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Area Bombing by Day Bomber Command and the Daylight Offensive, 1944-1945

Laurie Peloquin

This article will examine an important but neglected phase of the Allied strategic bomber offensive in the Second World War. Given the very rich literature on the bombing war¹ it is surprising to discover that little attention has been paid to the daylight attacks undertaken by Royal Air Force (RAF) Bomber Command in the fall and winter of 1944-1945. Nowhere in the existing literature is there a systematic analysis of this period of operations when the RAF and Royal Canadian Air Force (RCAF) carried out 153 daylight raids between 27 August 1944 and 24 April 1945.² Two primary issues will be addressed. The first concerns the accuracy achieved by Bomber Command in its daylight missions. The second is to determine if the reintroduction of daylight attacks resulted in Bomber Command carrying out a different and more selective targeting policy. Both of these issues are related to the more general question of the role played by Air Marshal Sir Arthur Harris in shaping the policy of Bomber Command. Harris's name is usually associated with a doctrinaire commitment to area bombing in general and the destruction of German civilian housing in particular. The evidence presented in this essay will allow the reader to form a more complete picture of Harris's response to the changing circumstances of the war.

* * * * *

Remembering the long and deadly stalemates encountered in the First World War, the major powers searched for a way to bring decisiveness to the battlefield. In Britain Sir Hugh Trenchard, Chief of the Air Staff from 1919 to

1929, advocated an offensive bombing strategy based on the view that "war could be won by producing such moral effect on the civilian population of the enemy that its government would have to sue for peace."³ During the 1930's, the British Air Staff refined this concept. Bombing of key German industrial, transportation and oil facilities would deliver a "knock-out blow" to the German economy. This view dominated air force planning in the early 1930's. With the outbreak of war, the RAF held cautiously optimistic views regarding the value and possible results of a bombing campaign, but this attitude was based on little more than hope.

By the end of 1939 it became clear that daylight bombing was too costly for the RAF and would not cause any serious difficulty to Germany.⁴ Over the first few months of 1940 Bomber Command engaged in very little activity apart from reconnaissance flights and leaflet drops. The situation changed markedly after the Germans dropped bombs on the Dutch city of Rotterdam on 15 May. The War Cabinet reacted by removing the order restraining bombers from attacks near civilian areas.⁵ High loss rates during daylight hours, 5.7 percent in May and June 1940, resulted in major raids being confined to hours of darkness, when, during these same months, the loss rate was 2.9 percent.⁶ By the autumn of 1940 night bombing had taken precedence, as daylight missions were limited to smaller and more specialized operations.⁷

Bomber Command underwent nothing less than a complete transformation by the time it



RAF Lancasters bomb through cloud during a daylight raid over France during the summer of 1944.

returned to large-scale daylight operations in 1944-1945. The availability of aircraft and crews had increased from 506 in November 1941 to 1,609 by April 1945. The light, two-engined bombers had been completely replaced by heavy four-engined aircraft that could carry much larger payloads further, with the formidable Avro Lancaster accounting for the majority of planes available (1,087) by the last few months of the war.⁸ The lightweight wooden de Havilland Mosquito was also available in large numbers. Originally put into service to find and mark targets, the speed (350 mph) and ceiling (33,000 feet) of the Mosquito made it invaluable as a bomber as well.⁹

The years of night bombing had forced Bomber Command to address the problem of target location. This led to the development of a succession of electronic aids, Gee, Oboe, H2S and G-H, which, despite effective German radio counter-measures such as “jamming,” enabled the bombers to attack with increasing accuracy, even when the target was completely obscured on moonless or cloudy nights. Gee was a “passive” system in which directional radio pulses from ground stations allowed the aircraft to plot its position. Oboe was a two-way system, in which a transponder in the aircraft enabled ground plotting staff to bring the aircraft over the target. Like Gee it was “line of sight” whose

range was limited by the curvature of the earth, and thus against targets deep inside Germany it was primarily used by high-flying Mosquitoes of the Pathfinder Force that dropped target markers for the main force. H2S, by contrast, was a ground-mapping radar carried in the aircraft. Although excellent for navigation, it proved to be of limited effectiveness for target-finding in built-up areas, which appeared as a large blur on the cathode-ray tube. It worked well, however, in conjunction with Oboe, and with G-H, an upgrade of Gee widely used starting in the fall of 1944 that featured two-way communication with ground stations for target finding and was more flexible than Oboe.¹⁰

The preparations for the invasion of Normandy diverted Bomber Command from its night area bombing offensive of German cities to operations in support of the upcoming land battle in France. The necessity of bombing rail yards in French cities to prevent German reinforcement of the invasion area without killing very large numbers of French civilians required a level of precision that forced a reevaluation of daylight bombing.

Air Marshal Sir Arthur Harris, who had become commander-in-chief of Bomber Command in 1942, strongly opposed any suggestion that Bomber Command attempt

daylight attacks against precision targets. He claimed that his force was operationally incapable of performing under the very different circumstances of daylight, and strongly clung to his belief that Bomber Command would be far more useful against area targets.¹¹ But, his superior, Air Chief Marshal Sir Charles Portal, Chief of the Air Staff, was equally convinced that Harris underestimated the capabilities of his force. To test those capabilities, Portal ordered a series of raids against six railway marshalling yards in France.¹²

Events proved Portal to be correct. The attacks, which began on the night of 6/7 March 1944, were successful, and reported "enormous damage" to the railway facilities, although some bombs hit civilian areas.¹³ Over the next few months Bomber Command made the majority of its attacks on precision targets in France, flying just under 9,000 sorties, as well as making 3,000 sorties into Germany.¹⁴ Aircrews were perfecting their ability to hit specific targets accurately at night. This skill would benefit them greatly when large-scale daylight attacks began as the whole of the British and US heavy bomber forces began

to support directly the Allied armies in the invasion of Normandy on 6 June 1944, and in the intense battles that raged for ten weeks thereafter. Still, the effectiveness of what often amounted to close support by heavy bombers remains controversial. Extensive cratering of the ground and reduction of German-held towns to readily defensible rubble at times impeded Allied troops, and, despite significant achievements in precision attacks, lapses in the bomber crews' navigation and target identification resulted on several occasions in heavy losses to friendly forces.

With the Allied victory in Normandy control of Bomber Command returned from General Eisenhower's headquarters to the Royal Air Force, which reassessed its strategy. There were important new opportunities, because the progress of Allied ground forces deprived the Luftwaffe of its forward air defence radars, meaning that Allied bombers would encounter much less effective interception.¹⁵ The debate as to what should have priority turned on three major target systems: oil, communications and transport, and industrial areas. Air Chief

A Halifax of 6 Group RCAF makes a daylight attack on an oil refinery in the Ruhr during October 1944.





Canadian Forces Joint Imagery Centre (CFJIC) PL 144277



Above left: An Avro Lancaster attacks the city centre of Münster, Germany, 19 September 1944. **Above right:** Two Lancasters have a close encounter during a daylight mission over Koblenz, Germany, 29 December 1944. Both aircraft made it back to base. This mission was undertaken to interdict the railway yards in Koblenz, which were one of the main transportation hubs supporting the German attack in the Ardennes.

Marshal Portal favoured oil as the primary target objective in shutting down the German war machine, a view advocated by General Carl Spaatz, commander of the US Eighth Air Force. Air Chief Marshal Arthur Tedder, deputy commander to General Eisenhower, believed that a broader effort to destroy the enemy's transportation and communication capabilities, as the bombers had already successfully done in France in preparation for the Normandy invasion, would paralyze the enemy's war-making abilities much more quickly than an assault on oil resources.¹⁶ As always, Arthur Harris preferred area targeting of German cities.¹⁷ Throughout 1944 Harris continued to refer to both oil and transport as "panacea" targets, insisting that the destruction of a single type of target would never bring Germany to its knees. Harris, however, was also subject to the decisions of others, and would prove to be a more or less obedient agent of senior authorities.

Oil became the top priority in a directive jointly issued by the commanding officers of both the RAF and the USAAF on 25 September 1944, followed by German rail and waterborne transport systems. Direct support of land and naval operations also took precedence over industrial areas, which were to be attacked only "when weather or tactical conditions are unsuitable for operations against specific primary objectives."¹⁸

Bomber Command, in fact, began its daylight raids nearly a month before, on 27 August 1944, against the Rheinpreussen synthetic oil refinery at Homberg/Meerbeek. Cloud cover over the target was 7/10ths and the attack took place using the same Oboe marking techniques and green target indicators used in night raids.¹⁹ The raid was described as only "moderately successful" because the overall bombing was widely dispersed and the refinery, although damaged, was not shut down. Yet, although flak had been reported as "heavy" over the target, no bombers were shot down and the escorting squadrons of Spitfires drove off the Luftwaffe.²⁰ Overall, the results were encouraging.

On 3 September 1944, 675 aircraft participated in daylight raids against six German airfields in Holland, targeting runways and hangars. Only one Halifax bomber was lost to flak over Venlo.²¹ All of the operations were described as successful in the Group Summaries, as in the case of Soesterburg: "bombs seen straddling the runways and bursting among buildings...fire and many new craters in runway."²² Photo reconnaissance confirmed these claims and similar results were obtained on five subsequent raids.²³

The oil offensive resumed on 11 September with raids against three plants, Castrop-Rauxel, Kamen and Gelsenkirchen, with visual evidence

of considerable damage at the first of these targets. Although German fighters did not appear to challenge the strong escort of twenty-six fighter squadrons, a total of nine bombers were lost to flak and 90 others, from a total of 129 despatched to the target, received some flak damage in this raid. Total losses for the day amounted to 2.4 percent, and overall the results were not outstanding as heavy flak had prevented good bombing concentrations.²⁴ Dortmund, Scholven/Buer and Wanne-Eickel, three oil targets, were attacked the next day, and the Nordstern plant at Gelsenkirchen was attacked again on the 13th. All four assaults damaged the targets, with severe destruction reported at several buildings at the Nordstern plant.²⁵ Bomber Command's Operational Research Section cautiously estimated that the raids to date had caused a total reduction of 5 percent of the output, but warned that repairs would soon restore production unless the attacks continued.²⁶ Attention shifted away from oil in mid-September when Bomber Command was again needed to assist the army, including bombardment of the fortified Channel Ports in support of the Canadians, but at the end of the month Bomber Command made attacks on oil facilities at Sterkrade and Bottrop. Bad weather and cloud cover prevented these raids from causing much damage.²⁷

In the four weeks before the issuance of the oil directive on 25 September 1944, Bomber Command had already begun daylight operations against those targets. However vocal in his disagreement with oil as the overriding priority, Harris was by no means opposed to striking such targets as part of a larger offensive.

Area targets, Harris's preference, and communication targets rounded out the daylight schedule for Bomber Command in September 1944. Emden's central district and docks were the objectives for attacks on 6 September. With the advantage of daytime visibility, the bombers were able to fly at a very low altitude, under 2,000 feet, to avoid early warning systems, and the Germans were unable to deploy a smoke screen over the city only when it was too late.²⁸ Enormous fires caused severe damage to the heart of the city's business and residential sections, several small ships were sunk, and the submarine building yard received major damage

to its engineering shops and foundries.²⁹ A raid on Munster on the 12th also produced serious destruction. Many buildings still burned 15 hours after the attack, which caused almost complete devastation to a large section of the town, including severe damage to the main rail station and several warehouses, factory and industrial buildings. The raid was described as "an extremely good attack."³⁰ The town of Osnabruck was targeted on 13 September, with the primary objective being the interruption of railway communications. Photo reconnaissance four days later showed extensive damage to the marshalling yard, railway workshops and post office, as well as devastation in the town centre. The group summary report remarked that the aiming point had been "wiped out."³¹ At the time of the photo reconnaissance, no repair work had been attempted.³² Total losses for the three raids amounted to three aircraft, all due to flak.³³ The success of these three attacks, added to the achievements against oil targets, proved Bomber Command to be more than capable as a daylight force when weather conditions were right and enemy flak limited.

In spite of the addition of daylight raids, the losses suffered by Bomber Command were significantly lower than the rate of three to four percent in 1943. This improvement was largely the result of the Luftwaffe's difficulties which included disruption of fighter production, heavy losses of fighters, a lack of trained pilots, fuel shortages and the loss to the advancing Allied armies of much of the early warning radar system.³⁴

An analysis of a report compiled by the Operational Research Section of Bomber Command concerning attacks in the Ruhr provides some insight into the opposition bombers faced in the summer of 1944. Overall, losses were about the same in daylight as at night – 1.3 percent. Flak, however, was much more effective by day, inflicting damage on 36.7 percent of the aircraft as compared to 2.5 percent by night, showing the advantages of visual fire control in contrast to the challenges of radar directed fire at night. The Ruhr, moreover, was the most heavily defended target attacked by Bomber Command. The following table illustrates the differences in loss rates against targets which were strongly, moderately, or

	Strongly Defended		Moderately Defended	Weakly Defended	Total
	No Cloud	Cloud			
Sorties	763	586	124	415	1,888
Missing	17 (2.2%)	1* (0.2%)	2 (1.6%)	2 (.5%)	22 (1.2%)
Flak Damage	412 (54.1%)	107 (18.4%)	46 (37.1%)	69 (16.6%)	634 (33.6%)

*Destroyed by Falling Bombs³⁵

weakly defended, as well as the protection provided to bombers by cloud cover:

German fighters had ceased to appear by day, but still posed the greatest risk at night, with 86 reported attacks. Overall losses for the month of September 1944 were very low, and now still lower for day operations than for those at night.

The shift to daylight bombing compelled changes in the tactics employed by Bomber Command. Following the strategy of the USAAF, the RAF began to employ fighter escorts, and these played a large part in discouraging daylight sorties by the Luftwaffe.³⁶ In the early years of the war tight, self-defending bomber formations had been used in daylight, although Luftwaffe fighters still found it very easy either to break up the formation or attack the group from the flanks.³⁷ With the switch to night raids, Bomber Command had introduced the bomber stream, but it would have been vulnerable in daylight visibility. Bomber Command rejected the American practice of tight daylight formations, as it would be difficult and time consuming to retrain crews, and adopted looser formations, known as "gaggles." Individual gaggles contained 40 to 70 aircraft which formed up in the air at a distinct landmark chosen before take-off. Lead aircraft were painted with distinct markings to simplify identification. Once over the target, the aircraft would vary their heights between 3,000 and 4,000 feet as protection against flak.³⁸ These initiatives showed the readiness of Harris and his group commanders to develop alternatives to night area bombing.

During October Bomber Command mounted 15 daylight operations. The initial raid, on 5 October against Wilhelmshaven, was not a success because heavy cloud cover resulted in scattered bombing.³⁹ The following day, 6 October, two raids against oil targets, Sterkrade and Scholven/Buer, benefitted from clear weather that facilitated bomb aiming, and photo

reconnaissance confirmed heavy-damage.⁴⁰ The next day there were accurate attacks on rail facilities at Kleve and Emmerich.⁴¹

On 13 October 1944 Bomber Command, the US 8th Air Force and the Tactical Air Forces received a directive for Operation "Hurricane," a massed attack on "areas selected from the undamaged parts of the major industrial cities of the Ruhr."⁴² The objective was to destroy economic and military resources of the Ruhr and "to demonstrate to the enemy in Germany generally the overwhelming superiority of the Allied Air Forces in this theatre."⁴³

Harris dispatched 1,014 aircraft against Duisburg, the first target, during the day on 14 October, followed that night by another 1,005. The reported results of both the day and night attacks included heavy damage to industrial plants, warehouses, dockside and railway buildings, and railway tracks throughout town.⁴⁴ Losses included 14 aircraft during the day raid and seven at night, all from flak. The high losses during the day were attributed to the early arrival of aircraft which attacked before the flak positions were suppressed.⁴⁵

The attack on Bonn, on 18 October, ushered in a new phase in Bomber Command technology. The radar aid G-H had been developed and tested in 1943, but it was not put into regular use. As a blind bombing aid, G-H proved superior to both its predecessors, GEE and H2S. However, the reliance on ground stations limited its range, and the deep penetrations into Germany made by Bomber Command in 1943 precluded its use at that time. By the fall of 1944 ground stations could be moved to the liberated areas of France and the accuracy of G-H was tested by equipping an entire formation, 3 Group. When bad weather washed out several operations, the commander of 3 Group selected Bonn, as it had not been bombed previously, allowing the results of the test raid to be properly

assessed.⁴⁶ The raid was a complete success, destroying many large buildings in the city centre, including the main railway station.⁴⁷

On the night of 23 October the whole command dispatched a thousand-plane raid on Essen, followed by another attack by 771 aircraft on the 25th⁴⁸ Intelligence indicated that most of the flammable buildings had been destroyed by fire in no fewer than 23 previous attacks on the city, so 90 percent of the bombs dropped were high explosive. Encouraging results included further damage to the Krupps plant and severe damage to the rail yards.⁴⁹ German reports show that the damage accomplished in the day raid surpassed that of the heavier night raid, with 1,163 buildings destroyed and 820 people killed, compared with 607 buildings destroyed and 662 people killed on the night of the 23rd.⁵⁰ Cologne suffered heavily under a similar daylight raid, again by 771 aircraft, on 28 October.⁵¹ In total, 2,239 blocks of flats and 15 industrial premises were classed as totally destroyed.⁵² With these raids Bomber Command proved it could be fully as effective against area targets during the day as it was at night.

Bomber Command continued its efforts against oil targets with raids on Wanne-Eickel, Homberg, and Leverkusen. Air crew observed thick black smoke billowing from a direct hit on an oil storage tank at Wanne-Eickel, which impeded visibility to some extent, although photos confirmed damage to several associated buildings.⁵³ A German report, however, tells of the destruction of a nearby chemical plant, which may have been mistaken as the target through the smoke.⁵⁴ No reports on the results from Leverkusen could be found. Homberg came under attack on 25 October, the same day as the heavy raid on Essen, showing that Bomber

Command had reached new levels of capability and strength. The two raids comprised of a total of 1,014 aircraft, 771 to Essen and 243 to Homberg. Cloud covered the target and it was believed that the early hits on the target were scattered, with greater concentration being attained in the later stages.⁵⁵

The record of Bomber Command operations in October 1944 shows that Harris carried out the oil and transportation directives and then complied with the new plan for Operation "Hurricane," which made cities in the Ruhr the priority for the rest of the month, with oil and transportation targets as alternates.⁵⁶

Operations in November conformed even more closely to the priorities established by the air staff. Bomber Command carried out 17 daylight raids, ten against oil, three against transportation and four against cities. Night operations included six against transportation targets, five directed at oil refineries and ten area attacks on cities. Loss rates remained low, with a total of 1.1 percent. Daylight losses were lower, at .8 percent, compared with the nighttime loss rate of 1.3 percent.⁵⁷

Of the oil targets, Homberg's Meebeck plant received the most attention. On 1 November, 228 aircraft sortied, but some crews failed to spot the markers in the heavy cloud cover and could not attack. One Lancaster was lost to flak.⁵⁸ The next day, in clear weather, a good concentration of bombs produced large fires,⁵⁹ at the cost of five planes shot down as the anti-aircraft defences also benefitted from the good visibility. In the third raid, on 8 November, the initial strike went well but the ensuing smoke led to scattered bombing by later crews. Stormy weather interfered with the attack on 20 November,

Halifax aircraft of 431 Squadron await their next mission over occupied Europe, June 1944.



causing many aircraft to lose formation and bomb erratically. Finally, on 21 November, persistence paid off. There was "a huge sheet of yellow flame and much smoke up to 10,000 feet."⁶⁰ Estimates were that the plant had lost 94.2 percent of its capacity.⁶¹

The Nordstern synthetic oil plant at Gelsenkirchen also suffered heavy damage in an attack by 738 aircraft on 6 November. Smoke from explosions and a "red glow"⁶² quickly obscured the aiming point so that later crews focused their attention on the town itself, where destruction included much of the town centre, a chemical works, the steel casting works of Vereinigte Stahlwerke, A.G., and the central rail station and marshalling yard.⁶³ Moderate flak brought down five aircraft, and crews claimed spotting one or two German fighters, which did not attack.⁶⁴ In the next raid, on 23 November, 3 Group used G-H in 10/10 cloud and judged the attack as accurate. Four raids had targetted the Nordstern plant since June, and it was estimated that 96.6 percent of its production had been lost by 30 November.⁶⁵ The remaining oil targets for daylight missions in November were Wanne-Eickel, Castrop-Rauxel, Dortmund, Bottrop and Osterfeld. Thick cloud over Wanne-Eickel forced attacks on secondary targets. The other operations were deemed highly successful, as in each case vital installations have been destroyed and the plants put out of action for a considerable period."⁶⁶

During November the RAF made two area attacks on Solingen, and one each on Munster and Dortmund. In the first raid on Solingen, on 4 November, the bombing was scattered and four aircraft were lost. Attacks the next day, even though the city was completely covered by cloud, destroyed, according to German sources, 1,300 houses and 16 industrial buildings, with damage to a further 1,600 buildings. As many as 1,882 people died under the bombs.⁶⁷ At Munster some damage was observed on the railway and an army headquarters and barracks, but little else was hit.⁶⁸ The Dortmund raid suffered from bad weather, causing target marking inaccuracies and scattered bombing.⁶⁹

After making only two attacks against transportation facilities in November,⁷⁰ Bomber Command committed no fewer than 17 daylight

and 14 night raids on this class of target during December. Attacks early in the month targeted water transportation, but intensive strikes against ground transportation began when the Germans launched their counteroffensive in the Ardennes on 16 December.

The industrial cities of Oberhausen and Witten, in the Ruhr valley, and Hamm, on the edge of the Ruhr, were Bomber Command's daylight area targets in December. No 3 Group executed all three of the raids using G-H. Damage to Oberhausen on 4 December included the main rail station, a chemical plant, and a colliery, as well as considerable business and residential destruction.⁷¹ Only one aircraft was lost, to flak. The next day's attack on Hamm, by 94 Lancasters that bombed through cloud, destroyed 39 percent of the city's built-up area according to the British Bombing Survey Unit.⁷² All aircraft returned safely.

The town of Witten had not previously been attacked by Bomber Command, and for this reason had become important to the Germans as a route for rail traffic diverted from other blocked routes. The primary target of a raid on 12 December was the Ruhrstahl Steelworks, which escaped unscathed, but there was severe damage throughout the city.⁷³ Losses were high, with eight aircraft out of a total 140, or 5.7 percent, failing to return. At least four of the missing airplanes were seen to have been destroyed by 60 German fighters which intercepted the force over the target. This was the first instance of loss due to fighter action, although a few isolated attacks had taken place earlier in the month.⁷⁴

Bomber Command aircrew encountered no fighters and lost no aircraft to flak during the two raids on oil targets made in December. On 3 December there was a small raid by 93 aircraft on the Hansa oil plant at Dortmund. Although undertaken through thick cloud, the attack was believed to have resulted in accurate bombing.⁷⁵ A raid by Mosquitoes on Duisburg on 11 December was scattered, but considerable damage was observed in the Meiderich benzol plant, as well as at several industrial premises including the steelworks.⁷⁶ The latter attack confirmed Harris's doubts about precision attacks in general, and the priority for oil plants

in particular. “[A]rea attacks,” he wrote to Portal on 22 December, “produce the best effect, and on the entire war machine, whereas attacks on oil plants do nothing at all unless they hit the oil plant. The fact that we have fortuitously knocked out six Benzol plants in the course of the area attacks in the Ruhr precisely supports my argument...We could not have knocked them out by looking for them.”⁷⁷

Mixed results characterized Bomber Command’s other daylight oil and communication attacks in December. On the 11th, through 10/10ths cloud, 3 Group launched a combined raid against two targets in Osterfeld, the benzol plant and the railway yards. Photographs showed some damage to the eastern end of the oil plant, and numerous craters in the marshalling yard which, however, work crews had already filled in by 24 December.⁷⁸ In fact, the ability of the Germans to effect readily repairs

necessitated constant reconnaissance of targets after they had been hit. The short-term nature of much of the damage compelled Bomber Command to launch several attacks against even those targets which had been heavily bombed in the past.⁷⁹ There were, however, better results from attacks on the marshalling yards at Rheydt on 27 December,⁸⁰ and at Koblenz, one of the main centres serving the Ardennes battlefront, on 29 December.

The new year opened with a daylight attack on the Dortmund-Ems Canal on 1 January 1945. The strike was successful. The 102 Lancasters and two Mosquitoes caused a large breach in the previously attacked and repaired canal, producing considerable flooding.⁸¹ To help the Allied armies countering the German offensive in the Ardennes, the RAF struck several railway centres. On 5 January, in clear weather, 3 Group attacked the railway yards at Ludwigshafen.

A Lancaster from 3 Group RAF, with its bomb bay doors open, carries out a bombing raid on the Pasing railway yards in Munich, Germany on 19 April 1945. The cloud cover resulted in the target being located using G-H. Post-raid reconnaissance reported that the bombing appeared to be concentrated.



CFJIC PL 144257



CFJIC PL 144287

A 4000-pound bomb and a load of incendiaries fall through the very cloudy sky over Dortmund, Germany on 12 March 1945. The daylight raid on Dortmund set the record of the most aircraft sent to a single target - 1,108 (including 192 from 6 Group) - and dropped 4,851 tons of bombs. Only two aircraft were lost.

Intense flak over the target caused the bombing to scatter, although the results proved positive even with this difficulty.⁸² During the month there were also successful attacks on the railway facilities at Krefeld, Saarbrücken, and Cologne.⁸³

Bomber Command targeted four oil installations for daylight operations during the month of January, Dortmund and Castrop-Rauxel on the 5th, and Recklinghausen and Bochum on the 15th. The crews reported good results in the three attacks where there was not heavy cloud cover, but these were small operations, each with fewer than a hundred sorties,⁸⁴ and no supporting evidence appears in the "Weekly Digests."

The period from the end of the Ardennes offensive, roughly mid-January 1945, to the end of the war is the most controversial part of the Bomber Command story. Historians, politicians and journalists employing hindsight have used the fact that the war ended in May 1945 to argue that the decision-makers ought to have known this in advance of the fact and scaled back violence accordingly in the early months of 1945. As historian Terry Copp has pointed out, no one was more guilty of this inconsistency than Winston Churchill, who criticized the bombing of Dresden two months after he had ordered

Bomber Command to undertake Operation "Thunderclap" which mandated the destruction of Dresden and other German cities.⁸⁵ The reality is that in early 1945, after the unanticipated and truly remarkable stiffening of German resistance in the fall and winter of 1944, there was a widespread conviction that Germany possessed the will and the capacity to prolong the war at least until late 1945.

"Thunderclap" began on the night of 13 February at Dresden, and may be said to have ended a month later with the last raid of the war on Nuremberg. Bomber Command's heavy area raids on cities, in response to the "Thunderclap" directive, did not mean that oil and communication targets were neglected, nor did it mean lack of support for the land battle.

A raid on the railway centre in the town of Monchengladbach opened operations in February 1945. Cloudy conditions prevailed over the target, but photographic cover proved that "useful" damage was caused to the main station.⁸⁶ The synthetic oil plant at Wanne-Eickel was attacked on 7 February, but winter weather scattered the force, and only 75 of the 100 Lancasters despatched were able to bomb.⁸⁷ The weather improved around mid-month, when Bomber Command began a four day offensive

against the city of Wesel, in support of First Canadian and Ninth US Army. Following close on the heels of USAAF attacks on the 14th and the 16th, Bomber Command struck the town on the 16th, 17th, 18th and 19th, although the raid on 17 February had to be aborted because of poor visibility. Photographs were obscured by cloud and smoke from burning buildings, but severe damage could still be seen, and Bomber Command crews reported a high concentration of bombs on the railway yards in the final raid on the 19th.⁸⁸

Bomber Command targeted two Ruhr cities for daylight raids in February, Essen and Mainz. Aircrews attacked Essen through 10/10ths cloud cover, aiming at sky markers, on 23 February. An extremely accurate attack, new damage ravaged the marshalling yards at the Krupps Works, affecting two machine shops, a foundry, and various other buildings.⁸⁹ The raid on Mainz also took place under 10/10 cloud cover, again employing Oboe with sky markers and again with good results. German reports described this raid as the worst received by Mainz during the war. A total of 5,670 buildings were destroyed in this raid alone, and between 1,100 and 1,200 people were killed.⁹⁰

By far the bulk of Bomber Command's energy in February was expended on oil targets, and nine attacks were made in daylight. Gelsenkirchen, which contained the Alma Pluto benzol plant and the Nordstern synthetic oil plant, was the focus of four assaults. The final raid against Alma Pluto, on 27 February, yielded the desired results. Through thick cloud, 3 Group undertook a G-H attack which severely damaged all vital installations at the plant. Reports estimated that the plant had been rendered inoperative for a period of three to four weeks.⁹¹ The following day Bomber Command turned its attention to the Nordstern plant with another G-H raid by 3 Group. Photographs taken 9 March confirmed that damage was very severe, and estimates were that it been knocked out for "at least a month."⁹² Raids against plants at Kamen,⁹³ Osterfeld, and Dortmund produced similar results.⁹⁴

Bomber Command executed more raids during the month of March than in any of the previous six months. As the Germans steadily

lost ground, the RAF pushed its advantage against oil, transport, and cities, in that order. A total of 72 attacks were made, 45 in daylight. The weight of these attacks during the day exceeded the tonnage dropped on Germany at any time during the war.⁹⁵

Area raids opened the month, with attacks on Mannheim on 1 March and Cologne the next day. With the battlefront extending so deep into Germany, attacks on German cities also served more than ever to block the movement of German troops and materiel. Both cities had been heavily bombed over the course of the war, making it difficult to assess the new damage. Photographs taken on 2 March, however, showed many fires raging in the centre of Mannheim, and severe damage to many residential and industrial premises. Because of the destruction, this was the last large raid sent to Mannheim.⁹⁶ The attacks by a total of 858 aircraft on Cologne achieved an accurate concentration over the aiming point. Photo reconnaissance the following day showed destroyed bridges, fresh destruction in the main rail station area, and craters and debris blocking roads.⁹⁷ These were the last bombs to fall on Cologne, which was captured by American troops on 6 March.

Cities in the Ruhr again experienced the weight of the bombs, in Essen on 11 March, Dortmund on 12 March, and Wuppertal/Barmen on 13 March. The raids on Essen and Dortmund corresponded to USAAF raids which were carried out just before and after the RAF attacks. New damage proved extensive in all three towns, with Dortmund being effectively put out of production.⁹⁸ The Allied assault across the Rhine scheduled for late March made these attacks part of the overall army strategy for encircling German forces in the Ruhr.

Bomber Command had reached the apex of its capabilities by March, as shown by the accuracy and destruction achieved by its attacks, in conjunction in some instances with the USAAF, against transportation facilities through which the German forces sustained their resistance to advancing Allied troops. Marshalling yards at Recklinghausen and Hamm received a brutal pounding on 20 March, destroying sidings, tracks rolling stock and buildings.⁹⁹ Similar destruction followed raids on 21 March against

the railway centre at Rhein, and attacks on 22 March to Hildesheim, Dulmen, Dorsten and Bocholt. Hildesheim was particularly hard-hit. This raid, the only one visited on Hildesheim during the war, effectively destroyed 70 percent of the town, including its railway installations.¹⁰⁰ Bridges at Bremen and Bad Oeynhausen both took direct hits and the rail tracks serving them were also severed.¹⁰¹

On 24 March Allied armies crossed the Rhine, and Bomber Command directed its efforts over the next two days to disrupting the enemy's transport to the bridgehead. Sterkrade and Gladbeck were hit on 24 March. In both cases rail lines to and from the cities were blocked, and in Sterkrade the marshalling yard was full of rolling stock, which was also destroyed. Hannover, Munster and Osnabruck received the same treatment on the 25th. The sidings at Hannover were also fully loaded, and much stock was destroyed.¹⁰²

Bomber Command also struck heavily against oil plants in March 1944, with a total of 16 attacks. Only five of these sites received more than one raid, as the tide had turned in the war and the constant bombardment began to bear fruit. The USAAF, although making its main effort against transport facilities and airfields, also attacked oil targets during this period. The plants at Datteln and Emsche Lippe North and South, were attacked on 7 March by the USAAF, and 9 March by Bomber Command. All the plants sustained heavy damage, but it is impossible to judge who caused the most destruction.¹⁰³ The report for the week ending 18 March 1945 briefly mentions that four oil plants had been rendered inactive, including Castrop-Rauxel and Emsche Lippe North and South, which were all attacked by Bomber Command in daylight.¹⁰⁴ Raids on Scholven Buer on the 10th, Bremen on the 21st, and Saltzmitter on the 29th were assessed as inflicting less damage.

By April the war was drawing to a close. As Allied gains steadily reduced the amount of territory under enemy control, Bomber Command curtailed its activities sharply and undertook only 27 operations. The successes of the previous month enabled them to withdraw from their commitment to smash oil targets.

Although a total of seven raids against oil ensued, only one took place in daylight. Transport and general area bombing made up the bulk of the operations. Eleven attacks were against transport, five in the day, and nine raids were made against cities, four in the day. Losses held at 1.2 percent overall, with the daylight rate still remaining lower at 0.5 percent.

The three cities targeted for bombing during daylight were Nordhausen, Heligoland, and Bremen, port cities that supported the U-boat force, which still posed a serious threat to Allied shipping. Nordhausen received two attacks, on 3 and 4 April, as it contained barracks which were believed to house German military personnel. Bomber Command reported the raid as a success, with direct hits on the airfield, hangars, railway tracks and sidings, and the barrack blocks. Unbeknownst to them at the time, the barracks actually housed concentration camp prisoners and foreign workers, many of whom were killed.¹⁰⁵ Bomber Command mounted a large raid by 969 aircraft against the island of Heligoland on 18 April. Very heavy damage was reported and confirmed by photographs for all targets, which included the naval base, signals network, oil tanks, the town, and the airfield on the neighbouring island of Dune.¹⁰⁶

In preparation for a forthcoming attack by the British XXX Corps, the port city of Bremen was bombed on 22 April, but only 195 aircraft out of a force of 767 were able to drop their weapons before smoke obscured the target. Bremen fell to the Allies four days later, the first major German port to be captured.¹⁰⁷ No results were reported for the one raid on oil at Regensburg on 20 April, which was the final oil target attacked by RAF Bomber Command during the war.

Five transport targets completed Bomber Command's operations for April and, indeed, for the war itself. The attack on the Leipzig marshalling yards on 10 April came on the heels of a successful USAAF raid on the 6th, and was itself followed by a night assault by the RAF. Damage was exceptional, but it is impossible to separate the results from the three attacks.¹⁰⁸ All rail links in Nuremberg were cut on 11 April by an attack of 129 Halifax bombers, which hit

their target with great accuracy. On the same day, another group of 100 Halifaxes, 14 Lancasters and eight Mosquitoes inflicted severe damage on the Bayreuth marshalling yards, a ball bearing works, and the Bayreuth/Bindace Airfield.¹⁰⁹ The last operation against transport targets took place on 24 April against the marshalling yards at Bad Oldesloe. Severed tracks and debris entirely stopped through traffic.¹¹⁰ The attack on Bad Oldesloe represented the final mission for daylight bombing crews in the RAF. Their job had ended.

* * * * *

Between the opening volleys of the war in 1939 and the autumn of 1944 the RAF vastly improved its results in daylight bombing. The debilitation of the Luftwaffe, a byproduct of preparations for the invasion of Normandy, enabled Bomber Command to range much more freely over the skies of Germany, and contributed to lower loss rates and improved accuracy. Precision targets such as oil plants and railway

yards were routinely attacked and struck by RAF bombers. Although the command had not achieved anything near pinpoint accuracy, targets could be destroyed in clear conditions,¹¹¹ even if in important instances the Germans still displayed an ability to repair facilities or make alternate arrangements to restore services that far exceeded Allied estimates of their capabilities.¹¹² With the assistance of the radio and radar aids that had been developed for the night bombing campaign, Bomber Command was often able to achieve results even when cloud covered the target. Blind-bombing accuracy improved with the introduction of G-H to 3 Group.¹¹³

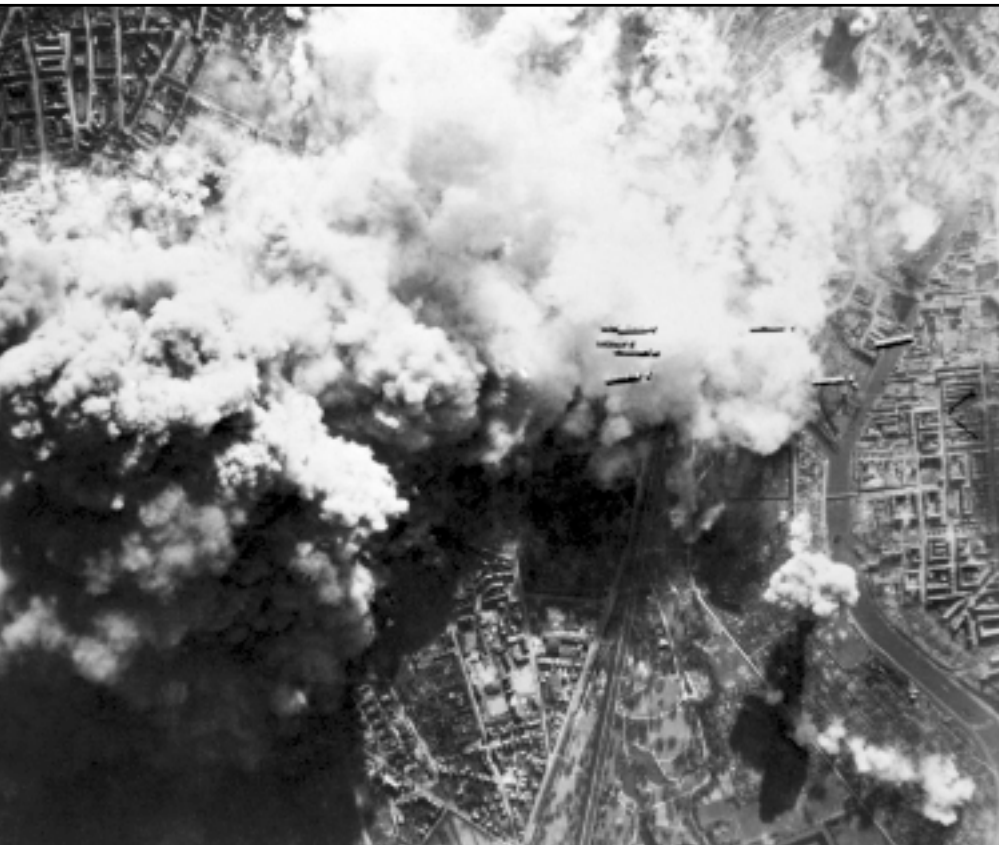
According to one recent study, RAF crews were more successful than their counterparts in the USAAF in locating and striking a target when visual aiming was not possible.¹¹⁴ This ability was a direct result of the extensive training British crews received on navigation aids. The devices which allowed Bomber Command crews to find a target at night proved equally as effective in

A Lancaster makes a daylight raid against an enemy dockworks.





These two photographs show the daylight raid on Hannover, Germany. This was one of three daylight attacks carried out by Bomber Command on 25 March 1945 (the others were against Münster and Osnabrück) designed to interdict the main reinforcement routes into the Rhine battle area. The attack on Hannover was carried out by 267 Lancasters and 8 Mosquitos from 1, 6 and 8 Groups. One Lancaster was lost.



the day, especially when aided by some visual sighting. As originally envisioned, the bomber war would take place in the day against specific targets. By the fall of 1944 the capability to achieve results during daylight hours had finally arrived. The intervening years had enabled Bomber Command to develop its skills in darkness, and it could now pursue its objectives day and night.

The daylight bombing missions conformed more closely to the goals set out for Bomber Command than those undertaken at night. The directive of 25 September 1944 made oil the top priority with transportation and communications in second place, followed by industrial targets when the weather precluded accuracy in attacking the primary targets.¹¹⁵ The total number of daylight operations between September 1944 and April 1945 amounted to 153. Of these attacks, Bomber Command directed 44 percent against oil, 36 percent against transport and 20 percent against industrial area targets. Out of a total of 166 night raids, oil accounted for 28 percent of the effort, transport for 25 percent and cities for 46 percent. The more precise targets such as oil and transport were wisely given higher priority in daylight, when visibility permitted greater accuracy than could have been achieved at night. Examination of the targets chosen by Bomber Command for daylight missions clearly illustrates adherence to the directive issued in September 1944, and shows a clear distinction from those targets chosen for night attacks.

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Arthur Harris has often been criticized by students of the air war for following his own agenda of retribution against the German people.¹¹⁶ By his own admission Harris vehemently opposed the choice of oil over area targets; "I fear the abandonment of any priority for area attacks with all the vast harm they have done to the enemy war machine, in favour of a type of attack which if it fails to achieve its object achieves nothing. Nothing whatsoever. Worse than nothing."¹¹⁷ However, the evidence of the daylight offensive proves Harris's compliance with the orders he received, as he focused the bulk of his command's attention on the targets selected by his superiors.

Bomber Command achieved a high degree of accuracy in its daylight attacks. The target was more often bombed than missed, even though the level of destruction varied from severe to negligible. Bomber Command also utilized its force in daylight in a manner which corresponded closely to the directives issued by the Air Staff. Oil, transportation and industrial targets were attacked in the order of priority specified by senior authorities. The evidence further shows that Bomber Command quickly reacted to the changing conditions of the war and demonstrated flexibility in its strategies.

Notes

1. See for example - Earl Beck, *Under the Bombs* (Lexington: University Press of Kentucky, 1986); Larry Bidinian, *The Combined Allied Bombing Offensive against the German Civilian 1943-1945* (Lawrence: Coronado Press, 1976); Horst Boog, *The Conduct of the Air War in the Second World War* (New York: Berg Publishers Limited, 1988); Michael Bowyer, *2 Group RAF* (London: Faber and Faber, 1974); Ronald Cooke and Roy Nesbit, *Target: Hitler's Oil* (London: William Kimber & Co. Limited, 1985); Conrad Crane, *Bombs, Cities and Civilians* (Lawrence: University of Kansas Press, 1993); R.J. Overy, *The Air War 1939-1945* (New York: Stein and Day, 1980); Denis Richards, *The Hardest Victory* (London: Hodder and Stoughton Ltd, 1994); Brereton Greenhous, *The Crucible of War, 1939-1945* (Toronto: University of Toronto Press, 1994).
2. Charles Webster and Noble Frankland, *The Strategic Air Offensive Against Germany 1939-1945 (4 Volumes)* (London: Her Majesty's Stationery Office, 1961).
3. Webster and Frankland, Vol.I, p.86.
4. Webster and Frankland, Vol.IV, p.428. As of September, 1939 Bomber Command had a daily average of 280 aircraft and crews available for duty, a number which increased to 506 by November 1941.
5. Webster and Frankland, Vol.I, p.144.
6. Martin Middlebrook and Chris Everitt, *Bomber Command War Diaries* (New York: Viking, 1985), p.55.
7. Middlebrook and Everitt, p.86 ff. The number of aircraft involved in operations ranged from 1-30, but most often consisted of around 10. Night raids during this period averaged 100 planes. Sea and coastal sweeps made up the vast majority of the daylight operations.
8. Webster and Frankland, Vol.IV, p.428, 451-3.
9. Max Hastings, *Bomber Command* (London: Michael Joseph, 1979), pp.194 and 363.
10. Webster and Frankland, Vol.IV, pp.5-17.
11. Webster and Frankland, Vol.III, p.26, Arthur Harris, *Bomber Offensive* (London: Collins, 1947), p.220.
12. Webster and Frankland, Vol.IV, p.166.
13. Middlebrook and Everitt, pp.479-481, 485, 486. Civilian casualties numbered 367, with the raid on Courtrai producing 252 of these deaths.
14. Greenhous, p.803, Middlebrook and Everitt, pp.491-519.
15. The [British] National Archives [TNA], Public Record Office [PRO] Air 14/745, "Countermeasures to Enemy's Use of Transmissions from Bomber Aircraft."
16. Webster and Frankland, Vol.III, p.31.
17. Harris, p.88.
18. Webster and Frankland, Vol.IV, pp.172-173.
19. TNA PRO CAB 66/54 No.485.
20. TNA PRO Air 14/3067 Group Summaries, August 1944, Middlebrook and Everitt, p.574.
21. Bomber Command Weekly Digest [BCWD] No.126; Operational Research Section (Bomber Command) [ORS (BC)] Report No.112.
22. TNA PRO Air 14/3069 Group Summaries, September 1944.
23. TNA PRO CAB 66/55 506 Weekly Summary of Operations of Bomber Command; PRO Air 14/3069 Group Summaries, September 1944.
24. TNA PRO CAB 66/55 557; Middlebrook and Everitt, p.582; CAB 66/55 537; ORS (BC) Report No.112.
25. TNA PRO CAB 66/55 537.
26. BCWD No.127.
27. Middlebrook and Everitt, pp.590-592.
28. BCWD No.126.
29. TNA PRO CAB 66/55 520, BCWD No.126 and Middlebrook and Everitt, p.578.
30. BCWD No.127, also CAB 66/55 537.
31. TNA PRO PRO 14/3069 Group Summaries, September 1944.
32. TNA PRO CAB 66/55 537 and BCWD No.128.
33. ORS (BC) Report No.112.
34. *United States Strategic Bombing Survey [USSBS]* Report No.4, pp.6, 9, 78, 81, 89; Webster and Frankland, Vol III, p.76; Cooke and Nesbit, p.142.
35. ORS (BC) Report No.112.
36. ORS (BC) Report No.15. The report did not address the main cause of Luftwaffe weakness, the destruction of its aircraft in the preparations for Overlord.
37. Middlebrook and Everitt, p.199.
38. TNA PRO Air 14 827 Daylight Operations, Group Formations.
39. Middlebrook and Everitt, p.594.
40. TNA PRO Air 14/3071 Group Summaries, October 1944 and BCWD No.129.

41. TNA PRO CAB 66/56 582 and BCWD No.129.
42. Webster and Frankland, Vol.IV, p.174.
43. *Ibid.*, p.174.
44. TNA PRO CAB 66/56 582 and BCWD No.131.
45. Middlebrook and Everitt, p.601.
46. Webster and Frankland, Vol.III, pp.172-173.
47. TNA PRO CAB 66/57614, BCWD No.133 and Middlebrook and Everitt, p.604.
48. Webster and Frankland, Vol.IV, p.484.
49. TNA PRO CAB 66/57614 and BCWD No.132.
50. Middlebrook and Everitt, pp.606-607.
51. TNA PRO CAB 66/57 No.614 and TNA PRO Air 14/3071 Group Summaries, October 1944.
52. Middlebrook and Everitt, p.608.
53. TNA PRO CAB 66/56 No.582 and BCWD No.132.
54. Middlebrook and Everitt, p.599.
55. *Ibid.*, p.607.
56. Webster and Frankland, Vol.IV, pp.174-176.
57. Middlebrook and Everitt, pp.612-625.
58. TNA PRO Air 14/3073 Group Summaries, November 1944.
59. BCWD No.133, Middlebrook and Everitt, p.612.
60. TNA PRO CAB 66/58 No.683.
61. BCWD No.138.
62. TNA PRO Air 14/3073 Group Summaries November 1944.
63. BCWD No.134 and No.136, TNA PRO CAB 66/57 No.634.
64. TNA PRO Air 14/3073 Group Summaries November 1944.
65. BCWD No.138.
66. BCWD No.136.
67. Middlebrook and Everitt, pp.613-614.
68. BCWD No.136, Middlebrook and Everitt, p.619.
69. TNA PRO CAB 66/59 No.703, Middlebrook and Everitt, p.624.
70. Middlebrook and Everitt, p.622.
71. TNA PRO CAB 66/59 No.715.
72. Middlebrook and Everitt, p.627.
73. BCWD No.141.
74. ORS (BC) Report No.119.
75. TNA PRO CAB 66/59 No.715, Middlebrook and Everitt, p.625.
76. TNA PRO CAB 66/59 No.737, Middlebrook and Everitt, p.630.
77. Harris/Portal Correspondence, Harris to Portal, 22 December 1944; see also Harris to Portal, 28 December 1944.
78. BCWD No.140.
79. BCWD No.141; Middlebrook and Everitt, p.632.
80. BCWD No.142; CAB 66/60 No.8.
81. TNA PRO CAB 66/60 No.8; BCWD No.142; Middlebrook and Everitt, pp.644-645.
82. TNA PRO CAB 66/60 No.21; BCWD No.144.
83. Middlebrook and Everitt, pp.650-652; BCWD No.148.
84. Middlebrook and Everitt, p.646.
85. Terry Copp, *No.Price Too High* (Toronto: McGraw-Hill Ryerson, 1995), p.210.
86. BCWD Nos.146,147,148 and 149.
87. Middlebrook and Everitt, p.660.
88. BCWD No.149 and 149; TNA PRO CAB 66/62 No.285; Middlebrook and Everitt, pp.664-666.
89. BCWD No.150; TNA PRO CAB 66/62 No.287.
90. TNA PRO CAB 66/63 No.288; Middlebrook and Everitt, p.672; BCWD No.150.
91. BCWD No.150; TNA PRO CAB 66/63 No.288.
92. BCWD No.152.
93. BCWD No.150; Middlebrook and Everitt, p.670.
94. TNA PRO CAB 66/62 No.287.
95. ORS (BC) Report No.125.
96. TNA PRO CAB 66/64 No.288; Middlebrook and Everitt, p.672.
97. TNA PRO CAB 66/63 No.288.
98. BCWD No.152; CAB 66/63 No.290; Webster and Frankland, Vol.III, p.264; Middlebrook and Everitt, pp.678-679.
99. BCWD NO.153.
100. TNA PRO CAB 66/64 No.291; Middlebrook and Everitt, p.685.
101. BCWD No.152.
102. BCWD No.153; TNA PRO CAB 66/64 No.291; Middlebrook and Everitt, pp.683-688.
103. BCWD No.151.
104. BCWD No.152.
105. BCWD No.156; Middlebrook and Everitt, pp.690-691.
106. BCWD No.157; TNA PRO CAB 66/65 No.295.
107. BCWD No.158; TNA PRO CAB 66/65 No.295; Middlebrook and Everitt p.699.
108. BCWD No.156; TNA PRO CAB 66/64 No.293.
109. BCWD No.156.
110. BCWD No.158; TNA PRO CAB 66/65 No.296.
111. See examples above, Homberg, 27 August 1944; Sterkrade, 6 October 1944; Ludwigshafen, 5 January 1945.
112. See David A. Barnhill, *R.A.F. Bomber Command and Tactical Air Support: Normandy 1944* (MA Cognate Essay, Wilfrid Laurier University, 1988). The author cites numerous examples where the bombs landed exactly where they were aimed and caused little effect to the enemy. See pp.39-42, 48-49, 63-66, 75-77.
113. See examples above: Gelsenkirchen, 25 November 1944; Hamm, 5 December 1944; Recklinghausen, 15 January 1945 for accurate bombing using G-H. For examples of problems with attacking through cloud: Homberg, 20 November 1944; Dortmund, 29 November 1944.
114. W. Hays Parks, "'Precision' and 'Area' Bombing: Who Did Which, and When?" *Journal of Strategic Studies* Vol.18, No.1, 1995, pp.145-174.
115. Webster and Frankland, Vol.IV, pp.172-173.
116. Hastings, pp.135, 138, 244; Crane, pp.28-29; Alan Levine, *The Strategic Bombing of Germany, 1940-1945* (Westport, CT: Praeger, 1992), pp.172-173.
117. Harris/Portal Correspondence, Harris to Portal, 18 January 1945.

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