From Stalingrad to Khe Sanh:
Factors in the Successful Use of Tactical
Airlift to Support Isolated Land Battle Areas

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In the last several years, the U. S. Air Force has provided key aerial logistics support for a number of relatively isolated locations where the threat of hostile fire has existed, including Tuzla and Mogadishu. Our airlift forces have been fortunate in that they have been able to conduct their operations into these remote locations successfully and, for the most part, safely. In crucial situations, necessary supplies—ammunition, food, fuel, equipment—are usually delivered by tactical airlift aircraft. From the earliest days, tactical airlift has tried to keep the losses small while delivering the greatest amount of supplies to the people who need it. Unfortunately, in spite of the best intentions of operational planners, that goal is not easily achieved. An examination of three instances should help to illustrate this fact and to suggest some essential aspects of successful tactical airlift in crisis situations.

Three twentieth century land battles stand out for the role played by tactical airlift in affecting the outcome: the battle for Stalingrad in 1942-43, the siege at Dien Bien Phu in 1954, and the attack on Khe Sanh in 1968. In each of these three cases, the units under siege were located at some distance (100-200 miles) from their supply bases. Attempts were made in each situation to supply the besieged units through the use of airlift. In each case, the duration of the airlift support effort was about two months. In each case, one re-supply airfield served as the primary delivery point for the supplies. And in all cases, the ability of airlift aircraft to safely land and offload supplies was essential to continued operational success. One case (Khe Sanh) resulted in modest success, while two cases resulted in failures that brought with them devastating military and political consequences.

I. The Battle of Stalingrad

The city of Stalingrad was not one of Germany's military goals when Hitler's Wehrmacht launched its summer offensive in Russia in June of 1942. The goal was to capture the Caucasus, which accounted for 70 percent of Russia's oil production, and 65 percent of its natural gas. The assault on Stalingrad began on 13 September; the Russians were forced to retreat into the heart of the city, where the battle degenerated into house-to-house fighting. After a protracted period of heavy fighting within the city, the Russians launched a massive counteroffensive northwest of Stalingrad on 19 November. The Rumanian Army on the Don was shattered and retreated. The next day the Russians breached the Axis flank south of Stalingrad, threatening to encircle the Fourth Panzer and the Sixth Armies in two giant pincer movements.

Hitler organized the Army Group Don, under the command of Field Marshal von Manstein, to launch a relief effort. He asked Colonel-General Hans Jeschonnek, chief of the Luftwaffe General Staff, if the air force could assist in attempted breakout or relief operations of the Sixth Army. Jeschonnek, who apparently understood that Sixth Army's encirclement would be a short term situation, assured Hitler that if transport and bomber aircraft were used, and if adequate

airfields inside and outside the encircled area were available, the Luftwaffe could airlift adequate supplies to the army (Hayward, 1998:235). On 22 November, the Russian pincers closed the ring near Kalach, thereby encircling Sixth Army in the land bridge between the Volga and the Don (Jukes, 1985:107). Some 250,000 German soldiers were trapped.

The re-supply effort would require the air force to deliver 750 tons of supplies per day (a figure soon reduced to 500 tons per day). Lieutenant-General Martin Fiebig, commander of Fliegerkorps VIII, the Luftwaffe corps responsible for air operations in the Stalingrad sector, warned Major-General Schmidt, Sixth Army's chief of staff, that supplying an entire army by air was impossible, particularly when most transport aircraft were already heavily committed in North Africa. Fiebig's superior, Colonel-General Wolfram Freiherr von Richthofen, agreed that the idea was infeasible, and tried to convince the German leadership that the necessary transport resources were not available (Hayward, 1998: 236). Many army and air force officers advocated that the Sixth Army attempt to break out of the Russian ring as soon as possible.

Jeschonnek quickly realized that adequate logistical support of Sixth Army by air would not be possible, even with favorable weather and no interference from the Russian air force. The standard "250kg" and "1000kg" air-supply containers on which he had based his original airlift calculations actually carried only approximately two-thirds of those loads; the weight categories were derived solely from the size of the bombs they replaced on the racks, not from the weight of the payload they could carry (Hayward, 1998: 240-1). When Jeschonnek tried to explain to Hitler that his earlier assessment had been made in haste, Hitler informed him that Reichsmarschall Goring had given his personal assurance that the air force could meet the army's needs. In addition, Hitler had publicly announced on 8 November that he was "master of Stalingrad," a statement that became his policy: to hold on to Stalingrad (Hayward, 1998: 215).

The necessary aircraft and crews for the Stalingrad airlift were assembled on short notice from the advanced flight training schools, using mostly Ju-52 and He-111 aircraft (Boog, 1978: 142). The Ju-52 carried about two and a half tons of cargo, and the He-111 could carry only two tons. Von Richthofen began airlift operations as ordered on 24 November. Approximately 320 Ju-52 and Ju-86 transports located at Tazinskaya and approximately 190 He-111 bombers at Morosovskaya were available to conduct the airlift. Neither transport type could trade much fuel for freight, because the distance from Tazinskaya to Pitomik, the main airfield at Stalingrad, was 140 miles (Whiting, 1978: 114). The primary load delivered to Stalingrad was ammunition, which the Germans desperately needed to withstand the Russian attacks. The Germans had previously agreed to slaughter and eat the horses that had carried their supplies when they first arrived in Stalingrad. But eventually even the horses were gone.

Fortunately for the Germans, the Russian air force only sporadically interfered with the airlift effort (Whiting, 1978: 113). The Russian Army continued to widen the corridor over which the German transports had to fly, and installed increasing numbers of anti-aircraft guns in it. A greater problem than the Russian aircraft and anti-aircraft fire, however, was the winter weather; the aircraft had to stand down for days, as temperatures reached 30 degrees below zero. In such appalling weather, the crews delivered only ninety-four tons daily (Mason, 1973: 367). The high point of the airlift occurred when 700 tons was delivered between 19 and 21 December—that is, 700 tons for all three days combined (Whiting, 1978: 114).

The supply airfields at Tazinskaya and Morosovskaya fell into Russian hands on 22 December, increasing the distance the transports had to fly from 140 to 200 miles. Manstein gave up hope of relieving Stalingrad on 23 December (Jukes, 1985: 125). Pitomik airfield was overrun on 16 January, and the smaller auxiliary airfield at Gumrak was seized on 21 January (Whiting, 1978: 115). The Sixth Army was split into two pockets by the Russian Army, with no hope of relief or resupply. Paulus, in the southern pocket, surrendered on 31 January, but the German troops in the northern pocket held out for two more days. German radio reported the fall of Stalingrad on 3 February.

As a result of the defeat, the German Army lost enough material to equip a quarter of the German Army. There were approximately 150,000 dead, and another 90,000 taken prisoner, including 24 generals and 2,000 officers. Of these, only about 6,000 returned home. The Luftwaffe lost approximately 488 aircraft and 1,000 air crew (which includes only transport losses) during the Stalingrad airlift (Mason,1973: 367; Hayward, 1998: 310). The decision to support Stalingrad by airlift was a costly one, and it proved to be a turning point in the war.

II. The Battle of Dien Bien Phu

Unlike the situation at Stalingrad, the circumstances which brought about the struggle at Dien Bien Phu were intentionally created. The French leaders in Vietnam selected the Dien Bien Phu site to prevent the flow of supplies between Hanoi and Laos. General Henri Navarre, who replaced General Raoul Salan as the French commander in chief in Indochina, was sent to Indochina to assess the military situation and prepare a plan of operations (Davidson, 1988: 167). Navarre searched for a strategy to defend northern Laos, and adopted one provided by Colonel Louis Berteil, which envisioned establishing a fortified airhead astride a key Viet Minh supply line into Laos (Davidson, 1988: 173). Dien Bien Phu had to be captured before this plan could be carried out.

Disregarding warnings that great risks were associated with it, Navarre put his plan into action on 20 November 1953. Operation Castor, as it was called, began with an airborne assault on Dien Bien Phu. The Sixth Parachute Battalion landed 200 meters north of the village, and airborne troops of the Second Battalion, First Regiment, dropped 600 meters to the south. These forces cleared Dien Bien Phu of enemy forces and secured the dirt airstrip. The following day two more parachute battalions were airdropped along with an artillery battalion, command headquarters, and heavy equipment. On 22 November, the sixth parachute battalion landed (Davidson, 1988: 189-96). The French forces occupied a fortified entrenched camp having three sub-sectors, which supported one another with forty-nine strong points (Giap, 1964: 78). Navarre believed that the poor roads in this hilly region would deny the Viet Minh the ability to bring up artillery. He believed that the Dien Bien Phu garrison would enable French forces to bring their superior firepower to successfully bear against the Viet Minh (Gurtov, 1967: 93).

Due to the difficulty involved in reaching the crests, the French installed themselves in the lower, more accessible areas, convenient to re-supply vehicles, and abandoned the heights. They believed that the vast basin would protect them from surprise attack. They appeared not to realize that due to the proximity of the surrounding mountains, a few well-placed Viet Minh guns could severely disrupt airlift operations (Roy, 1965: 36-7). Giap attacked on 13 March 1954.

The French logistical superiority depended on their capability to effectively deliver supplies by air. The distance of nearly two hundred miles between Hanoi and Dien Bien Phu complicated and aggravated the Air Force's operational conditions (Roy, 1965: 32). Although the French air arm, both air force and navy, put forth a maximum effort to halt the flow of supplies to the Viet Minh, they failed to do so. The French had approximately 130 aircraft available in northern Vietnam to provide close air support and interdiction, consisting of fighters, fighter-bombers, B-26 medium bombers, and C-119 transports equipped for napalm bombing. Of these aircraft, only 75 percent could be kept operational due to an undermanned maintenance force (Davidson, 1988: 216-7).

A greater problem was a shortage of airlift aircraft. Even though the French airlift fleet was supplemented with Air America aircraft "on loan" from the American Central Intelligence Agency, a realistic "in operation" figure would run between sixty to seventy-five aircraft, mostly C-47s. To maintain combat effectiveness at Dien Bien Phu, these aircraft would have had to deliver a minimum of 200 tons of supplies per day. The garrison never received more than half of this tonnage. Saboteurs destroyed or damaged seventy-eight aircraft (mostly transport) at Gia Lam and Cat Bi airfields on 6-7 March 1954 (Davidson, 1988: 217-9). On 14 March, the second day of the battle, the French lost the use of their airstrip at Dien Bien Phu after devastating Viet Minh artillery fire destroyed the runway, the control tower, the radio beacon, and the aircraft that remained on the ground (Davidson, 1988: 237). Supplies and reinforcements had to be delivered by parachute for the remainder of the siege.

Airdrops were first conducted from 2,500 feet, but the concentration of Viet Minh anti-aircraft artillery and the subsequent mounting number of aircraft losses caused the drop altitude to be moved up to 6,000 feet, and finally to 8,500 feet. As the drop altitude increased, so did the dispersion of supplies. The French defenders never recovered more than 100 tons a day, and the Viet Minh intercepted the rest—including ammunition that they could use in their howitzers against the defenders. All semblance of a centralized logistics system disappeared, and supplies were generally used at the strong points on which they fell (Davidson, 1988: 219). The Viet Minh overran Dien Bien Phu's main position on 7 May 1954 after a siege of fifty-five days (Gurtov, 1967: 115). The last group of French defenders ceased firing on 8 May 1954.

Almost half of the total French garrison of approximately 16,500 men had been killed, wounded, or missing (Fall, 1967: 483). This figure includes the entire command staff, which consisted of a general, 16 colonels, and 1,749 officers and non-commissioned officers. Sixty-two aircraft were shot down or destroyed (Giap, 1964: 140). The disaster at Dien Bien Phu ensured the loss of France's empire in Indochina and contributed to France's decision to significantly reduce its presence in other countries.

III. The Battle of Khe Sanh

The Khe Sanh Combat Base, originally established by the Green Berets in August 1962, was located in the Quang Tri province in the northwest corner of South Vietnam, close to the North Vietnamese supply route to the south, known as the "Ho Chi Minh Trail." The base sat atop a plateau in the shadow of Dong Tri Mountain and overlooked a tributary of the Quang Tri River (Shore, 1969: 8). It was a useful observation post, serving as a platform for launching special

operations forays and road watch teams which monitored NVA activities in Laos (Prados and Stubbe, 1991: 9).

The Khe Sanh airstrip was improved in the spring of 1967; it had organic artillery support, and its area of operations was within the range of the 175mm guns of Camp Carroll, to the east (Shore, 1969: 8). General William C. Westmoreland, Commander, United States Military Assistance Command Vietnam (MACV), believed that Khe Sanh's geographical location prevented enemy access to the coastal plains (Prados and Stubbe, 1991: 7). United States intelligence began to receive reports of several North Vietnamese Army (NVA) units moving south in late November 1967. By late December, it became clear that two of these divisions were moving to the Khe Sanh area, and another was moving to within easy supporting distance (Davidson, 1988: 554). The force consisted of six infantry regiments, two artillery regiments, an unknown number of tanks, and miscellaneous support and service units. American intelligence concluded that a major battle was about to occur (Shore, 1969: 29).

General Westmoreland saw Khe Sanh as an opportunity to bring optimum firepower to bear against the NVA in an isolated area (Davidson, 1988: 553). Westmoreland also noted many advantages the marines had at Khe Sanh that were not available at Dien Bien Phu, including the knowledge that additional friendly artillery fire outside the immediate battle zone could reinforce Khe Sanh. In addition, the United States forces had a much greater capacity for aerial resupply and air support assets greater by "orders of magnitude" than had been available to the French at Dien Bien Phu (Prados and Stubbe, 1991: 290).

The NVA struck Khe Sanh and its outposts with rocket, artillery, mortar, and small arms fire at 0530 on January 21st. The ammunition depot and the fuel supplies were blown up, and heavy fighting occurred on Hill 861, but the marines held their ground. General Westmoreland ordered Operation Niagara to be executed. This operation called for Khe Sanh to be defended not only by the Marine garrison, but also by firepower supplied by B-52s, tactical air, artillery, and mortars. The importance of the hill outposts was immediately recognized, and the marines held on to them determinedly.

Khe Sanh was defended by 6,680 marines, and it was estimated that the supply requirement necessary to sustain this force would be 235 tons per day (Prados and Stubbe, 1991: 373). The challenge of delivering these supplies fell primarily to the C-130s of Marine Aerial Refueler Transport Squadron 152 and the U.S. Air Force 834th Air Division; the C-123s of the 315th Air Commando Wing; the UH-34, CH-46, and UH-1E helicopters of Marine Aircraft Group 36 (MAG 36); and the CH-53 helicopters of MAG 16 (Shore, 1969: 72). General Westmoreland designated General William W. Momyer, USAF, as his single manager to control all tactical aircraft operating in the Khe Sanh area, including those of the Air Force, the Marines, and the Navy (Davidson, 1988: 558).

Flight operations were often limited by poor visibility, which was below minimum for airfield operations 40 percent of the time (Shore, 1969: 74). Pilots of cargo aircraft attempting to land at Khe Sanh faced a difficult and dangerous task. The key for survival was a steep approach through the eastern corridor, a short roll-out, and a speedy offload (Shore, 1969: 74). The C-123s, with a shorter landing roll and auxiliary jets to assist in takeoff, were more able to land in

the shorter distance than the C-130s, which often had to roll out the full length of the runway and then taxi back to the loading ramp (Prados and Stubbe, 1991: 375).

On February 10th, a Marine C-130 carrying fuel bladders was hit by NVA fire and destroyed. The result of this accident and damage sustained by other transports was the suspension of C-130 landings at Khe Sanh. Suuplies were then delivered by the Air Force via the Low Altitude Parachute Extraction System (LAPES) and the Ground Proximity Extraction System (GPES). LAPES was a self-contained delivery system that used a reefed cargo parachute to extract roller-mounted cargo pallets from the aircraft as the aircraft executed a low pass approximately five feet above the ground. GPES extracted cargo by means of snagging an arresting cable, similar to those used on aircraft carriers, with a hook extended from the boom at the rear of the aircraft (Shore, 1969: 76). Low overcast weather precluded the use of either system most of the time, and by the time the siege was over, only 15 GPES and 52 LAPES missions had been flown (Prados and Stubbe, 1991: 379).

After 10 February, most supplies were delivered by paradrops. The average distance that bundles landed from the impact zone was 133 meters, which was well within the drop zone. These paradrops were sufficient for commodities like rations and ammunition, but medical supplies, special ammunition, and other delicate cargo along with replacements and casualties, were not appropriate for parachute delivery (Shore, 1969: 79). These tasks were left to the C-123s to provide by landing on the hazardous runway. The defenders' spirits were buoyed by the knowledge that they could expect immediate medical attention and a speedy evacuation (Shore, 1969: 90-2).

The last sizable NVA attack on Khe Sanh occurred on the night of February 29th-March 1st . Although the NVA continued to harass the Marines with artillery and mortar fire until March 30th, the NVA began to withdraw from Khe Sanh on March 6th. Operation PEGASUS, a combined relief force of marines and troopers of the 1st U.S. Air Cavalry Division, opened the road to Khe Sanh on April 8th (Davidson, 1988: 561). MAG-36 and MAG-16 flew 9,109 sorties, transported 14,562 passengers, and delivered 4,661 tons of cargo in support of Khe Sanh combat base (Shore, 1969: 89). Air Force planes were responsible for approximately 12,430 tons delivered during the siege, and the high delivery of the campaign was 310 tons, delivered on January 27th (Prados and Stubbe, 1991: 373).

Conclusions

Tactical military airlift failed at Stalingrad and Dien Bien Phu, but it was successful at Khe Sanh. In comparing these situations, some factors favoring successful results become evident (see Table 1). In the first place, smaller numbers of soldiers can be supplied more easily, and with greater benefit, than larger numbers of soldiers. A quarter of a million men were to be supplied at Stalingrad, just over 16,000 at Dien Bien Phu, and about 7,000 at Khe Sanh. With only one fully-functioning runway available in each situation, effective delivery and dispersal of airlanded materials occurred when the numbers to be supplied were smaller. In addition, in all three cases, rarely could more than a few aircraft at a time be accommodated on the isolated airfield, partly because the airfield offloading crew could not handle the load, and partly because anti-aircraft fire was too intense for safe operations. The numbers suggest that the French would have needed

two airfields at Dien Bien Phu; actually a second strip existed, but it was too far from the center of the operation to be useful. The Germans, according to this reasoning, would have needed twenty-five airfields, assuming adequate delivery aircraft could have been provided. Two airfields were available, but one was too small to be of much practical use. These comparisons suggest that 10,000 men is the upper limit that can be effectively sustained in a protracted combat situation where only one runway is available.

Table 1. Comparison of Airlift Locations

	Stalingrad	Dien Bien Phu	Khe Sanh
Number of Men to be Supported	250,000	16,500	7,000
Supply Distance to be Flown	140/200 miles	150-200 miles	100+ miles
Number of Days Duration	60	55	77
Total Tons Airlifted	8,350	4675 (est)	17,100
Average Tons Per Day	117.6	85 (est)	235
Highest Single Day Tons Lifted	233	100	310
Primary Airlift Aircraft	JU-52 HE-111	C-119 C-47	C-130 C-123
Cargo Aircraft Lost	488	62	4

A second insight is that a favorable tonnage/soldier ratio is key to a favorable outcome. The Germans determined initially that they needed 750 tons per day to meet the needs of 250,000 men, yielding a figure of .003 tons (or about 6 pounds) per day per man. That figure was quickly reduced to 500 tons per day, yielding a figure of .002 tons (4 pounds) per day per man. At Dien Bien Phu, the French calculated a need of 200 tons per day for 16,000 men (although this figure fluctuated as new men were brought in and others were killed, wounded, or disappeared). In this case, the figure is .0125 tons (25 pounds) per day per man. At Khe Sanh, with 6,680 men and a requirement for 185 tons per day, the figure is .0299 tons (59.8 pounds) per day per man. The wide range of figures is probably due to the impact of the amount of ammunition (and fuel) required to maintain combat operations; a force of a quarter of a million men will employ a much greater number of guns and cannons than a force of 7,000 men.

The greatest amount of supplies delivered in one day by the Germans at Stalingrad was 233 tons, actually an average of a three-day total of 700 tons (19-21 December). The greatest amount delivered at Dien Bien Phu was 100 tons, while the greatest amount at Khe Sanh was 310 tons (on 27 January). The average amount delivered by the Germans was 117 tons, under 100 tons by the French, and 235 tons by the Americans at Khe Sanh. The Americans delivered more tons, on the average, than had been estimated as necessary (235/185, for a 1.27, or 127% delivery/requirements weight ratio). Obviously, a delivery/requirements ratio approaching 100% will provide the greater chance of success. However, the necessary tonnage per day must be realistically estimated. Sustained combat operations for large numbers of combatants will be supported only with great difficulty by emergency tactical airlift.

The Americans benefited from a shorter re-supply distance (a little over 100 miles) and a well-functioning supply base at Da Nang, which was equipped with both air and sea delivery supply modes. The Germans had logistics problems even before Paulus' army was encircled (Hayward, 1998: 183), and the re-supply bases at Tazinskaya and Morosovskaya were makeshift re-supply centers. The French had good bases of support in the Haiphong area, but did not have adequate airlift aircraft and in fact would have been catastrophically short of aircraft had not Air America aircraft been made available to them. Both the Germans and the French, while possessing superior aircraft and air tactics, were working at a disadvantage in having their resources spread too thinly, in the case of the Germans, or not having adequate interdiction and re-supply aircraft, in the case of the French.

The Americans enjoyed air superiority in at least three senses. First, there was no enemy aircraft threat. Second, fighter and bomber aircraft were available to provide sufficient ground fire suppression efforts. Both B-52 bomb strikes and low altitude fighter cover by F-4 and A-4 aircraft (when the weather allowed) reduced hostile ground and anti-aircraft fire. The third form of air superiority was in the more than adequate numbers of airlift aircraft: C-130s and C-123s were available in sufficient numbers to provide a steady flow of supplies. Unlike the situations at Stalingrad or Dien Bien Phu, re-supply aircraft were readily available in large enough numbers such that re-supply efforts in other areas of the theater were not significantly affected. Anti-aircraft fire was less significant at Khe Sanh than it was at Dien Bien Phu or Stalingrad.

Other factors were more favorable at the Khe Sanh site as well. Although the weather was often a problem, with fog and low clouds affecting visibility, the Americans did not have to work in the extremely cold weather experienced at Stalingrad. The Americans also had the advantages provided by the C-130 aircraft, one of the best cargo delivery aircraft built, specifically designed to carry large cargo loads, supplemented by rapid airborne offload systems. Under the pressure of the high tempo and risky conditions of Khe Sanh operations, aircrews developed the rapid ground offload method, which could deposit four pallets of cargo on the ramp within 30 seconds. If executed smoothly, the operation could be accomplished with no damage to the loading ramp of the C-130 and minimum damage to the aluminum pallets. The C-123, while carrying a smaller load, was slightly more maneuverable and could land in a much shorter distance, though some of the more proficient C-130 pilots could land in 2000 feet.

Failure to respond successfully to emergency tactical airlift situations can have profound military and political effects. In the case of Stalingrad, the German army suffered one of its worst defeats,

with significant losses of men and materials. The French loss at Dien Bien Phu resulted in a withdrawal from Southeast Asia, contributing to a national movement to reverse more than a century of empire-building processes. It may appear that the American success at Khe Sanh resulted in a much better outcome than those resulting from Stalingrad and Dien Bien Phu. But American "success" at Khe Sanh could be claimed to have been temporary at best; after the battle had been won, the site was abandoned, by May of 1968. And in fact, the American policy in Vietnam after that battle (and the associated activities of the 1968 Tet Offensive) became one of gradual withdrawal from active involvement in military defense activities in South Vietnam. If the tactical "lessons learned" from studying how to successfully prosecute emergency tactical airlift into hostile locations are important, the larger "lessons learned" should not be ignored either. Ultimately, each one of these three battles can be argued to be the key events around which larger national goals and strategies subsequently pivoted. All three locations became important as a result of political decisions, made at the highest level, that possession of those locations had to be maintained as a matter of national policy and national pride, in spite of the great risk of significant loss of lives and resources. The decision was to "force a fight" at those locations because it was politically important to show national determination and to demonstrate military dominance.

As the United States moves toward CONUS-based airpower and faces the possibility of simultaneous operations in regions lacking American military infrastructure, it is logical to assume that effective tactical military airlift will remain important. The requirements, due to political considerations, troop strengths, and weapons involved, will differ significantly in each scenario. But the decision to engage in an extended airlift operation should, in any case, be based on analysis of the following key factors: numbers of troops to be supported, essential tonnage to be delivered, airlift distances to be flown, supply capabilities of support bases, duration of airlift effort, ability to support airlift operations at the besieged base, and ensured air superiority. Only if these factors can be favorably addressed can a successful tactical airlift effort be expected.

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