the main modal supply line for TS because sending weekly land convoys would be too dangerous. The exception was fuel, hazardous goods, and heavy items that could not go by air due to size/weight restrictions, so they went, when necessary, by ground convoys. Another primary justification for the air support was offering standby aircraft and helicopters to provide medical aid to MINURSO personnel because there was no medical facility close to TS. Therefore, in case of an accident evolving UNMOs in the desert, TS could request a casualty evacuation (CASEVAC) to transport the injured from their position to an adequate medical facility. All observers learn and train how to ask a CASEVAC because this is the quickest way, and generally the only way, to save other observers' lives. Conducting aerial reconnaissance patrols, at least two per month for all TS, was a third use for the air assets. Eventually, TS conducted aerial route reconnaissance patrols to ensure that the way between specific TS points was safe for a ground convoy to cross. Finally, aircraft use proved essential on the mission as part of logistical efforts. It was another critical factor in efficiently maintaining TS operational in the desert, just like contracted services.

IV. Discussion

The lack of infrastructure in the mission area of responsibility and gaps in the military force deployed made operational contract support (OCS) crucial to MINURSO survival. The US Joint Forces defined OCS as the procedures of planning for and acquiring provisions, services, and construction from commercial providers. Fulfilling these tasks, the employment of OCS covering military logistic gaps is considered part of the warfighting capability of an armed force. Its use became a reality even for Great Powers such as the United States (US). This kind of logistical support played and shall continue to play, a vital role in the US's ability to deploy, fight, and win wars. Considering this, it becomes evident that the evolution of OCS use is reshaping how armed forces conduct logistics. It has been improving expeditionary logistics capabilities and growing in importance over the last few years. The main benefits OCS can provide are adequate support, positive economic and social impact on the local populace, minimizing the military footprint, and others. Recognizing these benefits that OCS could bring, the MINURSO logistic system also used OCS to fill existent gaps. The mission had external contractors working in logistics and other services. Two were to get air support, essential for logistical and operational purposes. The lack of aircraft was because the planned military contingent had not contemplated the aircraft requirement. The solution adopted was chartering aircraft (rotary and fixed wings) from civilian companies to fly for the mission. Contracting aircraft was one successful OCS used in the task, but there were other gaps and other OCS.

Localizing and neutralizing explosive remnants of war (ERW) was another mission gap that the logistic system overcame by using OCS. The presence of landmines and UXOs was a significant security danger in the mission area of the MINURSO deal. These explosive hazards threatened the lives of UNMOs monitoring the ceasefire, humanitarian aid workers, and local nomads. These artifacts were present on both sides of the Berm. A secondary objective of the UN's monitoring mission was to minimize this risk. The belligerent parts and MINURSO signed Military Agreements number 2 and 3 to deal with this issue. They compromised to reduce the danger of explosive devices in the mission area of responsibility. The belligerent parts and MINURSO should share information about landmines and UXO's position and incidents to achieve this goal, destroy any landmine or UXO in identified locations, and clear or mark its vicinity. To safely conduct these activities, it demanded specialized personnel and equipment. On the west side of the Berm, the Royal Moroccan Army was a traditional armed force present on the ground and was able to do it. There was a gap in this capability on the east side of the Berm because Frente Polisario Armed Forces were guerrilla organized units. Therefore, they had neither the personnel nor material to conduct these activities. MINURSO had a small military contingent focused on operating ceasefire monitoring activities, not conducting demining tasks. The UN contracted an international civilian company and sent the United Nations Mine Action Service (UNMAS) to coordinate their efforts to fill this gap. The contractors cleared areas contaminated with minefields, cluster ammunition, and other UXOs, verified UNMOs and convoys crossing routes, and destroyed thousands of artifacts. Since 2008, they proved more than nine thousand kilometers of roads and successfully destroyed almost forty thousand landmines, explosives, and sub-ammunitions. It granted UNMOS safety

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to patrol and monitor the ceasefire and reduced the threat to the local population. In other words, this OCS employment represented a key factor in MINURSO's success in fulfilling its mandate, and it also made a humanitarian contribution to vulnerable local Bedouins. The use of OCS covered a lack of essential capabilities on the mission, contributing to its unique expeditionary logistic.

Reflecting on the points this essay provides, it becomes clear that the MINURSO logistic system overcame the environmental challenges of the Sahara Desert to support its TS in the desert in 2017. The sources analysis illustrates that MINURSO successfully used a unique expeditionary logistics system. Three complementary factors made it possible. Despite the lack of military logisticians, one of these components employed a unique and efficient integration between civilian and military to provide complete and sustainable assistance to TS. Another factor was the use of tactical aviation to send supplies to TS safely, efficiently, and quickly. Finally, the operational contract support supplemented mission logistic gaps. In simple words, MINURSO's unique expeditionary logistics effectively supported TS. It occurred because of the integration between civil and military logisticians, the vital tactical aviation support, and OCS's key role in coverage gaps. The lessons discussed in this study can provide a valuable background to military logisticians' plans and support for future military or peacekeeping operations.

V. Implications and Research Limitations

In previous sections, we presented the results and content analysis of the raw data, pointing out adverse outcomes of trust violation and its implications in other fields of research, such as (i) Social Value Orientation (Dias, 2016; Balliet, D., & Van Lange, 2013); (ii) contract negotiations (Dias, M., Lopes, R., Cavalcanti, G., Golfetto, V., 2020; Dias, 2012; Dias, M.; Silva, L., 2021; Dias, M.; Pereira, L; Vieira, 2022; Dias, M et al. 2022; Dias, M., Lopes, R., 2020; Dias, M. Navarro, R., 2020; Dias, M., 2020a; Dias, M., Lopes, R., Duzert, Y., 2020; Dias, M., 2020; Dias, M., 2021a); (iii) project management (Soares, C.; Magalhães, M.; Barroca, J.; Dias, M., 2020; Dias, M., 2021); (iv) peripheral business, to name a few.

This article is limited to the United Nations Mission for the Referendum in Western Sahara (MINURSO) logistic system to overcome the environmental challenges to support their United Nations Military Observers (UNMOs) deployed on Team Sites (TS) in the Sahara region. Other countries and locations may convey incorrect understandings and should be investigated in separate studies.

VI. Future Research

Future studies are encouraged to investigate Moroccan and Western Saharan (host countries) contributions to maintaining TS or the role of the civilian component for mission support; both will broaden the comprehension of MINURSO expeditionary logistics. Further, academic studies on military operations established the adjective expeditionary to qualify procedures, forces, air forces, and logistics operating abroad.

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