

# Operation Tidal Wave

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This operation was one of the costliest for the USAAF in the European Theater, with 53 aircraft and 500 aircrewmen lost. It was proportionally the most costly major Allied air raid of the war, and its date was later referred to as "Black Sunday". Five Medals of Honor and 56 Distinguished Service Crosses, along with numerous other awards, went to Operation Tidal Wave crew members. A 1999 research report prepared for the Air War College at Maxwell Air Force Base in Alabama concluded that the bombing campaign in Ploie ti was "one of the bloodiest and most heroic missions of all time". One of the downed American planes crashed into a female prison in Ploie ti, resulting in about half of the civilian casualties from the total of 101 killed and 238 injured.

## Preparations

Romania had been a major power in the oil industry since the 1800s. It was one of the largest producers in Europe, and Ploie ti was a major part of that production. The Ploie ti oil refineries provided about 30% of all Axis oil production.

## Axis air defenses

In June 1942, 13 B-24 Liberators of the "Halverson project" (HALPRO) attacked Ploie ti. Though damage was small, Germany and Romania responded by putting strong anti-aircraft defenses around Ploie ti. Luftwaffe General Alfred Gerstenberg built one of the heaviest and best-integrated air defense networks in Europe. The defenses included several hundred large-caliber 88mm flak guns and many more small-caliber guns. The latter were concealed in haystacks, railroad cars, and mock buildings. German and Romanian AA artillery at Ploie ti consisted of 36 heavy (88

mm) and 16 medium and

light (37 mm and 20 mm) anti-aircraft batteries. The heavy batteries were further supplemented by 15 Würzburg radar stations used for fire control.

The defenses were divided between two regiments of the German 5th Flak Division (21 heavy, 10 medium and light batteries) and the Romanian 7th AA Regiment (15 heavy, 6 medium and light batteries). Half of the manpower of the German 5th Flak Division was Romanian. Additionally, smoke generators and 23 barrage balloons were deployed. The Axis had 57 fighters within flight range of Ploiești (Bf 109 fighters and Bf 110 night fighters, plus assorted types of Romanian IAR 80 fighters). For the defense of Ploiești, the Royal Romanian Air Force had aircraft from five Escadrile (Squadrons): 61 (IAR 80A), 62 (IAR 80B), 45 (IAR 80C), 53 (Bf 109G) and 51 (Bf 110C). The Germans had another four Staffeln: 1, 2, 3./JG4 (Bf 109G) and 11./NJG6 (Bf 110). These defenses made Ploiești the third or fourth most heavily defended target in Axis Europe, after Berlin

and Vienna or the Ruhr, and thus the most heavily defended Axis target outside the Third Reich.

#### Mission plan

The case for targeting Romania's oil refineries was set forth at the Casablanca Conference by Winston Churchill, who believed that destroying them would deal the "knockout blow" to the German war effort. However, due to a lack of resources for organizing other attacks, the plans were put on hold.

The plans were resumed in April 1943, when General Henry H. Arnold commissioned his staff to continue their development. Two plans were conceived: one called for a medium-scale high-altitude attack to be launched from Syrian bases, while the other called for a massive low-altitude attack launched from Libya. Colonel Jacob E. Smart's idea of the low-altitude attack was ultimately accepted. The code name for the mission was Operation Statesman, which was later changed to Operation Soapsuds, and finally to Operation Tidal Wave. In charge of the operation was General Lewis H. Brereton.

The Ninth Air Force (98th and 376th Bombardment Groups) was responsible for the overall conduct of the raid. To reach the necessary number of bombers, the partially formed Eighth Air Force from England provided three additional bomb groups (44th, 93rd, and 389th). Due to the distance involved, all the bombers employed were B-24 Liberators.

Based on HALPRO's experiences, the planners decided Tidal Wave would be executed by day and that the attacking bombers would approach at low altitude during the last leg of their run to avoid detection by German radar. Training included extensive review of detailed sand table models, practice raids over a mock-up of the target in the Libyan desert, and practical exercises over a number of secondary targets in July to prove the viability of such a low-level strike. The bombers to be used were re-equipped with bomb-bay fuel tanks to increase their fuel capacity to 3,100 US gallons (12,000 L). Additionally, the Norden bombsights were replaced with low-

level bombsights and the lead B-24s were also fitted with two .50-caliber machine guns, which were operated by the pilot. The ordnance carried by the bombers consisted of 500 lb (230 kg) and 1,000 lb (450 kg) high-explosive bombs, supplemented by incendiary bombs. All were armed with delayed action fuses varying in time from 45 seconds to six hours.

Originally the operation was to consist of 154 bombers, but the final number reached 178, with a total of 1,751 aircrew, one of the largest commitments of American heavy bombers and crewmen up to that time. The planes were to fly from airfields near Benghazi, Libya. They were to cross the Mediterranean and the Adriatic Sea, pass near the island of Corfu, cross over the Pindus Mountains in Albania, cross southern Yugoslavia, enter southwestern Romania, and turn east toward Ploiești. Reaching Ploiești, they were to locate predetermined checkpoints, approach their targets from the north, and strike all targets simultaneously. The five main ref

ineries of Ploiești were designated as targets White 1-5, while the Creditul Minier refinery from Brazi was designated target Blue, and Steaua Română from Comănești was designated target Red.

For political reasons, the Allied planners decided to avoid the city of Ploiești so that it would not be bombed by accident.

#### Flight to Romania

On the morning of 1 August 1943, the five groups comprising the strike force began lifting off from their home airfields around Benghazi. Large amounts of dust kicked up during takeoff caused limited visibility and strained engines already carrying the burden of large bomb loads and additional fuel. These conditions contributed to the loss of one aircraft, Kickapoo, during takeoff, but 177 of the planned 178 aircraft departed safely.

The formation reached the Adriatic Sea without further incident; however, aircraft #28, Wongo Wongo, belonging to the 376th Bombardment Group (the lead group, about 40 B-24s) and piloted by Lt. Brian Flavelle, began to fly erratically before plunging into the sea due to an unexplained malfunction. Lt. Guy Lovine a friend of Flavelle who was piloting aircraft #23 Desert Lilly descended from the formation to look for survivors, narrowly missing aircraft Brewery Wagon, piloted by Lt. John Palm. No survivors were seen, and due to the additional weight of fuel, Lovine was unable to regain altitude to rejoin the formation and resume course to Ploiești.

The resulting confusion was compounded by the inability to regain cohesion due to orders to maintain strict radio silence. Ten other aircrews returned to friendly airfields after the incident, and the remaining aircraft faced the 9,000 ft (2,700 m) climb over the Pindus mountains, which were shrouded in cloud cover. Although all five groups made the climb around 11,000 ft (3,400 m), the 376th and 93rd, using high power settings, pulled ahead of the trailing formations, causing variations in speed and time which disrupted the synchronization of the group attacks deemed

so important by Smart. Mission leaders deemed these concerns to be less important than maintaining security through radio silence. Although the Americans' orders would have allowed them to break radio silence to rebuild their formations, the strike proceeded without correction, and this proved costly. While in flight towards Bulgaria, the bomber formations

were detected by German radar. The bombers were also spotted by Bulgarian Avia B-534s, which took off to protect Sofia.

Earlier that day, a German signal station picked up a message from the Ninth Air Force regarding the departure of a large bomber formation. While the destination of the bombers could not be determined, the information was relayed further to other Luftwaffe units, including Jagdfliegerführer Rumänien. The American leaders were unaware that the Germans knew of their presence.

As they were passing the Danube, the B-24s descended to 2,300 ft (700 m) and continued at low altitude. Although now well strung out on approach

to Pitești, all five groups made the navigational checkpoint 65 mi (105 km) from Ploiești. As planned, the 389th Bomb Group departed for its separate, synchronized approach to the mission target. Continuing from Pitești, Col. Keith K. Compton and Gen. Ent made a costly navigational error. At Trgoviste, halfway to the next checkpoint at Florești, Compton followed the incorrect railway line for his turn toward Ploiești, setting his group and Lt. Col. Addison Baker's 93rd Bomb Group on a course for Bucharest. In the process, Ent and Compton went against the advice of their airplane's navigator and the Halverson Project (HALPRO) veteran Cpt. Harold Wicklund. Now facing disaster, many crews chose to break radio silence and draw attention to the navigational error. Meanwhile, both groups had to face Gerstenberg's extensive air defenses around the Bucharest area in addition to those awaiting them around Ploiești.

## Attacks

The Romanian and German fighters, although scrambled earlier, were directed to fly at 5,000 m (16,000 ft), as the bombers were expected at high altitude. This error was soon corrected and the fighters were instructed to attack the low-flying bombers. The first contact with the B-24s was made by IAR 80s of Grupul 6 Vânătoare at 11:50 AM, near Săbreni.

Noticing the navigation error, Lt. John Palm, piloting Brewery Wagon, broke off from the 376th Group's formation and attempted to bomb the refineries alone. Badly hit by flak, the aircraft jettisoned its bombs on an empty factory while trying to escape. Soon after, the damaged bomber was engaged by a Bf 109 of 1./JG4, flown by Hauptmann Wilhelm Steinmann. The bomber crash-landed in a field near Tâtrani, being the first B-24 shot down over Romania. The eight surviving crewmen, including Palm, were taken prisoner.

The Hell's Wench aircraft, flown by Lt. Col. Baker and his co-pilot Maj. John L. Jerstad, who had already flown a full tour of duty while stationed in England, also broke formation and led sever

al B-24s to their targets. Hit by flak, they jettisoned their bombs to maintain the lead position of the formation over their target at the Columbia Aquila refinery. Despite heavy losses by the 93rd, Baker and Jerstad maintained course and, once clear, began to climb away. Realizing the aircraft was no longer controllable, they kept climbing to let their crew abandon the aircraft. Although none survived, Baker and Jerstad were posthumously awarded the Medal of Honor for

these actions.: 77

Maj. Ramsay D. Potts, flying The Duchess, and Maj. George S. Brown, aboard Queenie, encountering heavy smoke over Columbia Aquila, led additional aircraft of the 93rd and successfully dropped their bombs over the Astra Rom n , Unirea Orion, and Columbia Aquila refineries. In all, the 93rd lost 11 aircraft over their targets in Ploie ti. One of the bombers, Jose Carioca, was shot down by a Romanian IAR 80 fighter, which went into a half roll and moved swiftly under the B-24 upside down, raking its bel

ly with bullets. The bomber crashed into Ploie ti Women's Prison. Of the 101 civilians killed and 238 injured in this raid, about half died when this three-story building exploded in flames. Forty women survived, but there were no survivors from Jose Carioca's crew.

The aircraft that shot down Jose Carioca, IAR 80B no. 222, flown by Sublocotenent Carol Anastasescu, was also damaged and set on fire after shooting down another B-24. While the pilot was trying to bail out, the IAR collided with the propeller of another B-24, which severed its vertical stabilizer. Anastasescu, who was thrown clear of the IAR as the airplane crashed in a field, later made a full recovery in hospital.

#### Concordia Vega and first Steaua Rom n attacks

Air defenses were heavy over the 376th's target (Rom no-Americana), and Gen. Ent instructed Compton to attack "targets of opportunity". Most of the 376th B-24s bombed the Steaua Rom n refinery at C mpina from the east, and five headed directly into the already smoldering conflagration over the Concordia Vega refinery. The group of bombers heading to Concordia Vega, led by Lt. Norman Appold, dropped their bombs on a distillation plant of the refinery. At C mpina, air defenses on overlooking hills were able to fire down into the formation.

#### Astra Rom n and Columbia Aquila attacks

With the 93rd and 376th engaged over the target area, Col. John R. Kane of the 98th Bomb Group and Col. Leon W. Johnson of the 44th Bomb Group made their prescribed turn at Flore ti and proceeded to their respective targets at the Astra Rom n and Columbia Aquila refineries. Both groups would find German and Romanian defenses on full alert and faced the full effects of now-raging oil fires, heavy smoke, secondary explosions, and delayed-fuse bombs dropped by Baker's 93rd Bomb Group on their earlier run. Both Kane and Johnson's approach, parallel to the Flore ti-to-Ploie ti railway, had the unfortunate distinction of encountering Gerstenberg's "Die Raupe" ("the caterpillar"), a disguised flak train. At treetop level, around 50 ft (15 m) above the ground, the 98th would find themselves to the left and the 44th on the right. The advantage, however, would rest with the 98th and 44th, whose gunners quickly responded to the threat, disabling the locomotive and killing multiple air defense crews.

With the effects of the 93rd and 376th's runs causing difficulties locating and bombing their primary targets, both Kane

and Johnson did not deviate from their intended targets, with the aircraft they were leading taking heavy losses in the process. Their low approach even enabled gunners to engage in continued ground suppression of air defense crews directly below them. For their leadership and heroism, Kane and Johnson were awarded the Medal of Honor. Lt. Col. James T. Posey took 21 of the 44th's aircraft on a separate assigned attack run on the Creditul Minier refinery, just south of Ploiești. Although air defense batteries had already heavily engaged the 93rd,

Posey's aircraft also received heavy fire from the same emplacements. Maintaining a continued low-level approach into the target area took some of the still heavily laden aircraft through tall grass, and damage was caused by low-level obstructions. Posey and his aircraft equipped with heavier 1,000 lb (450 kg) bombs managed to find their marks at Creditul Minier without loss to the formation.

### Second Steaua Română attack

The last Tidal Wave attack bombed the Steaua Română refinery, 8 mi (13 km) northwest of Ploiești: 161 at Cămpina. The 389th attack, led by Col. Jack Wood, ran into some navigation problems as cloud cover made it difficult to spot the Dealu Monastery, an important landmark for the plan. Though the group took a wrong turn, Wood's navigator corrected it, and the group continued to their target. The attack on Steaua Română was more complicated than the others, as it required the group to split into three detachments and hit several objectives. The attack proceeded as rehearsed at Benghazi. The damage caused by the 376th and 389th attacks heavily affected the refinery.: 76 The 389th lost four aircraft over the target area, including B-24 Ole Kickapoo, flown by 2nd Lt. Lloyd Herbert Hughes. After hits to Ole Kickapoo only 30 feet over the target area, the detonation of previously dropped bombs had ignited fuel leaking from the B-24. Hughes maintained course for bombardier 2nd Lt. John A. McLoughlin to bomb, and the B-24 subsequently crash-landed in an explosive cartwheel in a river bed.: 187 Hughes (who posthumously received the Medal of Honor) and six crew members were killed, while two gunners and the bombardier became prisoners of war.

### Return flight

On their way over Bulgaria, the B-24s were intercepted by three fighter groups, ten Bf 109s from Karlovo, four Avia B-534s from Bozhurishte, and 10 Avia B-534s from Vrashdebna. The pilots, Podporuchik Peter Bochev, Kapitan Tschudomir Toplodolski, Poruchik Stoyan Stoyanov, and Podporuchik Hristo Krastev, gained their first kills for the Bulgarian Air Force of the war (although only two B-24 were registered as having crashed in Bulgaria). The new fighter aces were personally decorated afterwards by Tsar Boris III of Bulgaria with the Order of Bravery, the first time in 25 years. Iron Crosses were awarded a month later from the German embassy. Other losses occurred over Yugoslavia, where two B-24s collided with each other, and over the Ionian Sea, where five B-24s were shot down by Bf 109s of JG 27.

## Result

Only 88 B-24s returned to Libya, of which 55 had battle damage.: 222 Losses included 44 to air defenses and additional B-24s that ditched in the Mediterranean or were interned after landing in neutral Turkey. Some were diverted to the RAF airfield on Cyprus.: 196 One B-24 with 365 bullet holes in it landed in Libya 14 hours after departing; its survival was due to the light armament of the Bulgarian Avia B-534 (only four 7.92 mm machine guns).

For the Americans, 310 air crewmen wer

e killed or missing, 108 were captured by the Axis, 78 were interned in Turkey, and four were taken in by Tito's partisans in Yugoslavia.: 76 Three of the five Medals of Honor (the most for any single air action in history) were awarded posthumously.: 77 Additionally, 56 Distinguished Service Crosses and 41 Silver Stars for valor were awarded. The Allies estimated a loss of 40% of the refining capacity at the Ploie ti refineries,: 75 although some refineries were largely untouched. Most of the damage was repaired within weeks, after which the net output of fuel was greater than before the raid.: 75 On 3 August, a de Havilland Mosquito of the SAAF 60 Squadron flew a reconnaissance mission to Ploie ti to record the results of Tidal Wave. Another flight took place on 19 August. Circa September, the Enemy Oil Committee appraisal of Ploie ti bomb damage indicated "...no curtailment of overall product output..." because many of the refineries had been operating below maximum capacity. O

ut of all the bombed refineries, only the Creditul Minier refinery and the Columbia Aquila restarted production in late 1944, while Steaua Rom n partially restarted production from January 1944.

The Royal Romanian Air Force carried out 59 sorties during Tidal Wave, and the Luftwaffe, 89. The Americans lost 53 Liberators (including that landed in Turkey and were interned) and 55 more were damaged. The Romanians claimed 20 confirmed or probable air victories for the loss of one IAR 80B and one Bf 110, plus 15 more claimed by Romanian AA guns. Even if optimistic, the Romanian claims compared favorably with the American sevenfold-plus exaggerations during Tidal Wave and subsequent raids. The system of air victory confirmations of the Royal Romanian Air Force was stricter than that of the Luftwaffe at the time of the raid. Luftwaffe losses amounted to five aircraft. Another 11 fighters were damaged (two Romanian and nine German), and 19 military personnel were killed, with another 97 injured. The American Ninth Air Force was expelled from the theatre.

Through emergency bomb drops on secondary targets, there were casualties at Drenta, Elena, Byala, Ruse, Boychinovtsi, Veliko Tarnovo, Plovdiv, Lom, and Oak-Tulovo.

Given the large and unbalanced loss of aircraft and the limited damage to the targets, Operation Tidal Wave is considered a strategic failure by the Allies.

## Aftermath

After the raid, Marshal Ion Antonescu visited Ploie ti and C mpina. Following this visit, it was decided to form a Special Intervention Corps with the task of responding to attacked areas and reducing the damage caused in future raids. Other

passive defense measures were taken, such as forming new camouflaging units based on the German model, while the air defenses of the region were also improved.

General Dwight D. Eisenhower and other commanders were persuaded to continue the air campaign targeting Romania's oil production after Tidal Wave. The objective was set to lower the production by 60-70%

. As part of General Carl Spaatz's plan, the raids restarted in April 1944, initially attacking the rail infrastructure used to transport oil to Germany. From May 1944, oil targets became the priority again and several air attacks were conducted on the Romanian refineries. Until August 1944, the Royal Romanian Air Force and Romanian flak shot down 223 American and British bombers as well as 36 fighters. Romanian losses amounted to 80 aircraft. Luftwaffe pilots shot down 66 more Western Allied aircraft. Total Western Allied casualties amounted to 1,706 killed and 1,123 captured.

#### Ninth Air Force and Eighth Air Force order of battle

##### Ninth Air Force

98th Bombardment Group (Heavy) ("Pyramiders"), Col. John R. Kane

376th Bombardment Group (Heavy) ("Liberandos"), Gen. Uzal G. Ent , Col. Keith K. Compton

##### Eighth Air Force

44th Bombardment Group (Heavy) ("Flying Eight Balls"), Col. Leon W. Johnson

93rd Bombardment Group (Heavy) ("Flying Circus"), Lt.Col. Addison E. Baker , Maj. John L. Jer

stad

389th Bombardment Group (Heavy) ("Sky Scorpions"), Col. Jack W. Wood , 2nd Lt. Lloyd Herbert Hughes

Awarded Medal of Honor

Awarded Distinguished Service Cross

#### Romanian and German order of battle

Luftflotte 4 Jagdfliegerführer Rumänien Otopeni

IV./Nachtjagdgeschwader 6 Ziliștea, with Bf 110

11./NJG6 Otopeni

12./NJG6 (Escadrila 51 Vânătoare de Noapte) Otopeni

I./Jagdgeschwader 4 Mizil, with Bf 109

1./JG4

2./JG4

3./JG4

4./JG4 (Escadrila 53 Vânătoare)

Flotila 2 Vânătoare Pipera



Grupul 6 V n toare Pipera, with IAR 80

Escadrila 61 V n toare

Escadrila 62 V n toare

Flotila 3 V n toare

Grupul 4 V n toare

Escadrila 45 V n toare T rg or, with IAR 80

In fiction

The plot of the 1966 science fiction novel *The Gate of Time* by Philip Jose Farmer begins in Operation Tidal Wave, where the book's protagonist is one of the many pilots shot down over Ploie ti. While parachuting, he feels a curious dizziness, and when landing, he finds himself not in Romania but in a very strange alternative history world, where the rest of the plot takes place.

See also

Bombing of Romania in World War II

Operation Tidal Wave II, a US-led military operation against Islamic State's oil infrastructure named after the failed WW2 operation.

References

Notes

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