The Operational Readiness State of Tanks in Army Group Center's Panzer Groups in late August 1941, by Wojciech Aleksandrowicz

Foreword by Nigel Askey

Did Army Group Center have sufficient numbers of operational tanks to conduct a successful invasion of the Moscow-Kalinin-Tula-Gorky space in August and September 1941? This question has been answered with new and insightful research by guest author Wojciech Aleksandrowicz.

Even after 77 years of post WWII history, one of the most debated historical 'what ifs' remains the events surrounding Hitler's famous Directive No. 33 on 19th July 1941. It essentially stated that Moscow was no longer the primary pre-war objective, and that once the Smolensk pocket had been eliminated (by early August) Army Group Centre (AGC) would use its panzer groups to assist Army Groups North and South. Since that time, historians have expressed various views on why the Wehrmacht could, or could not, have achieved its pre-invasion goals, and successfully invaded and occupied the Moscow region well before the 1941-42 winter set in. The various discourses and debates tend to focus on several key areas. These include: German logistical and supply constraints, the potential threat to AGC's southern flank if they advanced on Moscow so early, and that in August 1941 AGC did not have the operational tanks that would have been required.

The latter claim that AGC was effectively hamstrung by lack of operational tanks is the focus of this article. It came to prominence in the period after the collapse of the USSR, mostly as a consequence of various works by authors such as David Stahel and David Glantz. These works incorporate various statements about the readiness of operational tanks at various points in August and September, and then use this as evidence for their assertions.

However, until now, no one (at least to my knowledge) has conducted the necessary research or the associated fully-holistic analysis comparing the operational tanks that were available for Operation Typhoon and the operational tanks that would have been available for an advance on Moscow in late August 1941. This is, after all, the real crux of the matter. If Operation Typhoon came so close to success (and inflicted such massive damage) against considerably larger Red Army Forces, which were also dug in and had the weather on their

side, in October 1941, then how would the much smaller and less well prepared Red Army forces have fared in August 1941 in good weather?

I would like to thank Wojciech for his original ideas, the excellent research and his valuable contribution to this ongoing discourse. I believe his original approach will shed new light and promote further understanding of the consequences resulting from Hitler's fateful decision in July 1941.

Introduction

One of the few points brought to discussions about a possibility of Army Group Center (AGC) launching Operation Typhoon (an attack on the Moscow-Gorky industrial space) in late August 1941 is the state of the panzer divisions (PDs) at the disposal of both 2nd and 3rd Panzer Groups operating under AGC's command. It is often repeated that the number of combat-ready panzers was insufficient to conduct such an armoured thrust after the battle of Smolensk had concluded, and that the two month-long strategic pause enforced on AGC by Hitler's Directive No. 33 came out of the necessity to restore the level of operational readiness of its tanks. This, of course, completely ignores what actually happened to both the 2nd and 3rd Panzer Groups as they continued battling and travelling very long distances elsewhere (and away from the Moscow axis).

Many think that the number of operational tanks possessed by AGC on 2nd October, when Operation Typhoon finally started, was somehow greater, when compared to what was available in the third decade of August (which is the date proposed by Hoth for a renewal of the assault by his 3rd Panzer Group on the Soviet capital city). The purpose of this article is to reach the actual figure of combat-ready panzers in both panzer groups around the approximate date of an earlier Operation Typhoon (as close as it is possible), compare it with the actual figure for October, and then draw some conclusions.

At the time of writing this article, this author has not yet encountered an attempt to provide a specific number of operational tanks in AGC during this segment of time, and attempted to explore this seemingly unfathomable topic while also referring to the available literature and German documentation from that period.

1) The Number of Operational Tanks in AGC in late August 1941

Historiography has stayed away from generating exact numbers, or even rough estimates, having used percentage figures from the Halder War Diary instead. Thus, David Glantz in *Barbarossa Derailed Vol. 2* in Table 29 cites a report from 28th August, which presented the condition of the tanks in 2nd and 3rd Panzer Groups in the middle of the month. Accordingly, Guderian's panzer divisions had 45% of tanks operational, except 10th Panzer Division (PD), which had 83% of tanks operational and 18th PD with its 57% panzers combat-ready. On the other hand, Hoth's panzer groups had 45% of its tanks in an operational state with the exception of 7th PD, which had only 24% of Panzers operational.

The problem with juggling with percentages is that doing so often offers a misleading picture. For example, in the same War Diary on 14th September, two weeks before the launch of Operation Typhoon, we read that 3rd PD had 20% of its tanks fit for combat (with the rest described as "repair and total loss"), 4th PD had 29% of tanks ready to roll, 17th PD had 21% in this regard, and, finally, 18th PD had 31% of Panzers operational. Based on these statistics alone, 2nd Panzer Group was evidently in worse condition in the middle of September compared to its state in the middle of August. Because of such discrepancies, we need to dive further into the precise numbers available in the literature on this subject.

¹ Private war journal of Generaloberst Franz Halder, Chief of the General Staff of the Supreme Command of the German Army (OKH), 14 August 1939 to 24 September 1942, volume VII, p.71. Obtainable here: https://cgsc.contentdm.oclc.org/digital/collection/p4013coll8/id/3974.

² Ibid. p. 101.

1a) Figures Presented by Hermann Müller-Hillebrand³ and Thomas Jentz⁴ for Early September 1941 (and the Minor Differences Between Them)

Table 1. The strength and number of operational tanks in AGC's 2nd and 3rd PGs, calculated on the basis of Müller-Hillebrand's work "Das Heer".

State as of September 4, 1941 ⁵								
2nd Panzer Group (Guderian)	3 PD	4 PD	10 PD	17 PD	18 PD	Total	%	
Initial strength	198	169	206	180	200	953	36.62	
Operational tanks	41	49	159	38	62	349	30.02	

Table 1 continued ⁶							
3rd Panzer Group (Hoth)	7 PD	12 PD	19 PD	20 PD	Total	%	
Initial strength	299	231	239	245	1,014	41.02	
Operational tanks	130	96	102	88	416		

Table 2. Combined data from Table 1.

Number of operational tanks in AGC as of September	%	
Initial strength	1967	20.00
Operational tanks	765	38.89

Additional comment:

Since Müller-Hillebrand's table has some trouble with assigning panzer divisions to the appropriate panzer groups, the author of this article has used order of battle published in *Panzertruppen Vol. 1 1933-1942* by Thomas Jentz instead.⁸

³ Adjutant to the Chief of the Army General Staff , Colonel- General Franz Halder , until the spring of 1942; promoted to major general on February 1, 1945; author of several studies on the history of the war.

⁴ Author and co-author of 93 books focusing on the German Panzer Force and its Panzerkampfwagen at the time of World War II.

⁵ H. Müller-Hillebrand, Das Heer. 1933-1945, vol. III, p. 205.

⁶ Ibid.

⁷ Ibid.

⁸ T. Jentz, Panzertruppen vol. 1 1933-1942, Schiffer Military History 1997, p. 189.

Table 3. Strength and number of operational tanks in AGC's 2nd and 3rd PG's PDs calculated on the basis of Jentz's work "Panzertruppen 1933-1942".

Da	Data for the third decade of August and the first decade of September 1941 collected by T. Jentz ⁹									
3 PD (4th of September)	4 PD (9th of September)	10 PD (4th of September)	17 DP (10th of September)	of	7 PD (6th of September)	12 PD (26th of August)	19 PD (25th of August)	20 PD (25th of August)	Total	%
229	212	200	216	229	278	232	239	240	2,075	
54	83	153	52	93	130	96	102	88	851	41.01

When analyzing the data from *Table 1* and *Table 3*, an attentive reader may notice a slight difference in the statistics reported for the 3rd and 10th Panzer Divisions in 2nd Panzer Group by Müller-Hillebrand and Jentz on the same date - 4th September, 1941. This minor discrepancy is shown below and in its final form: the difference is circa 2% in favor of higher operational readiness data presented by Jentz. This, however, corresponds with the overall difference in percentage of combat-ready Panzers shown in *Table 2* (38.89) and *Table 3* (41.01) respectively.

Table 4. Minor discrepancy in data collected by Müller-Hillebrand and Jentz.

Discrepancy in combat readiness (in %) as of September 4					
3 PD	10 PD				
20.70	77.18	per Müller- Hillebrand			
23.58	76.5	per Jentz			
2.87	-0.68	differences			
2.	19	final difference			

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⁹ Ibid., p. 206.

The next logical step is to compile the data from the remaining dates and try to calculate the average difference in the combat readiness of AGC's tanks and (on the occasion) the daily average percentage of panzers that regained this readiness.

Table 5. Average difference in the combat readiness of AGC's tanks.

Combat readiness (in %) ¹⁰							
	4 PD	17 PD	18 PD	7 PD			
September 4 ¹¹	28.99	21.11	31	43.47			
September 6				46.76			
September 9	39.15		40.61				
September 10		24.07					

Table 6. Daily average percentage of tanks that regained their operational status.

	4 PD	17 PD	18 PD	7 PD
Day difference	5	6	5	2
Percentage point difference	10.15	2.96	9.61	3.28
Average for 1 day	2.03	0.49	1.92	1.64
Average day difference		4.	.5	
Average of averages for 1 day		1.	52	

 ¹⁰ Ibid.; see *Table 3*.
 ¹¹ H. Müller-Hillebrand, Das Heer..., p. 205.

From *Table 5* and *Table 6* one can read that the average number of days between the Hillebrand's date and Jentz's dates, for which they collected information about the combat readiness of Army Group Center's tanks, is about 4.5 days. If we multiply the number of days by a factor of 1.52 (which stands for average of averages for 1 day in percentage point differences), we get the figure of 6.85 in form of percentage point difference.

Then, if we calculate the average of percentage point difference for all of four panzer divisions listed in the aforementioned tables, we look at the figure of 6.5, which is a 0.35 discrepancy from the previous number. Hence, it can be inferred that the average number of percentage points of operationality gained by a panzer division (excluding 3rd and 10th PDs for the above-mentioned reason) for 1 day in the period from 4th to 10th September 1941 was approximately 1.52 percentage points.

1b) The Revised Figures for August 1941

Since Jentz's *Panzertruppen 1933-1942* contains data for only one¹² (Pz. Rgt. 7 of 10th PD) out of five panzer divisions within 2nd Panzer Group as of late August 1941, the most accurate source of data seems to be a report titled *Panzerlage der Pz. Gr. 2 am 22.8.1941.*¹³ According to the information it provides, Guderian's panzer group on 22nd August 1941 possessed 494 *einsatzbereite* (operational in German) *panzers*. 3rd PD had 60 combat-ready tanks, 4th PD - 64, 10th PD - 137, 17th PD - 74, 18th PD - 114 and finally Pz. Abt. 100 - 45.

Panzerlage states that the initial strength of the 2nd Panzer Group on 22nd June 1941 was 988 Panzerkampfwagen, which is 98 tanks less than the number given by Jentz and equals to 50% of combat-readiness (45% using Jentz figure). The number of 494 operational tanks in the third decade of August 1941 is also higher by 59 panzers, when compared to the state of Guderian's panzer group in the first decade of September 1941 (40% of combat-readiness reported). 14

After getting the number of 2nd Panzer Group operational tanks, it is time to present statistics on 3rd Panzer Group in the same period of time. Unfortunately, within the available documentation of Hoth's panzer group, there are no reports covering the status of

¹² T. Jentz, Panzertruppen..., p. 210.

¹³ KTB Nr. 1, Teil 2. Pz Gr 2. Ia NARA T313 R86 F7326496; see *Appendix I*.

¹⁴ See *Table 3*.

all its panzer divisions at once and the information is rather fragmentary. Therefore, the main source of data comes from Jentz. Consequently, on 25th August 1941, 19th PD and 20th PD had 102 and 88 operational tanks, respectively. 15 12th PD had 94 *einsatzbereite panzers* on 21st August. 16 Then, 7th PD's state is reported as of 6th September with 130 combat-ready tanks. However, on 21st August it was reported that this PD had 45% of its panzers available, which results in roughly 125 tanks ready to roll. 17 Overall, in the third decade of August 1941, at Hoth's disposal were c. 409 operational *Panzerkampfwagen*.

To summarize the above calculations, both <u>AGC's panzer groups had around 903 combat-ready tanks (494 within 2nd Panzer Group and 409 within 3rd Panzer Group) in late August 1941</u>, which equates to 43.5% of operationality (2.5 percentage points higher than in the first decade of September, as it is shown in *Table 3*).

One final matter to consider in this regard is the state of the 4th Panzer Group operating under Army Group North's command. This is because Hoepner's panzer divisions were part of the actual attack on Moscow starting on 2nd October 1941.

Table 7. Strength and number of operational tanks in 4th Panzer Group.

As of September 10, 1941 ¹⁸							
4th Panzer Group (Hoepner)	1 PD	6 PD	8 PD	Total	%		
Initial strength	156	256	223	635	69.24		
Operational tanks	99	181	154	434	68.34		
	72 (23rd of August) ¹⁹²⁰	169 (23rd of August) ²¹		395	62.20		

¹⁵ Ibid.

¹⁶ T. Jentz, Panzertruppen..., p. 210.

¹⁷ KTB Nr. 1. Pz Gr 3. la NARA T313 R225 F7489184.

¹⁸ T. Jentz, Panzertruppen..., p. 206.

¹⁹ Ibid., p. 211.

²⁰ 85 operational tanks on 27th of August. See *Anlage C 17 z. KTB Nr. 6 Pz Div 1. Ia NARA T315 R20 F000076* in *Appendix II*.

 $^{^{21}}$ Anlagen z. KTB Pz Div 6. Ia NARA T315 R329 F000513; see Appendix III.

The full picture of the considerations made so far is presented in the table below.

Table 8. Combat-readiness of AGC's and AGN's panzer groups.

Strength and number of operational tanks of 2nd, 3rd and 4th Panzer Groups in late August 1941							
	2nd Panzer Group (Guderian) 3rd Panzer 4th Panzer Group (Hoepner) ²² Total %						
Initial strength	1,086	989	635	2,710	47.0		
Operational tanks	494	409	395	1,298	47.9		

In the third decade of August 1941, AGC's and AGN's panzer groups possessed approximately 1,298 operational tanks (47.9% of operationality). When compared to the period going back to the first decade of September 1941, figures for both are pretty similar -1,285 combat-ready Panzers (47,4% of operationality).

2) The Number of Operational Tanks in AGC in Early October 1941

Numerous numbers have appeared in the historiography describing the number of tanks that the Wehrmacht had on the initial day of Operation Typhoon. Glantz in Barbarossa: Hitler's Invasion of Russia 1941 gives a figure of over 1,000 panzers, without specifying whether these were combat-ready tanks.²³ Bryan Fugate has counted 1,217 tanks ready to drive on Moscow on 2nd October 1941.²⁴ There is also a number of "2,103 to 2,254 tanks with the 14 panzer divisions subordinated to Heeresgruppe Mitte" reached by Gregory Liedtke. 25

Lev Lopukhovsky in The Viaz'ma Catastrophe, 1941 in Appendix VII gives a number of 1,620 operational panzers available in the panzer groups of Army Group Center for Operation Typhoon. This is accomplished by adding 25% of the 742 tanks under repair to the

²³ D. Glantz, Barbarossa: Hitler's Invasion of Russia 1941, Tempus Publishing 2001, p. 141.

²⁴ B. Fugate, Operation Barbarossa: Strategy and Tactics on the Eastern Front 1941, Presidio Press 1984, p. 286.

²⁵ G. Liedtke, Enduring the Whirlwind: The German Army and the Russo-German War 1941-1943, Helion & Company 2016, p. 148.

1,435 combat-ready tanks (59.6% of operationality). Without his extrapolations, 1,435 tanks ready for combat equates to 52.8% of operationality.

Notwithstanding, David Stahel is the historian who has studied this topic most thoroughly. In *Kiev 1941: Hitler's Battle for Supremacy in the East* his calculations are as follows.²⁷ By 27th September 2nd Panzer Group fielded 256 operational tanks (26% of operationality), with an additional 149 replacement tanks on their way: a total of 405 panzers.²⁸ According to Stahel's estimates, on 2nd October Hoth's 3rd Panzer Group (consisting of 1st, 6th and 7th PDs) had 350 combat ready tanks at the opening of Operation Typhoon. Lastly, the strongest of all three panzer groups involved in the attack on Moscow was the 4th Panzer Group, which mustered 780 einsatzbereite panzers. Of these, 450 were tanks in the newly arrived and fresh 2nd and 5th Panzer Divisions.²⁹

If we sum up Stahel's data, then <u>on 2nd October 1941 Army Group Center possessed</u> <u>c. 1,535 operational tanks</u>.

3) Comparison and Final Conclusions

Table 9. Comparison of the panzer groups operating under AGC's and AGN's command on 22nd August and 2nd October 1941 (within AGC).

Comparison of relative strength of the panzer groups involved in Operation Typhoon									
	2nd Panzer Group	3rd Panzer Group	4th Panzer Group	Total	%				
initial strength	1,086	989	635	2,710	\setminus				
Operational tanks around 22nd August 1941	494	409	395	1,298	47.89				
Operational tanks around 2nd October 1941	405	350	780	1,535	56.64				

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²⁶ L. Lopukhovsky, The Viaz'ma Catastrophe, 1941: The Red Army's Disastrous Stand Against Operation Typhoon, Helion & Company 2013, p. 726 (Kindle edition).

²⁷ D. Stahel, Kiev 1941: Hitler's Battle for Supremacy in the East, Cambridge University Press 2013, pp. 323-325.

²⁸ See also *KTB Nr. 1, Teil 2. Pz Gr 2. Ia NARA T313 R86 F7326837* and *KTB Nr. 1, Teil 2. Pz Gr 2. Ia NARA T313 R86 F7326838* in *Appendix IV*.

²⁹ Jentz, on p. 212, states 380 tanks in both panzer divisions. These comprised 194 panzers in 2nd PD and 186 panzers in 5th PD.

The 1,298 combat ready (or operational) tanks in the third decade of August 1941 represents 84.5% of the 1,535 tanks available at the start of Operation Typhoon. However, this percentage is very likely higher as Stahel seems to have over-counted by 70 Panzers in the 2nd and 5th Panzer Divisions.³⁰

What's more, Stahel states clearly that his data on the 4th Panzer Group's 11th Panzer Division is pure speculation. His estimation is a figure anywhere between 75 and 125 tanks³¹, and the final choice of including 100 tanks in the total figure of 780 operational Panzers at Hoepner's disposal is surprisingly close to reality. In a report dated 18th September, it was stated that the 11th Panzer Division had 119 combat-ready tanks.³² If we assume a similar number on 2nd October, and adjust the calculation to include Stahel's over-count of 70 panzers, the revised number is 1,484 operational tanks in Army Group Center on 2nd October 1941. This means the 1,298 tanks available around 22nd August represented 87.4% of the 1,484 tanks available on 2nd October.³³

Given that the Soviet forces (and especially their anti-tank forces) on the Moscow axis in late August 1941 were a mere fraction of what they were in early October 1941, and given that the Soviet forces had had almost a month and half to prepare their defenses on all the main approaches to Moscow by early October 1941, there can be little doubt that the 1,298 operational tanks that would have been available to AGC would have been sufficient for a successful invasion of the Moscow-Kalinin-Gorky space from August to October 1941.

In addition to the above, the reader should bear the following in mind. Of Stahel's supposed 1,535 panzers available for Operation Typhoon, as many as 599 came from newly arrived replenishments. This includes 450 panzers with the newly arrived 2nd and 5th Panzer Divisions (according to Stahel, but should be 380) and an additional 149 replacements sent to 2nd Panzer Group. For comparison, by 10th September 1941 all the panzer divisions

30 Jentz, p. 212. Jentz also supplies a detialed breakdown of the tanks by type.

³² Anlagenband 5 z. KTB Pz Div 11. Ia NARA T315 R586 F001042.

³¹ D. Stahel, Kiev 1941..., p. 325.

³³ One more thing to note is that on 22nd September 1941, 19th Panzer Division (held in reserve of AGC at the beginning of Operation Typhoon) had 53 *einsatzbereite* tanks. See: *Anlagenband B 2ab z. KTB Nr. 6 Pz Gr 4. Ia NARA T313 R340 F8623434*.

within these three panzer groups had only received 64 operational tanks!³⁴ This means the 599 additional tanks above would have been available to AGC during any offensive against Moscow through September 1941. This would also have included two completely fresh panzer divisions: namely the 2nd and 5th Panzer Divisions (both veteran formations).

Also noteworthy is that during the period under consideration German factories managed to produce 790 tanks, of which 576 (72.9%) were Panzer IIIs (50 mm) and Panzer IVs.³⁵ Moreover, in the same time span, 330 panzers were rebuilt, of which 81 (24.5%) were aforementioned types.³⁶ What is worth mentioning is that in the second half of September 1941, Guderian's panzer group obtained 5.5 times as many replacement tanks (149 vs. 27) compared to the previous two and a half months of continuous fighting. Even if we exclude the numbers for August and all the types no longer produced (such as Pz I and Pz 35t) as well as obsolete Panzers IIs, there were still 626 tanks ready to use. This is 27 more tanks than actually went to *Heeresgruppe Mitte*, after an additional month of production and reparation.

From an operational-strategic decision making point of view within OKH and/or OKW, this is quite inexplicable. Why these tanks weren't committed as replacements and/or reinforcements far earlier in the campaign makes no strategic sense.

Wojciech Aleksandrowicz, WWII Military Myths - operationbarbarossa.net, 22nd Oct. 2022.

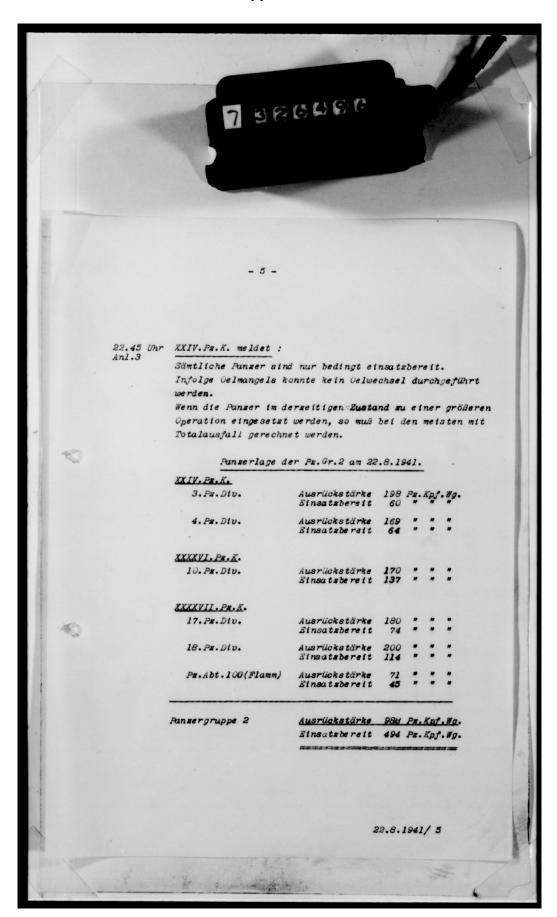
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N. Askey, Operation Barbarossa: the Complete Organisational and Statistical Analysis, and Military Simulation, Volume IIB, Lulu Publishing 2014, p. 182.

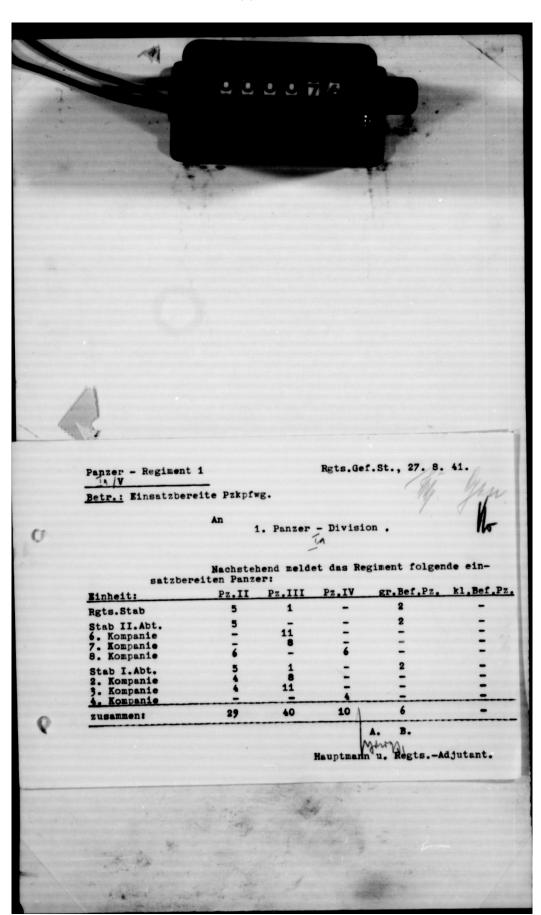
³⁵ Ibid., p. 184.

³⁶ Ibid., p. 182.

Appendix I.



Appendix II.



Appendix III.

