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'Everything in war is very simple...' The Great War French tank regulations and their implementation

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ABSTRACT
This article examines how the French army developed its tank doctrine during the Great War. How that doctrine came to be formulated and how it worked in practice will be discussed, as will the obstacles to devising such doctrine in the context of continuous and large-scale operations on the Western Front from 1916 to the end of the war. The three French tank designs, the Schneider, the St Chamond (both medium tanks) and the Renault light tank had to be tested and developed in the field, as was the doctrine used to employ them. As will be shown, despite developing sound tank doctrine on a tactical and operational level reasonably quickly, the French army would then discover that good doctrine was only part of the equation leading to military effectiveness, illustrating Clausewitz's dictum that 'everything in war is very simple, but the simplest thing is difficult'.[1]

Such was the scale of the French tanks' failure in their first engagement during the Nivelle Offensive in April 1917 that the *Artillerie Spéciale* (Special Artillery – *AS*, the code name for the French tank force) was in danger of being disbanded.[2] However, two subsequent and successful operations at Laffaux and Malmaison confirmed the tanks' utility to the French Army and enabled it to develop an effective tactical doctrine for the tanks, one that lasted for the most part unchanged for the rest of

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[1]Carl von Clausewitz, *On War,* Edited by Michael Howard & Peter Paret (Princeton: Princeton University Press, 1984), p. 119.

[2]Charles-Maurice Chenu, *Du Kepi rouge aux chars d'assaut* (Paris: Albin Michel, 1932), p. 248.

the war. This article will discuss that doctrine, how it came to be formulated and how it worked in practice. One major theme arises; the comparative ease with which the French army developed an effective doctrine for its tanks is in stark contrast to the difficulties of actually implementing this doctrine successfully on the Great War battlefield.

The French army developed sound offensive doctrine during the Great War at both the tactical and operational levels, but this was nearly always in advance of the technology or equipment immediately available. Thus implementing these sound tactical and operational ideas proved very problematic, illustrating Clausewitz's dictum that 'everything in war is very simple, but the simplest thing is difficult.'[3] This is particularly the case in relation to the French army's tank regulations, which encompassed what would be called doctrine today. By the beginning of 1918, the French army had a soundly thought-out doctrine for their tank units and the other arms they were supporting or being supported by. However, an examination of the development of the French tank regulations demonstrates that having sound ideas about tank tactics is only half of what is required for military effectiveness. The other half requires that these regulations be understood and then implemented. It was the latter provision that was to prove most difficult in the context of the Great War.

The original conception of the French tank force came from a senior artillery officer, Colonel (later General) Jean-Baptiste Estienne. He wrote to the French commander-in-chief, General Joseph Joffre several times during 1915 suggesting that an armoured vehicle on tracks should be developed. His initial letters disappeared into the bureaucracy of GQG (the French General Head Quarters) and he was forced to approach Joffre privately, which resulted in an immediate interview with one of Joffre's deputy chiefs of staff, General Maurice Janin.

Estienne's initial ideas on how to use the tanks centred on using them in a surprise attack across a wide front, without the usual accompanying artillery barrage. In the attack, the tanks would begin their advance before the infantry who would only join the tanks when the first trench line had been taken. The attack would continue with tanks advancing on the next trench line, with Estienne expecting that such swift movement would reach the German artillery-line within an hour.[4] After consideration by GQG, it was agreed that tank manufacture would begin. It is

[3]Clausewitz, *On War*, p. 119.

[4]GQG, *Emploi tactique des cuirassés terrestres*, 18 August 1916, Ministère de la Guerre*, Les Armées française dans la grande guerre,* Tome 4, Volume 2*,* annexes 3, number 2958. All further references to the French official history will be abbreviated as AFGG, followed by the tome and volume number. Thus this would be cited as AFGG 4/2, 3, 2958.

notable that it took less than two months, from the initial meeting of Estienne and Janin, for GQG to draw-up detailed tank specifications, accompanied by clear ideas about how they were to be used.

The French army had three tank-designs in service by the end of the war, the Schneider, the St. Chamond (both medium tanks coming into service in 1917) and the Renault light-tank (in service in 1918).[5] They all pushed contemporary automobile technology to the limits, a problem that was compounded by the lack of any experience with tracked vehicles within French industry. The initial two medium-tank designs were particularly troubled by manufacturing and design faults. The first of these to go into production in 1916 was the Schneider, essentially an armoured rectangular box on a US Holt-tractor chassis. It was armed with a short-barrelled 75mm howitzer, mounted on the right-side of the tank with a very limited arc of fire (20°), and a machine gun on each side. It weighed just over 13 tonnes, but the primitive engine struggled to move the tank at more than walking pace. Elements within the Ministry of Armaments independently commissioned another medium tank, the St Chamond. This was larger (23 tonnes) and was armed with a full-size 75mm field gun, with an even more limited arc of fire (5°) than the Schneider, and four machine guns. Its tracks were driven by two electric generators that were in turn powered by a petrol engine, an ambitious arrangement that French engineering was unable to make reliable until late in the war.

The Renault light-tank, introduced into service in 1918, was, by contrast, a very fine design, setting the template for nearly all tanks that followed it with its revolving turret, armed with a 37mm gun or a machine-gun. However, the good design was not able to overcome the technological constraints of the time. In particular, despite only having a crew of two and weighing significantly less than the Schneider, its engine was unable to move it faster than walking pace.

The first instructions on tank tactics came from GQG in August 1916 and were essentially just a refined version of Estienne's initial ideas.[6] The tanks were to enable an offensive to take possession of the battlefield over several hours, on a large front, all the way to the enemy's artillery batteries. This would be done in such a way as to make the following infantry attack a matter of occupying the taken positions, followed by the cavalry who would exploit this success. To maximise surprise and shock, the tanks were to advance simultaneously on their objectives, which ensured both a quick advance and conserved ammunition. The instructions were quite

[5]Not all the light tanks were manufactured in the Renault factory but the light tanks will all be referred to as Renaults here.

[6]AFGG 4/2, 3, 3002, GQG, *Emploi tactique des chars d'assaut*, 20 August 1916.

explicit in recognising that once the tanks had set off, it was going to be very difficult to issue new orders to them.

These ideas were made redundant when the British unveiled their tanks at the Somme in September 1916, which removed the element of surprise and demonstrated the limitations of the British tanks. During Estienne's trip to Lincoln in June 1916 to examine the British tank programme, he tried to persuade the British of the importance of delaying the initial use of tanks, until they could be used in large numbers and simultaneously by the allies.[7] The French asked E. S. Montague, the British Minister of Munitions, to stop the British tanks being used until the spring of 1917, when the French tanks would be ready for combat. Montague saw Haig in September 1916 to discuss the French proposal but the latter, although sympathetic, was not prepared to change his plans at such a late stage.[8] This was to have a serious effect on Anglo-French co-operation on tank warfare as the British unveiling of the tank instantly removed any question of using tanks in a surprise attack and the British had made official interaction more difficult by ignoring very serious French concerns.[9]

For the *AS*, the unveiling of the British tanks in 1916 was a significant setback, as one very effective but simple measure that the Germans took after the first British tank attack was to widen their trenches. There was no possibility of modifying the existing French tank designs to enable them to cross these wider trenches and making a way over these for the tanks required that they were closely supported by

[7]Service Historique de la Défense (SHD), 16N2121, Estienne, *Compte-rendu d'une mission en Angleterre les 25 et 26 Juin 1916*, 26 June 1916.

[8]See Tim Gale, *The French Army's Tank Force and Armoured Warfare in the Great War; the Artillerie Spéciale* (Farnham: Ashgate, 2013), pp. 34-35.

[9]Co-operation between the French and British tank services during the war is a complicated story and deserving of a study of its own. Informal liaison continued intermittently from 1916 to early 1918 but technical and tactical co-operation was inherently difficult because of the differences in the tank designs. Co-operation increased in 1918 as the general military situation changed but it was only with the formation of the Inter-Allied Tank Committee that the allies instituted formal co-operation and began to organise joint tank programmes. Its first meeting was held on 6 & 7 May, with representatives from France, the UK, Italy and the United States present. The discussion over these two days illustrates the rather different view on tank tactics that the British and French held, views that were not reconcilable within the remaining months of the war. For a further discussion on this issue, see; Elizabeth Greenhalgh, 'Technology Development in Coalition: The Case of the First World War Tank', *The International History Review*, 22/4, December 2000, pp. 806-1008.

accompanying infantry. Thus, a new tactical approach had to be developed and the tanks became close-artillery support for the infantry, with Estienne setting out the new parameters in October 1916. The role of the *AS* was to precede the infantry and be 'their guide and light.'[10] The tactical and administrative unit was established as the *groupe* (company), which consisted of four batteries (each with four tanks), the battery being the manoeuvre-unit. *Groupes* were to be organised into *groupements* (battalions).

Attacks were to be carefully planned using aerial photos, with the orders for each battery's attack made in detail. Tanks would move to their starting positions at night to avoid detection, possibly with artillery fire used to mask the tanks' motors. Although the tanks were armed with cannons and machine guns, their main strength was considered to be the ability to keep advancing under enemy fire. The cannon's primary role was to engage enemy machine guns; Schneiders were not expected to engage targets beyond 200 metres and the St Chamonds would not normally fire beyond 600 metres. Because the tanks were only to use their guns at short range, this was another reason to attack in fog or during the early morning. Estienne summed up the purpose of tank guns; 'only fire when you can't march.'[11]

A tank attack was to have three distinct phases. Initially the tanks would help the infantry take the successive trenches of the first enemy position, then move to attack the enemy artillery batteries, followed by an attack on the second enemy position. This process, theoretically, would be completed in less than three hours, with an advance of up to six kilometres. It is important to note that Estienne emphasised that the tanks should attack only when under the cover of fog or before daybreak. The British experience had also shown the necessity for close infantry and tank co-operation and an infantry company was therefore attached to each battery, primarily tasked with the removal of obstacles but also to assist in consolidating captured positions.[12]

The first French tank combat operation was undertaken within this methodological framework and was far from a success. Two *AS groupements* participated in V Army's attack at Juvincourt on 16 April 1917, a part of the Nivelle Offensive. Having been promised that the enemy artillery would be totally suppressed, the *groupements* made their approach march in broad daylight and in full view of the German artillery observers, who were on commanding heights above the battlefield. One *groupement* was shot to pieces by indirect German heavy-artillery fire without getting past the

[10], AFGG 5/1, 1, 49, Estienne, *Bases générales de l'organisation et de la tactique de l'artillerie d'assaut (A.S),* 9 October 1916.
[11]Ibid., This was a pre-war French infantry slogan.
[12]Ibid.

first German trenches. The other's commander was killed when his tank was hit by artillery before his units could deploy. His *groupement* carried on and some tanks penetrated more than three kilometres further into the German lines than could the French infantry. However, these modest successes had been bought at a considerable human and material cost; 76 tanks out of the 132 engaged that day were put out of action, with fifty-seven destroyed by German artillery.[13]

If all three of the available tank-*groupements* had been used on 16 April, then the subsequent story of the *AS* might have been very different. Fortunately, one *groupement* had not been used in April and was therefore available to be used in a later stage of the Nivelle Offensive. This second *AS* operation was executed very differently than the first, demonstrating a remarkable ability within the *AS* to learn from experience and rapidly introduce effective innovations.

Estienne and GQG took the opportunity to analyse the 16 April attacks in detail and to make sure that mistakes were not repeated.[14] The lengthy approach march on 16 April had been identified as a serious mistake; this time, three batteries of each *groupe* were placed close to the French front-lines before the operation, in order that they could advance at the same time as the infantry.[15] The tanks were more closely integrated with the infantry than on 16 April, primarily through placing the *groupes'* command posts with those of the infantry divisions. Each battery had specific tasks and objectives (unlike on 16 April where objectives had been given to the *groupes*), with one battery held in reserve, giving the *groupe* commanders some tactical flexibility. This thinking was also applied to the *groupements.* The in-line formation of the *groupements* on 16 April was agreed to be impossible to control. Accordingly the *groupements* were to be echeloned in depth, which gave the *groupement* commander the ability to reinforce success and concentrate effort, in addition to being easier to command.

Particular attention was paid to protecting the tanks from enemy artillery fire, as this had proved to be the tanks' greatest danger on 16 April.[16] A dedicated aircraft was provided to keep the commander informed of his tanks' movements and to signal artillery fire onto enemy anti-tank batteries.[17]

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[13]SHD, 6N2120, Estienne, *Rapport au sujet de la participation aux opérations de la V armée des groupements Bossut et Chaubès de l'artillerie d'assaut, 23 avril 1917*, *Tableau no. 2*.
[14]SHD, 16N2120, GAN, *Projet pour l'emploi tactique des chars d'assaut, 1 mai 1917*.
[15]SHD, 16N2120, *Emploi des tanks le 16 avril 1917*, undated, p. 3.
[16]Ibid,. pp. 4-5.
[17]SHD, 16N2120, Estienne, *Rapport au sujet de la participation du groupement Lefebvre et du 17e BCP aux opérations de la VIe armée, les 5 et 6 Mai 1917,* 18 May 1917.

The operation on 5–6 May was very successful, with few casualties and all objectives taken, and was only marred by mechanical difficulties. Nineteen Schneiders went into action, with only three breaking down, whereas the twelve St Chamonds had considerable difficulty on the terrain, with six breaking down, and one destroyed by German artillery.[18] Thus the results were better than those of 16 April, particularly as only one tank had been destroyed.

The large-scale disturbances in the French army after the Nivelle Offensive meant that only limited operations were undertaken during the remainder of 1917. Pétain, the new commander-in-chief, took the opportunity to launch a series of limited-objective offensives, in order to restore morale in the army and experiment with tactics. One such operation was made by French VI Army against the plateau containing the remains of the pre-war Malmaison fort. Capture of this plateau would give the French army an enfilading position over the Ailette River valley and allow flanking fire on the enemy positions on the eastern part of the Chemin des Dames and the Aisne valley.

In this operation, the *AS* units were engaged under a provisional framework prescribed by Pétain in a note to the armies on tank use, reflecting the lessons drawn from the battles in April and May.[19] In this note, Pétain emphasised the importance of close liaison between the tanks and the other arms, the infantry, artillery and aviation. As with all attacks, he said, success required the effective neutralisation of all the enemy artillery that could fire into the combat zone, which was not just the artillery itself but also its observation posts. All the German terrestrial observatories were to be blinded by smoke shells and the advance of the tanks was to be protected by specially designated aircraft. In the most favourable circumstances, fog or early morning mist would be used to mask the tanks' movement on the battlefield.

At the start of an operation, tank units would be attached to an infantry division. The divisional commander would develop his plan in conjunction with the tank commanders, who would then liaise with the relevant regimental commanders. During combat, the tank units' overall commander was to be stationed close to the divisional commander and the *groupe* commanders were to be with the infantry's regimental commanders. If the tanks were not attacking the first position, they were to remain in cover until signalled forward by the infantry, a tank liaison officer being attached to the infantry to ensure this was done correctly.[20]

[18]Ibid.
[19]AFGG 5/2, 2, 957, Pétain, *Note pour les groupes d'armées*, 22 August 1917.
[20]Ibid.

In line with the experience of 5 May, each tank *groupe* was to enter into action by successive echelons, with one or two batteries making the initial attack, while the other batteries remained in cover until their intervention was necessary. The advance of tanks was to be covered by a rolling barrage of smoke shells. Once the tanks had arrived on the enemy positions, they were to neutralise them and then signal the infantry to advance. Pétain drew attention to the grave danger of leaving stationary tanks on the battlefield and they were only to do this until the French infantry had occupied and organised the conquered area. The note emphasised that it was 'indispensable' for the most thorough training to be had by the infantry if they were to co-operate effectively with the tanks.[21] These thoroughly sensible recommendations about tank deployment were to be put to the test at Malmaison, where the theory was applied in less than ideal circumstances.

At Malmaison, French VI Army had 38 Schneider and 30 St Chamond tanks to support the three attacking infantry corps, as well as copious amounts of artillery. There was no attempt at surprise; over five days, French artillery fired just over 1.5 million shells at the German positions.[22] When the operation was over on 26 October, the French had advanced in some places nearly six kilometres and had captured over eleven thousand Germans and significant amounts of material. This had been achieved with casualties of fewer than twelve thousand men, comparing very favourably with the thirty thousand casualties in this area in April and May.[23]

From the point of view of the *AS*, the battle's most important result was that it had restored confidence in the tanks within the French Army. Not surprisingly, the view of the infantry commanders was determined by the effect of the tanks in their sector but there was only one wholly negative one.[24] Only two tanks were destroyed and there were eighty-two casualties, light compared with later engagements.[25] Thus Malmaison demonstrated that the tanks would suffer comparatively light casualties if the enemy artillery was efficiently suppressed, although an extensive artillery preparation would render the ground unusable to them.

The major lesson of Malmaison was that getting the tanks into action close enough to the enemy was going to be difficult whenever an extensive artillery preparation

[21]Ibid.
[22]F Pellegrin, *La Vie d'une armée pendant la grande guerre* (Paris, 1921), pp. 172-3.
[23]Robert Doughty, *Pyrrhic Victory: French Strategy and Operations in the Great War* (London; Harvard University Press, 2005), p. 389.
[24]SHD, 16N2162, VI Armée, *Rapport du Lieutenant-colonel De Bailleul 23 octobre 1917*.
[25]See Gale, *The French Army's Tank Force*, p. 102.

had taken place.[26] However, once the tanks were within close range, it was clear that the Germans had limited options to counter them; German prisoners expressed considerable dismay that their counter-tank preparations had been of no avail, stating that the tanks had caused 'disarray' in their ranks.[27] The tanks could thus be very valuable to their infantry, particularly in relation to keeping down casualties, an issue of pressing concern to Pétain and the French government.

The experience gained from 1917 was considered sufficient to enable provisional tank regulations to be issued; the *Instruction provisoire sur l'emploi des chars d'assaut*, in 29 December 1917.[28] The tank regulations contained two main elements; the regulations dictating the actions and preparation of the *AS* units themselves and the more general rules regulating how the tank units were used in conjunction with the rest of the army. It received only one set of major modifications, largely due to the introduction of the Renault light tanks and the changes to the organisation of the *AS* this necessitated, to become the *Instruction sur l'emploi des chars d'assaut* of 14 July 1918. This did not change the general methodology of tank-use and thus the *Instruction provisoire* of December 1917 remained the basis for tank tactics and operations throughout the rest of the war.

The *Instruction* starts by defining the aim of the *AS*; 'The *artillerie d'assaut* acts as *accompanying artillery* for the infantry, immediately acting to the demands and necessities of combat.'[29] Note the change here from the tanks original role as the infantry's 'guide and light'. The *Instruction* emphasised the mechanical limitations of the medium tanks, particularly in relation to crossing broken terrain and wide trenches.

In relation to the organisation of the *AS* units, this was in line with the experiences of 1917. The *groupe* commanders had great difficulty in keeping communication with, and had little control over their batteries and thus the *groupe* became three, rather than four, batteries.[30] A battery was assigned to an infantry battalion, the infantry commander taking command of it during combat. Three or four *groupes* constituted a *groupement*, along with a re-supply and maintenance unit, which gave the

[26]SHD, 16N2120, GAN, *Observations sur l'emploi des chars d'assaut le 23 Octobre*, Novembre 1917.
[27]Quoted in R Lafitte, *L'Artillerie d'assaut de 1916 à 1918* (Paris: Henri Charles-Lavauzelle, 1921), p. 38.
[28]SHD, 16N2142, GQG, *Instruction provisoire sur L'emploi des chars d'assaut*, 29 December 1917.
[29]*Instruction*, p. 1. My emphasis.
[30]Ibid,. p. 3.

groupement the ability to deploy and engage in an operation without the necessity of further support.[31]

In relation to the conditions needed for a successful tank attack, the *Instruction* is quite explicit. The best use of tanks was in an engagement where the artillery preparation 'is not complete.'[32] If the enemy positions were subject to a heavy artillery preparation, the infantry would be able to occupy these without tank support, rendering the use of tanks 'superfluous.' The *Instruction* pointed out that a tank would be quickly immobilised crossing badly overturned ground, with 'no profit to the infantry,' which was the main lesson from Malmaison.[33] There the artillery preparation had destroyed the German positions and the terrain as well, so even that though the tanks were moved through relatively undamaged areas of the battlefield, twenty-four out of the twenty-eight St Chamonds deployed had ditched or broken down before arriving in the combat zone.[34] This established that tank employment would require relatively undamaged ground, which in turn required a different approach to artillery preparation of the battle zone.

By contrast, if the preparation was either short or technical issues made it less effective; the use of tanks was both 'necessary' and the 'easiest' method of attacking with a reduced preparation.[35] Thus *coup de main* attacks against the first position were not ruled out, providing the ground was known to be suitable for tank movement. However, the deeper the objective, the better suited the operation was for tank combat, as the enemy artillery would be less effective.

As might be expected, close liaison with the infantry and the artillery was a 'necessity.'[36] The *AS* units were commanded in battle by the infantry commanders in order that they might react as quickly as possible to the needs of the infantry, particularly in relation to enemy machine guns. However, the regulations warned that the presence of the *AS* was not a reason to modify the general plan of engagement, which should be capable of fulfilment with or without the tanks. The *Instruction* stressed that it was vital that 'the infantry does not act as a spectator' to the tanks, this particular issue being a problem for the rest of the war.[37] By 1918, the French infantry and its commanders were understandably cautious in combat and *AS*

[31]Ibid,. pp. 3-4.
[32]*Instruction*, p. 4.
[33]Ibid.
[34]*Observations sur l'emploi des chars d'assaut,* p. 1.
[35]Ibid,. p. 5.
[36]Ibid.
[37]Ibid,. p. 8.

commanders continually complained about the failure of the infantry to follow the tanks forward.

The *Instruction* pointed out that modifications to the plan of engagement made necessary by the tanks (neutralising the enemy artillery) would also favour the other arms.[38] Despite the introduction of anti-tank rifles and mines by the Germans from mid-1918, artillery fire accounted for the majority of tank losses and remained the tanks' greatest danger. To protect the tanks, it was indispensable to have the following conditions; effective counter-battery fire in the preparation, arrangements for firing on enemy batteries that appeared during the battle, the blinding of enemy observatories, the extensive use of smoke shells in the rolling barrage and protection in the air against enemy aircraft.[39]

These provisions obviously required considerable forward planning if they were to be implemented effectively. In relation to infantry liaison, this could not 'develop in a fruitful way on the battlefield' but required prior preparation in exercises on the training grounds.[40] Three or four combined exercises were generally considered 'sufficient' to familiarise a battalion with tank combat and enable its infantry to assist and be assisted by the tanks. The importance of this training was such that instruction centres were formed at the Army Group *AS* bases, which any large unit stationed nearby was expected to use for infantry-tank training.[41] The tanks also needed their own close-support infantry but these required two or more weeks' training so they could not be taken from the divisions designated for the offensive.[42]

Reconnaissance was considered as of particular importance for a successful tank operation.[43] The *AS* officer attached to each army group was expected to maintain a constant reconnaissance of the armies' fronts and organise work on the ground to enable tanks to be quickly deployed. Once the decision to use tanks had been made, the *AS groupements* would then be attached to either specific corps or divisions and the *AS* officers would work with the staffs of these units to develop a plan. The infantry and *AS* commanders at every planning level were expected to work closely together on both the plan and the work required to enact it. At the higher levels of command, this involved establishing the de-training points for the tanks and the *AS* units' waiting and departure positions. At the lower levels, clearing the tanks' routes

[38]Ibid.
[39]*Instruction*, p. 8.
[40]Ibid,. p. 9.
[41]Ibid.
[42]Ibid,. pp. 9-10.
[43]Ibid.

through the front lines and finding camouflaged positions for the tanks were of primary importance.[44]

Once in combat, the tanks were to precede the first waves of attacking infantry, just behind the rolling barrage. They were to engage enemy resistance points as they appeared, although the infantry were expected to help identify these for the tanks, it being conceded that tank crews could not always do this for themselves due to the tanks' poor external visibility.[45] To ensure that liaison was as close as possible, the *AS* commander was to be stationed with the infantry commander during combat and batteries were expected to maintain constant contact with their commanders. Liaison with the infantry once in combat was to remain a problem as it was hazardous for both parties. On the battlefield, either the infantry had to approach the tanks, usually being subjected to heavy machine gun or artillery fire, or the tank commanders had to leave their tanks, with the dangers this presented. For example, in September 1918, one Renault battalion had fourteen men killed out of their tanks in combat, while liaising with the infantry.[46]

To account for the differences between the medium-tanks and the light ones, a provisional regulation for light tanks was issued in April 1918.[47] This is very similar to the *Instruction* of December 1917, with variations to take into account the differences in combat, organisation and maintenance between the Renaults and the medium tanks. In relation to tactics, the major difference was that the light tanks would be acting more closely with the infantry.

Mirroring the infantry that they were closely supporting, the light tanks were organised into companies, battalions and regiments. A company had three identical combat sections (with five tanks), a resupply and repair unit and a radio-tank. The light-tank battalion (bataillon des chars légers – BCL) would have three companies and three battalions would form a tank regiment, along with a varying number of medium-tank *groupements*.[48]

The light-tank regulations follow the general principles laid down in the *Instruction* of 27 December 1917; the Renaults would participate in offensive actions that were either 'regularly mounted' (i.e. with adequate planning and preparation) or in

[44]Ibid,. p. 13.
[45]Ibid,. p. 17.
[46]SHD, 16N2159, 21 CA AS, *Rapport sur les opérations de Champagne du 20 septembre au 3 octobre,* 26 October 1918.
[47]SHD, 16N2142, GQG, *Reglement provisoire de manœuvre des unités de chars légers*, 10 April 1918.
[48]Ibid., *Reglement provisoire*, p. 1.

operations that were rather more ad hoc, such as during the second phase of an offensive.[49] As per the *Instruction,* there was to be a detailed reconnaissance made by the *AS* officers at every level and an engagement plan developed with the infantry commanders. The army groups were instructed to rotate as many infantry units through their *AS* camps for training as possible but this was never easy, and infantry were considered sufficiently trained once they had two or three exercises with the tanks.

In relation to combat, the regulations described the section as the main tactical unit in combat, emphasising that it 'should never be divided.'[50] During combat, tank-sections were under the orders of the infantry battalions they were attached to and could be asked to fight with several successive waves of infantry. The section was never to 'cavalier seul' (go it alone, i.e. without infantry support) but was to remain in close contact with the infantry.[51] Thus the French army had a well-thought out methodology for the use of both medium and light tanks in offensive operations but this needed to be tested in combat, particularly in relation to the largely untried light tanks.

The first tank operations undertaken by the *AS* with the new regulations were the frantic defensive battles fought to stop the German spring offensives of 1918, including the introduction of the Renaults at the end of May. It had been intended that they would only be used *en masse* in a large-scale offensive, but necessity meant that their first engagement was in a small-scale counterattack against German Seventh Army, which was making alarming progress south-west of Soissons and thus in the general direction of Paris. GQG ordered that all available forces were to be thrown into the battle to stop the Germans entering the forest of Villers-Cotterets, 'whatever the cost.'[52] A local counterattack by one division was supported by elements from two light-tank companies. The tank attack was eventually beaten-off but the offensive capacity of two German divisions had been 'crippled,' the first appearance of the Renaults causing 'a real panic' in the German ranks.[53]

Although the regulations were now clear about tank employment, the immediate difficulty was ensuring that both the tank and infantry officers understood and were implementing them. Accordingly a number of different documents were issued,

[49]Ibid,. p. 21.
[50]Ibid,. p. 24.
[51]Ibid.
[52]Captains Delacommune & Cornic, 'Le Premier engagement des chars Renault en 1918', *La Revue d'infanterie,* August 1932, pp. 215-23, p. 223.
[53]SHD, 16N2150, GQG, *Historique des opérations des unités de chars légers du 501 RAS*, 30 June 1918, p. 2.

addressed to both sets of officers. For example, in June 1918, Pétain issued a note, specifically addressed to infantry officers, on the employment of light-tanks which summarised the relevant parts of the *Reglement*.[54] He emphasised the importance of the infantry supporting the tanks; the latter's 'actions are in vain if not supported properly by the infantry.'[55] There was an important prescription at the end of the note. It said that the light tanks were only to be used *en masse* (that is one battalion per infantry division) in properly organised offensives and that any derogation from this rule must be immediately reported to Pétain.[56]

The tank officers also needed reminding of the regulations. For example, a note was issued to the *AS* army group commanders in April 1918 pointing out that medium-tank units had been recently used 'in contradiction to' the regulations.[57] It was considered necessary to remind all the *AS* commanders that the 'normal employment' of the *AS* was in *groupes* and only 'very exceptionally by the battery.'[58] Attention was also drawn to the requirements for good planning and the difficulties of moving the tanks on rough terrain.[59] There was a culture within the *AS* of carefully analysing after-combat reports and these were expected to be accurate, regardless of whether this was embarrassing for other *AS* officers. For example, Estienne's second-in-command, General Monhoven, wrote a scathing report on an *AS* engagement south-east of Soissons in June.[60] Three light-tank companies were involved in a small-scale action to clear the Forêt de Retz, which while successful, had shown up numerous deficiencies in the leadership of the section-commanders. One section-commander lost sight of one of his half-sections (two tanks) and left his other tanks to go and find it. Unsurprisingly perhaps, he found the missing half-section but had lost contact with the other, compounding his poor performance by then firing dangerously close to some nearby French infantry, contrary to the regulations. Another section-commander lost his entire unit on the battlefield and meeting a small group of German prisoners, decided to escort them back to the rear, contributing nothing to the battle according to the report. Monhoven also severely criticised some section-commanders for failing to observe the strict maintenance schedules of their tanks (which were detailed in the tank regulations), resulting in two sections not getting into action due to losing the majority of their tanks to breakdowns. Monhoven instructed *AS* personnel to compile accurate after-

[54]SHD, 16N2142, Pétain, *Note sur l'emploi des chars légers*, 9 June 1918.
[55]Ibid.
[56]Ibid.
[57]SHD, 16N2150, GAN, *Note pour les commandants d'AS de GA*, 20 April 1918.
[58]Ibid. Underlined in the original.
[59]Ibid.
[60]SHD, 16N2159, Artillerie d'assaut, *Remarques relatives à l'engagement du 28 juin*, 19 July 1918.

action reports, which should not avoid, 'where truly merited,' criticism of *AS* officers and crews.[61]

The only large-scale use of the *AS* before July 1918 was the Battle of the Matz in June, when the French army was forced to undertake a desperate counterattack on the flank of German Eighteenth Army, which was threatening to open the road through Compiegne and then to Paris. Under the command of one of France's most competent generals, Charles Mangin, five infantry divisions and all the available tanks (144 medium tanks) in the area were launched at the exposed German flank. Mangin's immediate superior, General Émile Fayolle (commanding Reserve Army Group), thought the attack would take two or three days to organise but Mangin did it in one. As might be expected, the speed and urgency of the operation meant that many requirements of the tank regulations were broken. In particular, the detailed liaison in advance of combat between the infantry and *AS* officers that was so emphasised in the *Instruction* was simply not possible. Most of the *groupe* commanders only met their infantry equivalents several hours before the battle started and the infantry had no opportunity to undertake any training at all with the tanks. Indeed, many had never seen a tank before the day of the attack.[62] Fortunately, most of the *AS* officers had been stationed previously in the area and were thus familiar with the ground, which was just as well as there was no time for the regulation meticulous reconnaissance.[63]

It was intended that the tanks were to set off with the leading waves of infantry but delays on the approach march meant that only two *groupements* were able to do this. The initial attack was a great success, although the speed of the operation meant that it was unable to start in early morning, as per the tank-regulations. Fortunately, there was a persistent heavy mist that morning, which prevented the German artillery coming into action effectively until the afternoon. Across an eight-kilometre front, the French had pushed the Germans back three kilometres and it was clear that the German offensive could not continue. Seventy-three tanks were lost and there were 385 casualties, including 50 dead, out of the 2313 men who had gone into action. These casualties were not evenly distributed among the *AS* units, some *groupes* having lost 21% of their personnel and over 80% of their tanks.[64] Roughly

[61]Ibid.
[62]SHD, 16N2164. Groupement X, *Engagement du 11 juin dans la région Tricot-Courcelles.*
[63]SHD, 16N2163, Groupement III, *Rapport*, undated.
[64]SHD, 16N2120, GQG, *Tableau rectifie des pertes en chars et personnel par engagement au cours de la campagne.*

three-quarters of the tanks lost were hit by direct fire, usually from field guns, the others succumbing to indirect heavy artillery fire, usually after being immobilised.[65]

In June 1918, it was decided that the *Instruction Provisoire* was in need of revision because of the introduction into service of the light-tanks and the formation of tank-regiments.[66] Alterations ranged from changes of emphasis to more detailed instructions on practical matters such as the strategic movement of tanks. Most importantly, part of the resume was changed. From stating that 'the *AS* should only be used *en masse* and with a precise aim' it was changed to; 'the *AS* should only be used *en masse* in regularly mounted offensives.'[67]

The conduct of operations from April to June had often been in contradiction to the provisions of the tank regulations, due to necessity and the extemporised nature of the fighting. The first opportunity to test the regulations in a large-scale offensive came in July 1918 at Soissons, as the final part of the Second Battle of the Marne. General Estienne had been considering mounting a tank attack without a preliminary artillery preparation since he first visited GQG with his proposals for a tank force in 1915. This idea had met with considerable scepticism within the French army until the success of the British tank attack at Cambrai silenced most doubt.[68] Experiments with surprise tank attacks on a small scale were made during the first half of 1918 that gave confidence that a large-scale engagement with this methodology could be used successfully.[69]

At Soissons, French X Army had 55 Renaults and 171 medium-tanks available on 17 July 1918, although breakdowns prevented many coming into action the next day.[70] In line with the tank-regulations, the original intention had been for the Renaults to accompany each front-line division but there were simply too few available to do this and they became the army reserve. As there would be no artillery preparation, the tanks were ordered to advance ahead of the infantry, tasked, as per the regulations, with neutralising machine guns and any strong points not destroyed by artillery fire. The jump-off time (04.35) was also in line with the regulations, having been chosen so that the tanks could get into action in semi-darkness. In addition to the normal

[65]Ibid.
[66]SHD, 16N2142, GAN, *Note pour le général commandant l'artillerie d'assaut,* 20 June 1918.
[67]Ibid.
[68]SHD, 16N2142, GAN, *Renseignements complémentaires de détail au sujet de l'emploi des tanks à Cambrai*, 6 March 1918.
[69]See SHD, 16N2163, Groupement Chanoine, *Compte rendu de l'opération du 9 Juillet,* 11 July 1918.
[70]AFGG 7/1, p. 23.

counter-battery fire and neutralisation of known artillery observation posts, a large number of smoke shells were included in the barrage.[71] In each infantry division a *groupe* of field-guns was tasked with only undertaking counter-battery fire against anti-tank guns.[72] Thus the tanks were to be well-protected from enemy artillery, in line with the regulations.

On 18 July, the French medium tanks went forward with the first wave of infantry, just as the intensive artillery barrage was unleashed, catching the Germans entirely by surprise, in some areas the French advancing several kilometres in the first push. The initial tank attack was very successful but as the day progressed the tank attacks became less and less effective as the tanks were used in smaller and smaller numbers.

Despite its success, Soissons raised a number of issues connected with the tank-regulations, although these were more to do with their implementation than any problems in their prescriptions. To address these problems, an important *Note* was issued by Groupe d'armeés du nord (GAN), addressed to its infantry and artillery commanders down to the level of battalion and *groupe*.[73] It was in effect a précis of the *Instruction,* justified because many important prescriptions 'were often forgotten in the last battles and the failure to observe these gave poor results.'[74] In particular, Soissons had confirmed that operations with either weak infantry or tank units would be unlikely to be successful. The *Instruction* had advised that the *AS* 'is used-up quickly on the battlefield,' requiring a careful management of tank reserves by commanders.[75] This is clearly illustrated by the course of the Battle of Soissons; on 18 July 1918, X Army had 226 tanks engaged, the following day only 105 tanks went into action. By 20 July, X Army *AS* had only 32 tanks combat-ready, although, through great overnight efforts by the maintenance crews, 100 were available for combat the next day. The following morning, there were only three tanks fit for combat and the *AS* was retired from the battle into the army reserve that evening.

A key mistake at Soissons was that the tank units had often been used piecemeal, with weakened infantry units, in insufficiently planned attacks, after the initial morning assault in the morning of 18 July, quite contrary to the provisions of the tank regulations. The *Note* emphasised that nearly all coming operations would be in

[71]SHD, 16N2162, Groupement I, *Annexe au rapport sur les opérations du 18 au 23 Juillet 1918*, undated.
[72]Ibid.
[73]SHD, 16N2142, GAN, *Enseignements tirés des combats récents en ce qui concerne l'artillerie d'assaut*, 9 September 1918.
[74]Ibid.
[75]*Instruction*, p. 6.

depth and the *AS* units needed to be distributed accordingly. The continuity of *AS* action could only be assured by having tank reserves at army, divisional and regimental level, with potential employment plans for these being made in advance by commanders.

Although it must be conceded that it was tempting for infantry commanders to use every means at their disposal to increase their success, it was clearly erroneous to expect small-scale tank attacks, unsupported by artillery and with depleted and exhausted infantry, to be successful against enemy positions that had already resisted a full-scale tank attack. However, getting this message across to the infantry commanders, desperate to limit their units' casualties, was to remain a problem for the rest of the war. As for the *AS,* one senior officer wrote that it was simply a matter of honour for them to remain on the battlefield to support the infantry.[76]

It was now clear that tanks could be used as a substitute for artillery in semi-mobile warfare, but it remained to be seen if this approach could work in an attack on a strongly fortified position. The operations in Champagne (September-October 1918) provide an illustration of how the tank regulations were being implemented towards the end of the war. By this stage of the war, the medium tanks were very much on the wane and initially only eighteen Schneiders were available for this operation to support 138 Renaults. The strength of the German defences in Champagne was formidable; in the main combat zone, the Germans had two lines of double-trenches, the second of which was placed on the reverse-slope of a crest and was at the limit of the French field artillery's range.[77] All the German trenches were covered by an extensive network of barbed-wire, with deep shelters in the trenches and concrete shelters for the German machine guns and observation posts. The terrain was equally difficult, being covered in small woods, with successive undulations and crossed by the Somme-Py to Manre railway line.[78] Once past this area, the ground became very treacherous for the tanks; it was heavily wooded with a series of deep ravines, the two principal ridges being held in strength by the Germans. In addition, the Germans had brought numerous reinforcements into the area as well as additional equipment, including machine guns, mines, cannons and anti-tank rifles.[79]

Despite such unfavourable conditions, the Champagne operations were relatively successful, particularly considering that, unlike at Soissons, they had taken place against a well-entrenched enemy. The Germans had received ample warning of a possible tank-attack and had plenty of time to prepare for it but the tank casualties

[76]21 Corps AS, *Rapport*, p. 12.
[77]SHD, 26N459/2, *Opérations offensives (26 Septembre–8 Octobre)*.
[78]Ibid.
[79]Ibid.

were relatively light; only fifty-two Renaults and five medium-tanks were seriously damaged out of the six hundred and seventy two tanks eventually engaged in the operation.[80] Although the rapid advance of the French infantry prevented most of the isolated forward anti-tank guns from coming into action, German field guns, both batteries and single guns, remained the main danger to the tanks.

The operations in Champagne reinforced the *AS* officers' belief in the soundness of their regulations. When used according to the regulations, as on the first day of action in Champagne, the tanks could offer substantial assistance to the infantry, but this was diluted as operations became of a smaller scale and more extemporised. The Champagne operations' major lesson in relation to the *AS* was the same as that of Soissons; there was a need for the tank regulations to be understood and adhered to by the infantry commanders, rather than any revision required, and there were no further tank regulations issued during the war.[81]

The experience of the *AS* illustrates the difficulties encountered in bringing sound military ideas into practice; as Clausewitz says, '...in war it is difficult for normal efforts to achieve even moderate results.'[82] The battles of Soissons and Champagne both demonstrate that French infantry commanders, from divisional level downwards, frequently either misunderstood or decided to ignore the tank regulations, the latter being likely in the majority of cases. The French army and GQG cannot be accused of failing to promulgate information to the infantry and artillery commanders as numerous notes on tank use were sent out on a regular basis.

The issue of risk is the key to understanding French battle-planning in 1918. By this stage of the war, the mutinies of the previous year had made French commanders well aware of the fragile nature of their force and they were, not unnaturally, somewhat risk averse. A widely circulated GQG report on Malmaison had drawn attention to the lower percentage of overall casualties suffered there when compared with the battles on the Aisne in April and May 1917 and Verdun in August 1917; the losses at Malmaison being 8.45%, on the Aisne 17.7% and 18.4% at Verdun (the majority of these casualties being from the infantry).[83] In relation to keeping infantry losses down, the tanks had proved particularly useful in eliminating German machine-gun nests untouched by the artillery preparation, thereby considerably reducing the infantry's losses. This fitted in nicely with French military planning, which was oriented around avoiding or minimising risk, even if taking a risk might

[80]*Tableau rectifie des pertes.*
[81]SHD, 16N2150, Estienne to Pétain, 21 November 1918.
[82]Clausewitz, *On War*, p. 120.
[83]AFGG 6/1, 1, 187, GAN, *Note sur les attaques à objectif limité*, 15 December 1917.

produce better results. It was clear to GQG that infantry casualties would be high, regardless of success, and therefore it was of the highest priority to ensure the initial attack was successful. The tanks therefore offered infantry commanders, at all levels, an opportunity to minimise their casualties.

David Johnson has argued that the French Army after the Great War 'viewed technology from an evolutionary perspective supportive of its existing doctrine,' which is equally true of the army's attitude during the war.[84] This appears a rather conservative approach until one considers the level of technology available, which was far too primitive to allow anything other than an incremental approach to integrating it into the army. It was certainly not developed enough to justify a radical break with existing doctrine in an army that had become justifiably cautious.

The evidence is that the *AS* fought the war in as intelligent and sensible a manner as was possible, given the state of the technology available. It was the limitations of this technology that caused the most problems in *AS* operations, rather than any failure of preparation, planning or execution. Not only was tank technology dependent on the primitive automobile industry of the time, it had to be tested and developed in the field. No amount of sound tank doctrine could compensate for the fragility of the material, for the paucity of battlefield communication equipment and for the lack of tank-infantry training opportunities. This is an illustration of an important if little acknowledged aspect of the war. Contrary to the popular caricature of the Great War military, good ideas were often quickly adopted but they had to wait for adequate equipment to come into service before they could be implemented. There was no lack of intellectual understanding of the tactical war in French commanders by 1917, what was lacking was the equipment to put this understanding into practice. Only in 1918 was the French army equipped with enough aircraft, enough tanks and, most importantly, enough heavy-artillery to begin to exercise a mastery of the new form of combined-arms warfare that arose in the Great War.

[84]David E. Johnson, *Fast Tanks and Heavy Bombers: Innovation in the US Army 1914–1945* (Ithaca, NY: Cornell UP, 1998), p. 3.