

TROUBLE IN TRANSIT: ARMY MUST REDUCE VEHICLE MISHAPS

車輛運輸意外事故：陸軍必須減少車輛人為肇事

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Thursday, April 22, 2021 2021 年 4 月 22 日

取材自/2021 年 4 月份美國陸軍月刊

A battalion was conducting a field training exercise in preparation for a combat training center rotation. The unit trained on tasks including brigade support area defense, displacement and reestablishment. The battalion commander ended the exercise on the sixth day, and the unit prepared to redeploy to the cantonment area.

曾經有一個營級部隊正準備進入戰鬥訓練中心，在輪訓之前實施野戰演訓，演練行動項目包含有旅勤務支援地區防禦警戒、後勤設施轉移和重新開設等。營長於第六日結束演習並讓部隊準備回到原營區駐地。

The commander directed four M1120A4 trucks to make two convoy movements, both led by the transportation platoon leader. Without a convoy or movement briefing, the convoy made the first 90-minute movement to the cantonment area, dropped its cargo and returned to the brigade support area.

該營長指示由運輸排排長帶領 4 輛 M1120A4 重型戰術輪型卡車，以車隊來回 2 次完成運送演訓裝備器材等物資。在沒有向營長實施車隊編組與部隊運動規劃簡報下，車隊即實施第一次時間長達 90 分鐘，當運輸車隊抵達駐地，卸下車載物品後即返回勤務支援地區。

As the convoy made the second trip, using the same crews and vehicles, the third truck blew a tire. The driver slowed and pulled to the side of the road, but, due to limited visibility from heavy dust, the operator of the fourth truck did not see the vehicle in time to stop. Despite steering hard to the left, the fourth truck ran into the rear of the disabled vehicle, resulting in fatal injuries to the commander of the fourth vehicle.

當同一組人車進行第二次車隊運輸時，車隊第 3 輛車突然爆胎，駕駛即刻放慢車速並將車停靠於路邊，但由於前車行駛中揚起的塵土影響了後車的視線能見度，第 4 輛車駕駛未能發現前車狀況及時停車。雖已急速向左急轉彎煞停，但還是追撞上了第 3 輛故障車輛的尾部，導致第 4 輛車車長受到重傷。

Risk Factors

This scenario is a real-world mishap that mirrors many others investigated by the U.S. Army Combat Readiness Center (USACRC) at Fort Rucker, Alabama. Heavy dust limited visibility. Vehicles were not adequately spaced and traveled too fast for conditions. The unit driver training program did not include progressive training or convoy operations. Leaders did not properly conduct troop-leading procedures or convoy briefs, or practice dynamic risk management. The collision happened at the end of a long day on the last day of a field problem. Additionally, all four vehicles should have been deadlined by operator manual standards, and the convoy's only communication was by personal cellphones.

風險因子

上述真實的車輛事故場景與阿拉巴馬州拉克堡的美國陸軍戰備中心 (USACRC) 所調查的諸多車輛意外事故相似。車隊行駛中的揚塵影響後車視線能見度、車速過快且未能保持速限下應有之車距；該單位駕駛訓練過程未循序漸進或者未受過車輛編隊行駛駕訓；指揮官亦未正確按部隊指揮程序實施任務規劃或者未實施車隊執行任務前簡報；或針對執行任務之車長、駕駛實施任務遂行中即時動態可能意外風險管控之行車安全教育。此野外車輛碰撞意外事故發生於漫長的訓練期程的最後一日演訓結束前；此外，駕駛 4 輛車的駕駛依作業手冊標準已是最後一天可駕駛這些車輛，且車隊惟一通訊方式乃透過個人手機實施連絡。

This mishap started hours before the collision—and it happened in late spring, which has emerged as the Army's riskiest time of year for tactical motor vehicle operations.

其實這場車輛意外在碰撞前幾個小時就注定要發生了，因為此件意外事故發生於春末，這個時間點是陸軍部隊一年中發生車輛戰術機動時最危險的時期。



Two heavily damaged M1120A4 trucks await recovery following a collision during a field training exercise. At the time of the mishap, heavy dust conditions limited visibility. A truck commander was killed in the collision. (Credit: U.S. Army/Michael Barksdale)

兩輛嚴重受損的 M1120A4 重型戰術輪型卡車在野戰演訓中發生碰撞後等待修復。由於車隊行駛揚塵使後方車輛駕駛能見度受限造成碰撞事故。一名車長在碰撞事故中喪生。（圖片來源：美國陸軍/Michael Barksdale）

Deadly Mishaps

Tactical motor vehicle mishaps are the biggest killer of on-duty soldiers. Yearly statistics prove that these mishaps are deadlier than any other type, with 55 soldiers killed in the past five years alone. USACRC recently conducted a comprehensive, as yet unpublished, review of tactical vehicle mishaps since the beginning of fiscal 2015 and found key trends.

致命車輛意外事故

戰術機動時輪型車輛意外事故是執勤中士兵的最大殺手。每年統計的數據證明，這些戰術機動輪型車輛發生車輛意外事故，其致命性遠比其他類型的意外事故來的高。單單近 5 年就有 55 名軍人因此喪生。美國陸軍戰備中心 (USACRC) 近期對 2015 年財政會計年度開始以來，進行全面性，包含未公開的戰術輪型車輛意外事故實施發生意外當時資料之審視回顧，發現了意外發生的主要走向。

A majority of the study period's tactical vehicle mishaps occurred during routine, uncontested, small-unit vehicle movements along roadways and trails, not cross-country or collective-level maneuver training. In other words, these mishaps happened while soldiers in single vehicles or small formations were simply driving from one location to another. Tragically, each mishap was preventable.

而針對上述期間所研究，發現大多數戰術輪型車輛，會意外發生通常是單位例行性、習慣性地運用少部分車輛編組小型車隊，執行只須於道路或小徑上實施運輸任務才發生，而非越野或依部隊層級編組縱隊、梯隊、單位實施機動訓練時發生車輛意外。換句話說，當執行任務的士兵認為只是單駕駛一輛車或少數車輛編隊的其中之一去執行兩點間簡單的運輸任務時，就容易發生車輛意外事故，而可悲的是，每一件事務發生都是可事先預防的。

The Army safely conducts high-risk training and missions, including collective live-fires and airborne operations, every day. These signature events are likely decisive operations for the units conducting them, carefully planned, rehearsed and executed with significant consideration given to risk management. However, we are losing soldiers in supporting and shaping operations where relatively lower risk levels remain improperly mitigated.

陸軍部隊每日為了包含各部隊實彈集火射擊，以及空降作戰在內等高風險訓練與任務能安全的執行，上述訓練與任務來自其單位在精心策畫、推演和執行作戰計畫中一併考慮各項具有重大風險管理，所得可能具決定性作戰行動必須實施且具有標誌性之戰術訓練項目與任務。然而我們在面對較低風險等級的勤務支援和型塑戰場之協力作戰方面士兵正因車輛意外傷亡人數方面並未獲得適度降低。

Another noticeable trend is that cumulative fatal mishaps within the third quarter of each fiscal year were significantly higher than the other three quarters. More specifically, May and June accounted for 28% of fatal mishaps during the study period. In effect, nearly a third of the Army's tactical vehicle mishaps are occurring over a mere 16% of the fiscal calendar annually.

另一個值得注意的趨勢是，每一財政會計年度的第 3 季的累積致命事故明顯高於其他 3 季。更具體地說，每年 5 月和 6 月發致命車輛事故的事件就佔此次研究期間總致命事故的 28%。實際上，每年陸軍重型戰術輪型車輛事故中近三分之一的發生僅佔財政會計日曆的 16%。

There are a number of plausible theories for this “third-quarter spike.” This article will provide recommendations and share USACRC's existing loss-prevention tools that

leaders may employ to stop this trend. Experience proves that when leaders are aware of the hazards, they apply greater command emphasis to mitigate the risk.

Examine this problem, arrive at your own conclusions and become part of the solution.

對於這種於年度“第 3 季度飆升”的車輛意外事故，有許多似是而非的理論混淆了視聽。本文將提供建議並分享美國陸軍戰備中心 (USACRC)現有的損失預防的措施，可讓各級指揮官用來阻止這一趨勢持續發生。就以往經驗證明，當各級指揮官意識到危機意外可能影響任務執行時，常會加強其指揮力度以減輕風險。審查出問題癥結所在，並將結論所處置之作為成為解決方案之一部分。

Increased OPTEMPO

Several factors immediately come to mind when analyzing a recurring, almost seasonal, problem. USACRC's first consideration was increased operational tempo (OPTEMPO). Many Army National Guard and U.S. Army Reserve units execute annual training during the third quarter. Unsurprisingly, these units account for 10% more third-quarter fatal mishaps (30%) than any other quarter. As OPTEMPO increases and more miles are driven, there is a corresponding rise in fatal accidents. However, this argument is more nuanced than it seems.

作戰節奏多寡與車輛肇事關聯性

當分析車輛事故問題會在特定季節性中反覆出現時，內心自然會立即出現幾個可能產生車輛事故風險因子。而美國陸軍戰備中心 (USACRC)首先考慮到的是作戰節奏 (OPTEMPO)的次數強度增加。因為美軍許多國民兵和陸軍預備役部隊都在會計年度第三季進行年度訓練。不出所料，這些單位在第 3 季度發生的致命事故(30%)比任何其他季度都多 10%。隨著作戰節奏(OPTEMPO)的次數強度和行駛里程的增加，致命事故也會相應增加。然而，這個論點依所看到的表徵現象好像是這麼一回事。

USACRC's review of the Army's annual total mileage determined that the third quarter is only the second-highest quarter for miles driven each year. The Army drives an average of 5 million more miles (80 million) in the fourth quarter than the third (75 million). Despite this increased OPTEMPO and corresponding elevation of risk exposure, the fourth quarter saw a 30% decrease in fatal vehicle mishaps during the study period. Greater exposure and OPTEMPO do not explain the spike as a whole. We must find and consider other factors.

而美國陸軍戰備中心 (USACRC)對陸軍年度內總里程的審查，卻確定了第 3 季度只是每年行駛里程第 2 高的季度。陸軍在第四季度比第 3 季度（7500 萬英里）平均多行駛 500 萬英里（8000 萬英里）。因此儘管作戰節奏(OPTEMPO)的次數強度有所增加，風險暴露理應也相應增加，但對五年期間所研究的是，在第 4 季度的致命車輛事故減少了 30%。巨量的風險暴露和作戰節奏(OPTEMPO)的次數強度並不能完整解釋整體的車輛事故飆升問題的。我們必須找尋並考慮其他風險因子。

Personal Distractions

USACRC also evaluated the effect of personnel turbulence during “PCS season.” Permanent change-of-station moves typically ramp up each June, when an average of nearly 9,000 soldiers report to new duty locations.

人事輪調干擾車輛機動作業

美國陸軍戰備中心 (USACRC)還評估了“人員駐地輪調(PCS) 季節”期間人員更替所造成的影響。每年的六月，通常會因任務或職務需求實施調動至其他基地或駐地的人員會大量增加，在這期間平均有近 9,000 名軍人到新的執勤地點報到。

A summer-heavy personnel transition cycle makes sense. It's easier on families, allowing children to complete the school year before moving, and presents an opportunity for soldiers to take leave during favorable weather in conjunction with relocation. However, similar to all operational transitions, personnel transitions, particularly those of leaders at all echelons, present risk that must be carefully managed.

美軍以夏季為實施密集的人員輪調週期是考慮軍人家庭因素，讓孩子在搬家前完成當年度學年教育，並且有較好天氣可實施搬遷與休假合併的機會。然而，與其他營運事業單位人事業務交接一樣，人事調動與交接，尤其是各級幹部、指揮職的調整調動，都存在無交接或交接不確實之風險，必須謹慎管理。

The Army's junior and midgrade NCOs are at the tip of the spear and critical to successful execution of motor vehicle operations. It is their responsibility to conduct troop-leading procedures for small-unit missions and enable success. However, it is not uncommon for NCOs to depart an assignment or position without their replacement in place. Often, a junior NCO is required to serve as an “acting” leader until a permanent replacement arrives.

陸軍的初階和中階士官是執行困難與危險行動中擔任先鋒與承擔任務風險最大的一群人，對於能成功地執行車輛機動作業至關重要。他們的責任乃在運用部隊指揮程序步驟為小部隊任務策定計畫並使之能達成任務。然而，士官們在無人交接下便停止緣機動車輛作業任務的執行或離職或的情況並不少見。因此通常，初階士官被要求暫時“代理上階職務”執行或領導原任務遂行，直到該職務新任人員報到為止。



A military convoy makes its way through the rain at Fort McCoy, Wisconsin. (Credit: U.S. Army/ Scott Sturkol)
威斯康辛州麥考伊堡，軍車車隊在雨中前行。（圖片來源：美國陸軍/Scott Sturkol）

We must place the same level of emphasis on these NCO transitions as a change of command, or we assume more risk. Without a managed transition between two leaders, we are not only missing an opportunity to transfer established standing operating procedures, but also individual soldier details such as driver certifications and performance history.

我們必須設身處地為這些代理職務的士官實施任務上的指揮權轉移，否則我們將承擔更多風險。如果不能有效掌控管理離職與接替職務兩位領導人的任務交接，不僅只是失去一個應按原建立的交接程序而已，而是還會失去單一特殊駕駛士兵的駕照認證與其曾有的駕駛行車紀錄。

Failures in Leadership

Leaders not enforcing standards, not conducting rehearsals or convoy briefings, or not conducting proper troop-leading procedures contribute in some form to more than 70% of catastrophic vehicle mishaps annually. Therefore, those NCOs serving

in an acting capacity require even more attention and oversight, and we must set conditions for success by certifying them to perform enhanced leadership tasks. Deliberate transition plans concluding with an outbrief two echelons up are a good start to reducing the risk profile associated with personnel turbulence.

失去效用的領導

每年因領導幹部未依標準流程執行、不實施預演排練或行車前安全簡報，或正確的運用部隊指揮程序步驟策劃，導致造成 70%以上重大傷亡之車輛意外事故。因此對那些代理職務的士官們需要投注更多的關注與監督，我們必須透過一個認證方式來確認低階職務代理人對其任務所需領導能力已提升到可執行之狀況來為部隊車輛機動安全創造成功條件。先行透過向高兩層級實施已經過深思熟慮規劃的任務交接簡報是好的開始可降低因人事調動所產生的風險。

Inadequate driver training programs continue to factor into most Army tactical motor vehicle mishaps. More than 80% of USACRC investigations identify issues with driver training and/or absence of proper qualifications documentation. When drivers are not trained to standard and increase their miles driven, the risk profile is enlarged.

駕訓課程規劃不足是導致大多數陸軍戰術機動車輛意外事故持續存在的一項風險因子。美國陸軍戰備中心 (USACRC)調查確認超過 80%駕駛訓練存在有問題和/或者缺乏適當的經過認證的證照文件。當相關駕駛未依標準駕訓課程實施訓練和增加其長途里程駕駛訓練，則風險可能將會擴大。

The September 2019 update to Army Regulation (AR) 600-55: The Army Driver and Operator Standardization Program sets clear standards for effective driver training programs to reduce mishaps. Among other changes, it establishes a progressive training model that ensures drivers are fully— not just minimally—qualified to operate their assigned vehicles.

2019 年 9 月陸軍法規 (AR) 600-55 更新了部分條文：陸軍駕駛員和重型機械車輛操作員標準化課程設計中訂定了明確的課程基準，以為有效的駕訓課程設計減少車輛事故發生。除了部分條文修訂更新外，此次還新增了漸進式的模式化課程設計條例，以確保駕駛受完駕駛訓練後，完全具備有操作其所被分配到車種駕駛的資格，而不是最低標準可以開車而已。

Likewise, fatigue almost certainly plays a role. At least 30% of soldiers directly involved in third-quarter tactical vehicle mishaps during the study period were on

duty for over 12 hours. Longer daylight periods sometimes push limited visibility training further into the day.

同樣，疲勞肯定會造成影響安全駕駛的風險因子之一。於上述研究期間於第 3 季發生戰術車輛意外事故的士兵，至少有 30%是因為執勤時間超過 12 小時之關聯性。因晝長夜短的關係，有時會將原本一天有限度的訓練時間給拉長。

Unmitigated, this places additional strain on soldiers awake since dawn. Given that most tactical vehicle mishaps occur during routine, uncontested movements on roadways, fatigue is a likely contributor to inattention, complacency and haste.

這無疑給部隊生活必須黎明即起的軍人增加額外的疲憊壓力。鑑於大多數戰術車輛事故發生是在單位例行性、習慣性地運用少部分車輛編組小型車隊，執行只須於道路上實施運輸任務，疲憊很可能是導致面對臨時緊急狀況下，精神與注意力無法集中、過度自信和草率處理狀況重要原因。

Accident Reduction

So, how do we prevent a third-quarter spike not only this year, but in years to come? There are four key actions to overcoming this trend:

減少事故發生建議

那麼，我們如何能在今年度起至未來年度防止第 3 季度致命車輛事故飆升現象？下列有四項關鍵作為可解決季節性車輛事故飆升趨勢：

Commanders must be involved in their driver training program—commander involvement is foundational to the Army’s collective training and operations. The recent update to AR 600-55 requires commanders to interview, select and train their unit’s drivers. Driver selection is one of a company commander’s most important duties, and applying rigor to the selection process of both drivers and vehicle commanders will prevent mishaps. Battalion command teams must validate their programs, ensuring the programs are progressive in nature to prepare drivers for expected operational conditions, not just paved roadways. Brigade command teams should verify unit compliance with AR 600-55 and refine as necessary (Appendix J to AR 600-55 is a useful checklist).

1.指揮官必須參與挑選這些接受駕訓課程的人員-指揮官親自參與選訓人員是陸軍集訓和作戰行動的基礎。新版 AR600-55 法規要求指揮官必須約談、挑選和先期教育他們單位預備擔任駕駛人員。駕駛的遴選是連長最重要的職責之一，對駕駛和車長的遴選過程進行嚴格的篩選，可以防止事故的發生。營指揮督導小組必須驗證他們的駕訓課程設

計，確保駕駛訓練過程性質是漸進式的，以使駕駛能為預期的作戰條件做好準備，而不僅僅是單純的道路駕駛訓練。旅指揮督導小組應驗證部隊是否符合 AR600-55 法規規劃執行並根據現況實際所須實施精進(AR600-55 的附錄 J 是一個有用的驗證檢查清單)。

Junior leaders must be trained as vehicle and serial leaders. Proper execution of troop-leading procedures in movement planning and execution is risk management. Good procedures result in identified hazards, conduct of multiple rehearsals, identification of unserviceable equipment and other actions that increase safety. Great units create leader-development opportunities and programs to ensure junior leaders have the needed tools to succeed.

2.初級領導者必須接受車輛和與車輛相關系列的領導職能培訓。以正確的部隊指揮程序步驟實施部隊機動規劃與執行就是風險管控。良好的程序步驟可以事先辨識風險項目、實施多次事前預演、檢查出無法正常運轉的裝置設備和其他提高安全性的措施作為。優秀的單位會開創提升領導幹部發展歷程的機會與規劃，以確保初級領導者擁有成功所需的職能與工具。

Dynamic risk management must be emphasized and discussed throughout operations, especially those lasting beyond a few hours. Leaders tend to do their best risk management when planning major operations. They develop and discuss deliberate (and lengthy) risk assessment worksheets during execution of troop-leading procedures. However, the further they get from their final rehearsal, environmental changes, soldier fatigue and materiel issues increasingly factor into operations. Leaders must understand and appreciate the need for holistic risk assessment as conditions change and different forms of fatigue set in. Start by asking, “What has changed, and what are the three most dangerous things we are about to do?”

3.必須在整個車輛機動行動過程中強調和討論動態風險管理，尤其是持續數小時以上的運輸風險。領導幹部在規劃重大作戰行動車輛機動運輸時往往會盡最大努力進行風險管理。他們在實施部隊指揮程序期間制定並討論深思熟慮的（且冗長的）風險評估管制工作表。然而，隨著最後預演終了、任務地區環境變化、士兵疲憊心態和武器裝備問題就會越來越多地影響到車輛機動之行動。隨著情況的變化和不同形式的疲憊困乏心態出現，領導幹部必須理解並認知進行整體風險評估的必要性。首先要問：“發生了什麼變化，我們將要做的 3 件最可能發生危險的事情是什麼？”

Knowledgeable leaders must be present where the risk is. Battalion commanders and command sergeants major are almost never eyewitnesses to mishaps. It is also rare for company commanders or first sergeants to witness mishaps. Why? They have the knowledge, experience and authority to stop mishaps before they happen. But obviously, command teams cannot be everywhere. All junior leaders should have the authority to stop unsafe acts. While experience will come with practice and

repetition, leader certification programs will provide them with the knowledge to know what right looks like. Junior leaders are the crucial link to tactical vehicle safety.

4.具有專業知識與豐富經驗的領導幹部必須帶隊出現在風險所在之地，但營長、營士官督導長幾乎從未親眼目睹車輛意外事故。同樣地連長、連士官督導長目睹車輛意外事故的情況也很少見。為什麼？他們擁有專業知識、處理經驗和領導權責，可以在事故發生之前將其制止。但顯然，指揮職幹部不可能無處不在。因此所有低階下一級領導幹部都應賦予權責制止不安全行為。雖然經驗是透過實踐和不斷重複接觸獲得，但領導幹部認證計畫可以為他們提供專業知識，讓他們知道什麼是正確的。初級領導幹部是戰術車輛機動運輸安全的關鍵環節。

USACRC has multiple tools available to help soldiers and leaders prevent these and other mishaps. The Joint Risk Assessment Tool, Army Readiness Assessment Program and Driver's Training Toolbox, all available at <https://safety.army.mil>, are long-standing products proven to help reduce risk at every level.

美國陸軍戰備中心(USACRC)有多種工具可以幫助士兵和領導者預防這些和其他事故。聯合風險評估工具、陸軍戰備評估計劃和駕駛員培訓工具箱均可在 <https://safety.army.mil> 網站上獲得，這些是經證明有助於降低各個級別風險的長期產品。

The center also recently added Small Unit Leader Cards to its repository, which are designed to be a quick reference for junior leaders making the real-time decisions described above.

該中心最近還在其儲存庫房中新增小部隊指揮官可隨身攜行的領導卡片，旨在為初級領導者做出上述即時決策時能提供快速參考。

While there are many more tools available on our website, USACRC's most valuable resource is its people. USACRC stands ready to assist commanders in the field. Reach out if you need support or have successful programs and processes we can share. Saving lives is a team effort, and USACRC is part of your team.

雖然我們的網站上提供了更多工具，但美國陸軍戰備中心(USACRC)最寶貴的資源是其人員。美國陸軍戰備中心(USACRC)隨時準備協助戰地指揮官。如果您需要支援或有我們可以分享的成功計畫和流程，請聯繫我們。拯救生命需要團隊的努力，而美國陸軍戰備中心(USACRC)是您團隊的一部分。

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Brig. Gen. Andrew Hilmes is commanding general of the U.S. Army Combat Readiness Center, Fort Rucker, Alabama, and director of Army Safety. Previously, he was deputy commanding officer-maneuver, 3rd Infantry Division, Fort Stewart, Georgia, and before that, he was executive officer to the commander of U.S. forces in Operation Resolute Support, Afghanistan. He earned his commission as an armor officer at the U.S. Military Academy, West Point, New York, graduating in 1995.

作者

布里格.創.安德魯.希爾姆斯將軍是阿拉巴馬州拉克堡美國陸軍戰備中心的指揮官兼陸軍安全部主任。此前，他是喬治亞州-斯圖爾特堡第3步兵師副機動指揮官，在此之前，他是阿富汗堅決支持行動中美軍司令的執行官。他於1995年畢業於紐約西點軍校獲得軍銜，擔任裝甲軍官。