Deploying the Heavy Assault Bridge: Lessons Learned in Operation Iraqi Freedom

重裝突擊橋之佈署:伊拉克自由行動之經驗教訓

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In September 2009, coalition forces in the volatile southernmost district of Kirkuk Province, Iraq, grappled with a compelling mobility issue. The partnered units (1st Battalion, 15th Brigade of the Iraqi Army, and C Troop, 4th Squadron, 9th Cavalry, 2d Brigade Combat Team, 1st Cavalry Division of Multinational Division–North) found their patrol range stymied by a river west of a small town called Al Awashra. The town is located in an isolated hinterland brimming with Al Qaida in Iraq sympathies. Running north to south along a deep wadi system, the river and its unstable bridge prevented partnered armored patrols from maneuvering into the eastern reaches of the operational environment.

在 2009 年 9 月，駐紮在伊拉克最南方科庫克省聯軍正在努力解決一項重要的機動問題。伊拉克陸軍第 15 旅第 1 營及北部多國部隊第 1 騎兵師 2D 旅戰鬥隊第 9 騎兵團第 4 營 C 連，這兩個單位的巡邏範圍受限於一條亞瓦許然小鎮西側的河流，該鎮位於一處孤立的腹地，當地人民對伊拉克蓋達組織充滿著同情，縱深水系由北向南蜿蜒著，河流及不穩定的橋樑阻礙了聯軍機甲偵搜部隊向東機動至戰場環境。

Since a spectacular Al Qaida in Iraq-affiliated attack near Kirkuk had recently originated in the vicinity of Al Awashra, the partnered commanders urgently explored options for emplacing a load-bearing bridge to facilitate crossing for American mine-resistant, ambush-protected vehicles and Iraqi high-mobility, multipurpose, wheeled vehicles. After it was decided that a semi permanent structure was not feasible, the solution was to emplace a military heavy assault bridge (HAB). While this quick fix would provide a panacea for the tactical dilemma, it would also reveal lessons beneficial to future deployments in operational settings. Centering on the need to balance methodical preparation against the demands of high operational tempo, this article captures those insights in three successive phases: planning and reconnaissance, movement and staging, and bridge installation.

因為駭人聽聞的伊拉克蓋達組織在科庫克省亞瓦許然附近發起攻擊，聯軍指揮官緊急選擇個人攜行橋協助美軍防地雷反伏擊車和伊拉克悍馬車以通過。經評估以後，瞭解到這些非永久性的設施並不可行，最後採用軍用重裝突擊橋來佈署。如此具有快速修復能力的裝備對戰術上困境可提供補救之道，這對未來作戰佈署上也有所助益。須著重在有條理的作戰準備上取得平衡，方能面對高度的作戰節奏，本文彙整這些觀點為成功三階段：計畫偵查、運動整備及橋樑架設。

Operators use armored recovery vehicles to suspend the HAB in preparation for attachment to the Wolverine in the background.

背景來自於操作者使用裝甲救濟車來支援重裝突擊橋組裝在金鋼狼上的準備工作。

Planning and Reconnaissance

The first phase of C Troop's effort to emplace a HAB at Al Awashra was mission preparation. As an initial reconnaissance in early September to assess options, the troop commander escorted the 2d Brigade Combat Team engineer and the partnered Iraqi battalion executive officer to the site. After determining that the 18-foot span of the existing abutments could support the 11-ton bridge and the additional 30 tons of mine-resistant, ambush-protected vehicles, higher headquarters approved the HAB as the most feasible solution. Since the operation would require combined operations by elements of Forward Operating Base Warrior and Joint Base Balad, the mission required planning across separate divisions within Multinational Corps–Iraq.

計畫及偵查

C連第一階段著重於亞瓦許然執行重裝突擊橋架設準備任務。在9月上旬，連長護送2D旅戰鬥隊工兵及伊拉克盟軍副營長到達這裡實施初步偵查評估要項。確認現有橋墩垮距18英呎，能夠乘載11噸橋樑及額外30噸重防地雷反伏擊車，上級批准重裝突擊橋為最為可行之方案。因為作戰需要戰士前進作戰基地及巴拉德聯合基地聯合作戰，這項任務需要伊拉克境內多國部隊計畫整合。

The Wolverine, with the HAB in place, maneuvers to the bridging site.
搭載重裝突擊橋的金鋼狼前往架橋現場的機動畫面。

With the Iraqi partners enthusiastic about a cost-free enhancement to their maneuver range, involved echelons coordinated the convergence of the improvised company team at Kirkuk. Beginning with local elements, it consisted of the command team and 1st Platoon of C Troop for security, an explosive ordnance disposal team for site clearance, and two heavy equipment transport (HET) systems of the 15th Brigade Support Battalion to transport two M88A2 armored recovery vehicles. The team would be completed by an engineer platoon and two HETs from Logistics Support Area Anaconda to transport the separate components of the M104 Wolverine tracked carrier and its HAB to a forward staging area. Once near the bridging site, the M88A2s would transfer the HAB to the carrying arm of the Wolverine for final transport and emplacement. The resulting assembly revealed the first lesson of the mission: the value of integrating a nuanced assessment of unit readiness into the larger planning process. While multiple echelons rapidly organized the proper assets, the hasty nature of the mobilization would prove to be a liability.

伊拉克友軍不惜代價地擴大他們的機動範圍，影響科庫克應急部隊集結之溝通協調。作戰初期，當地部隊指揮組及C連第1排任警戒部隊，未爆彈處理小組負責場地肅清，第15旅支援營2套重裝運輸系統載運2部M88A2裝甲救濟車。這個由 1 個工兵排及 2 組重裝運輸系統編成的小隊從森蚺後勤支援地區運送 M104 金鋼狼履帶運輸車分散的零件及重裝突擊橋至前進整備地區。當靠近架橋位置，M88A2 將重裝突擊橋移動至金鋼狼裝甲運輸車載運臂上，做最後的轉換及設置。由此可知，本次任務的第一課，部隊整備的各項細微評估，對於較大計畫研擬過程的重要性。當多國部隊快速編組適合的裝備，機動能力的急迫性本質將造成不利條件。

Movement and Staging

The second phase of the mission centered on the stages of movement to a tactical staging point, initial assembly, and transfer of the HAB from the HET to the Wolverine. On 8 September, the requested engineer and transport elements arrived from Balad with the requested bridge-laying system. The team deployed in a convoy the next morning at 0600, with HETs transporting the heavy equipment. After driving about 70 kilometers south along the Tikrit highway, the team arrived at the town of Raml, 12 kilometers west of the

bridging site. The convoy then moved eastward into the desert, established a hasty tactical assembly area (TAA) with security patrols by gun trucks and a scout weapons team, and downloaded the M88A2s and the Wolverine to prepare to transfer the HAB.

運動及整備

第二階段任務著重於運動階段到達戰術補給點，然後初步集結，並將重裝突擊橋從重裝運輸系統移轉至金鋼狼履帶運輸車上。在9月8日，任務賦予之工兵及運輸部隊帶著橋樑架設系統從巴拉德到達此地，在隔日上午6時重裝運輸系統編成車隊，在提克瑞特高速公路向南行駛70公里後，小隊到達雷蒙小鎮，此地位於架橋位置西方12公里，車隊向東行駛進入沙漠，運用警戒部隊的砲車及偵蒐武裝小組建立急迫戰術集結地區，並整備M88A2及金鋼狼履帶運輸車以運送重裝突擊橋

At this point, leaders learned the most crucial lesson of the mission: the importance of balancing training and rehearsals against the demands of high-tempo operational timelines that often prize combat expediency. While higher planners had assigned an engineer platoon and appropriate equipment, none of the engineers had any knowledge of the Wolverine or the HAB it emplaces. As horizontal construction engineers in a light infantry brigade combat team, they had no resident expertise with armored bridge-laying techniques. To make matters worse, the mission came with little advance notice. As a result, the operators arrived at the TAA utterly unprepared for the technical complexity of transferring and attaching the HAB to the carrying arm of the Wolverine.

在這一點，幹部們瞭解任務的重要一課：訓練及預演重要性，以適應高度節奏作戰時間表，這通常是作戰的重要關鍵。當上級計畫官賦予工兵排適當裝備，而工兵部隊卻沒有架設金鋼狼履帶運輸車或重裝突擊橋的知識。就如同輕步兵旅戰鬥隊中的工程工兵沒有裝甲橋樑架設專業技術。更糟的是，當任務來臨前卻沒有事先通知，當操作手抵達戰術集結區域時，完全來不及裝載及運輸重裝突擊橋至金鋼狼履帶運輸車的承載臂上。

As the team explored the unfamiliar procedure for using M88A2 booms to lift, suspend, and fix the folded HAB to the M1 Abrams tank chassis of the Wolverine over the next 6 hours, mission tempo ground to a halt. In the process, the operators damaged components of the Wolverine carrying arm

system, jeopardizing mission success. After much trial and error, the engineers attached the bridge, while the C Troop first sergeant (a career tanker) instructed the novice crew on Wolverine movement operations. At this point, the convoy split into two sections. The four HETs and four gun trucks moved to an alternate TAA, while the remaining gun trucks, the explosive ordnance disposal team, the two armored recovery vehicles, and the Wolverine carrying the HAB proceeded east toward the bridging site at Al Awashra. After 2 hours of deliberate travel through restrictive terrain, the patrol arrived at the site as darkness fell.

當小隊摸索如何去使用M88A2舉起、懸掛及固定重裝突擊橋至M1 亞柏坦克底盤需耗費6個小時，任務作戰節奏將會暫停。在過程中，操作手可能會使得金鋼狼履帶運輸車乘載臂系統零件受損，危及任務成功。在多次的嘗試及錯誤之後，當C連士官督導長(一員裝甲兵)在金鋼狼履帶運輸車運動作業指導新兵，工兵配屬負責橋樑架設。此地，車隊被分為兩個部分，4組重裝備運輸系統及4輛砲車移動到預備戰術集結地區，剩餘砲車、未爆彈處理小組、2輛裝甲救濟車以及金鋼狼履帶運輸車將裝載重裝突擊橋向東前進至亞瓦許然橋樑架設位置。經過兩小時週密機動穿越限制地區，當偵察部隊抵達時已經入夜。

The Wolverine emplaces the HAB as coalition partners look on.
安置重裝突擊橋的金鋼狼被當成同盟夥伴看待。

Bridge Installation

The arrival of the team at Al Awashra initiated the final phase of the operation: bridge installation. With the Iraqi partners on-site to assist with security, the explosive ordnance disposal team cleared the site of potential explosives and the engineers positioned the Wolverine to extend the HAB. Unfortunately, after numerous attempts to use the launch system to extend the bridge over the river further damaged components of the supporting arm, the device was inoperative. The process of attaching the bridge to the Wolverine carrying arm had taken its toll. Complicating the situation further, the HAB could not be fully retracted and had to be abandoned near the site. With the mission now unachievable, the team reunited with the transportation element at the alternate TAA, uploaded the disabled Wolverine and M88A2 vehicles onto the HETs, and returned to Forward Operating Base Warrior. Two days later, the Balad elements returned to home base.

橋樑架設

當小隊到達亞瓦許然後開始作業最後階段─橋樑架設。伊拉克在地友軍協助負責警戒，未爆彈處理小組負責清除潛在之爆裂物，工兵設置金鋼狼履帶運輸車以運用重裝突擊橋。 但不幸地，經過多次嘗試運用架設系統更進一步延伸橋樑以越過河川，造成支援吊臂零件損壞，設備無法運作。使得裝載橋樑至金鋼狼履帶運輸車吊臂的過程中需要運用拖車。若情況更為複雜，重裝突擊橋可能無法完全撤收，就在附近進行棄置，現行任務將完全無法達成。小隊將在預備戰術集結地區與運輸部隊會合，將損壞的金鋼狼履帶運輸車及M88A2裝載至重裝運輸系統上，運回至戰士前進作戰基地。2天以後，巴雷德部隊也回到了自己的大本營。

The learning point from the debacle at Al Awashra was obvious but instructive: technical assets required mission focused training before delivery to a combat environment. While admirably embodying the *Essayons* (“Let Us Try”) motto of the Corps of Engineers, the platoon had deployed with insuffcient preparation. Even more unsettling, if a higher scheme of maneuver had depended on opening the crossing point for decisive movement, the bridging disaster could have had far-reaching consequences.

在亞瓦許然的挫敗是顯而易見的，可以讓我們學習到的經驗與指導是─戰術裝備投入戰場前須著重於任務訓練，當我們讚揚工兵部隊「讓我們嘗試」的座

右銘時，部隊卻在沒有充分準備下遂行任務。甚至有更多事情尚未完成準備，當上級作戰計畫關鍵行動在這個渡河點時，架橋作業所造成的災難是可以預想得到的。

This mission failure represented deficient leadership across multiple echelons. At the platoon level, leaders who deployed the equipment with untrained operators should have demanded more training time to develop technical expertise. The engineer chain of command at the company and battalion levels also should have objectively assessed the readiness of their unit for such an endeavor upon receipt of the mission. The troop commander also shared responsibility for not personally assessing the proficiency of the most critical system to the operation as part of troop-leading procedures. Finally, planners at the higher echelons made unfounded assumptions about the capability of infantry brigade combat team Soldiers to operate armored systems. These omissions and the failure of senior noncommissioned officers (NCOs) to advise leaders of unit readiness established the conditions for undue friction at Al Awashra.

這項任務的失敗代表許多層級領導能力不足，在排級部分，命令新兵架設裝備的排長應該要有更多的時間來訓練士兵以提升他們的專業技術。而在工兵營連級指揮鏈也應該客觀地評估受領任務後的各項整備工作，再由部隊指揮官賦予責任，而不是靠個人經驗評估重要武器系統操作程序之熟練程度，這是部隊指揮程序的一部分。最後，在上級部隊計畫官做了一項沒有根據的假定事項，步兵旅戰鬥隊士兵操作裝甲系統的能力，這些疏失和資深士官幹部的錯誤告訴各級幹部應完成部隊作戰整備，建立良好作戰條件，以避免造成在亞瓦許然的失敗案例。

Despite the dispiriting nature of the attempt, the Al Awashra bridging mission was not yet over. Two weeks later, the company team redeemed itself. After resupplying at Balad, selecting a new HAB, and training on the Wolverine system, the engineers returned to attempt installation again. The same cavalry, engineer, transportation, and explosive ordnance disposal elements conducted troop-leading procedures, moved to Raml, and established another TAA. The mission commander again established security with scout weapons team support while the engineers began to mount the HAB on the Wolverine. While quicker than the previous attempt, the procedure still consumed several hours as the operators carefully sought to avoid

harming the system. While they managed to complete the task, revealing the value of methodical training, the operation was still slowed by the absence of an experienced NCO to troubleshoot technical issues.

儘管這次任務的結果令人沮喪，但在亞瓦許然架橋任務尚未結束，兩週以後，該連隊挽回了他們的榮譽，在巴拉德再整補後，換了新的重裝突擊橋，並在金鋼狼履帶運輸車系統上進行訓練，工兵們再次嘗試橋樑架設。同樣的騎兵隊、工兵、運輸部隊及未爆彈處理小組按部隊指揮程序來到了雷蒙，並建立另一個戰術集結地區，當工兵開始將重裝突擊橋裝載至金鋼狼履帶運輸車上時，任務指揮官再次運用偵查武裝小隊擔任警戒部隊。雖然比先前的作業更快速，但操作手按程序小心翼翼地避免損壞系統，依然耗費幾個小時。當他們完成整個任務時，瞭解到按程序、步驟、要領訓練的價值，在故障排除上仍會因為一個專業士官的缺席影響作業速度。

Despite additional damage to interlocking components on the bridge, which prevented the system from functioning properly, this time the Soldiers repaired the structure by cannibalizing the previously discarded bridge. These improvised fixes finally allowed the engineers to extend and emplace the bridge over the crossing point. With both Iraqi partners and American Soldiers looking on, the HAB settled firmly into position as darkness fell. Once engineer leaders examined the support structure and pronounced it structurally sound, the Iraqis tested the integrity of the crossing with a light truck, followed by an American mine-resistant, ambush-protected vehicle.

儘管橋樑的連結構件會造成額外傷害，但可確保系統作用正常。此時士兵們運用先前棄置的橋樑零件修復結構，緊急修復作業使得工兵可以在渡河點架設橋樑。在伊拉克友軍及美國士兵摸索下，重裝突擊橋完成架設至定位時，已夜幕低垂，工兵幹部檢測其支撐結構及判斷結構安全後，伊拉克友軍利用燈車來完成通過測試，美軍防地雷反伏擊車隨後跟上。

The second attempt at emplacing the bridge proved successful, despite continuing limitations, such as the absence of a licensed Wolverine operator and an experienced supervisor. The units involved learned from previous mistakes and prepared with specific training for technical tasks. Additionally, the belated success at Al Awashra was due to the perseverance of the NCOs, who worked tirelessly for hours in the Iraqi sun to negotiate technical challenges. It was these leaders, as they assumed ownership of an unfamiliar system, who carried the team through to mission achievement.

第二次嘗試橋梁架設是成功的，雖然仍有許多限制因素，例如具有證書的金鋼狼履帶運輸車操作手未到，也沒有足夠經驗的督導官，部隊仍然可以從先前的錯誤和特定任務專長訓練準備瞭解如何作業。此外，在亞瓦許然遲來的成功應歸功於這群堅忍不拔的士官們，在伊拉克烈日下不知疲倦地遂行任務，解決技術上的挑戰。這正是領導者，全權負責這些陌生系統，帶領著團隊達成任務。

Conclusion

Following the emplacement of the HAB in Al Awashra, the Iraqi and American units maximized their patrol range in southern Kirkuk Province. The bridge achieved its intended purpose of providing mobility to the partnership in a difficult combat environment. While these immediate benefits were critical, the lessons learned in pursuit of this upgrade over two arduous attempts, lasting more than 24 hours each, are equally important. In the planning process, collaboration up and across multiple echelons rapidly produced the necessary solution, yet needed more nuanced assessment. Company leaders found that mission focused rehearsals are always vital to operational success, despite compressed timelines. Finally, and perhaps most importantly, the efforts to install the bridge at Al Awashra revealed the capacity of Soldiers to negotiate challenges. This final aspect—the value of assessing, learning, and adapting in an operational setting—is perhaps the most important lesson of all.

結語

伊拉克及美軍部隊在亞瓦許然佈署重裝突擊橋之後，在科庫克省可以大幅增加巡邏範圍， 這種橋樑可達到提供友軍在困難戰場環境機動力之預期目標。這些優勢十分關鍵，可以提升兩個困難作戰意圖，併各自持續超過 24 小時，這是同等重要的。在計畫過程中，團隊合作和跨多國部隊能迅速產生必要的解決方案是需要更詳細的評估，連級幹部將任務著重於預演，對作戰成功十分重要，僅管會壓縮時間表。最後，也許是最為重要的部分，在亞瓦許然架設橋樑可以展現軍人面對溝通挑戰的能力。最後一方面，評估、學習及適應作戰環境的價值，也許是所有最為重要的一課。