

## Air and Space this Week

### Item of the Week

# WWII ETO STRATEGIC BOMBING: EIGHTY YEARS AGO – PART 2

Originally appeared August 7, 2023

**KEY WORDS:** Strategic bombing Schweinfurt Regensburg Juggle Black Thursday

*Warfare circa 1943 required abundant men, material, and supplies; the transportation system and its defenses to get them where they were needed; and the industrial/manufacturing infrastructure that could support the entire effort.*

*Many strategic targets were available. The problem was to find the ones that would be most effective militarily, yet do-able operationally. But one thing was certain, oil products, their acquisition, refining, and transportation, was of paramount importance, especially when Rommel's tanks were running wild in northern Africa. But there were other good target options.*

*The previous Item of the Week focused on the mission to bomb the oil complex in Ploesti, Romania, on August 1, 1943, eighty years ago this last week. This week's Item focuses on a major bombing mission to the ball bearing plants of Schweinfurt and the FW-190 fighter plane manufacturing plant in nearby Regensburg*

## ETO STATUS IN AUGUST, 1943

A lot was going on in the European Theater of Operations in the summer of 1943. The great tank battle at Kursk was won by Russian forces, at a serious cost. The Allies invaded Sicily on July 10; Palermo was captured on July 22. Hamburg was fire-bombed in Operation Gomorrah on July 24. Mussolini was arrested on July 25.

Prior to July, 1943, combat on all fronts was going the Allies' way. However, German resistance was fierce, and gains were made at a high cost. A full-scale invasion of Europe, especially from the north and west, lay in the future. But first, the German military, and ***its ability to wage war***, had to be weakened significantly. That meant strategic long-range bombing attacks on heavily-defended targets.

Bombing technology improved dramatically throughout the War, but was still relatively primitive in mid-1943. Bombing from high altitude was safer than coming in a low level, but bombing accuracy suffered the higher the bombers went. If the target were huge (like a city), inaccuracy wouldn't matter so much. But if the targets were small, accuracy mattered. More than safety.

Allied military planners wanted to hurt future German military capability. One critical industry that all could agree on was that the German military absolutely could not operate as a fighting force without oil and the fuels refined from it. Germans had captured the biggest oil processing facilities in Europe, those centered around Ploesti, Romania, early in the War. Their importance led to the great bombing raid described in the first part of this two-part Item.

Other strategic targets were obvious too, such as reducing German fighter aircraft production in advance of the coming invasion of Europe.

But deep-penetration bomber strikes, which at that time meant that the attacking bombers would not have fighter support for the full duration of the mission, were going to be very, very costly. Ploesti's foretaste made that a certainty. Large sacrifices of bombers and crews were justified only for the most important strategic targets. The search was on for other valuable targets, ones that might not be quite so heavily defended.

Military analysts reviewed the paths necessary for strategic war material to follow *en route* from source to finished product, looking for bottlenecks where a relatively small amount of damage would cause an inordinate amount of strategic impact. An example might be a key mountain pass or bridge through/over which several important roads/railroads ran – a few bombs and a large portion of the transport network would be shut down until repairs could be made.

The value of other bottlenecks was perhaps more subtle. One such was the German's ability to produce ball bearings, a critically-important component of all sorts of military vehicles. The manufacturing process was somewhat difficult and lengthy.

And for Germany, all of the plants producing ball bearings was in one place, the town of Schweinfurt.

### **SCHWEINFURT I: "OPERATION JUGGLER"**

The Army Air Force was building its bomber forces up in both England and in North Africa as fast as possible, but the demand for both B-17 and B-24 bombers was huge. Enough B-24s had reached bases in North Africa for the Ninth Bomb Group to conduct Ploesti bombing raid, but losses there required replacement before a really large strike could be mounted again. The Ninth had enough bombers for a smaller strike, however.

The Eighth Air Force in England had been receiving a lot of B-17s. They were assigned to one of two large groups that would eventually be called Bomb Divisions, the First, based in the English Midlands, and the Fourth, based in East Anglia. A few smaller-scale missions against closer aircraft manufacturing plants had been conducted in April-July; they were quite costly, but were successful in causing major damage to FW-190 fighter factories in Bremen, Kassel, and Oschersleben. Similar reductions in the rate at which Bf-109 fighters could be produced was extremely desirable. Manufacturing of the Bf-109 was concentrated in two locations: Wiener/Neustadt near Vienna (reachable from North Africa), and Regensburg, near Schweinfurt ((barely) reachable from England).

Hmmmm. Two important strategic targets, so deep within Germany that full fighter escort was not possible, and two Bomb Divisions. Add another important target, and a Bomb Group near enough to hit it.

General Idea: Hit them all simultaneously, in order to split up and disorganize the defenses of all three targets, necessary because fighters presently in use did not have the range to escort the bombers all the way to the target. Escorting fighters could protect the bombers in a two-stage shuttle method: the first group of fighters take off with the bombers and escort them as far as possible before turning back, while a second group of fighters launch later, timed to meet the returning bombers at the fighters' range limit. The Ninth would hit Wiener-Neustadt, the Fourth (under then little-known Curtis LeMay) would hit Regensburg, and the First (under Robert Williams) would hit Schweinfurt. The extra distance flown by the Fourth required them to halve their bomb capacity to provide space for extra fuel tanks.

Bomber launches had critical time constraints. The idea was that the Fourth's attack on Regensburg would attract most of the fighters, who would then have to re-arm and re-fuel afterward. The Firsts' attack on Schweinfurt would be timed to come on the heels of the Fourths', before the defending fighters could get back aloft. To further scatter the German defenses, the First would return home, but the Fourth would continue outward from Regensburg and land in North Africa. Two smaller attacks would be made immediately before to act as diversions against targets on the coast of France and Denmark, and on several Luftwaffe airfields.

The missions had been originally scheduled for August 7, but a period of bad weather in both England and North Africa forced delays. The weather cleared in North Africa first, and since the contribution to Juggler by the Ninth was deemed less important to the overall mission, they were sent out to hit Wiener-Neustadt on August 13 and again on the 14<sup>th</sup>.

For the England-based Eighth AF Bomb Divisions, Operation Juggler would be Mission Number 84. Date: **August 17, 1943, eighty years ago next week.**

## **OPERATION JUGGLER DROPS THE BALL (BEARINGS)**

The morning of August 17 started poorly, as a typical thick English fog blanketed the Eighth's airfields. Critical timing constraints required an NLT 8 AM departure. The Fourth was able to take off in East Anglia OK, using instruments. But the First remained fog-bound.

The Fourth was already to the Netherlands by the time the First took off. Fighters would now have ample time to land, re-fuel and re-arm, and be back aloft at altitude ready to hit the First.

The mission was not scrubbed.

### **Regensburg**

LeMay's Fourth Bomb Division were organized into three wings comprising 62, 42, and 42 bombers. P-47s shuttled to provide support, but the bomber stream was so long that effective coverage was not obtained, even in those zones reachable by the fighters. One of the two

fighter groups assigned to the outbound escort was late on arrival, and none of the fighters on the outbound leg of the mission encountered aerial opposition.

German fighter attacks on the bomber stream were relentless, and lasted for more than an hour before the fighters had to break off to re-fuel and re-arm. They'd be back. Fifteen of the 146 attacking bombers fell in this phase of the attack.

German fighter defenses at Regensburg were strong, but the defensive anti-aircraft fire there was less so. One hundred-eighty bombers dropped almost 300 tons of bombs very effectively, as bombing conditions and aiming were excellent. The Bf-109 plants took very heavy damage. The idea to not have the Fourth return to England but rather head for Algeria worked like a charm. Two damaged bombers had to land in Switzerland and were interned, another crashed in Italy, and five had to ditch in the Mediterranean. One hundred twenty-two bombers made base, but half of them had suffered battle damage.

### **Schweinfurt**

A total of 230 B-17s were in the First Bomb Division, divided into 9 groups in four mutually-supporting boxes; the bombing stream was more than twenty miles long. Weather along the way was worse than expected, forcing the bombers to fly at 17,000 feet, increasing their vulnerability to fighter attack. A group of Spitfire escorts were added during the delay to help with the outbound stream, and they were able to be on station long enough to knock down a few of the first-arriving defensive fighters. After that, the bombers were on their own.

First BD followed the same route as the Fourth, but had to diverge slightly in order to approach Schweinfurt, and the German fighters were quick to pick up the attack target. The delay in launching the Schweinfurt strike was catastrophic. The German fighters were at altitude, full of fuel and ammo, and were fully prepared to meet unescorted bombers. In addition, the shorter-range aircraft at Schweinfurt had just received an unguided rocket system for attacking bombers, and they put it to good use. Both Bf-109 and FW-109 fighters employed aggressive head-on attacks, while other aircraft fired away with rockets from astern.

Bomber losses mounted, especially in the lead squadrons. Twenty-two went down, and another three fell to AAA, but 183 bombers dropped 424 tons of bombs successfully. Eight more bombers fell on the way back before the escort was in range, and another three succumbed to battle damage before making base.

The AAF's monthly magazine, *IMPACT*, showed post-strike damage at Schweinfurt from Operation Juggler (*IMPACT*, November, 1943, pp. 18-19). Considerable damage was done to the buildings housing ball bearing manufacturing, but while the buildings were damaged, the machines that produce the bearings were less so. The bearing production rate was cut by one-third, and much of the damage was quickly repaired. Unknown to the Allies at the time: Ball bearing manufacturing was concentrated at Schweinfurt, but bearings already created were not stored there. Caches of bearings in a lot of places reduced the effect desired for the Operation Juggler strike. We didn't so much as drop the ball (bearing), the Germans juggled them around a bit to safety!

## Wiener-Neustadt

W-N was bombed numerous times during the War after Operation Juggler, including a major mission causing a lot of damage on November 2, but finding info on the first bombing attack on it, part of Juggler, has proved to be difficult. Its early launch precluded it having any value as a diversion, in fact, bombing there may have alerted the Germans to the vulnerability of other airplane manufacturing facilities. I found one sketchy source that listed a strike by 61 B-24s on the 13<sup>th</sup> and the same on the 14<sup>th</sup>. I found corroboration in the USSAF Combat Chronology – 61 bombers both days, no further info). In any case, the Ninth's B-24s made no significant contribution to Operation Juggler, and likely had little success, this time, at W-N. The AAF's monthly magazine, *Impact*, did show some pictures from February 5, 1944, that showed repairs made since the damaging November 2 strike, along with internal photos showing damage (*IMPACT*, April, 1944, pp. 1-3.) W-N was hit again successfully during the [Big Week](#) (February 1944), and [many times](#) through the duration of the War.

## Totals

A total of 60 B-17s were lost on the combined Schweinfurt-Regensburg mission, many more than on any mission previous. Many other B-17s were damaged, and many of those were never returned to service. A total of 552 aircrewmen were lost, about half KIA/MIA and half POWs. Five crews had been rescued, and another two crews were interned.

The buildings and facilities at Schweinfurt were badly damaged, but the equipment they contained less so. Production of ball bearings dropped initially by ~33%, but existing stores ensured that no production of war material was lost due to a ball bearing shortage.

The FW-109 facility at Regensburg was badly damaged, and repairs there were slower than at Schweinfurt.

Both targets would need to be hit again.

## SCHWEINFURT II: BLACK THURSDAY

A second major raid against the ball bearing manufacturing plants at Schweinfurt was needed to “complete” the damage from Operation Juggler. It took many weeks for the bombers and crews in the Eighth AF to be replenished after the losses at Ploesti and Schweinfurt-Regensburg. Aerial reconnaissance and other sources showed that the damage was considerable, but repairable. The “Second Schweinfurt” was set for Thursday, October 14, 1943.

Lessons learned at Ploesti and Juggler led to a simpler battle plan – a straight-in bombing attack on Schweinfurt followed by a loop to the south and a more-or-less straight return north of Paris to England. No split targets. No diversions. Fighter escorts on the outbound and inbound legs were strengthened, with P-47s on the outbound side and P-47s and Spitfires on the inbound side, but there was still a zone they couldn't reach – over the target.

Mission planners were still convinced that deep-penetration unescorted bombing missions were feasible. This mission would finally change their minds.

Bad weather affected this Schweinfurt mission, just as it did with the first. One group, with B-24s, had to go to a secondary target due to the weather they encountered, taking 29 planes out of the attacking force. The formations flown by the others had to be loosened, making the planes more vulnerable to fighters.

The Germans hadn't been idle since the first Schweinfurt raid. Anti-aircraft guns were added and gunners trained. The local Me-110 squadrons were beefed up with the now-familiar unguided rockets. And they were ready.

The Thunderbolt pilots shot down a number of first-arriving defenders, but had to return. The bomber stream was exposed, and the Germans stayed with the frontal fighter attack, rocket attack from the stern, tactics. Fighters and flak accounted for 13 bombers, and another 12 made base but were immediately scrapped. One hundred twenty-one of the bombers returned with "medium" damage.

A total of 291 bombers were launched, of which 229 made bomb runs on target. Of the ~2,900 airmen participating, 254 did not return, 65 of which were POWs. Five aircrewmembers in planes that made base were KIA, another 43 were WIA.

The factories at Schweinfurt were hit heavily again, but while production was slowed, the loss did not materially affect the output of wartime material.

Bomber command had overestimated the ability for bombers to self-defend against fighter and rocket attacks. The loss rate of deep-penetration mission planes to date was simply unacceptable. Sixty bombers! The 305<sup>th</sup> Bomb Group lost 13 of its 16 bombers, and had 130 casualties (36 KIA). That's an 87% percent casualty rate. The 306<sup>th</sup> had 35 KIA and 65 POW.

No wonder that this date became known as "**Black Thursday!**"

What was needed was the P-51, with a Merlin engine. But that's another story; [here](#).

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Last Edited on August 6, 2023

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