



**Cruzin' for a Bruzin':**  
**The Avalon Hill and John Garret Counter Sets**  
**for the 1940 Campaign in France**

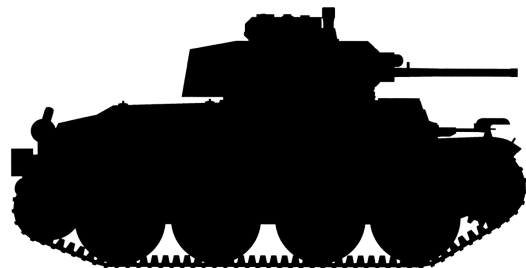
By Carl Schwamberger

The most well known PanzerBlitz/ Panzer Leader pieces for the 1940 campaign in France are those by Ramiro Cruz, published by Avalon Hill in *The General* in 1976. They reflect one school of French military history still popular in the 1970s, but which present problems when trying to model or simulate the battles of 1940. Other pieces were published elsewhere with alternative values. A set authored by John Garrett in *Outposts* magazine, circa 1974-76, represents a wide study of PB playing piece expansion, and includes the French of 1940.

There are significant differences between the Cruz and Garrett interpretations, specifically in the numbers of vehicles each counter represents and in the combat values on the pieces. Further, when used according to the TO/TE of the French army, and deployed as per the actual battles, the Cruz French tank and infantry pieces cannot offer significant opposition to the Germans. This would not be a issue if the myth of a universal French collapse were true, but most of the key battles were not easy for the Germans. Some were near-run things, and in more than a few armored

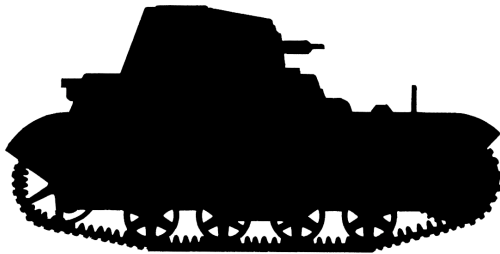
battles the French won tactical victories. Unfortunately, it is extremely difficult if not impossible to reproduce these outcomes with the Cruz counters when using them as per the actual battles. Several German tank pieces reflect the same general problem: they cannot perform successfully the tasks that, historically, they succeeded in.

My object in this article is to examine selected Cruz French tank pieces according to the original standards of PanzerBlitz design. The corresponding Garrett pieces are included for comparison and to examine their usefulness as alternatives. The methods to find tank or armored combat values described by Alan Arvold in his noteworthy article, "Anti-Armor Attack and Range Factors in PanzerBlitz" (Imaginative Strategist, 2005) will be used. My object is to provide a starting point for a reconsideration of the various 1940 PB pieces. I caution the reader, however, that what follows is



merely a basis for further discussion; I have no intention of dictating firm conclusions.

The starting points of gun penetration and armor thickness are straight-forward enough. The modifiers one applies to these, however, are much more subjective. I have used those in the Arvold article for consistency, but have added a few select others. Many other possible modifiers are possible but the validity of those and others rides on largely best guess or opinion;



without clear evidence I have been reluctant to use them. Identifying mathematical values for any game is tricky. At the scale of PB/PL the analysis revolves around the performance of individual weapons and crew, and their combined performance as small units, specifically platoon-sized units. Beyond that the issues of crew training and tactical methods are difficult to pin down. I have not been able to find critical analysis or data tables for the effectiveness of various small combat formations. Hard facts for rates of fire, gunnery skills, the effectiveness of specific platoon, squad, or individual vehicle tactics for the 1940 campaign in France are few. Researching the anecdotal evidence from eyewitness accounts is extremely time consuming and filled with traps.

For example, there is a popular view that the French army was much inferior to the German army in training and skill. In certain aspects this was the case. Some large formations such as the French 55th and 71st Divisions spent little time training. Conversely, there is solid general evidence of the better-led French units making the time for proper training. At the crew/squad/platoon the evidence of their level of training compares favorably with the Wehrmacht.

One method for evaluating respective combat abilities and cross checking other evidence is to identify which side caused the other the greater casualties. In the case of the tanks there are some general figures for each side that suggest similar combat losses were suffered. Unfortunately these do not make a clear separation of combat losses from mechanical breakdowns, neither do they separate losses in tank versus tank combat from losses by artillery, aircraft, mines, or antitank guns. Overall in tank versus tank engagements there is a rough parity of losses between the Germans and the French.

Eyewitness accounts clarify matters a little. On one hand there is the oft-repeated quote of a German officer that, "French tanks attack in loose order, singly or in small groups." This remark derives from an observation made during the battle of Merdorp, during which, depending on which account is read, the Germans lost between 140 and 190 tanks. The French lost between 90 and 110. Further confusion with this example

comes from the heavy use of artillery by the French and direct Luftwaffe support. Many other like examples are available. Typically the German description is of 100 French tanks attacking at X and half are destroyed. The French version is that 20 attacked and 5 were lost. With such material one is limited again to educated guesses.

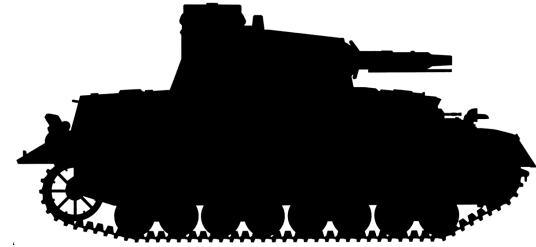
Considering all this, I have largely rejected making up modifiers for training differences. The Defensive Tactics Modifier described by Arvold is included for consistency for the German pieces. The Offensive Tactics Modifier I have applied to both sides.

To the French tanks I have added three modifiers. The armor modifier illustrates the gross advantage in side armor these tanks had. True, several French tanks had this or that flaw tucked away, but the tanks opposing them had two universal flaws: their armor was too thin to resist the average AP ammo of the era, and it was poorly sloped. The modifiers for turret or gun crew and for platoon size are self-explanatory. These are all three fairly subjective, but no more so than the earlier modifiers used for the PB combat values.

The modifiers for platoon size I left out. The Germans did not use a universal platoon of five tanks in 1940, and many companies were mixed with two different types. The French did not formally mix tanks at the company or battalion level. They did use three different platoon sizes, 3, 4, or 5, and like the Germans had "extra"

command tanks in each company and battalion.

The excluded modifiers can be plugged in by the reader easily enough. I will eventually do so myself as solid data is located.



### **Chart 1: Attack Factors**

The first chart provides the base for the Attack Factors of the armored units. Numbers for penetration and armor thickness are drawn from several sources wherever possible. To a limited extent I have averaged these, where it is not clear which source is best. There are two numbers for penetration displayed for the French weapons. The first line derives from French sources, which are mostly based on armor penetration tests conducted at 100 meters versus vertical steel plates. The second line represents German tests, which were conducted at 500 meters versus plate at a 30 degree angle. All the German penetration numbers are assumed to be from this 500 metre/30 degree test. Both tests have their usefulness. There is some evidence that the engagement ranges of the 1940 tank battles were much less than 500 meters. More importantly, the German tanks of 1940 had poorly sloped armor. Very few planes on the panzers surfaces came close to the 30 degrees they tested themselves against.

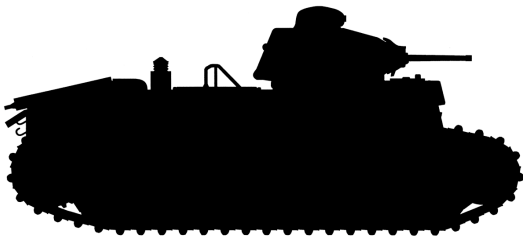
Chart 1: Attack Factors

French AP Gun Penetration								
Tank	Tests by Gun & Country	Penet. in mm	Turret Crew	Crew Modifier	Offensive Tactics	Total	Cruz	Garrett
B1 bis	L35 Hotchkiss 47mm TG	62	2	-0.5	2	7.2	8	4
	German	50		0.5	2	6.5		
	L12 St Chamond 75mm IG	34	2	-0.5	3	5.9		
	H Class vs soft target *	10		-0.5	3	10.5		B(H)
AMR	25 mm	54	1	4.4	N/A		2	2
	German	29		1.9	Recon			
H35	SA18 37mm L21 Puteaux TG	31	1	-1	1	3.1	4	3
	German	29				2.9		
R35	SA18 37mm L21 Puteaux TG	31	1	-1	1	3.1	4	3
	German	20				2.9		
AMC 35	L35 Hotchkiss 47mm TG	62	1	-1	2	7.2	5	4
	German	33				4.3		
FCM 36	SA38 L33 37mm Puteaux TG	31	1	-1	1	3.1		3
	German	31				3.1		
H39	Hotchkiss 37mm L33	49	1	-1	1	4.9	5	3
	German	31				3.1		
R40 [AMX 40]	SA38 L33 37mm Puteaux TG	49	1	-1	1	4.9	5	
	German	31				3.1		
S35	L35 Hotchkiss 47mm TG	62	2	-0.5	2	7.7	6	4
	German	33				4.3		
D2	L35 Hotchkiss 47mm TG	62	2	-0.5	2	7.7	6	4
	German	33				4.3		
Panhard/ Laffly 80	13.2mm HMG	29	2	1.9	N/A		2(U)	2
					Recon			
Towed Guns	Penetration in mm	Gun crew	Crew mod.	Limited traverse	Offensive tactics	Total	Cruz	Garrett
25mm ATG	50	4	0.5	N/A	1	5.5	4	2
	29							
47mm ATG	95	5	1	-1	2	12.5	6	5
	50					7		
German AP Gun Penetration								
Tank	Tests by Gun & Country	Penet. in mm	Turret Crew	Crew Modifier	Offensive Tactics	Total	Cruz	Garrett
Pz II	KwK 20mm	20	3		Recon		2	2
Pz 3Bt	KwK 3B(t)	33	3		1	4.3	5	3
Pz III d	KwK 36 L45 37mm	33	3		1	4.3	6	5
Pz IV	KwK 124 75mm	37	3		3	6.7	5(H)	10(H)
	H Class vs soft target	10			?			
* Limited traverse modifier of -2 applies to hull-mounted 75mm gun								

If we follow Dunnigan's method, we find that the raw AF for the examples given in chart one are at odds with both Cruz and Garrett's counters. The

Cruz values are closer to the computed values but again these are for the 10-to-14 vehicle per piece ratio. The first modifier affecting the French

firepower would be the rate of fire. The number of turret crew are shown for each tank. In the case of the Char B1bis the driver/gunner and loader are included for the 75mm gun. Confirmation of the effect of the smaller crew jumps out everywhere in the historical record. To be fair there are occasional remarks by French tankers that the small crew was an advantage, but the weight of the record suggests otherwise.



The B1bis presents a aggravating problem with its two guns. If these had a similar range of capabilities versus armored and soft targets it would be simple to combine them into a single AF. But the 75mm gun apparently lacked an AP round and had very poor penetration. The 47mm gun was not much good versus infantry. Complicating this is the presence of two machine guns, raising the potential H class AF.

The Offensive Tactics category is straightforward enough for the Germans. For the French the question returns to that of just how effective the crews were. There is no overall or general indicator that they were any less aggressive than the Germans. For every example of French tanks withdrawing we can find another of German tanks crews breaking off an attack or a French unit pressing bravely

in. Lacking statistical data on this, I haven't fallen back on the anecdotal evidence (and the principle of innocent until proven guilty) to give the French the same modifier.

### **Chart 2: Defense Factors**

The armor thicknesses given in Chart 2 are best case, usually hull front or the gun mantels. Note the values given for the side armor of the French. These are consistent, and the book values are only 15 to 20 per cent less for rear armor. Also the slope of the hull and turret armor was usually between 45 and 70 degrees. The side armor for the German models is significantly less, averaging between 10 and 20mm. The slope is typically between 70 and 90 degrees on the German tanks.

The DF for the Cruz French are apparently based on the idea that these counters represent full companies of 10 to 14 vehicles. To make up for these masses, one can stack only two tank pieces per hex, but this still allows the player to concentrate far more tanks than was typical. It is not clear how many vehicles Garrett's pieces are based on, although his text suggests 3 to 5. The B1 tanks came in companies of ten and platoons of three. The other infantry support tanks were in platoons for four. The cavalry, however, organized most tank units into platoons of 5, with 22 in a squadron. The platoon size of five is the most common for the Somua 35 or Hotchkiss 39, which were usually found in the cavalry tank regiments where the smallest unit had five tanks.

The platoon size modifier is included to illustrate a possible difference. I suspect

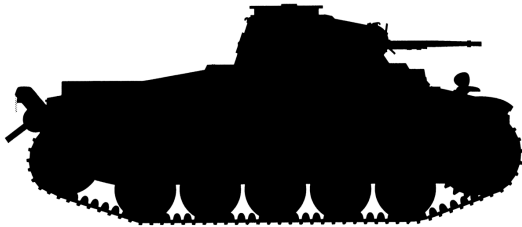
Chart 2: Defense Factors						
French Tanks						
Tank	Front or Mantel Armor	Side Armor Modifier x 1.5	Platoon size	Modifier -1 per tank	Cruz	Garrett
B1 bis	60mm	9	3	7	8	7
	60mm side			6.5		
	55mm turret	8.5				
AMR	13mm	N/A	3	-0.7	4	2
H35	40mm	6	4	5	6	5
	35mm side					
R35	45mm	6.75	4	5.75	7	5
	35mm side					
AMC 35	40mm	6	4	5	6	5
	35mm side					
FCM 36	40mm	N/A	4	3		5
	20mm side					
H39	45mm	6.75	5	5.75	7	6
	40mm side					
R40	58mm	8.7	4	7.7	7	
	40mm side					
S35	55mm	8.25	5	8.25	8	6
	46mm side					
D2	40mm	6 (armor not as well closed)	4	5	7	5
	40mm side					
German Tanks						
Tank	Front or Mantel Armor	Tactics Modifier x 2			Cruz	Garrett
Pz I a	13mm	2.6			2	2
Pz II c	30mm	6			5	4
Pz 38 t	25mm	5			5	3
Pz III F	30m	6			6	4
Pz IV d	35mm	N/A Support?			5	4

like all the modifiers it needs further research.

Following Arvold's description of Cruz's methods, the German tanks have their DF raised to account for superior tactics - specifically, their practice of keeping the axis of advance at a angle to the enemy, thus adding an extra angle or "artificial slope" to

the armor. I have severe reservations about the difference this practice would have made historically; nor is it clear that this tactic was in common use in 1940, or even that it was unique to the Wehrmacht. Given that, the reader may be astonished to learn that, in game terms, the DFs for the Cruz counters are increased by 60 to 100 per cent, apparently by this tactical

modifier. It is questionable, but I include it in order to keep this analysis consistent. The Panzer IV crews were trained for a support role; however, they were frequently required to close with the enemy in order to supplement the inadequate Panzer II and Panzer 38t models. Consequently the tactics modifier may not be appropriate for them.



### Ranges

It is clear from the several penetration tables I used that ranges beyond 700 meters for AP rounds are questionable. The AH ranges are suitable for the higher AF of those pieces. Garrett's pieces have longer ranges, but the AF is significantly less, negating the advantage.

### Conclusions

The results do not closely align with either the counters designed by Cruz or Garrett. The French armor defense values lean towards Cruz, but problem here is that his counters represent a group double or triple the 5 tank counters upon which the analysis is based. Cruz's assumption of grossly ineffective French tank crews, requiring 2 or 3 tanks to represent one, is questionable. Garrett, for his part, seems to be ignoring the tactics modifier for the German tanks the AH

pieces reflect. Or he may have assumed smaller platoons. The derived attack factors slightly favor Garrett. The exception is in the case of the more powerful French guns - the L33 37mm and the 47mm guns. Why Garrett rated these lower is not clear.

Two courses for change suggest themselves. The simplest is to use the Cruz versions of the French pieces, but double the number used. That is, use two counters to represent a company or 10 to 14 tanks, or 5 to 7 tanks per counter. This allows one to create scenarios with the French armor closer to its historical capability. I recommend this route when making a Garrett counter set is not a option. On the German side, the exceptions to Cruz's pieces are the Panzer IV and the Stug III B carrying the 75mm L24 gun. I highly recommend doubling the AF to a 10 H for both.

Another method is to use the Garrett values with some small modification, which is my personal preference. This allows a little better modeling of the tactics of the French armored forces through the use of 3 to 5 vehicle counters. Use the Cruz values for most of the German tanks and the French AT guns. In either case, I strongly recommend keeping the stacking for French armor at two per hex. This reproduces the French practice of fighting in smaller more dispersed groups than the Germans.

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