MORE NOTES ON THE Me-262

New Details on the Jet and Its Performance From the Anti-Nazi Pilot who Brought it in

FURTHER conversation between USAAF Interrogation and Technical officers and the civilian test pilot who flew the brand-new Me-262 to Frankfurt/Rhein-Main has brought out a number of additional details concerning the aircraft and its performance, supplementing the information published in SUMMARY No. 75 (*page* 5). The pilot's own remarks on his career, the motives which inspired him to desert with his valuable contribution to the Allied cause, and his cool accomplishment of the getaway, make one of the most interesting stories of the final stages of the air war in Europe. Some of the highlights of his report are given in this article; others will be published in a future SUMMARY.

General Description: All the general facts already known on the Me-262's merits and faults in relation to conventional fighter aircraft have been confirmed by the pilot prisoner. Its merits lie in its high speed and heavy armament; its demerits are its lack of maneuverability, relatively short range, and the extreme vulnerability of the jet units, which tend to catch fire very easily if hit in combat.

Length of Me-262 Runways : One of the most significant facts provided by this pilot is in regard to the length of landing and takeoff runs of the Me-262. It has been thought for some time that jet-propelled aircraft needed a runway of at least 1,650 yards, as reported in SUMMARY No. 65 (*page* 7), *et ante*. This flyer stressed that he was referring to experienced pilots, in stating that a takeoff run of only 900-1,100 yards is needed for a fully loaded 262, but the margin of difference he estimated as safe for inexperienced pilots is only 350 yards, making a needed runway of 1,250-1,450 yards for operational use.

On grass-strip runways, the test pilot said, an Me-262 can be taken off by a good pilot in 1,100-1,400 yards, and can be landed on grass in 700-900 yards. This would seem to cancel previous estimates of the size of field necessary for emergency jet landing grounds and dispersal bases. When this pilot came in at Frankfurt, he was able, by excessive braking, to bring his ship to a stop within about 600 yards. It must be remembered that this man was one of the most expert pilots in the Reich, and possibly the best of all flying this plane.

Speeds: Takeoff speed of the Me-262 with full fuel load but without bombs is about 110-124 m.p.h., and cruising speed is about 465 m.p.h. Approach speed for landing is about 155 m.p.h. With full load, stalling speed is in the neighborhood of 120 m.p.h.

In all his acceptance flights (about 80) the pilot never flew above 13,000 feet. Up to this height, he said, speed does not change with altitude changes, as in other aircraft. This he attributed to the absence of a carburetor and the consequent opposite effect of fuel injection pressures in a jet engine as air density decreases at higher altitudes.

Structural Workmanship : The test pilot has said that the workmanship on Me-262s is not up to that on the Me-109. When testing the jet plane, it was not infrequent for parts to be stripped off in steep fast dives; he himself had on occasions lost cockpit covers, bomb racks, and the tail pipe "bullet" valve during dives. Because of these uncertainties, pilots rarely did rolls during acceptance flights.

As has been suspected from combat reports, if one Jumo unit fails during flight for any reason, the strain on the other is too great, and it generally fails very quickly.

Operational Life : The pilot amplified his earlier statements on performance and operation of the 262, in regard to the endurance of various components of the aircraft. He had been informed that the normal life span of the Jumo 004 unit was 25 hours of flight. He is of the opinion, however, that it is more likely not to exceed 15 hours. Overheating and consequent buckling and blistering of the tail pipe, needle valve, and possibly the combustion chamber would, he thought, take place well under 25 hours. Turbine blades also have to be watched carefully. The pilot stated that inferior materials available to the crippled Reich metal industry were probably responsible for these shortcomings.

Flying Characteristics : The Me-262 is said by this flyer to have good aileron control at all altitudes and at high speeds, and it will do a good slow roll. He had never put one into a spin, but after stalling, the plane falls forward with no bad spin tendencies. About a third of all the 262s that he had test-flown had a tendency to skid at first, but this was easily adjusted by the rudder trim-tab.

There is no flutter while diving, it was said; the reason, according to the informant, is the high position of the tail plane in relation to airflow around the wings.

Visibility : With the exception of visibility, the minimum weather conditions for safe flying are the same speed for jets as for other fighters. Because of its great speed, minimum safe visibility for takeoff and landing the Me-262 is considered to be two-and-a-

half to three miles, and that for an experienced pilot.

Losses of New Aircraft: Although this test pilot knew about operational Me-262s only from hearsay, he was able to furnish a few very interesting facts about numbers and serviceability. He estimated that only about half of the entire output of Me-262s were operational at any one time. Many losses occurred in ferrying, conversion training, and occasional failure of jet units in the air.

Tactics Against Me-262s : The pilot was cooperative in giving helpful hints for Allied pilots who encounter the jets. He confirmed that fighters should aim at the jet units, since they catch fire even more easily than conventional engines.

Several Staffeln at Lechfeld, it was said, had been devoting their efforts to experimental missions against Allied aircraft, as suspected, to devise the most effective tactics and methods against them.

Advantage in speed of the 262 can be overcome by an advantage in altitude. By flying cover in stacked-up formation, with as much as 3,000 feet between flights, the upper element can reach a diving speed similar to the speed of an Me-262, and this can be exploited in attacking the jet, which needs from 9,000 to 12,000 feet for a split-S maneuver.

Ideal situation for a P-51, for example, would result from a combination of two factors: first, speed gained through diving from superior altitude, making straight escape risky for the jet; second, exploiting its sluggishness in maneuvering if it should attempt an evasive turn.

The pilot also repeated the by-now well-known fact that an Me-262 is at its most vulnerable near the deck in a traffic pattern for landing, when its fuel is likely to be nearly exhausted.

Career and Escape of the Jet Test Pilot

THIS flyer had waited a long time for an opportunity to desert the GAF. Suddenly, at the end of March, because of the danger of capture of 22 new Me-262s at Schwäbisch-Hall, orders came for the planes to be flown to Neuburg. This was the factor immediately facilitating French leave. More significant, however, was the fact that his home town near Lachen/Speyerdorf had just been taken by US forces, and his parents were no longer in danger of Nazi reprisals from the projected desertion. It has been confirmed that the pilot had planned to desert as far back as Christmas, and had twice spoken of it to his family by January.

Investigation has shown that the informant comes of an intellectual and artistic family which manifested anti-Nazi tendencies as early as 1935.

Personal History: Born in Speyer/Rhein in 1914, the pilot received the equivalent of a high school education. Following this he took a three-year course in aircraft construction and engineering in Mannheim and Weimar. He received his basic flying training in the Luftwaffe at Darmstadt and Mannheim in 1936, and tactical training as a fighter pilot followed at Mannheim/Sandhofen in 1938.

In July, 1939, he became a GAF instructor, and was later assigned to an operational fighter unit. In May, 1940, he was transferred to the GAF experimental station at Rechlin where he tested captured Allied planes.

The pilot was discharged from the Luftwaffe in August, 1941, and remained at Rechlin as Me-109 acceptance pilot. He was later employed at the Erla plant in Leipzig, and from February, 1942, until July, 1943, he worked for the same firm in their Antwerp branch. For a time he flew some defensive missions, and was awarded the Iron Cross, 2nd Class, for shooting down a Spitfire. He joined the Luftwaffe again in September, 1944, and was discharged again to be an acceptance pilot for the Messerschmitt Me-262 plant in Augsburg. Early in January, 1945, the pilot was given a new assignment with the Messerschmitt branch at Neuburg.

The Getaway : The pilot told interrogators that at the final assembly plant at Schwäbisch-Hall, it was decided late in March to destroy all jet planes on hand, since bombing had made all runways unserviceable. At the last moment, however, sufficient repairs had been accomplished, and it was decided to ferry the aircraft eastward to safety.

The informant took off fourth in the ferrying formation, with the intent to fly to Lachen/Speyerdorf, turn his plane over to the Allies, and join his parents. His plans were changed, however, when his landing gear failed to retract. Because of added wind resistance and because efforts to retract the landing gear pulled him off course, he decided to make a premature landing at an alternate field. Flying at 300-400 feet, he chose Rhein/Main, circled, picked a runway among the craters, and landed with a run of between 450 and 600 yards.

Interrogators believe that the test pilot is not an opportunist. According to them, it seems that he only regrets that his home town was not taken sooner, so that he could have made an earlier desertion.

The pilot expected a very early collapse of German resistance, and expressed his desire to help the Allied cause in order to avert further unnecessary bloodshed, and to aid in overthrowing the Nazi regime. He told his interrogators that he was willing to fly his ship for test purposes or in mock combat with US aircraft.

USSTAF officers who have visited the pilot's family believe that he acted in good faith, without ulterior motives, and with courage of his convictions. His character and general reliability are therefore judged by interrogators to be above reproach.

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DETAILS OF THE JAGDSCHLOSS

Captured Documents Provide Facts on Principles And Operation of the German Long-Range PPI System

INFORMATION of considerable technical value has been obtained by Air Technical Intelligence officers from the examination of Jagdschloss sites and equipment captured during recent ground operations. Manuals and other documents have also been acquired which provide a wealth of intelligence on this sytem from an electronics engineering viewpoint. The present article should be considered as supplementary to previous less technical treatments of the Jagdschloss radar, published in SUMMARIES No. 72 (*page* 9) and No. 51 (*page* 8).

General Principles : The Jagdschloss ground radar has the German designation FuMG 404, the initials standing for *Funkmessgerät* or "radio-measurement apparatus." It is an all-around long-range search equipment incorporating an IFF principle, as previously mentioned.

Short wave pulses are sent out of the radar transmitter at a definite pulse recurrence frequency, over a horizontally-rotating directive antenna. The reflected impulse is received by the directional antenna and transmitted through the radar receiver to the display units O-Gerät (Monitor Unit) and *Sternschreiber* (PPI display).

The monitor is used principally for initial setting and calibration. A beam of electrons traces the time base from the center of the *Sternschreiber* screen toward the outer portion at a uniform velocity; this process is synchronized with the turning of the antenna. The position of the radar apparatus is in the middle of the scope picture and all located targets around the apparatus are continually visible.

Transmitted impulses return after the time required for the outward and return trip to a target has elapsed, which equals the time required for the electron beam to move from the center point of the scope to a point corresponding to the target position. The time base can be measured or gauged in kilometers. The radar blip appears on the scope in an angular position indicating the azimuth of the antenna array at that moment.

A constant picture of the air situation is produced which gives the measured azimuth and the slant range. Because of the limited directive possibilities of the antenna beam a blip of about four degrees' width results. Interruption of the signals resulting from the turning of the antenna is rectified by the afterglow.

Cathode Ray Tube : Documents and prisoner sources have indicated that two makes of cathode ray tnbes are in the *Sternschreiber*, one by Fernseh Company and the other by Opta-Radio. The former model is a constant current (1.7 amp.) indirectly heated type with filament voltages ranging from 0.8 to 1.0 and a constant current of 1.7 milliamperes. The Opta-Radio model is a constant voltage type with currents from 0.4 to 0.6 amperes and a constant filament voltage of 4.0.

Anode voltage is 12 kilovolts on all models. The screen diameter is 40 cm.; the PPI tube is housed in a 53.5-by-80-cm. cabinet with a 36-cm. hole cut in the top for the tube. The cathode ray tube is mounted a few centimeters below the hole and a flat glass plate with gridded map overlays applied to it (or possibly to the tube surface).

The 100-km. marker is a circular trace, with a dark point at north, and the range circle is switched on and aligned to a 100-km. circle marked on the screen when setting up. In operation a light spot appears at the north direction only, but the 100-km. circle may be applied for checking by depressing a button.

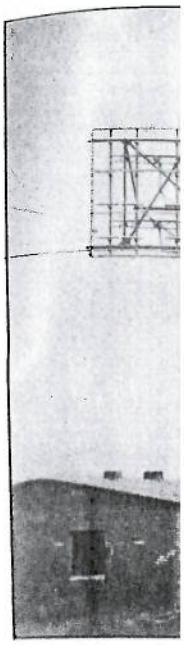
The tube used is extraordinarily large. Prisoners have reported it has a wall thickness of 10 to 15 millimeters, and that it can stand an inward pressure of 20 tons. Operators and maintenance personnel are ordinarily carefully instructed on, and protected against, the dangers of collapsing tubes. Severe injury has resulted from such accidents.

Recognition impulses are received on an FuG 25A installed in the friendly (German) aircraft, and the aircraft transmitter is tuned to the IFF frequencies of the ground station. Individual recognition impulses are picked up by the recognition antenna and transmitted through the receiver to the scope.

Because of the time lag in the airborne set, and the small amount of directivity in the IFF array, the signal in the cathode ray tube shows a lag of about 500-1,000 meters behind the accompanying target blip and is somewhat wider. Comparison of the two signals would indicate that the echo was from a friendly aircraft.

Transmitter Operation : An oscillator located in the Jagdschloss "Z-Gerät" generates the impulse frequency, which serves to synchronize the entire high-frequency system. This is conducted through a phase shifter for equalizing the phase differences present in the different units, and also for adjusting the "nullipulse" to the zero mark on the monitor unit. The transmitter generates pulses in synchronism with the plate keying which reach the radar antenna through the "Simultängerät" and the high-frequency coupling.

The function of the Simultängerät is to block the



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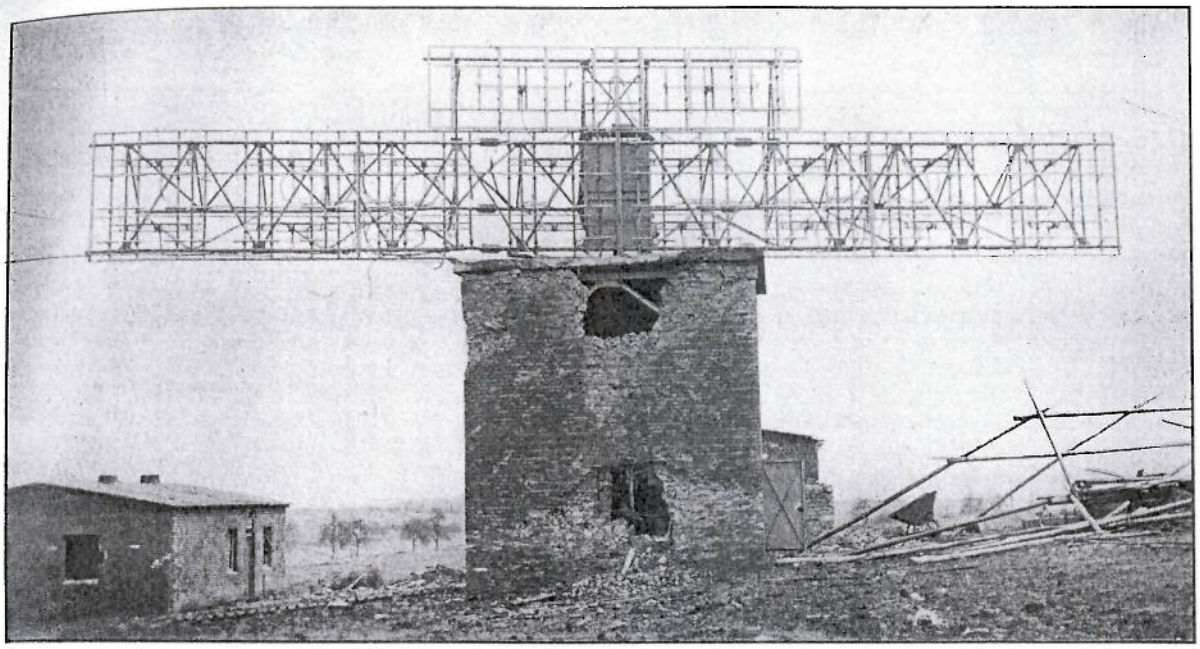

Jadgschloss installation captured near Trier is the same one shown in reconnaissance photo in SUMMARY No. 57 (*page* 8). The site was defended for a time by the Germans, and some shell fire damage to the cabin resulted.

path to the receiver while the transmitter is in operation, to prevent destruction of the receiver by the transmitter pulse. The path to the transmitter is likewise blocked for the reflected pulse. Frequency changing is provided for by a tuning adjustment which controls the length of two trombone-like metal tubes.

Receiver Operation : After the reflected impulse reaches the radar antenna, it is conducted into the receiver through the high-frequency coupling. The echo is amplified in the high-frequency amplifier and then mixed with the local oscillator output. The intermediate frequency signal so generated is amplified again, mixed again, and amplified a third time. The signal is then detected and amplified. The pulses reach the monitoring unit and the Sternschreiber through the "Nordimpulsgerät."

Monitoring Unit serves for initial setting and calibration of the apparatus. From the Z-Gerät the synchronizing voltage for the time base is led to the monitoring unit. On this unit the correct setting of the nullipulse, the north impulse, and the correct tuning of the receiver are observed. A test knob can be pushed down which will intensify north impulse when it is produced by the rotating antenna at the north contact. A phase shifter in the circuit to the Nordimpulsgerät sets the spot to the calculated range value.

Sternschreiber: The air situation around the Jagdschloss is reproduced on the cathode ray tube of the

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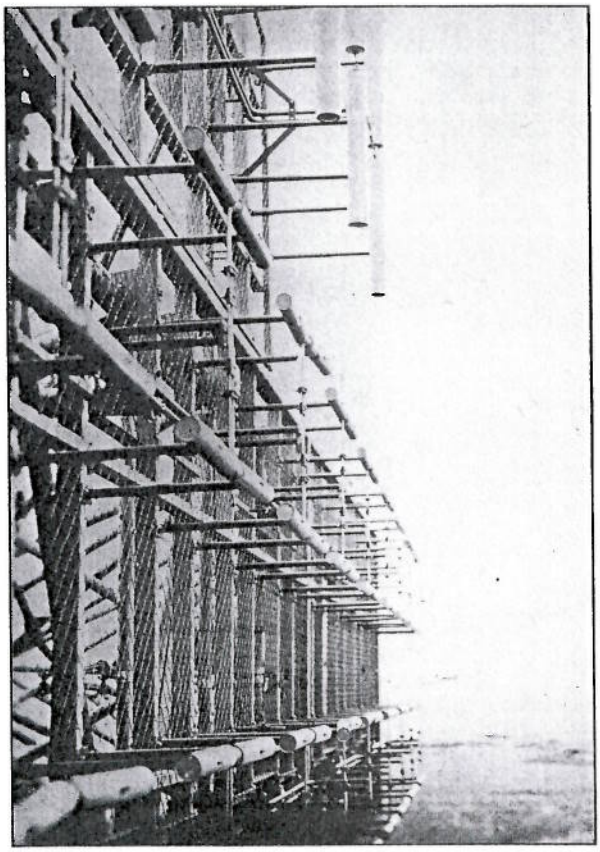

Close-up of Antenna shows horizontally polarized dipoles on the main array; IFF array, above, uses vertical polarization. Dipoles are of light sheet metal tubing, a construction permitting a wide range of frequencies.

For this purpose two two-seater dual-controlled Me-262s were used; pilots practiced flying in this jet before going over to the Ar-234B. Preliminary flights were originally followed by flights in the He-111, whereupon direct conversion to the Ar-234 began.

A newer flying training syllabus opened the course with five circuits and bumps in the Ar-96, followed by six bad-weather landings under radio control. The student then changed to the He-111, and after more circuits and landings, made several practice bombing flights using the Lotfe 7D and cement bombs.

Conversion to the Me-262 then took place, consisting of three or four dual takeoffs, totalling about 20 minutes' flying time. The trainee was then transferred to the Ar-234, the first flight being under radio control for about 20 minutes' duration. Four or five more flights were made in the Ar-234, including one high-altitude flight in which the student was required to remain at a height of about 26,000 feet for a minimum of 15 minutes. This was followed by a cross-country flight lasting an hour and a half, during which the pilot requested radio fixes and was required to home on the airfield beacon on his return. The latest course ended with four practice bombing runs using cement bombs aimed with the Lotfe 7D bombsight.

JAGDSCHLOSS

(Continued from page 7)

Sternschreiber, which shows all radar targets. The Nordimpulsgerät inverts the positive output of the receiver presenting a negative pulse to the cathode of the cathode ray tube. Thus the time base lights up for the nullimpulse and the received impulse.

The time base generator is triggered through the frequency doubler, an amplifier (not found in all sets) and a phase shifter, all located in the Z-Gerät. The purpose of the frequency doubler is to trace the time base twice in the interval between two transmitter impulses. This allows the radar impulse to be presented on the first trace and the IFF impulse on the second trace.

The time base current is fed to the deflection coils around the stem of the cathode ray tube, which are rotated round the stem by a synchronous motor, so that the time base is traced radially from the center and rotates on the screen of the tube.

Synchronizing Apparatus: This component serves to lock the display on the cathode ray tube to the turning of the antenna. The synchronizing voltage is generated by an attachment to the antenna motor. The large gear wheel on the axis of the antenna motor interrupts a light ray from a lamp to a photo-cell while the motor turns. In this way an alternating voltage is generated which is amplied both by a photocell amplifier and an AC amplifier. This alternating current is used to drive the synchronous motor which turns the deflection coils of the cathode ray tube. This arrangement insures that the time base on the Sternschreiber rotates in exact time with the antenna.

IFF: The IFF section of Jagdschloss operates similarly to the radar section. To identify targets with its help, an impulse is generated which is led to the IFF antenna via the "Frequenzweicker." This closes the receiver for the interrogating frequency and the transmitter for the answering impulse.

The re-radiated impulse reaches the IFF receiver via the upper antenna and the Frequenzweicker. This impulse keys the cathode in the same manner as the radar echo.

Range and Frequency: Prisoners interrogated recently have given the maximum range of Jagdschloss as 120 kilometers (75 miles). Lower limit of range of one site was stated to be about three miles, which was considered very good.

Waveband of one Jagdschloss (that at Drossel) was reported by a prisoner to be between 1.2 and 1.8 meters, with usual working frequency at 1.6. Average output was around 64 kilowatts.

Jamming: Effectiveness of jamming by "window" varied. A prisoner has said that aircraft formations were protected by use of window only while right in the cloud of chaff; a fresh plot could be made on Jagdschloss as soon as the lead planes emerged. Chaff-dropping was always more effective, it was said, if done by aircraft separate from the main stream.

GROUND DEFENSES

(Continued from page 3)

This does not mean, however, that 10,000 heavy AA guns have been captured or destroyed during the past four months. In spite of the rapidity of the Allied advance, and in spite of the critical German transportation situation, it is known that a substantial number of these guns were successully withdrawn from static defenses and are now in use as mobile antiaircraft and antitank guns. Recent photo interpretation does not reveal any new large-scale flak defenses. Heavy flak is now being employed piecemeal for ground or air defense as expediency dictates. Many heavy guns have been diverted to a ground rôle in an attempt to satisfy the crucial needs of the Wehrmacht, and are located along the fighting front where the situation demands. Others have been deployed in their primary rôle to give protection to heretofore

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