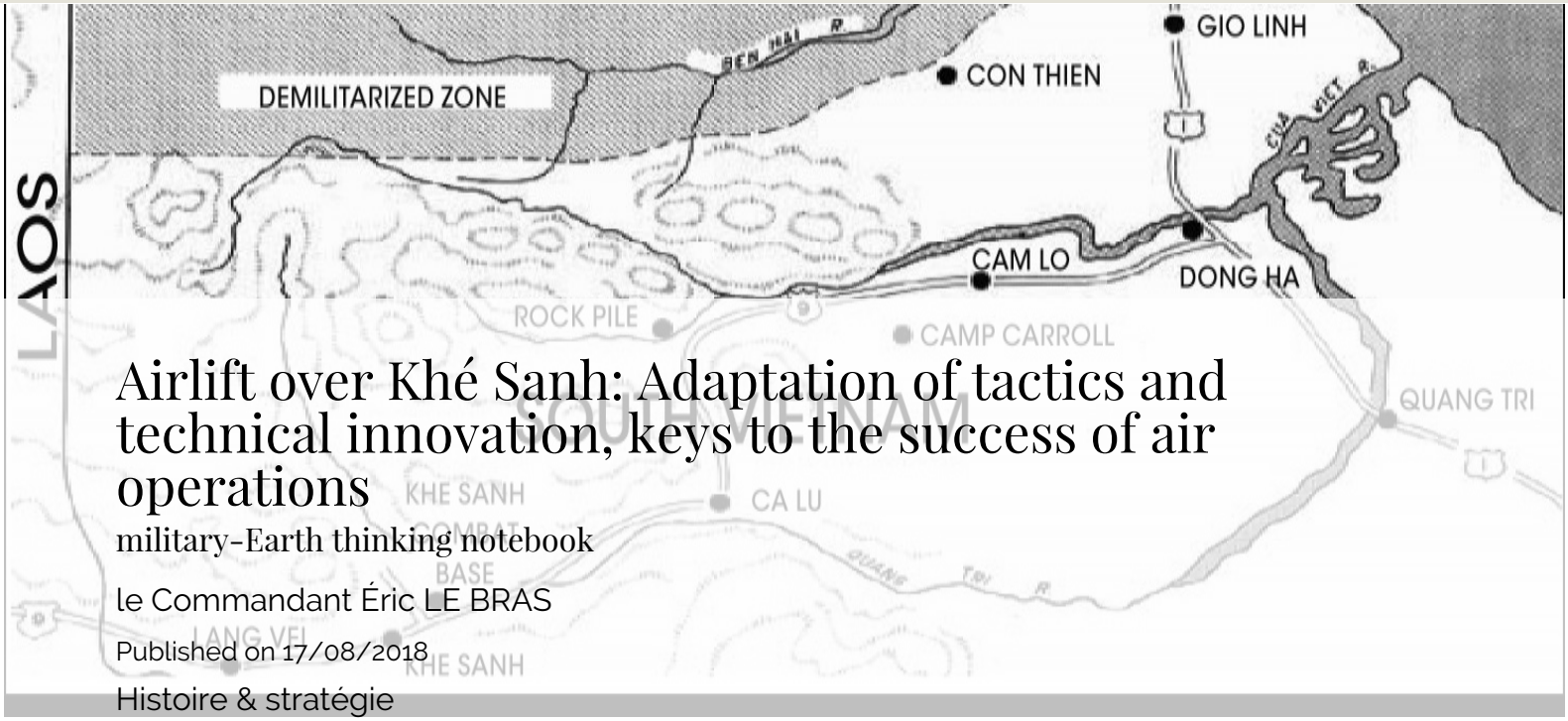

Airlift over Khé Sanh: Adaptation of tactics and technical innovation, keys to the success of air operations

military-Earth thinking notebook

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Histoire & stratégie

The success of the 1968 airlift in support of the beleaguered Marines at the Khé Sanh base in Vietnam was due first of all to the Niagara bombing operation, which allowed the Americans to maintain the initiative**. But above all, the siege was such that this success would probably not have occurred without three new refuelling techniques described here.**

The author concludes by putting into perspective the air operations conducted at Khé Sanh and Diên-Biên-Phu in 1954, and paves the way to a reflection on the fundamental aspect of the capacity for innovation and on the future means that could be dedicated to air-landing.

"In the present future, in which any strategic conception necessarily moves, we must both draw on past experience and invent the adaptation of this experience to new means. Any innovation is a major risk, but any routine is lost in advance".

General Beaufre[1]

1] "Introduction to the Strategy", Chapter II.

It takes considerable resources to provide an airlift for beleaguered troops. Numerous examples in the history of modern conflicts illustrate the difficulties of such an operation. In 1942, the food and ammunition needs of the 250,000 soldiers of the 6th German Army trapped in Stalingrad required a daily supply of 400 tonnes, more than four times the transport capacity of the Luftwaffe's dedicated means. In 1954, the support of the 13 French battalions engaged in the defence of Diên-Biên-Phu was estimated at 165 tons. During the 57 days of the siege an average of 120 tons of cargo was dropped over the entrenched camp, or nearly 100 kilograms per minute.[1]

Behind the figures lie other realities: the fighting and the ability to recover these materials. The limited size of the drop zones, the proximity of enemy lines, and the often unfavourable weather conditions hampered the precision of airdrops. The ability to

maintain control of the airfields proved to be decisive.

In this context, the success of the airlift carried out in 1968 by the Americans to support the 6,680 Marines besieged by North Vietnamese troops on the Khé Sanh base was remarkable. Situated about ten kilometres from the Laotian border and 25 kilometres south of the 17th parallel, in a sparsely populated area, the base is located in the heart of the Laotian territory.e of Quang Tri province[2], the Khé Sanh base served as a support point for intelligence and counter-infiltration actions by North Vietnamese regular troops. The capture of this strategic blockade would have assured Giap's forces access to the coastal plains of South Vietnam. Confronted with a three-to-one balance of power, haunted by the spectre of Gen-Bien-Phu,[3] the American armed forces managed, throughout the 77 days of siege, to retain the initiative and, in fact, their freedom of action. Their ability to adapt equipment and tactics in the areas of bombardment and air-delivery ensured the success of the operations.

The chronological course of the battle underlines the importance of the air fact, particularly in the fields of fire support and transport. After a brief historical review, we will look at Operation Niagara, which was designed to destroy the North Vietnamese positions through the combined action of air and artillery. A second part will be devoted to the realization of the air bridge and the implementation of the C130s and helicopters of the USAF (US Air Force), the US Navy and the USMC (US Marine Corps). Finally, the study will conclude by putting the battles of Khé Sanh and Diên-Biên-Phu into perspective through the prism of air operations.

Operation "Niagara": the early stages

U.S. air-land operations in Vietnam officially began in February 1965, but as early as 1962 Special Forces elements were at in charge of the surveillance of the demilitarized zone and the Ho Chi Minh runway, located straddling the territories of North Vietnam and Laos. The Khé Sanh base was set up for this purpose.

The strategic character of the site was reinforced by the construction of an airfield, which was redeveloped in 1967. With a length of 1,180 metres, covered with aluminium plates, the runway was able to accommodate American helicopters and tactical transport planes.[4]

In November 1967, a number of clues led the US General Staff to consider a large-scale North Vietnamese offensive in the Quang Tri area. Two divisions were moving north of the demilitarized zone. A total of 6 infantry regiments, 2 artillery regiments reinforced by tanks[5] and support units were taking position around Khé Sanh, a total of 23,000 men.

As guerrilla activity intensified, ground connections were soon impossible, transforming the strongholds along the 17th parallel into besieged bases, which could only be supplied by air. The only practicable road, the old Colonial Road 9 (RC9), oriented East-West and linking Laos with the coastal provinces of South Vietnam, was under Viet Cong control.

Aware of the traumatic impact on public opinion that the fall of Khé Sanh would have caused, the Americans reinforced the troops defending the site, bringing the number of troops to 6,680. Nearly half of the troops engaged were assigned to the defense of the hills surrounding the site [6]. 6] The American strategy was based on the ability to support their positions with ground-to-ground and air-to-ground means, notably the Strategic Air Command (SAC) B52 "Stratofortress" [7]. 7] The low population density around the camp made it possible to envisage an intense bombing campaign.

In addition to the 40 or so tanks and artillery pieces protecting the base, the Marines could benefit from support from the 175 mm guns of Camp Caroll and Rock Pile, other American bases located further east along the demilitarized zone.

In view of the unfavourable balance of power, and based on the experience of defending the Con Thien site in the fall of 1967, the Joint Chiefs of Staff improved the situation.In view of the unfavorable balance of power, and based on the experience of defending the Con Thien site in the fall of 1967, the US General Staff planned Operation Niagara, a bombing campaign combining B52s and fighter bombers to destroy the enemy's position around Khé Sanh.

On January 20, 1968, a North Vietnamese deserter officer confirmed the imminence of the attack, scheduled for the same night.

Operation "Niagara": B52s in support of besieged forces

On 21 January at 5.30 a.m., the outposts and the Khé Sanh base were subjected to heavy artillery shelling. Ammunition and fuel depots were destroyed and part of the airfield was rendered unusable. But despite heavy fighting, the Marines were able to contain the offensive and maintain control of the side points. General Westmoreland ordered Operation Niagara. The bombardment operation to clear the site of its attackers could begin.

Considerable intelligence resources were deployed to locate the enemy positions. Several hundred seismic and acoustic sensors[8] had been previously placed around Khé Sanh. The collected signals were transmitted to a Lockheed EC-121R "Warning star" aircraft [9] at a high altitude "racecourse", which compiled and distributed them to a specialized center [10], located in Thailand at Nakhon Phanom. The coordination of the lights was carried out from a C130 AB3C [11] and a ground cell responsible for terminal guidance of the B52s. Daily, 35 B52s and 300 fighter bombers took part in the operations.

At the beginning of the operations, the "Stratofortresses" engaged targets at a safe distance of at least 3 kilometers from the positions held by the Marines. The North Vietnamese took the opportunity to mass their troops and ammunition depots in trench networks as close as possible to the American positions.

"Combat skyspot", adaptation of bombing techniques

Observing the opposing manoeuvre, American forward controllers developed a new method of target designation. Called "combat skyspot", this radar guidance technique made it possible to reduce the safety margin to 1,200 yards, or less than 1,100 meters, causing heavy losses in the enemy ranks.

During the 77 days of the siege, the Strategic Air Command aircraft flew 2,548 missions and dropped 59,542 tons of bombs. To this figure must be added 37,000 tons of ammunition delivered by other fighter aircraft. [12].

12] "We broke their backs...by the firepower of the B52" [13]. This sentence of General Westmoreland summarizes the effectiveness of the bombardments carried out by the SAC planes.

This deluge of fire thwarted the maneuver of the North Vietnamese forces, allowing the

realization of the air bridge.

Refuel Khé Sanh!

A first estimate of the needs estimated the daily supply needed to support the operations at 165 tons. General W. Momyer, an airman, commanding the 7th Air Force' was designated to lead the airlift and coordinate the means implemented by the USAF, the USMC and the US Navy.

As at Diên-Biên-Phu, air operations were going to be hampered by weather conditions, enemy anti-aircraft artillery and the constraints inherent to the refueling of outposts.

The weather at this time of year was unfavourable for air operations. Nearly 40% of airborne and airdrops were cancelled due to fog. Giap's troops took advantage of these poor visibility conditions to move their anti-aircraft artillery, forcing crews to apply steep arrival procedures and reduce their stopover time.

The decommissioning of part of the runway on the first day of the battle highlighted the qualities of the C123 "Provider". Smaller in weight and size than the C130, equipped with rockets for takeoff, the C123s were the first USAF aircraft to open the air bridge. Their action was complemented by USMC Boeing Vertol CH46 "Sea knight" heavy helicopters. On January 23rd, C130 operations were resumed. On January 27th, at the height of the campaign, 310 tons of cargo were put ashore. A daily average of 250 tons was thus ensured during the first 8 days of the battle, to compensate for the destruction of the ammunition stockpile that occurred in the first hours of the fighting.

On 10 February, a "Hercules" carrying flexible fuel tanks was hit by anti-aircraft artillery and caught fire on landing. A second C130 was severely damaged the next day. From that date on, only the C7A and C123 continued their rotations on Khé Sanh, ensuring medical evacuations and the delivery of packages too fragile to be dropped.

The American airmen were forced to ensure that Khé Sanh was resupplied at all costs, and they were going to exploit the C130's remarkable heavy airdrop capabilities. Three new techniques were to be implemented.

LAPES and GPES, technical innovations

The first one, LAPES (Low altitude parachute extraction system) [14], consisted in the grounding, by ejection, of pallets at a height of between 3 and 5 metres. Constraining from a logistical point of view (parachute extraction and specific pallet), this method was supplemented by the GPES following several fatal accidents caused by the impact of loads after the drop[15].

15] Implemented from 30 March, the GPES (Ground proximity extraction system) was similar to the aircraft carrier docking technique. A hook, attached to the load and left hanging at the rear of the open ramp of the C130, was designed to hook a taut cable on the runway and extract the pallet.

In the end, 52 LAPES and 15 GPES drops were carried out.

Finally, to avoid bad weather conditions, a release profile without visual reference was developed. Using ground radar and C130 Doppler radar, this method ensured remarkable

accuracy. Out of 600 packages dropped only 3 were lost.

"Super gaggle", tactical innovation

The positions around Khé Sanh were resupplied by USMC helicopters. Given the proximity of the enemy troops, an original tactic called "super gaggle" [16] was developed. A dozen fighter-bombers, type A4 "Skyhawk", and combat helicopters, type "Huey Gunship", neutralized the enemy positions with napalm, tear gas and smoke screens. At the same time, as many as 16 heavy helicopters, operating in close formation, were carrying out refuelling operations. Due to the difference in relative speeds of the engaged aircraft, careful preparation was required. The duration of field operations did not exceed 5 minutes. This method was convincing: out of all the refuelling operations carried out with this combat aircraft support, only 2 helicopters (2 CH46) were shot down by the North Vietnamese forces. A total of 17 helicopters, 1 C130 and 3 C123 were lost by the American forces.

On April 8, a reinforcement of American troops composed of Marines and the 1st US Air Cavalry Division (air-mobile division) reached Khé Sanh[17], putting a definitive end to the siege. At the end of 77 days of fighting, the American losses amounted to 205 soldiers[18]. North Vietnamese losses were estimated at between 9,000 and 15,000 men. To this figure must be added the 45,000 soldiers lost by General Giap's troops in the Tet offensive. In the end, over 2 months of conflict in South Vietnam, the North Vietnamese forces had lost the manpower and equipment of 6 divisions. Their sacrifice would prove to be worthwhile. Forced to reinforce their positions around Saigon, the Americans abandoned the Khé Sanh base in June 1968.

From Diên Biên-Phu to Khé Sanh

The geography of the site does not allow for an objective comparison of the land battles at Khé Sanh with those at Diên-Biên-Phu. On the other hand, in the air, the homogeneity and continuity [19] that characterize the aerospace environment allow a comparison of these two battles through the prism of air operations.

The outcome of the air bridge over Khé Sanh is commensurate with the air assets deployed by the American forces. Numerous aircraft of modern design, paving the way for new modes of operation, made it possible to ensure the refuelling of a besieged site for 11 weeks in difficult weather conditions and a permanent anti-aircraft threat. Put in perspective with the operations conducted at Diên-Biên-Phu, the management of the air campaign carried out by the Americans reThe management of the American air campaign, when compared with the operations conducted at Diên-Biên-Phu, reveals the weaknesses of the French 1954 air campaign in the areas of command and control of operations, air transport and fire support.

High-performance intelligence resources, a centralised chain of command and modern AB3C-type air assets made it possible to optimise the activity of several hundred aircraft engaged daily in support and transport operations. This coordination and the tactics implemented have made it possible to reduce aircraft losses by half compared to French losses [20] for a number of air missions 10 times higher.

The new capabilities offered by the C130 in the field of airdropping equipment have made it possible to implement new techniques, limiting the risks for crews and guaranteeing the accuracy of deliveries by air. In 1954, only the 24 C119 "Flying boxcars" had a door at the

rear of the aircraft allowing heavy and voluminous loads to be dropped in a single pass. The hundred or so C47 "Dakota" [21] available could only drop through the narrower side doors, forcing the crews to make up to 12 passes over the landing zones to drop their entire load, giving the enemy forces the opportunity to adjust their fire.

The dispersal of the packages on the ground and the lack of precision of the drops made it necessary to carry out the refuelling of the French outposts on men's backs. The human cost of these missions was exorbitant, forcing the abandonment of certain positions [22].

The use of heavy helicopters and the "super gaggle" will prevent Khé sanh from experiencing these supply difficulties.

At Khé Sanh, the North Vietnamese were never able to neutralize the airfield. The runway, even if damaged, will allow C123 and C7 landings. Medical evacuations could thus be ensured during the 77 days of siege. At Diên-Biên-Phu they could only be carried out during the first two weeks of the battle. 23] American morale was also maintained by the distribution of mail throughout the siege.

The airdrops carried out in 1968 by the Americans only concerned equipment. The personnel were put in place by air and helicopter transport, thus avoiding the dispersion of personnel when they were put ashore. Conversely, the destruction after takeoff of a C123 with 48 soldiers on board demonstrates the vulnerability of this type of operation.

The American airbase was never the object of massive assaults comparable to those experienced by the defenders of the entrenched French camp. Only the American outposts were subjected to the waves of assault by North Vietnamese soldiers. Two American positions were thus submerged by Giap's forces [24]. The bombing campaign carried out as part of Operation "Niagara" probably caused real chaos in the enemy trenches, allowing the Americans to retain the initiative. In 1954, the 26 Boeing B26 bombers lined up by the French expeditionary force and the "napalm" missions carried out by the C119s alone could not reverse the course of events.

Conclusion

The American military success at Khé Sanh is undoubtedly the result of exemplary coordination between air transport, fire support and bombing operations. The establishment of a chain of command overseeing all air assets has borne fruit. While the firepower of the B52 bombers was decisive, the ability of the American forces to innovate in the tactical and technical fields must also be emphasised.

Nearly 40 years after these events, as new equipment entered into service in the French army, this capacity for innovation appears to be essential. It is a guarantee of success in future operations.

Thus, in the field of airdropping equipment, current satellite navigation systems make it possible to envisage the creation of autonomous means of guiding loads under sail, after a drop at medium or high altitude. This type of technique, which makes it possible to overcome weather conditions, reduce the size of the landing zones and limit the risks for aircraft and crews, opens the way to new methods of delivery by air.

As far as helicopters are concerned, the remarkable characteristics of the "Tiger", the EC 725 "Caracal" and, in the future, the NH90 open up new areas of use.

Like the "super gaggle" implemented at Khé Sanh, these assets will only be developed through joint reflection, a necessary condition for the success of our future external operations.

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1] Figures taken from the book "Aviation**Indochine",** General Chassin.

2] see attached map

3] "I don't want another Diên-Biên-Phu", President Lyndon Johnson, Times February 1968.

"The enemy hopes to win a victory in Khé Sanh similar to the one achieved in 1954 in Diên-Biên-Phu, with the aim of causing a psychological shock and breaking down the bitter morale of the people.General Westmoreland, Commander-in-Chief of the American forces in Vietnam (quoted in Vietnam studies, Air Mobility 1961-1971, by Ltt General J Tolston, Chap IX)

4] Lockheed C130 "Hercules", Fairchild C123 "Provider" and De Haviland C7A (American name of the military version of the DHC-4 "Caribou").

5] These were Soviet-built amphibious tanks of type PT76. This was the first time General Giap's forces used the armor weapon in the Vietnam War.

6] See attached map

7] The B52s operated from Andersen base on the island of Guam, more than 4,000 kilometers from their targets. Each mission lasted between 10 and 12 hours. Their carrying capacity was 51 conventional 374 kg bombs. Others operated from the bases of U Tapao in Thailand or Kadena (Okinawa) with a load of 108 250 kg bombs.

8] ACOUSID sensors: acoustic / seismic intrusion detector. ADSID / HELOSID: Air / Helicopter delivered seismic intrusion Detectors (designed to be planted in the ground, they were dropped by attack aircraft type F4 or reconnaissance aircraft type OP-2E "Neptune" or helicopter).

[9] Wiretapping and electronic intelligence version of the C121 "super constellation"...

[10] This center, ISC (infiltration surveillance center), was in charge of all the tracking operations on the Ho Chi Minh trail.

[11] AB3C: Airborne battlefield command and control center

12] In total, the American B52s and fighter bombers delivered in 11 weeks around Khé Sanh nearly twice the tonnage of bombs dropped by the US Army air force during the Pacific War between 1942 and 1943. (Figures taken from "Airpower at Khe Sanh", Air force magazine, August 1998, VOL 81, N°8)

13] "the thing that broke their back...was the fire of B52's", quoted in "Airpower at Khe Sanh".

14] Better known in France under the name of Very Low Height Drop or TFH, this type of delivery by air is still practiced by the crews of C160 "Transall" and the specialists of the 11th Parachute Brigade (1st Parachute Train Regiment).

15] Several Marines were killed after a pallet hit their dugout.

16] Literally "big hornet" or "big circus"...

17] The operation associated with the deployment of the 1st US Cavalry division and the takeover of Colonial Road 9 was codenamed "Pegasus". See on this subject the book "Vietnam studies**, Air mobility" Ltt Gen J.**Tolston, Chap IX

18] This official figure relates only to the USMC's losses. To this should be added the passengers and crews of the destroyed aircraft as well as the losses of Operation "Pegasus" and the defenders of the advanced positions of Lang Vei and Khé sanh village, i.e. a death toll close to 1,000.

19] On this subject, see Colonel Chamagne's book, "The Art of**Air Warfare", pages 97-102**.

20] 62 French aircraft were destroyed in the operations of Diên-Biên-Phu, 14 on the ground and 48 in the air (figures taken from the book "Aviation Indochine", General Chassin**)**.

21] The Douglas C47 "Skytrain" is the military version of the famous DC3 "Dakota".

22] During the night of April 16-17, 1954, ten hours of fighting were necessary to bring some water jerry cans and ammunition to "Huguette"; the "Huguette 6" position was evacuated a few hours later. Quoted in "Les Paras **français, la guerre d'Indochine", Henri Le Mire**

23] 213 wounded were thus evacuated, quoted in "Les Paras français, la**guerre d'Indochine", Henri Le Mire**, "Les Paras français, la**guerre d'Indochine"**.

24] The positions of Lang Vei and Khé Sanh village will be taken by the North Vietnamese...

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