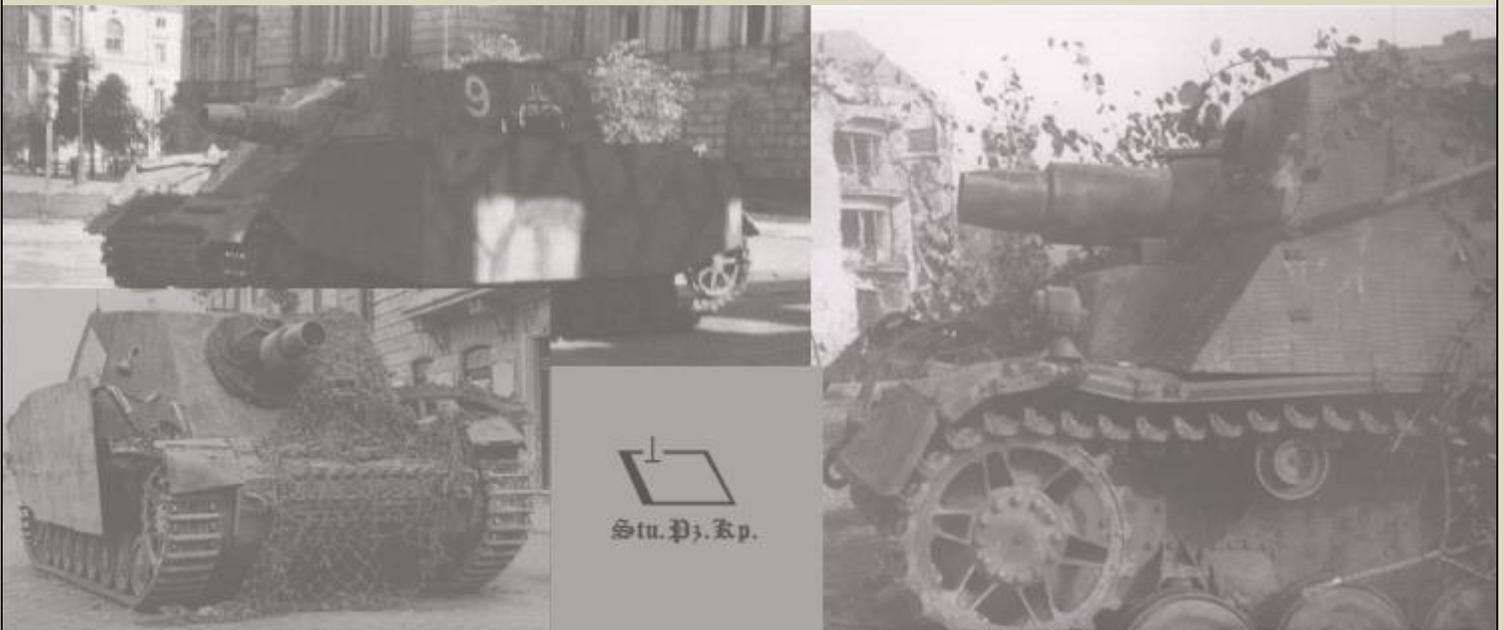


## **US MILITARY INTELLIGENCE REPORT**

**[Panther Infra-Red Equipment]**



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## 21 ARMY GROUP TECHNICAL INTELLIGENCE REPORT

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### German Infra-Red Equipment as fitted on the Panther Tank

Four Panther Model G tanks equipped with Infra-red were at FALLINGBOSTEL with the "Panzer Jaeger Lehr and Versuchskompanie". They were, however, not withdrawn northwards with the soft skinned vehicles on the formation of "Kampfgruppe Uhu" but were committed, in a daylight role, into the battle north east of MINDEN. The following report is based on examination of these tanks, three of which were burnt out and the fourth badly smashed, and on the interrogation of one of the crew who subsequently rejoined "Kampfgruppe Uhu".

This report should be read in conjunction with War Office (H.I.10) German Infra-Red Equipment Intelligence Note - Serials 3 and 6. The equipment fitted consists of a screened car type headlamp with 12 volt 200 watt transmitter lamp, an infra-red receiver gun sight for use with the 7.5 cm KW.K.42 (L/70) gun, a gun elevation control device and the necessary power source (12 volt accumulators), a vibrator unit and a transformer. PW [prisoner of war] from Kampfgruppe Uhu stated that "Puma" is the code name for the Panther tank fitted with this equipment. It is not known how official this name is, as "Puma" has already been used for the Eight Wheel Armored Car mounting the 5 cm Kw.K.39 (Sd.Kfz.234/2). Another PW has used the word "Sperber" (Sparrow- Hawk) when referring to the Panther tank fitted with this equipment.

#### Transmitter and Receiver Mounting

The transmitter and receiver mounting consists briefly of base plate, stand and instrument table. The 10 mm thick steel base plate is segmental in shape and is keyed to fit on to a plate welded on the inner edge of the azimuth indicating ring inside the cupola of the turret. When using the Infra-Red equipment the normal control mechanism of the azimuth indicating ring is disconnected so that the ring, and hence the base plate, can be rotated freely. A spring loaded locking plunger is provided so that the azimuth indicating ring can be locked with the infra-red receiver and the gun lined up.

The stand (see Fig.1) consists of two vertical 8 mm thick plates reinforced with webs. The instrument table is pivoted horizontally to the top of the stand and it can be elevated or depressed either freely or by means of a vernier screw adjustment. The table is spring loaded so that when free it will be elevated slightly. The table can only be depressed freely against this spring, when a pin, located on the right hand side of the stand, is withdrawn. Sockets are provided at either end of the instrument table for hand grips.

The table carries, from left to right facing forwards, a 12 volt 200 watt screened headlight, a control switch and a cradle with Infra-Red receiver which serves as a gun sight. Centrally located on the front edge of the table is a steel segment centered on the axis of the pivot pin which carries the table on the stand. Finally beneath the right hand end of the table there is a four point socket for a power supply cable leading through the switch to the screened headlamp. The receiver cradle has a three point mounting with adjustment, by means of a bolt and nuts, in the vertical plane.

#### Elevation Control Device

Inside the turret, fixed to the roof in front of the cupola opening, is the gun elevation control device (see Figs 2 and 3). This consists of two internally spring loaded rollers on a horizontal spindle carried by an inverted L shaped bracket. The outer or left hand roller, which registers movement of the gun, is stepped, and on its smaller diameter is wound a thin 15 BM wide steel tape (not shown in the drawing) leading in from a bracket on the gun cradle. On its larger diameter there is a loose fit insulated composition tyre which is normally held in position by a small grub screw. There is a thin metal contact strip let into the tyre and extending across its face. By means of the grub screw the position of this contact strip in relation to the roller can be varied as desired. Fixed to the outer face of the roller but insulated from it, there is a thin brass plate slip ring.

The inner roller is also stepped and on its smaller diameter carries another thin 15 mm wide steel tape (also not shown in the drawings) leading in from the infra-red receiver mounting through a hole in the turret roof. Screwed to its larger diameter is an arm which extends across and round the outer roller. Fixed to this arm at points opposite the periphery of the insulated tyre on the outer roller are two spring loaded contact wheels, only the outer of which is insulated from the arm. On the end of the arm there is an insulated mounting for a small indicator light, one contact of which is wired to the insulated contact wheel while the other is connected by a spring contact to the slip ring on the face of the outer roller.

Finally on an arm fixed to the upper end of the inverted 'L' shaped bracket, there is an insulated spring contact rubbing on the slip ring. The electric circuit is therefore - from the lead-in to the slip ring; out to the indicator lamp; to the insulated contact wheel; across the metal contact strip in the surface of the outer roller tyre to the second contact wheel and hence to the inner roller with an earth return through the bracket and the turret of the tank.

Against the action of their internal springs the two rollers revolve in opposite directions as their steel tapes are unwound once the initial slack has been taken up. The steel band from the outer roller is taken forward in the turret, over a roller and down to a segment plate fixed to gun bracket. Elevation of the gun further unwinds the steel band causing the outer roller to move in clockwise direction as viewed from the right in the drawing.

As already mentioned the steel tape from the inner roller is taken through the roof of the turret in front of the cupola and attached to the segment plate on the front of the table of the infra-red equipment mounting. Elevation of the viewer and table will unwind the steel band and cause the inner roller to move in an anti-clockwise direction. This steel band is only hooked over a slot in the upper end of the segment plate and it is fitted with a thimble to allow quick connecting or disconnecting. When

disconnected the band end with thimble rests over the hole in the roof of the turret, which is protected by a heavy steel skirt welded on to the outside of the turret top plate.

#### Accessories

When not in use the infra-red receiver is carried on a mounting inside the left hand wall of the turret. The frame holding this mounting is built up of small rectangular section steel bars and also carries a junction box for the power supply to the headlamp. Immediately in front of this frame, but fixed to the inside of the turret front plate are the vibrator unit and the transformer for the power supply to the infra-red receiver. The mounting for the headlamp and receiver is normally carried in the rear end of the right hand pannier. A set of 12 volt accumulators, in addition to the tanks normal equipment, is carried together with a CC 400 watt type portable generator.

#### Method of Use

According to a PW, the equipment is lined up on a source of light at 600 meters range before going into action. That is, the gun is aimed at the source of light by means of its normal sight and this source is also correctly sighted through the infra-red receiver. The lamp in the elevation control mechanism is then illuminated by setting the insulated tyre on the outer roller so that the contact strip is immediately below the two contact wheels.

On going into action the steel band is disconnected from the infra-red receiver table, thus breaking the indicator mechanism circuit; the spring loaded plunger on the azimuth indicating ring is withdrawn and the pin on the side of the stand of the receiver mounting is also withdrawn. The screened headlight and receiver can then be traversed and depressed or elevated by the tank commander by means of the hand grips on the ends of the instrument table.

The tank is driven blind with the tank commander giving orders to the driver over the intercom. On sighting a target the commander halts the tank and orders the gunner to traverse the turret to the left or right as the case may be. As the gun and turret come into line with the Infra-red receiver the plunger on the azimuth indicating ring goes home locking the ring and mounting to the cupola. At the same time the commander connects up the steel band to the segment plate on the receiver table and brings the vernier adjustment to work by means of the pin on the right hand side of the stand. Any further adjustment is then done, for traverse over the intercom to the gunner or for elevation of the receiver by the vernier control. When on target with the receiver the commander informs the gunner, who elevates or depresses the gun until the indicator lamp in the control mechanism lights up. The gun is then on target and is fired.

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Figure.1 – Mounting with screened headlamp and Infra-Red receiver/gun-sight for Panther tank.

Figures.2 & .3 – Elevation control device (less cover) for Infra-Red receiver/gun-sight on Panther tank.

