

WHAT COLOUR WAS IT ?.

During WW II, the majority of photographs were made using cameras loaded with either orthochromatic or panchromatic 'black and white' photographic films. Due to wartime rationing, photographic film was often difficult to obtain and the available cameras were also highly variable in quality, While the professional war still photographers had access to the best cameras with the best lenses and the best photographic film, the average amateur still photographer often had only the available wartime film and the commonest of cameras, many of which had only limited exposure settings. As a result, the existing war time photographs tend to range in quality from the large, sharp and clear photographs of the professional still photographers to the small, grainy, sometimes slightly out of focus, and often slightly over or under exposed photographs taken by the amateur photographer.

While colour photographic film was available during WWII, it was costly, difficult to process and as a result, saw only limited use, mainly with the professional war photographers in both Allied and German armies. There was also only a limited market for colour photographs. Apart from a few quality magazines such as "Life" , Fortune", "Signal" etc, the majority of wartime newspapers, magazines and other publications were set up to use only black and white photographs. As a result, the majority of wartime photographs were taken with black and white film.

The process of interpreting colours from black and white photographs is best begun by attempting to determine the type of film used to make the photograph. By knowing that film emulsion's response to the colours found in the visible light spectrum, it is possible to estimate the probable colours found on objects in the photographs

Orthochromatic film.

Orthochromatic film was once the most common film, being widely used by both amateur and many professional photographers during WW II.. It was cheap, readily available and easy to develop in the home studio or "in the field" using a red photo light bulb for illumination during film processing and making prints,

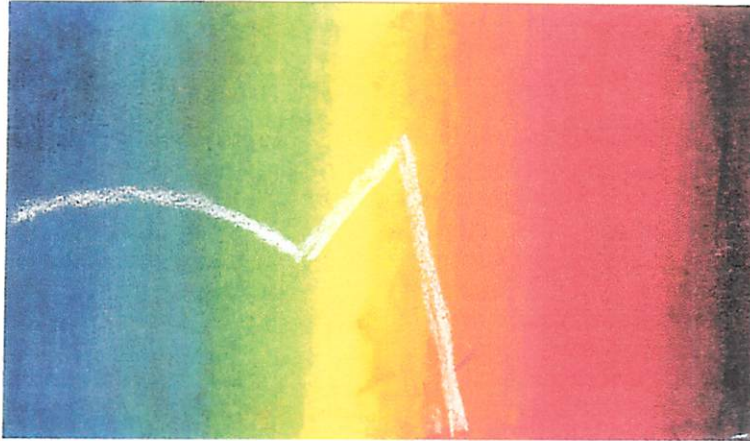
The response of the orthochromatic film's emulsion to the colours in the visible light spectrum can be seen in the following chart, which ranges from the ultraviolet spectrum where the wavelengths are shortest, through the visible light spectrum to the infrared spectrum where the wavelengths are longest

The white line shows the response of orthochromatic film's emulsion to colours in the visible light spectrum.

- The curve in the line shows the emulsion used in orthochromatic film to be very sensitive to blue light, somewhat lesser in sensitivity to green but most sensitive

to yellow light, However, it's sensitivity drops off sharply in the orange and red end of the visible light spectrum.

- While orthochromatic film is sensitive to blue, green and is very sensitive to yellow light, it is almost totally insensitive to orange and is totally insensitive to red light. (ref: "Light and Film" Life Library of Photography, 2dn ed. 1981, pp 138-139)



When compared to photographs taken with panchromatic films, the tones which we associate with blue, yellow and red hues in panchromatic photographs are reversed in black and white prints made from orthochromatic film

- Blue hues appear in tones ranging from medium grey to very pale grey,
- Yellows hues appear in tones ranging from light grey to near white
- Red hues range in tones from very dark greys to jet black.

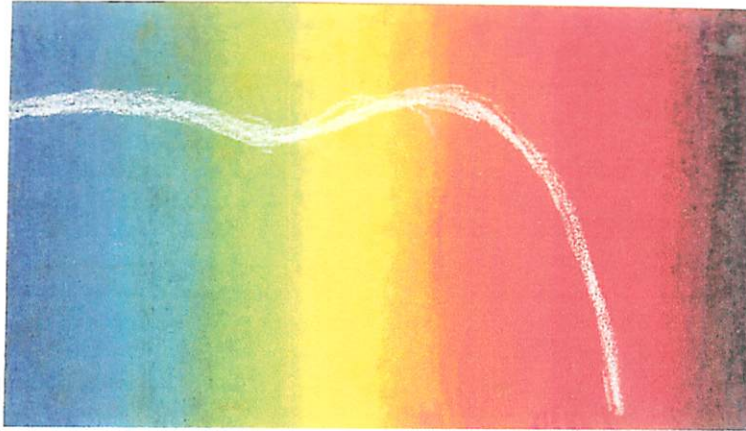
While orthochromatic movie film was largely replaced by panchromatic movie film during the 1930's, orthochromatic film, being less expensive, continued to be widely used for still photography by both amateur and professional photographers during the war and well into the 1950's

Panchromatic film

Panchromatic film was developed in the 1930's but was much more expensive and much more difficult to develop than orthochromatic film. Due to it's cost and specialized developing processes, panchromatic film was used mainly by professional photographers.

In the following chart, the white line shows the response of Panchromatic film's emulsion to light in the visible light spectrum . It can be seen to be responsive to all colours and produces black and white prints with recognizable differences between most colours (hues). Since the panchromatic emulsions respond more evenly to all colours in the visible light spectrum, it's emulsion produces grey tones which appear more natural to the human eye. (Ibid pp 138-139)

Panchromatic film like orthochromatic film also responds unevenly to the colours in the visible light spectrum. It's emulsion is more responsive to the shorter blue light wavelength and less responsive to the longer red light wavelengths.



From the chart it can be seen Panchromatic film's emulsion is most sensitive to blue and yellow light, slightly less sensitive to green but it's sensitivity drops off sharply in the orange and red spectrum

- Panchromatic film's response to blue light, is somewhat similar to that of Orthochromatic film. Depending on the hue, blue objects will range in appearance from dark grey to very light greys,
- Yellow hues will range from light grey to near white tones,
- Unlike orthochromatic film, panchromatic film is moderately sensitive to red light. As a result, red hues usually appear as mid grey tones.
- Due to the film emulsion's sensitivity to red light, developing the exposed film requires complete darkness..(the red photo light bulbs used in orthochromatic film processing would further expose and ruin the film).

During the war years, panchromatic film was mainly used in motion picture cameras or for photographs made and developed by professional photographers.

INTERPRETING COLOURS FROM BLACK & WHITE PHOTOGRAPHS

When attempting to identify colours in either of the two types of black & white photographs, it helps if a known red, blue or yellow can be found in the photograph.

Mr..Phil Dyer writing on the topic in the AFV News (Jan-April 1983, p 15) made the following observations:

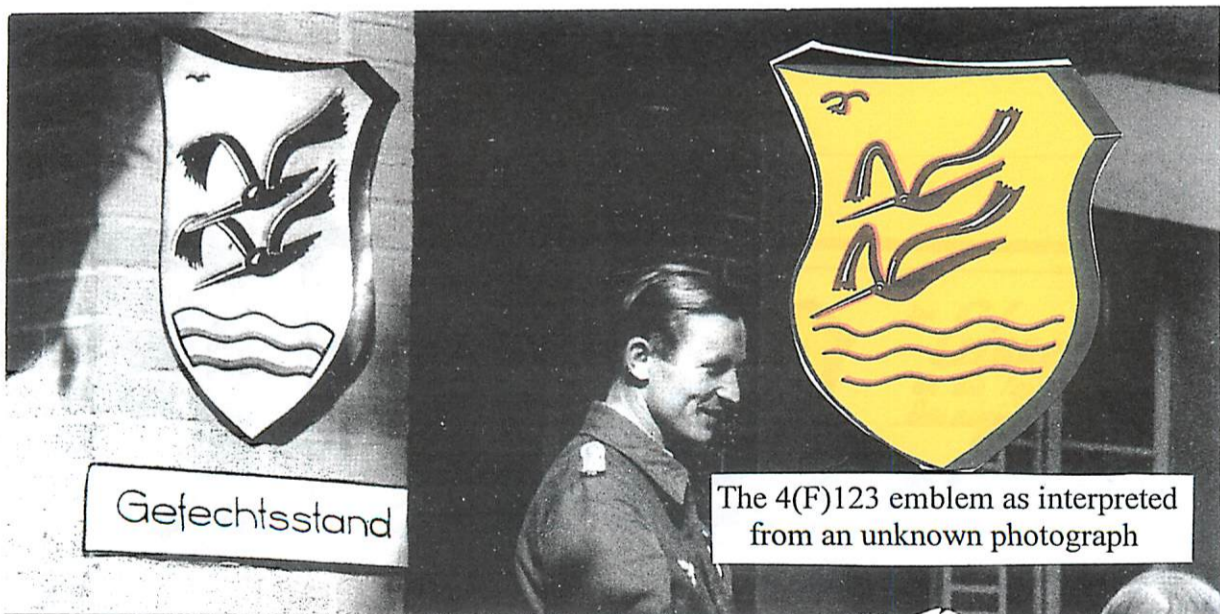
- "If a known red looks very dark or a known dark blue looks a medium grey and a known yellow appears half way between the two, the photograph was probably taken with orthochromatic film"
- "If a known red looks a medium grey or a known dark blue is very dark and yellow appears slightly darker than white, the photograph was probably taken with panchromatic film"

Interpreting colours from the various grey and black tones seen in photographs taken with either orthochromatic film or panchromatic film can be somewhat tenuous at best.

- It can be complicated by factors, such as available light (time of day, shadows etc), the quality of camera and lens, the lens exposure settings, quality of the film and finally, the film processing and print making procedures being used in the ‘dark room’,
- The use of colour filters would completely change the tones of objects in the photographs.. During the 1930’s colour filters were used by some movie studios to offset the deficiencies found in orthochromatic movie films, (ie. blue eyes appearing white, red lips appearing black, bright blue skies appearing grey etc) However, any use of colour filters by the Allied still photographers or the still photographers of the German Propaganda Kompanie (PK) has not been documented. Colour filters may have been used by the PK photographers for home front or commercial assignments, however, it seems unlikely most wartime photographers operating in combat zones would have regarded colour filters as being anything but practical. It is also unlikely the average amateur photographers had or used colour filters.

Ideally when interpreting colours from a black and white photograph, there is data on the photograph or information available on specific colours which can be expected to be found on the main subject or on other objects in the photograph (ie. colour charts, known paint schemes, actual paint samples, colour photographs etc) However, when there is no documentation as to specific colours or when a known red, blue or yellow colour cannot be found in a photograph, the interpreting of colours from a single photograph or even from a series of photographs, becomes a combination of research, reasoning.... and sometimes purely educated guesswork.

Consider the following photograph found in Edition No 22 of the ‘Luftwaffe im Focus’ journal, showing crew members and the unit emblem of the 4.(F)/123 operating in France during 1942.(pages 32-33); For many years, the emblem of the 4 (F) 123 was illustrated in books such as Mr. Karl Reis, “Markings and Camouflage Systems of Luftwaffe Aircraft in World War II” (1965) and more recently “ Luftwaffe Emblems 1939-1945”(Mr. Barry Ketley ,2012) ,



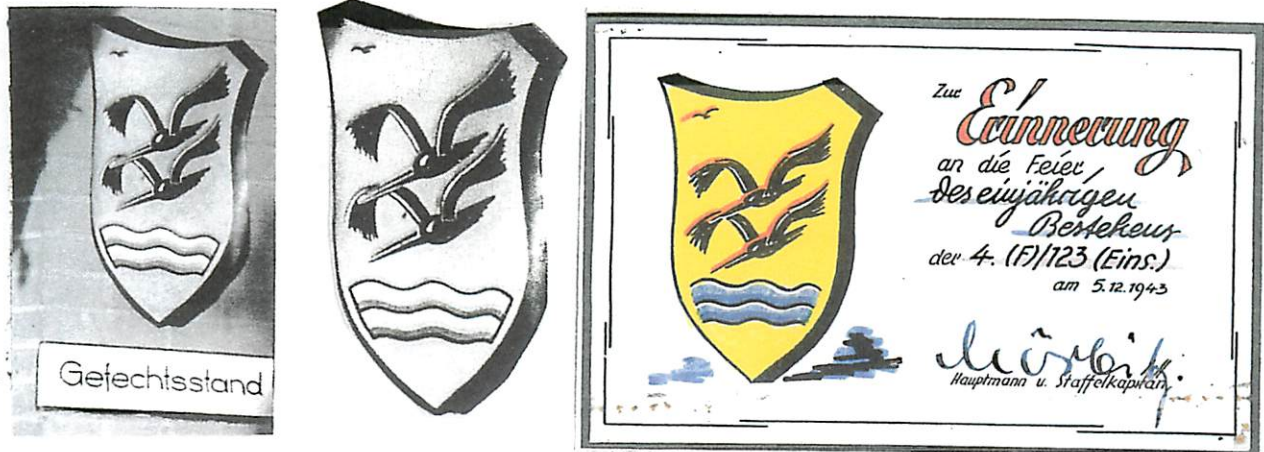
The artist / illustrator for the books must have had access to a different black and white photograph of the unit’s emblem as there are variations in the presentation of the waves below the two stylized ravens.

- The artist correctly depicts the black and mid grey tones of the two ravens in the insignia as being black with a red upper trim layer
- The off-white centre of the shield in the photograph is correctly shown as being yellow.
- However, the waves in the illustration were left ‘open’ at the ends and not ‘boxed in” as shown in the photograph and on the card. Also the spaces between the waves were wrongly assumed to be yellow as seen in the body of the shield. The illustrator apparently concluded the three waves seen under the flying ravens were also just black and red lines,,, ... (Was there actually another version of the emblem???)

Look closely at the photograph and compare the interpreted grey tones in the Staffel’s insignia to the actual colours shown in the coloured invitation card.

- The red lines directly above the two black stylized flying ravens on the invitation

Compare the illustration from the books to the photograph, then compare the two to the actual colours of the unit emblem found in an invitation card of the period shown in the same article.



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Look closely at the photograph and compare the interpreted grey tones in the Staffel's insignia to the actual colours shown in the coloured invitation card.

- The red lines directly above the two black stylized flying ravens on the invitation card, appear as dark grey tones on the photograph. These dark grey tones indicate the photograph was taken using panchromatic film. (ie. If orthochromatic film had been used, those bright red lines on the shield would have appeared to be jet black)
- In the photograph, the light grey tones of the yellow on the shield body appears only slightly darker than the white tone seen in the centre of the "Gefechtsstand" sign, This is an indication that the shield was painted a colour other than white., (Though it was actually yellow, the light grey tone of the yellow shield could easily have been misinterpreted as being pale blue.).

The three waves under the two flying black ravens are actually a gradation of blue tints, ranging from dark blue at the bottom of the waves to a very light blue at the top, yet in the illustration the waves are black with red trim...did the artist mistake the dark blue lines for black and the mid grey tones for red? Possibly the lighter grey tones fading into near white were misconstrued as being yellow...but without the benefit of having the original photograph used by the artist, it is any one's guess as to the accuracy of both the form and colours in the 'waves' as found in the Reis / Ketley books .

Sometimes the colours found on objects in a black and white photograph can be verified from existing war time documents recording the actual colours used by a certain unit, This photograph of a Bf-109F fighter bomber of the 10th Staffel (Jabo) JG2, during 1942, was taken with panchromatic film.

- For many years this particular aircraft was widely depicted in illustrations and described in many books as having yellow tactical markings outlined in black with a white painted rudder.
- However, wartime documents were later found which indicated all aircraft of the 10th Staffel actually used blue tactical markings.
- It is now accepted that the tactical markings on this aircraft and on other aircraft of the 10th Staffel, were painted a mid blue hue, outlined in black. Also, the rudders (and lower engine cowlings) were not white but were actually painted yellow



Identifying colours seen on black / white photographs of armoured vehicles (AFV's) poses additional problems.. Unlike aircraft which are usually kept reasonably clean, AFV's, especially tanks were often badly faded, covered with dust or mud, wet from rain, covered by snow, wholly or partially repainted with temporary coats of white or other camouflage paints and sometimes covered by camouflage nets, branches etc. Some areas on tanks were stained from spills of gasoline and oil, etc. The Zimmeritt coatings on Tiger 1 tanks were especially prone to damage and tended to collect dirt and dust. Knocked out tanks usually had smoke stained and fire damaged areas on hulls and turrets with large patches of rust on the armour plate.. There is also the tendency of some paints, especially the red hues, to fade badly when exposed to sun and weather. Red hues (including red browns) when applied as an undercoat can "bleed through" thin top coats of white, yellow or other lighter coloured paints, resulting in pink or orange tints etc (This may account for the "pink" unit markings reported on some Tiger 1 tanks of the sSS-PzAbt102 in Normandy).

The interpretation of colours from black and white orthochromatic or panchromatic films is obviously somewhat of a guessing game.. As a result, despite the best efforts of the artist to research and portray the actual colours, mistakes can happen.... and mistakes have happened in the interpretation of colours from black and white photographs..

One example of an apparent mistaken interpretation of the colours found in black and white photographs, can be found in the many illustrations purporting to depict the actual colours of the tactical numbers found on the turrets of Tiger I and Tiger II tanks of the sSS-PzAbt101 / 501 during the battles in Normandy and in the Ardennes.

QUESTIONING THE COLOURS OF THE TACTICAL NUMBERS OF THE sSS-PzAbt101 / 501

All tank units during WW II, whether in the German or allied armies, used a system of markings to identify the unit and individual tanks for both tactical and ownership purposes. Unit badges or insignia, and tactical numbers etc, were seen on tanks of all nations, including those Tiger tanks of the sSS-PzAbt101 / 501 heavy tank battalion,

Newly formed in early January 1944, at the Mons-Maisieres training grounds, the HQ and 3rd Companies of the sSS-PzAbt101 developed their own distinctive marking system to identify their tanks, whether on parade, on the battlefield or in the repair company's shops.. This practice continued with the formation of the full Battalion in April, 1944.

- Each of the three companies of the sSS-PzAbt101, had the battalion insignia painted in different locations on the glacis and rear plates on their Tiger I tanks .This unit ownership and company identification system was both simple and effective.
- Following the practice of it's parent Regiment, (LSSAH) the tanks of the HQ Company and each company used a numerical code for identifying the tactical role of each tank in the battalion. (ie..HQ Company.command tanks were assigned tactical numbers 007, 008, 009 , Other tanks in the battalion used a different three number code. The first number of the code identified the company, the second number identified the Troop (Zug) in the company, the third number identified the individual tanks within the Troop. Company commanders were assigned tactical numbers 105, 205, 305, Company adjutants being assigned 104, 204, 304. etc) The tactical numbers were painted on the sides and rear of the turret for visibility in the field.. Again, this system was both simple and effective.

However, beginning in the mid 1980's, the authors and illustrators of the many books and articles published on the sSS-PzAbt101 / 501, began describing and illustrating the Battalion's Tiger tanks as using yet another marking system. Despite already having the unit insignia painted on the hull in different locations for each company and the use of a distinctive tactical number system, it was now claimed that a third and very distinctive colour--coded system also existed to identify each company According to these sources,

each of the four companies in the battalion could also be identified by the use of different coloured tactical numbers. These were described as follows

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- HQ Company. tanks had solid white numbers
- 1st Company, tanks had white outlined numbers,
- 2nd Company tanks had red numbers outlined in white,
- 3rd Company tanks had blue numbers outlined in yellow

Though this colour coding system remains widely accepted by modelers, neither the reasoning nor any documentation for it's existence was apparently ever revealed. It was rumored at the time to have originated in the reminiscences of a certain 'SS-101' veteran, who, some forty years after the war, was apparently able to recall the existence of a four-colour tactical number system being used on the battalion's Tiger tanks, both in Normandy and in the Ardennes.battles*

*Note: The probability that a veteran could accurately remember such details many years after the war is highly doubtful. Writing on the recollections of colours by witnesses in court. Mr. "David W". quoting from the "Tort and Witness Statistics, 2004", via the American Bar Association, noted we should " not rely on veterans or witness's perceptions of colors of an object' "witness statements in court have proven a witness to be reliable less than 4 % of the time within a color range of hue to within 25 % of the actual colour"....."The 4 % that correctly identified the color and hue range within 10 % of the actual color are a rarity at best" ([www.afrika.korps.org /german afv colors.htm](http://www.afrika.korps.org/german%20afv%20colors.htm))

As interesting as the tale of a veteran's recollections of particular colours may be, it appears more probable the 'three colour tactical number system' originated in the attempts of some writer or illustrator to make sense of the wide variations in grey tones found in the many black and white photographs showing the tactical numbers on the various Tiger tanks of the sSS-PzAbt101/501.

When looking at the black and white photographs of the Tiger tanks of the sSS-PzAbt 101 / 501, it is apparent that the quality of the photographs was dependant both on the type of film being used, the quality of the photographic equipment as well as the ability of the photographer to take a clear photograph..

- Amateur photographers often had inexpensive cameras loaded with whatever was available in the war time brands of 'black and white' orthochromatic film. Photographs were often taken using estimated exposure settings, As a result, there are amateur's photographs which are often small and either over-exposed or under-exposed. Unfortunately, some conclusions on 'colours' were interpreted from the over exposed or under exposed B&W photographs made by amateur still photographers.,
- The professional PK war photographers had access to the very best cameras with top quality lenses, quality orthochromatic or panchromatic films* and light meters for determining the correct exposure settings. Their photographs tend to be of

better quality and often included documentation on the subject, date and location,....:

*Note: The Allied war photographers always complained about the amount of equipment they had to carry as well as the lack of telephoto lenses for their still cameras. On the other hand, the German PK photographers had the superb 35mm Leica still cameras with built in range finders and telephoto lenses which were the envy of the Allied photographers, Due to rationing, and the wartime demands for film, the many amateur still photographers serving in the Allied armies had difficulties obtaining film for use in their personal cameras.. Canadian war photographers soon learned that their precious rolls of still camera film could be used as bribes to obtain equipment or have repairs made to their vehicles. Perhaps also of interest, while the British and German war photographers did have 35 mm movie cameras with telephoto lenses, the sounds of the battle were not recorded at the time, but were later replicated and added to the film during developing and processing. However, by the end of the war the German PK war photographers had movie cameras which recorded the actual battle sounds directly onto the film. By 1945, American war photographers were equipped with light weight 16mm movie cameras using colour film . (Mr. D. Conlin, “War through the lens, The Canadian Army Film and Photo Unit, 1941-1945”, pp.33-36 etc.)

Though the three coloured tactical number system continues to be widely accepted, not everyone has agreed with it's existence. The late Mr. Tom Jentz in his book “ Tiger I, Heavy Tank, 1942-1945”, (Osprey publ. p 44) noted, “the tactical numbers of the sSS-Pz Abt101 (later sSS-PzAbt501) were painted in blue outlined in yellow” Though some modelers or Tiger tank enthusiasts may want to disagree, an examination of photographs of the battalion's Tiger tanks, as found in the many books published on the Tiger tanks of the sSS-PzAbt101 / 501, indicate he was indeed correct

THE DOCUMENTED TACTICAL NUMBER COLOURS OF THE 3rd. COMPANY sSS-PzAbt101 and sSS-PzAbt 501

The sole example of specific colours used for the tactical number of the sSS-PzAbt 101/501 was to be found on the Tiger II tank which once existed in the collection at the Aberdeen Proving Grounds Museum.(APG) This tank had been collected in the Ardennes and brought to the APG, .where it was subsequently sand blasted and repainted several times. Though some tank enthusiasts later questioned the accuracy of the mid-blue, yellow outlined tactical numbers found on the turret of the Tiger II, the former Director of the Museum, the late Col. J.B. Jarrett, always maintained the tactical numbers were repainted in the same blue and yellow hues found on the tank when it first arrived at the APG

The blue / yellow hues of the tactical numbers can be seen in this colour photograph of the Tiger II tank, tactical number 332 of the sSSPzAbt501, taken at the Aberdeen Proving Grounds ca.1954. (:Since the side of the turret was in shadows, the tactical numbers appear a darker blue than they actually were,)



For many years the APG photographs provided the only documentation that at least one of the Tiger II tanks of the 3rd Coy. in the Ardennes battles had blue coloured tactical numbers outlined in yellow. However, more recently an original, un-retouched war time colour photograph appeared on the internet, showing a knocked out Tiger I tank (tactical no. 305) of the 3rd Coy. sSS-PzAbt 101, in Normandy during July 1944. This colour photograph confirms the use of mid-blue tactical numbers with yellow outlines on the Tiger I tanks of the 3rd Coy in Normandy. ([http://facebook.com / Tigers in Ardennes/photos/a](http://facebook.com/TigersinArdennes/photos/a))

Since the same colours appeared on the turrets of Tiger I tanks of the 3rd.Coy. sSS-PzAbt101 in Normandy and on the turrets of Tiger II tanks of the 3rd.Coy sSS-PzAbt501 in the Ardennes it can be concluded that the Tiger I and Tiger II tanks of the 3rd Company, participating in both those battles did indeed have mid-blue tactical numbers outlined in yellow.

However, some black and white orthochromatic photographs of other Tiger I tanks from the 3rd. Company, show a wide variety of tones in their tactical numbers. These range from mid grey tones with a lighter outline to an apparently 'solid' white tone.with a darker outline. The following photographs show Tiger I tanks of the 3rd. Company at the Mons-Maisieres. training grounds in January 1944. It is probable these photographs were taken by amateur photographers using orthochromatic film.



Though the tactical numbers in these photographs appear to have been painted solid white, the numbers do appear to have a faint outline and are similar in appearance to the tactical numbers seen in photographs of other Tiger tanks from the HQ, 1st and 2nd Companies. Since the 3rd Company is known to have used blue tactical numbers outlined in yellow, it is likely the 'solid white' tactical numbers on the tanks in these photographs were partly the result of misjudged exposure settings and partly the response of the orthochromatic film's emulsion to mid blue colours.

THE TACTICAL NUMBERS OF THE HEADQUARTERS COMPANY

The many illustrations showing the Tiger 1 tanks of the HQ Company, usually depict the tactical numbers of the three HQ Tiger tanks as being painted solid white.

Though there are few existing photographs of the three HQ Coy. tanks, it is known that the two Tiger SdKfz267 of the Battalion commander and his adjutant were assigned tactical numbers 007 and 008. The SdKfz268 command tank of the Battalion signals officer was assigned tactical number 009.

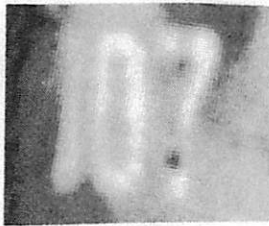
- In order to carry out battle training exercises, tactical numbers were painted on all nineteen tanks of the new formation shortly after the tanks were received at the Mons-Maisieres training grounds in Belgium.
- The tactical numbers 007 and 008 were undoubtedly painted on the two SdKfz267 command tanks in mid January 1944 at the same time as the tanks of the 3rd Company.,
- The Battalion's ownership emblem/ insignia was painted on the HQ command tanks in the same manner and location as on the tanks of the 3rd Company. ,
- The third HQ command tank,(a SdKfz268 Tiger 1 command tank) was shipped to the battalion in April 1944 as part of a shipment of twenty-six Tiger 1 tanks. It was assigned tactical number '009', The tactical numbers and unit emblem were undoubtedly painted on this tank at the same time as the tactical numbers and insignia were painted on the battle tanks assigned to the 1st and 2nd Companies.

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*Note: . The total of 19 tanks received by the 'new formation' (ten in November 1943 and nine in January 1944,) was apparently the minimum number of tanks considered by the Heereswaffenamt as being necessary for the tactical training of this and other fledgling heavy tank battalions in late 1943. Sixteen tanks were assigned to four Troops (Zug) in the 3rd Company. Only two SdKfz267 tanks were required for the HQ Company: (ie. for the Officer Commanding the Battalion and the Operations Officer). A Tiger 1 battle tank equipped with Fu-5 / Fu-2 radio sets was assigned to the HQ Coy for the Battalion Signals Officer for unit ground communications training purposes only. The full Battalion strength of 45 tanks was only attained in April, 1944 with the receipt of 26 Tiger 1 tanks, including a SdKfz268 command tank for the Signals Officer. This command tank was fully equipped with the extra Fu-5 / Fu-2 and Fu-7 radio transmitters / receivers for use by the Signals Officer in maintaining ground communications with accompanying tank units or in air liaison duties with ground attack aircraft of the Luftwaffe.

- The 'colour' tones in the orthochromatic photographs of the two SdKfz267 command tanks (007 and 008) are very similar to the light grey tones seen in similar black & white photographs of 3rd. Company tanks of the SS-101.
- The photograph of the SdKfz268 command tank (009) was apparently taken with panchromatic movie film and matches those grey tones found on panchromatic photographs showing the tactical numbers of tanks from the 1st and 2nd Companies

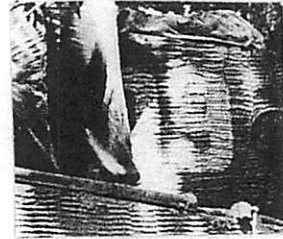
None of the photographs of the three command tanks show solid white tactical numbers on their turrets.. Though they are difficult to see, all of the tactical numbers in the following photographs appear to have had an outline in another colour.



007

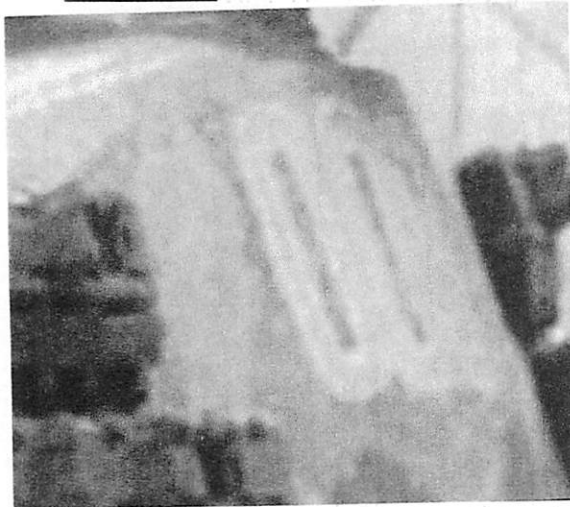


008



009

Look at the following photographs of the two HQ Coy .Tiger II tanks, tactical numbers 008 and 009. These tanks were photographed prior to the Ardennes battles in December, 1944.. Note that the tactical numbers are outlined in another colour and are not painted solid white.



008



009

Because the two existing colour photographs prove the 3rd. Company's use of mid-blue tactical numbers outlined in yellow, it is probable that the tactical numbers on all three tanks of the HQ Coy were also painted a similar mid blue outlined in yellow

This conclusion is based not only on the early association of the HQ Coy with the 3rd Coy during training, the similar positioning of the unit ownership markings (emblem) on both the HQ and 3rd Company tanks as well as similar light grey tones found in B & W photographs showing the 'tactical numbers of Tiger tanks from the 1st, 2nd and 3rd Companies .

THE TACTICAL NUMBERS OF THE 2nd COMPANY TIGER 1 TANKS.

Since only black and white photographs are known to exist showing the Tiger 1 tanks of the 2nd Company, the colours of their tactical numbers must be estimated by comparing the grey tones of the tactical numbers to those grey tones associated with objects having known red, blue or yellow hues in either orthochromatic or panchromatic films.

Based on the presence of a known red colour found in a series of orthochromatic and panchromatic photographs, of the 2nd Coy tanks, it appears none of the 2nd Coy tanks had red tactical numbers outlined in white, but had the same blue tactical numbers outlined in yellow painted on their turrets as seen on both the HQ Coy. and 3rd Coy tanks.

The best evidence for the Tiger 1 tanks of the 2nd Company having blue with yellow outlined tactical numbers can be found in a series of photographs of the 2nd Company, taken by two photographers from the SS-Propaganda Kompanie, These photographs show the Tiger tanks of SS-Hauptsturmfuehrer Michael Wittmann's 2nd Company climbing the switch-back curves of the N316 highway up the Levriere Valley in Normandy, on June 10, 1944..

- One PK photographer used a high quality 'still' camera loaded with orthochromatic film,
- The second PK photographer was using a movie camera loaded with panchromatic movie film.
- Both cameramen were taking photographs of the same tanks, at the same location and at the same time of day (ie. the photographs were taken under identical lighting conditions but differed only as to the type of film being used)

In the following orthochromatic photograph, Wittmann's Tiger tank, tactical number 205, can be seen climbing the N316 highway. Located behind the tank on the side of the highway is a large triangular traffic warning sign, which appears in the photograph as a very dark grey triangle with a solid black outlined edging.

- These pre-war road signs were apparently constructed using heavy plywood backings, holding white enameled, sheet-metal faces, on which black warning designs were painted..
- The white enameled metal face and plywood backing were held together by a wide bright red enamelled metal edging, which fitted over the front and back edges of the sign and were held in place by screws.
- The plywood back of the sign appears to have been painted a slightly different red hue. Since it was wood, the exposure to the sun appears to have caused the red

paint to have “weathered” badly in places, possibly turning an orange or pink colour.*.

- The signs were bolted on white painted square wooden posts. White painted wooden posts also lined the switch-back curves of the N316 highway

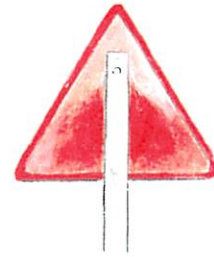
*Note: Following the common practice of the time, the plywood backing was probably first covered with a white lead primer, over which an oil based red paint was applied. Fading of the red top coat would have produced either a pink or orange hue, depending on the degree of exposure to the sun, rain etc and the type of red pigment used in the paint..



Face of sign



back of sign



weathered back of sign



(Above) SS-Hauptsturmfuehrer Michael Wittmann’s Tiger 1 tank, tactical number 205

According to the current literature and illustrations, Tiger tanks of the 2nd company used red numbers outlined in white. However the overall dark grey / black tones on the red-painted road sign in this orthochromatic photograph, disproves that claim.for the following reasons:

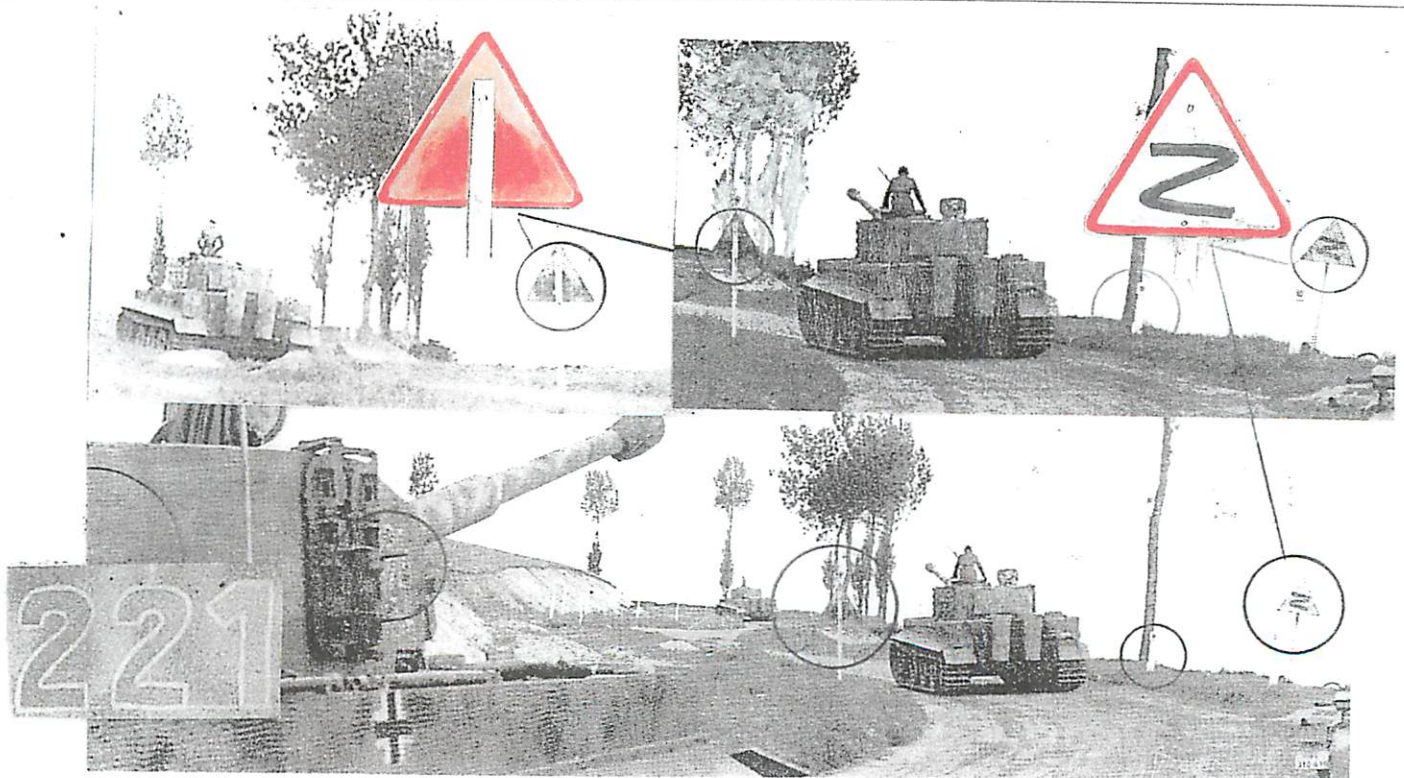
- Orthochromatic film emulsions are known to be totally insensitive to red light. The partly faded and weathered red painted plywood back of the sign appears a very dark grey while the outer solid red enamel painted metal rim appears jet-black .
- However, the tactical numbers on Tiger No,205 in the same photograph appear as a light grey tone with a thin, white outline.

- If the tactical numbers on Wittmann's tank were actually painted a red hue, the numbers on the tank turret should also have appeared in very dark greys or black tones similar to those dark grey / black tones seen on both the red enameled metal edging and weathered red wooden back of the triangular highway sign
- Since orthochromatic film is known to be overly sensitive to blue and yellow, the light grey tones of the tactical numbers suggest a mid blue hue was actually used for the centre of the numbers. with yellow for the outline (The 2nd.Company's unit insignia on the glacis plate has apparently been obliterated by the wartime censor)

Compare the above orthochromatic photograph of Wittmann's Tiger No 205, to the following photographs taken from the panchromatic movie film made by the second SS-PK photographer, These photographs show other 2nd.Coy. Tiger tanks, climbing the same highway, and at the same time of day.

- Two large triangular highway signs appear in the background. The badly weathered, red-painted plywood back of one sign appears in light to mid grey tones, with the metal edging appearing in a solid mid-grey tone. (the red enameled metal edging did not weather as badly as the plywood backing).
- The white enameled metal face of the second sign (seen in shadows) has a black 'curves ahead' warning design in the centre and has the same red enameled metal edging holding the sign together. The sign is held up by a white painted square wooden post.(also in shadows)
- The mid grey tone of the tactical numbers is similar to the grey tones found on the back of the red painted, weathered traffic sign in this panchromatic photograph.,

As it is unlikely the other tanks of the company used colours different from Wittmann's Tiger 205., the mid grey tones of the tactical numbers seen in the panchromatic photographs cannot have resulted from their being painted red. The mid grey tones of these panchromatic movie film prints suggest the numbers were actually painted a mid blue colour.



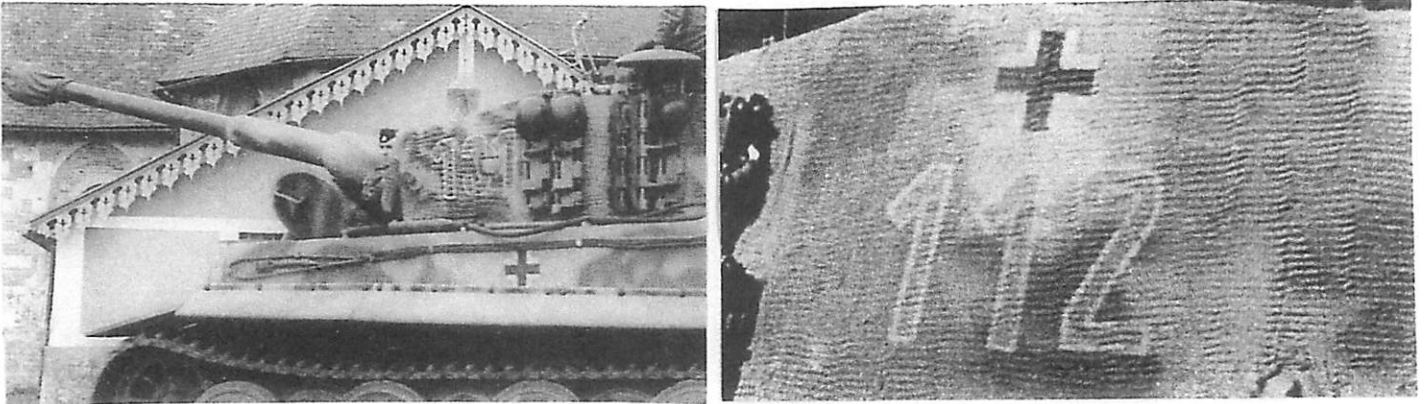
As can be seen in the above panchromatic photograph, the light tones of the outline on the tactical number are slightly darker in tone than the known white found on the Balkenkreutz' as painted on the tank's hull.. Based on this difference, it is concluded the tactical numbers were not outlined in white, but were most likely to have been painted a yellow hue .

.. THE TACTICAL NUMBERS OF THE 1st COMPANY TANKS

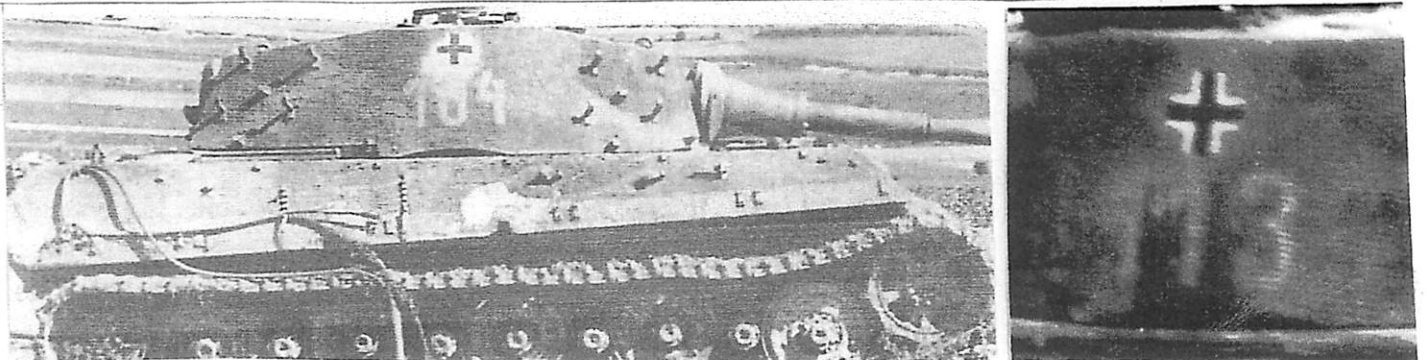
The 1st Company Tiger tanks also appear to have used blue/yellow tactical numbers.

- Part of the problem in interpreting colours from photographs of the 1st. Coy. tanks lies in the fact that many of the well known photographs of the 1st, Coy. tanks in Normandy were actually taken from panchromatic motion picture film. As a result, the tactical numbers on tank turrets in these photographs tend to show a mid tone colour outlined by a lighter tone.
- Some writers and illustrators have interpreted these numbers as being white outlines filled in with green. This is understandable since the blue and green hues can be difficult to separate in photographs taken with either panchromatic or orthochromatic films.

In the following two panchromatic photographs, the dark grey tones of the tactical numbers almost match the green tones in the adjacent camouflage paint.



For comparison, the following photographs of two other 1st.Company Tiger II tanks in France during 1944, were taken with orthochromatic film.



The above orthochromatic photographs show the tactical numbers of these two 1st Company Tiger II tanks had light / dark grey tones similar to other orthochromatic photographs of tanks from the HQ, 2nd.and 3rd.Companies.

- The similarity in grey tones suggest the Tiger I and Tiger II tanks of the 1st Coy had the same blue tactical numbers, outlined in yellow as painted on the turrets of tanks belonging to the other three companies.
- It should be remembered that four tanks from the former 4th Troop (Zug) of the 3rd. Coy were incorporated into the new 1st Coy. in April 1944. These former 3rd Coy. tanks would have had blue tactical numbers outlined in yellow prior to the repainting of their tactical numbers.
- The 1st. Company tanks also carried the same unit insignia painted on the tanks in the same locations as the HQ and 3rd.Coy. tanks, but with a rhomboid heavy tank battalion symbol and a number '1' painted on the right side of the glacis plate,.

Overall, during the Normandy and the Ardennes campaigns, it appears the tactical numbers on the Tiger I and Tiger II tanks of the HQ, 1st, 2nd and 3rd Companies of the sSS-PzAbt101/501 were all painted a mid blue hue with a yellow outline.

The reasoning behind the adoption of blue /yellow outlined tactical numbers for the Tiger I tanks of the newly formed sSS-PzAbt 101 is not known, The choice is unusual since blue tactical numbers with yellow outlines are not known to have been used by other German Tiger tank battalions during the war..

- It is known that some Luftwaffe fighter and bomber units adopted the coats of arms of the cities located near the airfield where the unit was formed, However, neither the coats of arms of Augustdorf nor those of Mons-Maisieres had blue and yellow colours in their heraldry, so the choice of blue / yellow tactical numbers could not have been derived from the coats of arms of either of the two training camps where the new unit was formed.
- Perhaps the SS Officers in the HQ and 3rd company of the newly formed sSS-PzAbt101 chose blue numbers with a yellow outline, basing this choice on a tradition of blue and yellow colours within the SS, (It is known that the long service award badges issued to long serving members of the SS all had blue ribbons).
- It is entirely possible the new unit had simply found a readily available supply of blue and yellow paints in the former Belgium Army stores at the Mons-Maisieres training grounds. If so, the workshop crews had made use of that supply of paint to create the new and unique blue and yellow tactical numbers painted on the turrets of their Tiger I tanks.

Once begun, the tradition of painting the same colours on all tanks of the battalion was carried onto the turrets of the new Tiger II tanks of the re-named battalion in time for the Ardennes battles.

THE TACTICAL NUMBERS ON THE TIGER II TANKS
OF THE sSS-PzAbt 501
AFTER 1944

Though it appears mid blue tactical numbers outlined in yellow were painted on all Tiger 1 tanks in Normandy and on a majority of the Tiger II tanks of the sSS-Pz Abt 501 participating in the Ardennes battles, it must be noted that at least one of the Tiger II tanks ,in that battle did not have tactical numbers painted on the sides or rear of the turret*

*Note: Prior to the Ardennes attack, the Tiger II tanks and all vehicles of the battalion were ordered to over paint their unit markings to prevent enemy agents from identifying the presence of the 'heavy tank battalion' in the assembly areas. It is also interesting to note, following the restoration of the Tiger II, at La Gleize, Belgium, the tactical number 213, was (perhaps erroneously), painted black, outlined in white

There are other factors to consider::

- While it is probable all of the Tiger 1 and Tiger II tanks issued to the sSS-PzAbt101 / 501 during 1944 had tactical numbers painted in the same shades of blue and yellow, considering the shortage of some paint supplies during late 1944, replacement shipments of Tiger II tanks received by the battalion in 1945 may not have had tactical numbers painted on the tank turrets in exactly the same shades of blue and yellow.
- Consider too the chaotic conditions existing within Germany during early 1945 with Allied tank forces attacking from the west and Russian tank forces attacking from the east. It seems very probable that the painting of tactical numbers and unit markings in a particular colour may not have been considered a matter of urgent concern. As a result, some replacement Tiger II tanks received by the Battalion in early 1945 may have had their tactical numbers painted on their turrets using supplies of whatever paint colours were readily available in the battalion's workshops at the time.
- Replacement Tiger II tanks received later in 1945, may have gone into battle totally unmarked, lacking both the battalion's ownership insignia and tactical numbers.

Conclusions

Unless documentary evidence to the contrary can be found within original wartime records, or if unaltered, original war time colour photographs are found, showing different coloured tactical numbers on Tiger tanks of the sSS-PzAbt 101 / 501 during 1944 in the Normandy or the Ardennes battles, it must be concluded that the published data on the existence of a three coloured tactical number system is incorrect. .

Based on the examination of available, published black and white photographs, as well as existing colour photographs, of two tanks of the 3rd Coy, sSS-PzAbt101 /501, it appears the perceived differences in the colours of the tactical numbers within the Battalion can

be attributed to the varied responses of the orthochromatic or panchromatic film emulsions to the blue and yellow hues found in the visible light spectrum, as well as to other factors such as lighting, camera exposure settings etc.

Overall, it appears the late Mr Tom Jentz was indeed correct in his statement that the tactical numbers used on all Tiger I and Tiger II tanks of the sSS-PzAbt101 / 501 were painted blue outlined in yellow.

Acknowledgements.

Correspondence over many years with the following persons concerning the colours and markings of the WW II German heavy tanks, must be acknowledged, Mr.Miles Krogfus Mr. George Bradford, Mr. Geoff Walden, Mr.Greg Walden, Mr.Yann Joubert, the late Mr. Bill Auerbach, the late Mr. Tom Jentz, the late Mr. Charles Yust, as well as others, all of whom contributed in various degrees to this study.

Mr. Steve Sauve, the editor of IPMS Canada's publications, reviewed the original draft copy of this article and made recommendations and suggestions which were incorporated in the narrative.

The photographs of Tiger tanks used in this article were scanned from the many books written by Col. Wolfgang Schneider or sent to the author and are used here with his permission. Col. Schneider also reviewed the initial draft copy, pointing out some errors which have been corrected in the final copy .As always, his assistance was very much appreciated.

The photograph and invitation card from the 4 (f) /123 Staffel operating in France during 1942 was published in the "Luftwaffe im Focus" magazine, They are used here with the permission of the editor, Mr. Axel Urbanke. This magazine is probably the best source for well documented information, quality photographs and illustrations of Luftwaffe aircraft during WW II.

The photographs of the Tiger II tanks of the HQ Company during the Ardennes battles were scanned from Mr. Greg Walden's book "Tigers in the Ardennes, The 501st Heavy SS Tank Battalion in the Battle of the Bulge" and are used here with his permission. This book remains the very best source for information on the Tiger II tanks of the sSS-PzAbt501 during the Ardennes battles.. .

The colour photograph of the APG Tiger II was taken in 1954, by the late Mr. Charles Yust and is from the author's collection. Other sources are as noted in the text.

Any and all errors in this paper are the sole responsibility of the author.

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