

BOMBER COMMAND REPORT ON NIGHT OPERATIONS, 30th & 1st MAY 1943.ESSEN: Bocholt.SUMMARYESSEN

1. A force of 295 heavy bombers made a blind-bombing raid through 10/10th cloud, on Essen. The target was sky-marked by 10 Oboe Mosquitoes. 78% of the Main Force reported attack but daylight reconnaissance revealed only a little fresh damage to Krupps works, and a few incidents in the town. 12 bombers are missing and one crashed on the return owing to damage by flak.

Bocholt

2. No. 8 Group despatched 12 Y type aircraft to attack Bocholt; 6 bombers completed the operation, and one failed to return.

Metereological Forecast

3. Cold front at midnight from 61°N . 09°E . to 55°N 08°E ., becoming warm southwards and cold to Brussels to Nantes.

Home Bases:- All fit at dusk, with broken low cloud at 1,500-2,000' and medium cloud above; 7-9/10ths alto cumulus, tops 10-12,000'. Fit for return (from Ruhr) with similar conditions, visibility not less than 2 miles.

Germany:- Continuous cloud near frontal zone at least 15,000', with rain. Ruhr (confirmed by Pampa, 2115 hrs.) 9-10/10ths medium cloud, tops 14-15,000', with well broken cloud above. Cold front will probably be encountered at about 05°E ; aircraft will have to negotiate 50... miles of dense cloud to 15,000', with cirrus above to great heights continuous at times with the medium. Wind at 20,000': 240/25 m.p.h. west of front: 270/30 m.p.h. east of front.

ESSENPlan of Attack

4. Zero hour 0230 Period of Attack - Essen 0230 to 0309 hrs.

Briefed route:

Mosquitoes:- $52^{\circ}20'\text{N}$ $04^{\circ}30'\text{E}$ - Essen - $51^{\circ}40'\text{N}$ $03^{\circ}54'\text{E}$

Heavy bombers:- Egmond - $51^{\circ}45'\text{N}$ $06^{\circ}56'\text{E}$ - Essen - turn left - $51^{\circ}50'\text{N}$ $07^{\circ}15'\text{E}$ - Egmond.

The Oboe skymarking technique was to be adopted by 8 Mosquitoes, attacking at five minute intervals, to indicate the aiming point to the main force.

Tracking flares (red steady) were to be dropped by the Mosquitoes at $51^{\circ}45'\text{N}$ $06^{\circ}56'\text{E}$, 5 minutes short of the target, and they were to drop further tracking flares (green steady), $51^{\circ}37'\text{N}$ $06^{\circ}57'\text{E}$, 2½ minutes later. The main .../force

force were to use these tracking flares as a guide for the bombing run up and were to aim their bombs at release point flares (red with green stars + one white for longer burning) on an exact heading of 200 M, with bombsight setting true height and air speed, zero wind and at an indicated speed of 165 m.p.h. Any crews compelled to bomb on E.T.A. were to release their bombs from 20,000', on this heading of 200 M and at the same speed, at 51°26'N. 07°00' 30"E.

Every precaution was to be taken at briefing to ensure that crews clearly understood the marking technique to be adopted, in particular the colour of flares to be expected at each point. The necessity for accurate timing was also to be stressed.

All aircraft were to climb before crossing the English coast, and fly above the main cloud mass of the front expected between the Dutch coast and the target. They were to avoid flying in the main cloud mass, owing to the risks of severe icing in cloud, and any aircraft unable to climb above it were to return to base.

The Eastern Gee Chain was to be available on two frequencies between 0155 and 0320 hours.

Timing and Bomb Loads

5.		<u>Mosquitoes +</u>	<u>Main Force Aircraft</u>	<u>Loads</u>
<u>Time</u>	<u>Time</u>			
0230	0231-0235		2/3 Lancasters of 1 Gp.	1 x 4000 H.C. + I.B.
0235	0235-0239		(1/3 Lancaster of 1 Gp.	1 x 4000 H.C. + I.B.
			{ All " 3-Gp.	Max. concn. I.B. load.
			{ 5 " 6 Gp.	1 x 4000 H.C. + I.B.
			1/4 Halifaxes of 6 Gp.	2 x 1000 H.C. or G.P. + I.B.
0240	0240-0244		10 Halifaxes of 4 Gp.	1 x 2000 H.C. + I.B.
			1/2 rem. Halifaxes of 4 Gp.	2 x 1000 H.C. + I.B.
0245	0245-0249		Rem. " 4 Gp.	2 x 1000 H.C. + I.B.
0250	0250-0254		1/2 Halifaxes of 6 Gp.	2 x 1000 H.C. or G.P. + I.B.
			All " 8 Gp.	1x2000HC + 3x1000GP + 8x500
			3/4 Lancasters of 8 Gp.	1x4000HC + 4x1000GP + 6x500
0255	0255-0259		1/2 Lancasters of 8 Gp.	" " "
			1/2 rem. Lancs. of 5 Gp.	1 x 4000 HC or G.P. + I.B.
0300	0300-0304		1/3 rem. Lancs. of 5 Gp.	" " "
0305	0305-0309		rem. Lancs. of 5 Gp.	" " "

* 2 Lancasters of 61 Sq. to carry 1 x 8000 lb. H.C.: actual time of attack not stated.

+ 2 reserve Mosquitoes also detailed carrying 2 x 500 H.C. bombs in addition to sky markers.

...../Sorties

Sorties

- (a) No. of aircraft despatched.....35
 (b) " reporting attack on primary area.....239(78.4.)
 (c) " " alt. area..... 3(1.0.)
 (d) " abortive sorties (technical and
 manipulative defects....28)
 (icing.....21) 51(16.7.)
 (sickness of crew..... 2)
- (e) " aircraft missing.....12(3.9.)

Weather Experienced

7. Home Bases:- Light rain and cloud below 1,000' affected east coast areas at dusk, gradually receding eastwards during the night. Otherwise, no cloud below 1500-2000'. Moderate visibility.

Route:- 10/10ths medium cloud, tops 12,000-16,000', with 10/10ths cirrus surging with medium cloud at 02⁰⁰-04⁰⁰ B., and extending above 25,000'. Light rain to heavy icing from 14,000-24,000'. Static and bumpiness. Widely varied reports of wind at 20,000': 200-280°/20-30 m.p.h. veering towards surface to 350°/30 m.p.h.

Target:- 10/10ths medium cloud, tops 14,000-16,000': variable cirrus above, base 19,000-21,000'. No moon. Visibility fair. Wind at 20,000': 240-260°/25-30 m.p.h.

Night Photographic Statistics

8. 10/10 cloud covered the target and no photographs showing ground detail were obtained.

Narrative of Attack

9. 6 of the 8 Mosquitoes detailed to release skyrockets at 5 minute intervals were successful, only the 5th and the 8th failing. Thus during the main part of the attack there was an adequate succession of rockets with only one break of 2 minutes during which no flares were visible. Many aircraft made use of the longer burning white flares after seeing the release point flares go out. There were some complaints that the flares went into cloud and were only visible as a glow. As a result of the failure of the last Mosquito, aircraft of the last wave had to bomb on E.T.A. The majority of these reported a fairly concentrated glow of fire in the prescribed target area, but also suggested that there were other more scattered fires: earlier crews considered that the effort was probably successful if the marking was accurate.

One reserve Mosquito attacked at 0337 hours with H.U. bombs from 23,000 feet, but the crew were unable to observe the results of the bomb or other bombing owing to cloud.

Alternative Targets

10. Three aircraft, unable to reach the target, released their loads at Gladbach, 5 miles N.W. of Essen and 51°59'N. 06°19'E respectively.

Day Reconnaissance

11. Two or three fresh incidents in Krupps Works are seen, including roof damage to a sheet rolling mill and machine shops; partial destruction of a 3 bay shed and roof damage to a railway shed.

Damage by fire and H.U. to residential property in Frohnhausen, S.W. of Krupps seen for the first time, is probably the result of the raid on
/5.0.43

3/4.4.45. A hit in the centre of the sports ground off Kleine Hamner Strasse, in the N. of Essen, may have damaged the balloon site there. Part of the roof of Huyssenstift, S.E. Essen, has been stripped. (Report No. E. 1550).

Navigation Aids(Geo)

12. The Eastern Chain operated on the Virginia frequency throughout and on the target frequency from 0155-0320 hours. All aircraft were equipped with Mark II sets and 220 of them returned useful data. 185 experienced no set difficulties, obtaining an average range of 280 miles, while 14 aircraft received signals over the target. Interference on the Virginia frequency was very heavy and broke through on to the target frequency in the areas where jamming was heaviest. The signals were very strong, with B the strongest.

Blind Bombing Aids (Oboc)

13. 10 Mosquitoes (including 2 reserves) equipped with Oboc were detailed to skymark the target, 4 aircraft with 1 reserve being controlled by each pair of ground stations. The first signal to release was given at 0231 hours by Triningham I and 6 aircraft released markers successfully, the signals being between 1 minute late and three minutes early. Owing to technical defects and errors in manipulation, those aircraft which should have attacked at 0250 and 0305 received no release signals, but the reserves were not called upon. One reserve did not bomb owing to failure of its equipment, the other attacked with 2 x 500 H.G. bombs after the main force. 6 aircraft released tracking flares en route, according to plan.

Enemy Defences

14. (a) Flak and Searchlights:- Searchlights were unable to penetrate the prevailing 10/10ths cloud but they were very active beneath, illuminating the cloud and possibly acting as an aid to fighters. Heavy flak at the target was either predicted 'Unseen' or in barrage form, and was reported as moderate to intense. No light flak was reported.

42 aircraft were damaged from this cause.

(b) Fighters:- Enemy wireless traffic revealed 11 patrols near Eindhoven(3), Eindhoven/Amsterdam(1), Twente Enschede/Rhine(5), Vechta(1), Arnhem(1). A total of 11 pursuits were made, but only 2 claims were heard. These were made by the fighter in the Eindhoven/Amsterdam area, and its reserve, the first on the outward journey, and the second on the return. Fighter pilots complained that it was difficult to maintain radio contact with their control stations. Crews reported 20 encounters with enemy aircraft mainly in the Eindhoven/Arnhem area, only 2 of which (one near Dorsten and one in the target area) developed into attacks. In neither case was the bomber damaged.

Casualties

15.	No. of aircraft missing.....	12(3.9%)
	" damaged (a) flak.....	42
	(b) fighter.....	Nil
	(c) not enemy action....	3
		45(15.0%)

Observations of crews indicate that 6 or 7 aircraft were shot down by flak one at Dulmen and the remainder in the target area. Of the 4 losses sustained in the Zutphen/Arnhem area at least 2, and possibly all, were caused by fighters. In addition it is probable that one bomber was shot down by a fighter in the Eindhoven/Amsterdam area before reaching the target.

...../One of the

One of the 42 aircraft damaged by flak crashed on the return, being totally destroyed. The only serious non-enemy action damage was caused by an accident at take-off.

Bocholt

16. B Y type Stirlings and 4 Y type Halifaxes were detailed to make a blind-bombing attack on Bocholt, using their special equipment. 6 aircraft completed the task, attacking through 10/10ths cloud. Failure of H2S caused the early return of 2 bombers, 2 sorties were abortive owing to other technical defects, and one reported icing and a technical defect. The remaining aircraft was shot down by flak in the target area. None of the returning bombers was damaged.

APPENDIX

Timing of Attack

I. (a) Pathfinder Force:-

6 Mosquitoes attacked at 0231, 0235, 0241, 0243, 0253, and 0259.

1 reserve Mosquito attacked at 0337.

(b) Main Force

attacked between 0231 and 0240.....	30
" 0241 and 0250.....	78
" 0251 and 0300.....	33
" 0301 and 0309.....	74
" 1-5 minutes late.....	11
" 6-10 minutes late.....	5
	<u>232</u>

Bomb Loads Carried

II. (a) Pathfinder Force

T.I. only.....	6
T.I. + H.E.....	1

(b) Main Force:

H.E. + 30 lb. inc. + 4 lb. inc.....	70
H.E. + 4 lb. inc.....	143
H.E. only.....	19
	<u>232</u>

KSHG)
EHO } VF.

BC/S. 26342/1/ORS.
4th August, 1943.

30th April/1st May, 1963.

TARGET: Bocholt

Target	Group	Type	Sorties	w/C reporting attack on		Abortive sorties		Missing	Damage			Interceptions		Results		
				prim. area	alt. area	over on. territ.	not over on. territ.		flak	fighter	not B/w	att-acked	not attached	H.E.	Inc.	
ESSEN	8	Mosq. IV	10(2*)	7(1*)	-	3(1*)	-	-	-	-	-	-	-	(P)	40.2	396.4
	P.P.F.													(*)	3.1	5.5
	8	Hal. II'2'	10	5	-	-	4	1	-	-	1B	-	-	(H)	18.3	20.4
	Main	Lanc. I	5	5	-	-	-	-	-	-	-	-	-			
	Force	Lanc. III	8	7	-	-	1	1	2	-	-	-	1			
	1	Lanc. I	33	25	1	-	6	1	2	-	-	-	6			
		Lanc. III	32	24	-	-	4	-	1, C+2	-	-	-	1			
	3	Lanc. II	11	5	-	-	5	-	1	-	-	-	-	(P)	2	195
	4	Hal. II'2'	48	36	1	1	7	4	1B+8	-	1	2	5	(H)	-	6
		Hal. V'2'	9	6	-	-	2	1	3	-	-	-	-			
	Hal. II'2'	18	15	-	-	2	-	2	-	-	-	-				
5	Lanc. I	43	39	-	-	3	1	5	-	-	-	-				
	Lanc. III	58	48	-	-	6	4	12	-	1	-	3				
6	Hal. II'2'	20	13	1	-	6	-	2	-	-	-	2				
ESSEN	TOT.L		305	239	3	2	46	12	26-120+40	-	1B+2	2	18			Tons of Bombs
BOCHOLT	8	Star. I	8	3	-	-	4	1	-	-	-	-	-	(P)	16.0	-
		Hal. II'2'	4	3	-	-	1	-	-	-	-	-	-	(H)	2.7	-
BOCHOLT	TOT.L		12	6	-	-	5	1	-	-	-	-	-			
TOTAL			317	245	3	2	51	13	26-120+40	-	1B+2	2	18			

* Reserve aircraft (included in total)

 P=on Primary
 A=on Alternative
 H=Carried by
 M=Missing aircraft

BOMBER COMMAND REPORT ON NIGHT OPERATIONS, 1/2nd MAY, 1943.MINELAYINGSUMMARY

1. 30 Wellingtons and Stirlings of 1, 3 and 4 Groups were detailed on a mining operation off the W. Coast of France. 28 reached their targets, laying a total of 66 mines. All returned, but the crew of one Stirling had to bale out over England owing to petrol shortage, and the aircraft crashed in Wiltshire.

Meteorological Forecast

2. Midnight position of fronts: occlusion from 63°N. 10°E. to 55°N. 06°E. to 50°N. 07½°E., becoming cold to W. Alps and warm to 47°N. 10°E.

Home Bases:- Belt of frontal low cloud with rain will pass across Operational Groups during the night. 7-10/10ths. cloud at 1,000-1,500' by dusk, with patches at 600'. Moderate visibility. Diversions to S. Coast, S.W. and Training Groups if necessary.

Germany:- Well broken convection cloud N. of frontal belt, especially inland. Tops to 15,000' in front; little cloud further E. Centre of low pressure will be in Ruhr area by 2,00, giving thick cloud to 15,000', and thin cirrus to 28,000'.

N. Italy:- Broken layer cloud. Thundery cloud over Alps.

W. France:- N. of 47°N.: 5/10ths cumulus at 2,000'. 47°-45°N: little cloud. S. of 45°N: 5-8/10ths cumulus and strato-cumulus. Good visibility everywhere. Reasonable layered cloud en route.

Sorties

3.	(a)	No. of aircraft despatched.....	30
	(b)	" reporting attack on primary area.....	28
	(c)	" abortive sorties (weather.....1) (technical defect...1).....	2
	(d)	" aircraft missing.....	0
	(e)	" mines laid.....	66

(including one laid wrongly at 452700. 011800.)

Weather Experienced

4. Home Bases:- Rain and low cloud persisted all night over S.E. England. Elsewhere, cloud amount was very variable, with patches forming below 1,000' over high ground before dawn. Fog patches developed in Yorkshire and N.E. England about midnight, gradually becoming widespread.

Targets:- 9-10/10ths cloud, base 3,000', tops 10,000'. Patches of stratus below 3,000', and of cirrus above 10,000'. Moderate visibility. Thick haze at Brest. No moon.

...../Enemy Defences

Enemy Defences5. (a) Flak and Searchlights

Intense heavy flak co-operating with many searchlights was encountered at Brest. Elsewhere slight light flak and few searchlights operated, with slight ^{heavy} flak from Belle Ile.

(b) Fighters

Enemy wireless traffic revealed one night patrol in the Brest area, but gave no indication of any pursuit. Two single-engined enemy fighters were sighted in the St. Nazaire area, but no attack developed.

Casualties

6. No. of aircraft missing..... Nil
 " damaged (a) flak..... Nil
 (b) fighter..... Nil
 (c) not enemy action..... 1)..... 1

One Stirling (I/149) of 3 Group crashed near Havant due to fuel shortage on return, and became a total wreck. The crew baled out safely.

MIA/WF.
 BC/S. 26342/2/ORS.
 26th July, 1943.

1/2nd May, 1943. Mine-laying

Target	Group	Type	Sorties	w/o reporting attack on		Abortive sorties		Missing	Damage			Interceptions		Results
				prim. area	alt. area	over en. territ.	not over en. territ.		Flak	fighter	not E/A	attacked	not attacked	
BREST	1	Well. X	6	6	-	-	-	-	-	-	-	-	-	12 mines
HAYDOCK	3	Stir. III	3	2	-	1	-	-	-	-	-	-	-	6 mines
CLONDE	2	Stir. I	2	1	-	-	1	-	-	-	-	-	-	2 mines
CLONDE	3	Stir. III	7	7	-	-	-	-	-	1E	-	-	-	21 mines
LORIENT	4	Well. X	6	6	-	-	-	-	-	-	-	-	-	12 mines
ST. NAZAIRE	4	Well. X	6	6	-	-	-	-	-	-	-	-	-	12 mines
TOTAL			30	28	-	1	1	-	-	1E	-	-	-	65 mines

(* + 1 mine laid wrongly at 4527N. 0118W.)

BOMBER COMMAND REPORT ON NIGHT OPERATIONS 3/4th MAY, 1943.LEAFLETSSUMMARY

1. 4 Whitleys of 91 Group dispersed leaflets over the Paris area without incident.

Meteorological Forecast

2. Midnight position of fronts:- (1) Cold from Penbrooke to Spurn Head to S.W. Norway. (2) Warm from 46°N. 04°E. to Dijon to 50°N. 10°E. to 52 N. 15°E.

Home Bases:- Fit at dusk except in N. Slight rain with cloud based below 1,000' and extending to 10,000' in Humber area. By midnight, low stratus (base 600-800') will have spread from North Sea into 8,1,2,3 and 5 Groups. Raining Groups will be similarly affected: base of cloud 800 - 1,000' by 0200-0400. Broken cloud in 4 Group, base 1,500-2,000 by 0200.

Germany:- Little cloud N. of 52 N. Increasing amounts of medium cloud further S., with rain and low cloud near warm front. Much layer cloud S. of warm front. Ruhr: Broken strato-cumulus, 6-8/10ths at 10-15,000': cirrus at 18,000'.

France:- Broken layer cloud in N.W. Much cloud at all levels in Central France, with thundery rain locally.

Sorties

3. (a) No. of aircraft despatched.....4
 (b) " reporting leaflets dropped over primary area.....4
 (c) " missing.....0

Weather Experienced

4. No cloud. Poor visibility. No moon.

Enemy Defences

5. (a) Flak and Searchlights

No activity was reported from ground defences.

- (b) Fighters

Enemy wireless traffic revealed no patrols in the area. One crew, however, sighted and evaded a Ju. 88, west of Paris.

Casualties

6. None.

Target	Gp.	Type	Sorties	√C reaching prin. area	√C missing	Damage	Interceptions
PARIS	91	Whit.V	4	4	-	-	-

MLM/VF.
 BC/S. 26342/2/ORS.
 26th July, 1943.

BOMBER COMMAND REPORT ON NIGHT OPERATIONS - 4/5th MAY, 1943.DORTMUND: Rheine: Leaflets.SUMMARYDORTMUND

1. A large force of 596 bombers, led by Oboc Mosquitoes, delivered the first heavy attack of the war on Dortmund. The attack fell mainly in the central and northern parts of the town, very severe damage being caused in these areas. The spread to the north and north west was due to the under-shooting of the backscatters. 30 bombers failed to return, one came down in the sea owing to flak damage, and 10 crashed on the return owing to fog and poor visibility.

Rheine

2. 3 Y-type aircraft, operated by crews under training, set out to make a blind bombing attack on Rheine. 5 aircraft completed the operation, and all returned without damage.

Leaflets

3. Leaflets were dispersed over Douen and Hantes by a total of 24 aircraft of training groups, all of which returned safely, although one crashed on landing owing to engine failure.

Meteorological Forecast

1. Estimated midnight position of fronts (1) cold $61^{\circ}N 5^{\circ}E$ - North - N.W. Ireland (2) warm $61^{\circ}N 5^{\circ}E - 56^{\circ}N 1^{\circ}E$ (3) cold $60^{\circ}N 22^{\circ}E$ - Kiel.

Home Bases:- Small amounts of cloud, fog patches late in night, except in E. England, where low stratus may form after dusk; 4, 6 and possibly 1 Group should be able to land all their aircraft. Remaining groups may require diversions, which will be found at airfields on S. Coast (W. of 0°) S.W. England, W. Wales, N.W. England and Scotland. There is a high probability of acklinton, Scorton and coastal aerodromes in E. Anglia remaining fit. Visibility is not expected to be below 2000 yards in the training groups.

N.W. France: Broken strato-cumulus cloud.

S. and Central France: Much cloud at all levels with rain.

Germany N. of $50^{\circ}N$: Fine, with moderate visibility. S. Germany: Much cloud at all levels. Route and target: small amounts of cloud, with some cirrus in the target area, not below 23,000 ft.

.../Plan of attack

Plan of Attack

5. Zero hour 0100 hours - Period of attack 0057-0145 hours

Briefed Routes:-

P.F.F. Mosquitoes:- 52°24'N 04 33'E - Dortmund - 50°10'N 01°37'E

Heavy and Medium Bombers:- T. Texel - 52°05'N 07°25'E - Dortmund - turn wide right - 51°55'N 07°10'E - Egnon.

As an aid to navigation, 8 Oboe Mosquitoes were to drop yellow T.I's (long burning) at 51°52'N 07°26'E en route for the target. The aiming point was then to be marked with green T.I. released in salvo by these Mosquitoes at intervals between 0057 and 0137 hours. This marking was to be backed up by 22 Lancasters and 2 Halifaxes aiming red T.I's at green if visible, but otherwise to overshoot the exact centre of all reds by 1 second, between 0102 and 0141. Backers up detailed to attack after 0120 hours were to have one of their red T.I's fused to burst at 6,000 ft.

The main force were instructed to aim their bombs at green T.I's if possible, but otherwise at the centre of all reds.

In order to guard against the risk of scattered bombing resulting from the lateness of markers, main force crews were to bomb nothing but markers before 0110 hours. They were to turn left, and circuit and make another run from north to south, after that time, if no markers were seen on arrival.

It was to be specially emphasised that the colour of T.I's to be dropped by the Mosquitoes and the backers up was a reversal of recent procedure in Oboe ground marking attacks.

The attention of crews was to be drawn to the attack of RHEINE planned for 0120 hours, in order that they might avoid being misled by this diversion.

The Gee East n Chain was to be available all night, and on two frequencies between 0020 and 0155 hours, with wider pulses on the normal frequency in the hope that they might be more easily read through jamming.

Timing

6.	<u>Mosquitoes</u>	<u>Backers Up</u>	<u>Main Force</u>
	0057	-	
	0110	-	
	-	5 Lancasters at 1 min. intervals 0102-0106	0102-0125 (1/3 force, selected crews of all Gps. & all P.F.F. main force crews)
	0107	-	
	-	2 Lancasters at 1 min. intervals 0108-0109	
	-	2 " " 0111-0112	
	0113	-	
	-	1 Lancaster at.....0114	
	-	2 " " at 1 min. intervals 0116-0117	
	0119	-	
	-	1 Lancaster at.....0120	0120-0135 (Rem. Halifax (Stirs. & Wells. .../over

<u>Mosquitoes</u>	<u>Blockers Up</u>	<u>Main Force</u>
-	1 Halifax at.....0122	
-	1 Lancaster at.....0123	
0125		
-	1 Lancaster at.....0126	
-	1 " ".....0128	
-	1 Halifax at.....0129	0130-0145 Ret. Jones
0131		
-	1 Lancaster at.....0132	
-	2 Lancasters at 1 min. intervals 0134-0135	
0137		
-	1 Lancaster at.....0138	
-	2 Lancasters at 1 min. intervals 0140-0141	

There was no mention of planned heights, en route or at the target, on any P. form.

Sorties

7.	No. of aircraft despatched.....	596
"	" reporting attack on primary area.....	504(84.4%)
"	" " alternative area.....	8(1.3%)
"	abortive sorties-(technical defects and manipulative errors.....50) (sickness of crew.....4)....	54(9.1%)
"	aircraft missing.....	30

Weather Experienced

8. Route:- Small amounts of high and medium cloud. Patches of low stratus cloud over North Sea. Moderate visibility. Winds at 20,000': 070°/35-40 m.p.h., but some reports of wind 120° in the target area.

Target: Cloudless. Moderate visibility. Surface wind - light, easterly.

Night Photographic Statistics

9.	No. of photographs with bombing showing ground detail.....	176
	Plotted by ground detail within 3 miles.....	47
	" " between 3 and 5 miles.....	39
	" " outside 5 miles.....	47
	Unplotted.....	43
	No. of photographs with bombing showing fire-tracks.....	253
	Plotted by fire tracks within 3 miles.....	160
	" " between 3 and 5 miles.....	62
	" " outside 5 miles.....	8
	Unplotted.....	23
	Total photographs, with bombing, examined.....	428
	No. of aircraft claiming attack.....	504
	" " estimated from night photographic statistics to have bombed within 3 miles of the aiming point.....	240

Narrative of Attack

10. The green T.I's dropped by the 7 Oboc Mosquitoes were well placed, and approximately on time, but the red T.I's fell short, lying up to 2 miles North of the greens. This resulted in many of the main force bombing north of the target but nevertheless night photographic evidence indicated that about 50% of the attacking aircraft bombed within 3 miles of the aiming point.

.../The timing

The timing in general was good, but the continuity of the marking was broken between 0123 and 0130 hours.

Daylight Reconnaissance

11. Photographic cover of the town, docks and immediate suburban areas is complete. Damage is seen to be widespread and severe, the greatest concentration, mainly caused by fire, being in the centre of the old town, in urban districts immediately to the north, and in the dock area to the northwest. Apart from scattered incidents, little damage is seen in the south of the town. Several villages to the north and northwest have suffered severely, and some 300 craters have been counted near fire decoy sites in this area.

Industrial damage is estimated at over 45 acres of devastation, involving 28 factories, of which two (the Dortmund Union and the Hoesch Iron and Steelworks) are of the first priority. Other factories include electrical firms, engineering works, millers, railway concerns and breweries. Pithead buildings and 2 collieries have also been affected. A great number of warehouses on the quaysides of the inland docks and many others near the railway have been completely destroyed. Communications have been affected not only by many direct hits in roads, railway tracks and canal embankments but also by severe damage to the main passenger station. Other places of interest or significance which were damaged include the main telegraph offices, the Dortmund airfield, the Deussen Gasworks and the ancient Rathaus. It is estimated that the number of residential or commercial buildings destroyed or gutted exceeds 1,400 and many others were damaged.

Alternative Targets

12. 8 aircraft attacked alternative targets in the areas of Texel(2), Rheino, Munster, Metelen, Heugel, Hengelo and Mookinga.

Navigational Aids (Gee)

13. The Eastern Chain operated throughout on the Virginia frequency and between 0020 and 0155 hours on the target frequency also. Useful information was returned by 360 aircraft, 73, of which had no difficulties with their sets. An average range of 305 miles was obtained, 51 aircraft receiving Gee in the target area. There was no change in the type or strength of enemy jamming. For the first time broad pulses were transmitted on the Virginia frequency. Many navigators reported favourably on the experiment, but the effect of these pulses is still uncertain.

Blind Bombing Aids (Oboc)

14. 8 Mosquitoes, equipped with Oboc, with 2 reserves, were despatched to ground-mark the target, 4 aircraft and one reserve being controlled by each pair of ground stations. The fourth aircraft controlled by Swingate and Triningham-II failed owing to an error made at Swingate. The remaining aircraft released their green T.I's accurately, the Triningham I signals being on time, and the Triningham II signals 2-5 minutes late. Both reserve aircraft bombed the target, one using a Gee fix owing to the failure of Oboc equipment. The turning point was marked with yellow T.I's by 8 Mosquitoes.

Enemy Defences

15. (a) Flak and Searchlights

The clear dark night favoured the use of searchlights which were very active, especially round Dortmund, where about 200 formed 6 large cones, mainly north of the aiming point. Heavy and light flak of moderate intensity appeared to concentrate on aircraft illuminated by the searchlights. These were very efficient and there were several reports of aircraft passed from one cone to another. 29 aircraft sustained flak damage, mainly in the target area.

...../Seven observations

Seven observations were made of a burning aircraft dropping red and green T.I. markers. As only Mosquitoes, not one of which is missing, carried green T.I. it seems that the enemy was using scarecrow phenomena.

A convoy was crossed during the outward journey over the North Sea and despite the display of colours of the period of heavy barrage was fired at the bombers. One Halifax was hit and probably another bomber was shot down into the sea.

(b) Fighters

Overheard wireless traffic revealed extensive controlled fighter activity. The enemy fighters, which were airborne early, claimed their first success as the bombers reached the Dutch coast. 14 patrols undertook 35 pursuits, which resulted in 3 unsuccessful attacks, 6 reports of aircraft destroyed and 6 tentative claims, 3 of which were probably included in the first 6 claims. Rather more than half the pursuits and 5 successful attacks took place during the outward journey.

Crews reports 15 attacks, 36 approaches and 12 followings. Fighters were active in the target area, and 3 attacks and 8 approaches took place there at heights greater than 19000 ft.

An unusual feature of the fighter activity on this night was the greater number of interceptions on the outward route than on the return route.

Casualties

16.	No. of aircraft missing.....	30
	" damaged (a) flak.....	29
	(b) fighter.....	5
	(c) not enemy action....	6
		40

In addition to the 9 bombers claimed by controlled fighters, four other aircraft were seen to fall to fighter attack, two out and two home. There were over 70 observations of aircraft seen shot down in the target area, evenly spaced over the period of the attack. The majority of these reports stated that the aircraft was gone by searchlights and that it fell in flames. It appears that a large number of scarecrow phenomena were used and it is only possible to make an estimate of the losses in the target area. It is probable that 6 bombers were lost over Dortmund; 5 to flak and one to fighters. There were probably two other flak losses, one over Munster and the other to the northwest of the main Ruhr defences. A further bomber was possibly shot down by a convoy over the North Sea during the outward journey.

It therefore seems probable that 14 aircraft were lost to fighters, 8 to flak and the remaining 8 to unknown causes. Rather more aircraft were lost on the outward journey than on the return.

One Halifax came down in the sea owing to engine failure caused by flak damage, the crew subsequently being rescued.

Visibility at home bases deteriorated towards dawn, fog being wide-spread, causing 7 aircraft to crash when a landing was attempted. In addition 3 crews abandoned their aircraft owing to petrol shortage aggravated by repeated diversions. A Lancaster and a Wellington were damaged in collision just before landing, and another Lancaster crashed owing to a burst tyre.

Rheine

17. 2 Halifaxes and 6 Stirlings, all equipped with H2S, set out to make a blind-bombing raid on Rheine. 5 aircraft completed the task, and 3 returned early owing to technical defects. No opposition was reported, and all the aircraft returned safely.

Leaflets

18. 14 aircraft scattered leaflets on Nantes and 10 on Rouen, returning without loss. Plak near Dieppe damaged one Wellington, while another was attacked by a fighter in the same area, sustaining slight damage. A third aircraft crashed on the return owing to engine failure.

APPENDIXTiming of AttackI. (a) Pathfinder Force:

(i) 7 Mosquitoes attacked at 0057, 0102 $\frac{1}{2}$, 0107, 0114, 0119, 0130(2),

2 reserve Mosquitoes attacked at 0143 $\frac{1}{2}$, 0158.

(ii) 20 back-up aircraft attacked at 0102, 0104, 0106, 0108, 0109, 0110, 0111, 0112, 0115, 0116, 0120 $\frac{1}{2}$, 0122, 0123, 0132, 0133(3), 0138, 0139 $\frac{1}{2}$, 0141.

* T.I.'s brought back.

(b) Main Force

Attacked 1 minute early.....	1
" between 0102 and 0115.....	158
" " 0116 and 0125.....	122
" " 0126 and 0135.....	141
" " 0136 and 0145.....	45
" 3-10 minutes late.....	5
" time unknown (crashed).....	3
	<u>475</u>

Bomb Loads CarriedII. (a) Pathfinder Force

T.I. only.....	7
T.I. + H.E.....	22

(b) Main Force

H.E. + 30 lb. inc. + 4 lb. inc.....	279
H.E. + 30 lb. inc.....	58
H.E. + 4 lb. inc.....	59
H.E. only.....	55
30 lb. inc. + 4 lb. inc.....	21
4 lb. inc. only.....	3
	<u>475</u>

4/5th May, 1943.

DOWNLAND: RESULTS: 1-0-0-1-0-0

Target	Group	Type	Sorties	A/C reporting attack on		Bertive sorties		Missing	Damage			Interceptions		Results			
				prim. area	alt. area	over en. territ.	not over en. territ.		flak	fighter	not E/A	att. asked	not att. asked	H.E.	Inc.		
DOWNLAND	8	Mosquito IV	10	9	-	1	-	-	-	-	-	-	-	-	(P) 812.2	685.8	
		Hal. II'2'	2	2	-	-	-	-	-	-	-	-	-	-	(M) 23.9	4.7	
		Lanc. I	13	10	1	-	-	2	-	-	1E	-	-	-	(H) 39.9	42.5	
			Lanc. III	8	8	-	-	-	-	-	-	-	-	-			
	5	Main Force	Stir. I	4	4	-	-	-	-	-	-	-	-	-	-	Heavy Bombs	
			Stir. III	2	1	-	-	-	1	1	-	-	-	1	-	8000 lb. 10000 lb.	
			Hal. II'2'	13	10	1	-	1	1	-	1E	3E	-	-	-	(P) 5	225
			Hal. II'2' L.	1	1	-	-	-	-	-	-	-	-	1	-		
			Lanc. I	8	8	-	-	-	-	-	-	-	-	-			
			Lanc. III	13	12	1	-	-	1	1E	1E	-	-	-			
	1		Lanc. I	40	30	1	-	6	3	2E+1	-	-	2E	1	8		
			Lanc. III	36	33	-	-	3	-	-	-	-	2E	-	6		
			Well. X	24	26	-	-	6	2	1E+2	-	-	1	-	4		
	3		Lanc. II	12	11	-	-	1	-	1E	-	-	-	-	2		
			Stir. I	17	12	1	-	1	1	-	-	-	-	1	5		
			Stir. III	37	46	-	-	7	2	2E+3	1E	-	1	-	5		
	4		Hal. II+V'2'	69	60	-	-	1	2	6	1E+2	-	1E	-	1		
			Hal. II-L	24	23	-	-	1	1	-	-	-	-	1	-		
Well. X			38	31	-	-	5	2	1	-	-	-	-	1			
5		Lanc. I	53	44	1	-	7	1	3	1E	1E	4	4				
		Lanc. III	72	68	1	-	3	-	2	1E	1E	4	6				
6		Hal. II'2'	32	26	1	-	1	4	3	1	-	-	1	6			
		Well. X	38	29	-	-	3	2	1	-	-	-	1	1			
DOWNLAND	TOTL		596	504	8	6	48	30	1E+6E+22	1E+1E+1	10E+1E+1	15	48				

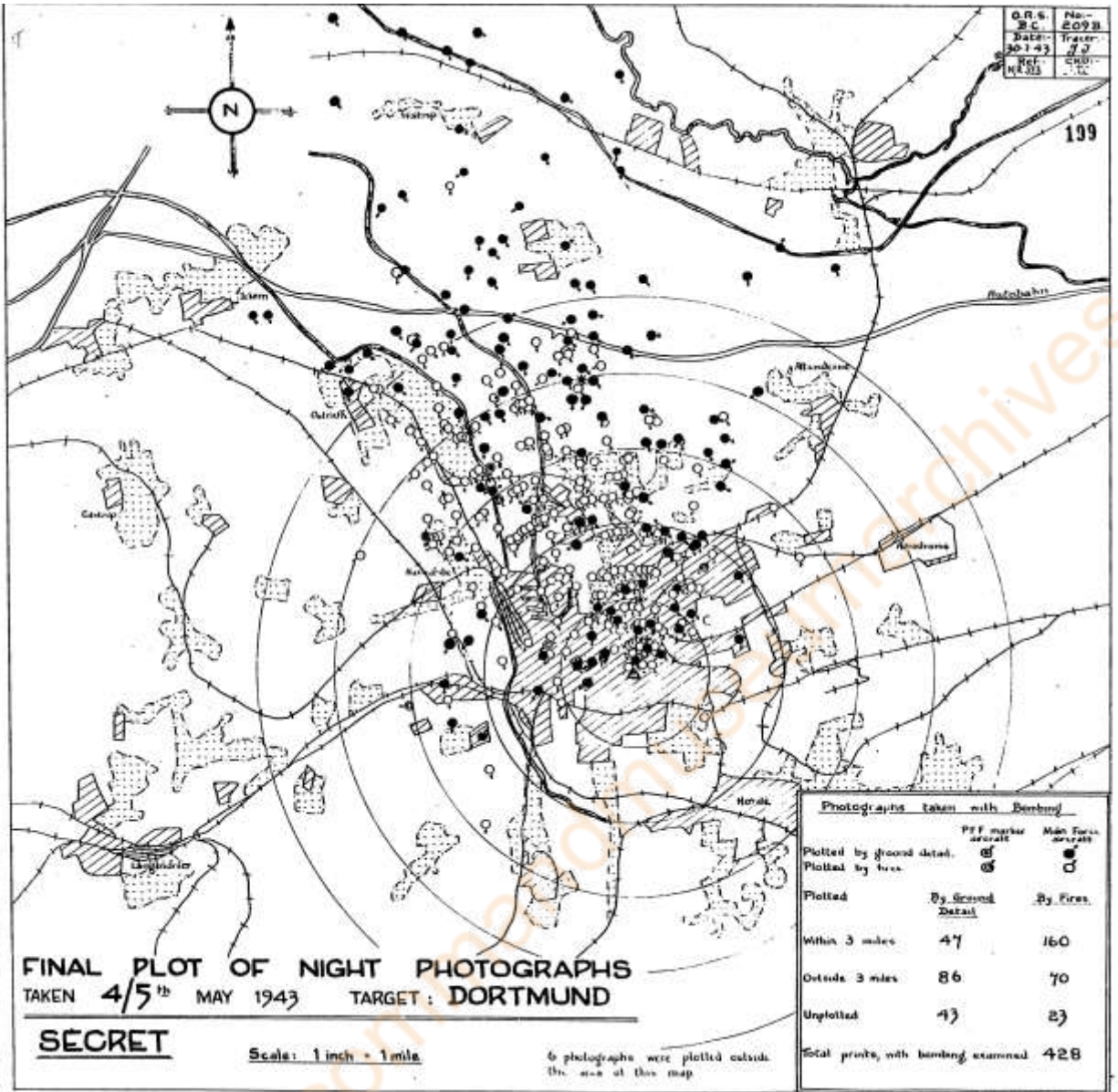
(* including 15 Halifax V)

...../CONT.

...../CONT.

Target	Group	Type	Sorties	A/C reporting attack on		Bertive sorties		Missing	Damage			Interceptions		Results
				prim. area	alt. area	over en. territ.	not over en. territ.		flak	fighter	not E/A	att. asked	not att. asked	
DOWNLAND	TOTL		596	504	8	6	48	30	1E+6E+22	1E+1E+1	10E+1E+1	15	48	
BRIDGE	8	Hal. '2'	2	1	-	-	1	-	-	-	-	-	-	Tons of Bombs
		Stir. I	6	4	-	-	2	-	-	-	-	-	-	H.E. Inc.
BRIDGE	TOTL		8	5	-	-	3	-	-	-	-	-	-	(P) 19.7
BRIDGE	91	Whitley	1	1	-	-	-	-	-	-	-	-	1	Including
BRIDGE	92	Well. III	4	4	-	-	-	-	-	-	-	-	1	1 x 4000 lb.
BRIDGE	93	Well. III	10	10	-	-	-	-	-	-	1E	-	1	bomb.
BRIDGE	95	Well. Ia	7	7	-	-	-	-	1	1	-	1	-	
		Well. IV	1	1	-	-	-	-	-	-	-	-	-	
		Whitley	1	1	-	-	-	-	-	-	-	-	-	
BRIDGE	TOTL		24	24	-	-	-	-	1	1	-	1	3	
TOTL			628	533	8	6	51	30	1E+6E+23	1E+1E+2	11E+1E+1	16	49	

RAID TRACK NOT AVAILABLE



BOMBER COMMAND REPORT ON NIGHT OPERATIONS, 5/6th MAY, 1943.OPERATINGSUMMARY

21 Stirlings of 3 Group were despatched on a mining operation to the Frisians. 17 reached their targets, laying 96 mines. 1 aircraft experienced trouble with its Gee equipment and laid 5 mines in the Heligoland area. Another had its bomb distributor damaged by flick from a British convoy off the Norfolk coast. One aircraft did not return.

Meteorological Forecast

2. Midnight frontal positions: (1) cold from 60°N. 09°E. to N. Yorkshire to 50°N. 11°W. (2). Warm from 60°N. 09°E. to 55°N. 06°E.

Home Bases:- Fit At dusk, apart from local thunder storms in S. England. Belt of low cloud with showers near cold front; to the S., variable amounts, with fog patches late in night. 4 Group will have frontal conditions from midnight till at least 0400, with cloud based at 1,000' and poor visibility. Similar conditions in 1, 6 and 5 Groups. 3 Group will have much medium cloud from 0200-0500, with a risk of large patches of stratus at 600' above M.S.L. and of an outbreak of thundery rain; but all airfields will not be affected simultaneously.

Germany:- Patches of strato-cumulus over N. Sea coast. Fine weather inland, N. of 50°N., with industrial haze. S. of 50°N., variable amounts of high and medium cloud.

N. Italy:- Much cloud. Occasional rain.

France:- Much high and medium cloud. Variable amounts of low cloud. Showers.

Frisians:- Much medium cloud. No low cloud.

Kattegat:- Patches of strato-cumulus. Broken medium cloud.

Sorties

3.	(a)	No. of aircraft despatched.....	21
	(b)	" reporting mines laid in primary area..	17
	(c)	" " alt. area.....	1
	(d)	" abortive sorties (technical defect.....)	1
		(flick from R.N. convoy...)	1
	(e)	" aircraft missing... ..	1(4.8')

Weather Experienced

4. Home Bases:- Fit during operational period, apart from sporadic outbreaks of thundery rain.

Route:- 6-10/10ths strato cumulus, base 1,500-2,500, with broken medium cloud above, clearing to small amounts near target.

Target:- Little cloud. Moderate visibility. No moon.

..../Enemy Defences

Enemy Defences5. (a) Flak and Searchlights

Crews reported slight flak with searchlights, from Langeland, Langeroog, and Nerderney.

(b) Fighters

Enemy wireless traffic indicated night fighter patrols in the Tangel/Lecumarden area, and one attack was claimed, but there is no evidence of a success. Reference was also made to another pursuit, but there are no details of this. One aircraft was reported by our crews to have been shot down N. of Terschelling, but no claim was made by enemy sources. It is therefore uncertain whether this observation referred to the missing aircraft, and there is no evidence as to the cause of loss.

Casualties

6. No. of aircraft missing.....1
 " damaged by enemy action.....Nil
 " " by non-enemy action..... 1

Nothing is known of the fate of the missing aircraft.

HLH/VF.
 IC/S. 26342/3/ORS.
26th July, 1943.

Target	Group	Type	Sorties	A/C reporting attack on		abortive sorties		Missing	Damage			Interceptions		Results
				prim. area	alt. area	over en. territ.	not over en. territ.		Flak	fighter	not V/A	attacked	not attacked	
P. DUNE IS.	3	Str. I	11	1	-	1	1	-	-	-	-	-	-	70x mines 31 mines
		Str. III	7	6	-	1	-	-	-	1	-	-	-	
TOTAL			21	17	1	-	2	1	-	-	1	-	-	10x mines

(* Including 5 mines planted in alternative area - HELICOLAND)

BOMBER COMMAND REPORT ON NIGHT OPERATIONS, 9/10th MAY, 1943.MINELAYINGSUMMARY

21 Stirlings of 3 Group were detailed on a mining operation off the coast of France. 20 reached their targets, laying 64 mines; but 2 of these exploded on contact with the water. No losses were sustained.

Metereological Forecast

Home Bases:- Cold front approaching from N.W. will lie from the North to S.Wales by 0600. At midnight, 6 Group expect to be in the rear of the front, with broken cloud at 2,000' and good visibility. 4, 1 and 5 Groups will have intermittent rain on 10/10ths at 1,000' or below. 8 Groups hope for well broken cloud at 1,500'. By 0500, 1, 5, 3 and 4 Groups will all have 10/10ths at 1000-1500', locally 600-1,000', with poor visibility in showers. Freezing level 2,000', severe icing above this height in frontal zone to 15,000'.

Germany:- Much cloud at all levels, with convection to great heights and thundery showers in N. Ruhr: 5/10ths low cloud and broken high cloud: Medium cloud will develop by 0200, and increase rapidly. Route to Ruhr: 1 and 6 Groups will have to negotiate front on outward journey, and all Groups will be affected on return. A belt of thick medium cloud will extend from 10-20,000' with some cumulo-nimbus, hail and thunder. 1 and 5 Groups may also experience difficulty in climbing through thick layers of low and medium cloud. Medium layers will break and thin towards the North.

W. France:- 5/10ths convection cloud, base 2,000'. Showers in N. and poor visibility.

Statistics

(a)	No. of aircraft despatched.....	21
(b)	" " reporting mines laid in primary area.....	20
(c)	" abortive sorties (weather).....	1
(d)	" aircraft missing.....	0
(e)	" mines laid.....	64

(2 of these exploded on hitting the water)

Weather Experienced

W. France :- Variable cloud, 2-9/10ths. Moderate visibility. Moon above the horizon and 33% of full. Wind at 1,500': 240°/50 n.p.h. over bases, veering to 280°/40 n.p.h. over targets and backing 20° on return.

Enemy Defences5. (a) Flak and Searchlights

Two crews reported heavy flak over Nantes, and 2 others were fired on by ships, one off Arromanches, and the other in the Gironde Estuary. No searchlights were reported.

(b) Fighters

Enemy wireless traffic revealed night fighter patrols in the areas of Brest, St. Nazaire and Nantes, but no pursuits or attacks developed.

Casualties

6. None from enemy action. One aircraft was slightly damaged through overshooting on landing.

MLM/VP.

BC/S. 26342/3/ORS.

28th July, 1943.

9/10th Nov, 1943.

MINELAYING

Target	Group	Type	Sorties	A/C reporting attack on		abortive sorties		Missing	Losses			Interceptions		Results
				prim. area	alt. area	over un. territ.	not over en. territ.		flak	fighter	not N/A	attacked	not attacked	
GIRONDE R.	3	Stur. III	15	14	-	-	1	-	-	-	1, C	-	-	40x mines
La F. PALMICE	3	stbr. I	2	2	-	-	-	-	-	-	-	-	-	8 mines
		stbr. III	4	4	-	-	-	-	-	-	-	-	-	16 mines
TOTAL			21	20	-	-	1	-	-	-	1, C	-	1	64x mines

(* including 2 mines which exploded on hitting the water)

BOMBER COMMAND REPORT ON NIGHT OPERATIONS - 12/13th MAY, 1943.DUISBURGSUMMARY

1. A large force of 562 heavy and medium bombers, made a successful raid on Duisburg, which was accurately groundmarked by 10 Oboc Mosquitoes. An excellent concentration was achieved and about 85% of the 487 aircraft reporting attack are estimated to have bombed within 3 miles of the aiming point. Very considerable damage included 48 acres of devastation in the old town centre, and many factories suffered severely. The docks, railway marshalling yards and goods and passenger stations were also seriously damaged. 34 aircraft (5.3%) failed to return and 3 others were totally destroyed.

Good weather favoured the enemy defences and night fighters contributed almost equally to the night's losses.

Meteorological Forecast

2. Estimated midnight position of fronts: (1) warm $61^{\circ}N$ $5^{\circ}E$ - $55^{\circ}N$ $10^{\circ}E$ - Hamburg (2) occluded $62^{\circ}N$ $7^{\circ}W$ - $60^{\circ}N$ $5^{\circ}W$ becoming warm to $55^{\circ}N$ $5^{\circ}E$ - Frisians, becoming cold at Wick - St. Abbs Head - N. S. Isles - $49^{\circ}N$ $10^{\circ}W$.

Home Bases:- 6,4,1 and 5 Groups should be fit for take-off and return, with broken cloud in 6 and 4 Groups, lowering southwards to 300/1,000 ft. in 5 Group, and much medium and high cloud. The remaining groups will be affected by the front, having some rain or drizzle and much low cloud, base 1000 ft., with patches down to 600 ft. Training groups expect to have similar conditions, and will not be available for diversions.

N.W. France: High cloud, base below 1,000 ft. South of Nantes well broken layer cloud.

N.Germany: Along North Sea coast there will be broken layer cloud.

Inland over Germany: Well broken medium and high cloud.

S.Germany and N.Italy: Small amounts of cloud.

Route and target: Bront over Norfolk at take-off and just off Norfolk coast about time of return, with cloud main top at 6-10,000 ft, and upper cloud to 20,000 ft. but with good lanes except along a narrow belt, where cloud will be solid in patches to 25,000 ft. Along remainder of route, broken strato-cumulus tops about 5,000 ft, clearing to nil or small amounts towards the target.

Wind:

(a) Bases N. of $53^{\circ}N$ to target
 750 nb. $220^{\circ}/80-85$ n.p.h. falling to $250^{\circ}/30-35$ n.p.h. at target.
 500 nb. $220^{\circ}/90-95$ n.p.h. " $240^{\circ}/40$ n.p.h. "
 350 nb. $250^{\circ}/100$ n.p.h. " $260^{\circ}/50$ n.p.h. "

...../(b)

(b) - Bases S. of $53^{\circ}N$ of target

750 lb.	$220^{\circ}/70$	n.p.h. falling to	$250^{\circ}/30-35$	n.p.h. at target
500 lb.	$230^{\circ}/75$	"	$250^{\circ}/40$	n.p.h. "
350 lb.	$250^{\circ}/80$	"	$260^{\circ}/50$	n.p.h. "

Plan of Attack

3. Zero hour 0200 hours Period of attack 0157 - 0245 hours.

Briefed route: Eindhoven - $52^{\circ}00'N$ $06^{\circ}43'E$ - Duisburg - turn right - Noordwijk.

Yellow warning T.I.'s were to be dropped by 9 Mosquitoes at $51^{\circ}40'N$ $06^{\circ}45'E$.

Between 0157 and 0237 hours the Mosquitoes were to drop red T.I.'s in salvo on the aiming point, and this marking was to be maintained by 10 Y aircraft (5 Stirlings and 5 Halifaxes) and 15 Lancasters aiming green T.I.'s at red, if visible, but otherwise at the centre of the patterns of greens, between 0202 and 0242 hours. Bombights were to be set to ensure that T.I.'s overshoot by 3 seconds in order to make allowance for the fact that T.I.'s burst above ground level.

The main force, including 30 aircraft (19 Y type) of the P.F.F., were to bomb nothing but T.I.'s till 0240 hours: if none was visible on arrival before that time, they were to turn right, orbit and make a second run after 0240 hours. Bombs were to be aimed at red T.I.'s if possible, but otherwise at the centre of the pattern of greens.

Crews of Y aircraft (both backers up and main force) might drop two bombs of the H.E. load, on any target in Germany, by HES in order to gain practice in the use of the equipment.

Timing

4.	<u>Markers (Section 1)</u>	<u>Main Force</u>
	<u>Mosquitoes</u> Stirlings, Halifaxes(Y) & Lancasters	
0157-0201	-	-
-	0202-03 2 L at 1 min. intervals	0202-20 Section 2: Selected crew of heavies of Nos. 1, 2 & 5 Gps. (H.E. only) and all 8 Group main force + (for load see para. 5)
-	0205-06 , L.H	"
0207	-	
-	0209-11, L.H.L at 1 min. intervals	
0212	-	
-	0213-14 S.L at 1 min. intervals	0215-25 Section 3: Selected crew of mediums of Nos. 1, 4 & 6 Gps. and of Stirlings rem. heavies of 1 Gp. (H.E. + I.B.)
-	0216 3	
0217	-	
-	0218-19 L, S at 1 min. intervals	
-	0221 H	0220-30 Section 4: Remaining Halifaxes (H.E. + I.B.)
0222	-	
-	0223-24 S,L at 1 min. intervals	

...../over

Markers (Section 1)
Mosquitoes Stirlings, Halifaxes (Y)
 & Lancasters

Main Force

-	0226	L	0225-40	Section 5: Remaining Stirlings & Wellingtons. (I.B. only)
0227	-	-	-	-
-	0228-30	S.H at 1 min. intervals	-	-
-	0231	L	0230-45	Section 6: Remaining Bombers. (H.E. + I.B.)
0232	-	-	-	-
-	0233-34	H, L at 1 min. intervals	-	-
-	0236	L	-	-
0237	-	-	-	-
-	0238	L	-	-
-	0241-42	2L at 1 min. intervals	-	-

* plus 1, to attack at 0242 hours with 2 x 500 lb. H.C.
 if not required as reserve.

Bomb Loads

<u>Markers</u>	<u>Yellow</u>	<u>T.I.</u> <u>Red</u>	<u>Green</u>	<u>H.E.</u>
9 Mosquitoes	1	3 (2/3 LB ⁿ)	-	-
1 Mosquito	-	2	-	2 x 500 lb. H.C.
5 Stirling (Y)	-	-	6 (1/2 LB)	3 x 500 lb. H.C.
5 Halifax (Y)	-	-	6 (1/2 LB)	6 x 1000 lb. G.P.
5 Lancaster	-	-	6 (1/2 LB)	2 x 500 lb. H.C. + 4 x 1000 lb. G.P.

+ 8 Group. Main Force Halifax (Y) 4 x 1000 lb. G.P. + 8 x 500 lb. H.C.
 (Time detailed 0202 hours)
 Lancaster 1 x 1000 lb. H.C. + 4 x 1000 lb. G.P. + 8 x 500 lb.
 (Time detailed 0202 hours)
 Stirlings (Y) 3 x 500 lb. H.C. + I.B. (Time detailed 0220 hours)
 Stirling & Halifax } incendiaries (" ")

(" L.B. = long burning)

Sorties

(a)	No. of aircraft despatched.....	572
(b)	" reporting attack on primary area.....	483(84.5%)
(c)	" " alternative area.....	8(1.4%)
(d)	" abortive sorties (technical defects & manipulative errors.....)	29
	{ weather.....	11
	{ illness of crew.....	5
	{ collision.....	1
	{ crashed on take-off.....	1
(e)	" aircraft missing.....	34(5.8%)

...../Weather Experienced

Weather Experienced

7. Route: (from S. of Wash) High strato-cumulus over the North Sea, tops 6-10,000 ft, breaking to nil inland over Holland.

(from N. of Wash) similar, but tops 15-20,000 over the North Sea about 50 miles from the English coast, with slight icing in the cloud tops.

Wind: 240°/50-60 n.p.h over the North Sea, becoming 230°/40 n.p.h. towards the target.

Target:- No cloud apart from small amounts of cirrus. Visibility moderate, but slight haze. Surface wind: light, south or southwest.

Moon above the horizon, 50% of full.

Night Photographic Statistics

8.	No. of photographs with bombing showing ground detail.....	129
	Plotted by ground detail within 3 miles.....	88
	" between 3 and 5 miles.....	12
	" outside 5 miles.....	6
	Unplotted.....	23
	No. of photographs with bombing showing fire tracks.....	288
	Plotted by fire tracks within 3 miles.....	120
	" between 3 and 5 miles.....	18
	" outside 5 miles.....	1
	Unplotted.....	149
	Total photographs with bombing examined.....	420
	No. of aircraft reporting attack.....	483
	No. of aircraft estimated, from the photographic evidence to have bombed within 3 miles of the aiming-point.....	410

Narrative of Attack

9. The red T.I's were dropped by the Gee Mosquitoes with great accuracy, and most of the green T.I's, which were aimed at the reds, were also well placed. Night photographs showing T.I's burning indicate that the earliest were within one mile of the aiming point, followed by others in the local area to the north and north east. The concentration round the city centre was renewed, and a small group of T.I's fell about 3 miles north-east. In all about 80% of the T.I's fell within 2 miles of the aiming point. Almost the whole force aimed at red T.I's or red and green; this resulted in very accurate bombing, an estimated 85% of the bombs being inside the 3 mile circle. The timing was also good, the last aircraft attacking 4 minutes before the prescribed end of the raid.

Daylight Reconnaissance

10. Complete photographic cover was obtained after the raid; some of the fresh damage shown may be attributed to the raid on 26/27 April, for which previous cover was unsatisfactory. But night photographic evidence indicates that most of the damage was caused by the attack at present under consideration.

The greatest concentration of damage is in the town centre, where an area of devastation of 48 acres includes almost the whole of the old town. Other incidents, which in the aggregate are considerable, are scattered over a wide area; most of these incidents are near the main station or in the district of Heiderich. Many important industrial concerns suffered damage. These include 4 factories of the Vereinigte Stahlwerke A.G. (August Thyssen), 2 of which suffered severely. A coke and benzol purifying plant appears to have been put out of action and the largest tar-distillation plant in Germany was extensively damaged. Munition factories, chemical works, a zinc and sulphuric acid

oid plant, a ships boiler works, a wire works, cotton and cellulose sawing mills, a silk fabric factory, a soap works, a malt works and marshalling yards sustained serious damage. Many warehouses and store sheds were destroyed and stores of timber burnt out. At least 7 barges were destroyed and others damaged, while a barge-building yard was gutted. Many warehouses and the marshalling yard in the Beck area were destroyed or damaged, and railway tracks in the yards and sidings were disrupted by many direct hits which also damaged rolling stock. Further interruption to communications was caused by direct hits on branch lines, and damage to 2 railway viaducts and to the main passenger and goods stations. A lock gate on the Rhine Herne Canal was also seriously damaged.

In the old town and Papenlall 600 buildings, mainly hotels or blocks of shops, offices, or flats, were destroyed or damaged. In addition about 200 houses were demolished, gutted or damaged; the majority of these were in Heiderich, Harborn and Heudorf.

Alternative Targets

1. 8 aircraft attacked alternative targets in the areas of Wessel(2), Bocholt, Bborn, Arnhem, Amsterdam, Hengelo, and Dinslaken.

Special Equipment

2. (a) Gee: The Eastern Chain operated on the Virginia frequency throughout and on the target frequency 0130-0250. All the aircraft despatched were fitted with Mk.II. Useful information was returned by 36 aircraft, 85% of which had no difficulty with their equipment, obtaining an average range of 295 miles. 77 aircraft received Gee in the target area. The signal was very weak. Interference was very heavy and of the usual type.

3. (b) Oboe: 10 Mosquitoes equipped with Oboe were despatched to find and mark the target, 5 aircraft being controlled by each pair of ground stations. One aircraft controlled by Walker and Triningham I returned early owing to a technical defect, while the remaining 9 Mosquitoes completed the operation, dropping their red T.I's very accurately. Triningham I signals were 1 minute early to 2 minutes late, while Triningham II was nil to 10 minutes late. This resulted in discontinuity in marking, which was, however, covered by the backers-up. 7 aircraft dropped yellow landmarks at the specified point en route.

4. (c) H2S: The backers-up included 5 Y-type Halifaxes and 9 bombed with the main force. The equipment was mainly used as a navigational aid, and only one aircraft reported checking the position of the red T.I's by H2S. 4 Halifaxes reported difficulty with the equipment and in one it failed completely. One Y-type Halifax failed to return.

Heavy Defences

15. (a) Flak and Searchlights

About 200 searchlights were in operation in the early stages of the attack, but later they were hindered by smoke. Barrage flak was intense throughout but the heavy predicted flak, which was also intense, was reported by several aircraft to be less accurate than usual, possibly owing to the presence of controlled night fighters in the target area. Balloons were observed over Duisburg at heights of 6,000-7,000 ft.

The most intense ground opposition outside the Ruhr was met at Amsterdam, where many heavy anti-aircraft guns and about 50 searchlights were in action. Similar but weaker defences were encountered at Eindhoven, Utrecht and Deventer.

...../14 aircraft

4. aircraft were damaged by flak, principally over Ruhr defences, though several aircraft were damaged over Northern Holland. Halifaxes and Stirlings suffered equally badly with nearly 13% damaged, while Lancasters escaped with 6% and Wellingtons with less than 3%. No Mosquitoes were damaged.

16. (b) Fighters

The weather was favourable for night-fighters which were most active near the target and over north-western Holland. Enemy wireless traffic revealed 10 patrols by controlled fighters operating from Bergen/Alkmaar(2), Arnhem/Deelen(1), Twente Enschede(2) and Gilze/Rijen(5). 25 pursuits were undertaken which resulted in 11 victories, near Alkmaar(4), Arnhem/Deelen(1), Zwolle(1), Rotterdam(2), Gilze/Rijen(1), and Voorne(2). At least 6 claims can be related to observations by British crews. Encounters with enemy aircraft totalled 67, and were evenly spread throughout the period of the raid. Of the 19 attacks, 2 occurred in the target area. 2 Ju.88's were shot down by the bombers they attacked, one over Deventer and the other over Winterswijk. In addition one Me. 110 was probably destroyed, and one Me. 110 and 4 Ju 88's were damaged, all over Northern Holland. 7 bombers were damaged by both flak and fighter.

Casualties

17.	No. of aircraft missing.....	34(5.8%)
	" damaged (a) flak.....	43
	(b) fighter.....	7
	(c) flak and fighter..	1
	(d) not on action....	4
		55(9.6%)

Observations of crews indicate that 1 aircraft were shot down by flak in the target area, 3 or 4 in the Eindhoven/Amsterdam area before reaching Duisburg, and 1 near Rotterdam on the return. 3 bombers were seen to be shot down by enemy aircraft in the target area, and it is estimated that 14 or 15 were brought down en route, at least 7 before reaching and 5 after leaving the target. Thus 12 or 13 losses were probably due to flak and 17 or 18 to enemy aircraft. In addition one returning Lancaster, which was seriously damaged as a result, reported a collision over Eindhoven with another Lancaster. It is possible that this caused the loss of the second aircraft.

An obstruction caused one aircraft to crash on take-off, and 2 crashed on return, all being total losses.

APPENDIX

Timing of Attack

I. (a) Pathfinder Force

(1) 9 Mosquitoes attacked at 0157, 0201, 0206, 0217, 0218, 0228, 0229, 0237, 0247.

(ii) 22 bombers up attacked at 0202, 0203, 0206, 0209, 0210(2), 0211, 0218(2), 0221, 0222(3*), 0225, 0226, 0227, 0233(2*), 0235, 0236, 0238(2).

* including one aircraft which dropped no T.I's.

(b) Main Force

Attacked 1-2 minutes early.....	6
" between 0202 and 0215.....	152
" " 0216 and 0230.....	235
" " 0231 and 0245.....	58
" time unknown (crashed).....	1
	<u>452</u>

Bomb Loads Carried

II. (a) Pathfinder Force

T.I. only.....	9
T.I. + H.E.....	22

(b) Main Force

H.E. + 30 lb. inc. + 4 lb. inc.....	170
H.E. + 30 lb. inc.....	29
H.E. + 4 lb. inc.....	35
H.E. only.....	116
30 lb. inc. + 4 lb. inc.....	93
4 lb. inc. only.....	9
	<u>452</u>

EMD/VP.
BC/S; 26342/5/ORS.
6th August, 1943.

12/13th May, 1943. DUISBURG

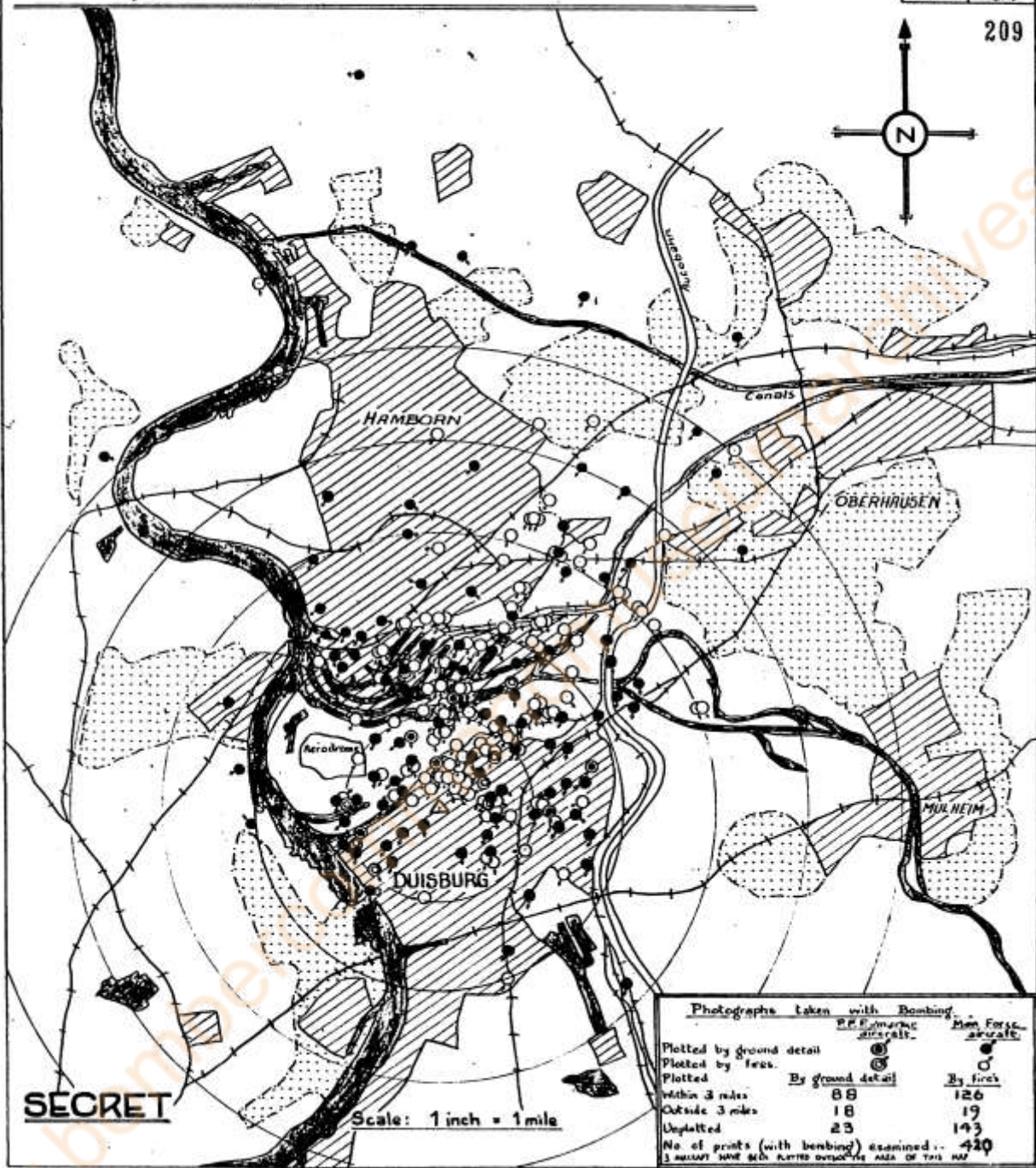
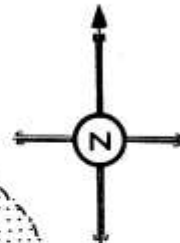
Target	Group	Type	Sorties	✓C reporting attack on		abortive sorties		Flowing	Damage			Interceptions		Results		
				prim. area	alt. area	over en. territ.	not over en. territ.		flak	fighter	not E/A	attacked	not attacked	Tons of Bombs		
														H.E.	Inc.	
DUISBURG	P.F.F.	Regatta IV	10	9	-	-	1	-	-	-	-	-	-	(P) 357.3	504.1	
		Hal. II E	4	3	-	-	-	1	1.C	1B	-	-	-	(A) 5.8	17.3	
		Hal. II-L	1	1	-	-	-	-	-	-	-	-	-	(C) 45.6	45.8	
		Lanc. I	11	10	-	-	-	1	1	-	-	-	-	-	-	-
		Lanc. III	10	8	-	-	-	2	1	-	-	-	-	-	-	-
	Main Force	Hal. II E	19	17	-	-	1	1	-	-	-	-	1	-	-	-
		Hal. II-L	1	1	-	-	-	-	-	-	-	-	-	-	-	-
		Lanc. I	10	10	-	-	-	-	-	-	-	-	-	-	-	-
	1	Lanc. III	12	10	-	-	-	2	-	-	-	-	-	-	-	-
		Lanc. I	22	20	-	-	-	2	-	-	-	-	-	-	-	-
		Lanc. III	39	36	-	-	1	1	-	-	-	-	-	-	9	-
	3	Wall. Z	32	26	-	-	-	4	2	1.C	-	-	-	-	3	-
		Lanc. II	15	15	-	-	-	-	-	-	-	-	-	-	-	-
		Str. I	11	9	-	-	-	1	1	1	-	-	-	-	2	-
	4	Str. III	59	49	-	-	-	2	4	8	2B+1	1B	7	9	9	-
		Hal. II+E	65	51	2	-	-	7	5	1.C+8	1.C	1E	3	5+4	-	-
		Hal. II-LA	33	28	-	-	-	4	1	4	1.C	-	2	2	-	-
	5	Wall. Z	39	32	-	-	-	5	2	-	-	1E	-	-	1	-
		Lanc. I	59	46	-	-	1	2	6	4	-	-	-	-	2	-
		Lanc. III	64	62	-	-	2	-	-	1B+1.C+5	1.C	1.C	3	5	-	-
6	Hal. III	19	12	1	-	-	4	2	4	1.C	-	-	3	-	-	
	Wall. Z	41	28	1	-	-	6	6	1.C+1	-	-	2	2	-	-	
TOTAL			572	463	8	5	42	34	1B+5.C+3B	3B+4.C+1	3E+1.C	22	47			

RAID TRACK NOT AVAILABLE

FINAL PLOT OF NIGHT PHOTOGRAPHS
 TAKEN 12/13th MAY 1943. TARGET: **DUISBURG**

O.R.S.	No. -
B.C.	218 D.
Date -	Placed -
5-8-43	J.D.
Ref. -	CRD -
N/A 326	17C.

209



Photographs taken with	Bombing	
	B.F.F. aircraft	Gen Forc. aircraft
Plotted by ground detail	⊙	⊙
Plotted by feet	⊙	⊙
Plotted	By ground detail	By feet
Within 3 miles	88	126
Outside 3 miles	18	19
Unplotted	23	143
No. of prints (with bombing) examined -	420	
3 aircraft have been plotted over the area of this map		

SECRET

Scale: 1 inch = 1 mile

BOHEM COMBAND REPORT ON NIGHT OPERATIONS - 13/14th MAY, 1943.BOHUM: PILSEN: Berlin: Minelaying: Leaflets.SUMMARY.BOHUM:

1. A force of 442 aircraft, including 10 Obco Mosquitoes, made a fairly successful attack on Bohum. The initial ground marking of the target was accurate, but after the first 15 minutes red decoys igniting on the line of approach of the aircraft caused a large part of the force to bomb short, thus considerably reducing the effectiveness of the raid. Failure of half of the Obco aircraft contributed to the success of the decoys. Nevertheless roughly half of the total force is estimated to have bombed within 3 miles of the aiming point, causing considerable damage to industrial property including the Vereinigte Stahlwerke A/G., and to railway communications.

23 aircraft (5.2%) are missing and 5 were totally destroyed on return. Good weather and moonlight facilitated the efforts of night fighters which were responsible for about two thirds of the casualties.

PILSEN:

2. The Skoda works at Pilsen was the target for 168 heavy bombers. An extraordinary concentration of bombing was achieved, but unfortunately it fell entirely in open fields 2 miles from the works. Nearly the whole force was led astray by the first red T.I.'s dropped, which were inaccurately placed despite an excellent performance by Y-type aircraft in locating the target.

9 aircraft failed to return, 6 of these being lost to night fighters.

BERLIN:

3. 12 Mosquitoes of 2 Group set out to bomb Berlin. The mission was completed by 9 aircraft. One Mosquito failed to return.

MINELAYING

4. 43 mines were laid off the Frisian Islands by 8 bombers, all of which returned safely.

Leaflets.

5. Leaflets were scattered over Rouen by 12 aircraft of training groups

Metereological Forecast

6. Estimated midnight position of fronts: (1) warm front, Denmark-Pontland North 58°N 12°W., with cold front from centre of that position to S. Ireland.

Home Bases:- Fit for take-off. Little cloud in Southern Groups. In the N. broken strato-cumulus and medium cloud. Neither cloud will present climbing difficulties. For return: S.W. of Thorney-Goole-Scotland, low stratus base 1,000-1,500 ft. E. and N. of this line patches of stratus and strato-cumulus at 1,000-1,500 ft., visibility 2-5 miles. Locally smoke may reduce visibility to 200 yards. Visibility locally in 6 Group less than 1,500 yards and in 4 Group cloud will be lower.

N. France:- Much low stratus. S. of Nantes, well broken cloud.

Germany:- North Sea Coast: Broken strato-cumulus, which will not extend

/..... appreciably

appreciably inland across the coast. Inland small amounts of cloud and moderate visibility. Some industrial haze in S. and E. Germany.

Route and Target:- Fine, with little or no cloud.

Winds:

	10,000 ft.	18,000 ft.	30,000 ft.
Bases N. of 53 $\frac{1}{2}$ ° N to Don Holder	230°/60 n.p.h.	230°/65 n.p.h.	230°/55 n.p.h.
" S. "	240°/40 n.p.h.	230°/50-55 n.p.h.	230°/45 n.p.h.
Don Holder to Ruhr	250°/25 n.p.h.	240°/35 n.p.h.	240°/20 n.p.h.
" Pilsen	250°/85 n.p.h.	250°/30 n.p.h.	260°/30 n.p.h.
	-270°/15 n.p.h.	-270°/15 n.p.h.	

BOGHUM

Plan of Attack

7. Zero Hour 0200 hours. Period of attack 0157 - 0235 hours.

Briefed Route: 51°00'N 05°40'E - 51°06'N 07°30'E - Bochum - 51°55'N 07°20'E - 54°00'N 05°00'E.

As a preliminary warning 8 Oboc Mosquitoes were to drop yellow T.I.'s at 57°05'N 06°55'E. Between 0157 and 0231 hours, the Mosquitoes were to drop red T.I.'s in salvo on the exact aiming point, this marking was to be maintained by 14 Stirlings, aiming green T.I.'s at reds, if seen, otherwise at the exact centre of the pattern of greens visible. Allowance was to be made for the fact that T.I.'s burst above ground level. The main force, including some aircraft of 8 Group, were to aim their bombs at the red T.I.'s if possible, but otherwise at the centre of the area covered by the greens. Until 0110 hours only markers were to be bombed; if none were visible on arrival before that time, aircraft were to turn right, circuit, and make a second run after 0110 hours. The first wave of the main force, consisting of selected crews of heavy aircraft of 1 and 4 Groups and of the 8 Group main force aircraft, was to carry purely H.E. loads. The second wave, consisting of selected crews of Lancasters of 1 Group, Stirlings of 3 Group and Wellingtons of 1, 4 and 6 Groups, and the fourth wave (remaining Lancasters and Halifaxes) were to carry mixed loads. The third wave was to carry incendiaries only.

Aircraft of 1 Group were instructed to meet at 18,000 ft. over Southold, and to climb to maximum height before reaching the enemy coast: bombing was to be carried out from as great a height as possible, and the minimum amount of evasive action was to be taken during the bombing run. After bombing, the searchlight belt was to be crossed at high speed, after which Lancasters were to climb to maximum height for the return trip, while Wellingtons might lose height and gain speed through the fighter and G.C.I. area. Emphasis was laid by 1 Group, on the need for co-operation between bomb-aimers and navigators of Lancasters carrying mixed loads, to ensure the correct interval between release of H.E. and incendiaries.

Timing

8.	<u>Markers</u>	<u>Stirling</u>	<u>Main Force</u>
	<u>Mosquitoes</u>		
	0157 & 0201	-	
	-	0202 & 0204	0202-0210 selected crews of heavies of 1 and 4 Groups and all 8 Group main force.
	0206	-	
	-	0207 & 0209	0210-0220 Selected crews of Lancasters of 1 Group, Stirlings of 3 Group & Wellingtons of 1, 4 & 6 Groups.
	0211	-	
	-	0212 & 0214	0215-0230 Remaining Stirlings & Wellingtons
	0216	-	

those reported by many crews during this period were almost certainly decoys, which appear to have been ignited between 0210 and 0220 hours from the target to 6 miles south along the line of approach of the aircraft. In consequence, the bombing was concentrated round the target during the first 15 minutes of the attack, but later both the breakers-up (which were equipped with 123, and should therefore not have been decoyed) and the main force bombed progressively further south. Other decoy markers were active east and south east of the target, but these attracted comparatively few aircraft. The re-arming of the sliding-point with red 11's at 0234 hours was too late to affect the backward drift. Nevertheless about 60% of the aircraft bombed within 3 miles of the sliding point, and considerable damage was revealed by daylight reconnaissance. Several incidents which occurred in Hattingen, 5 miles S.W. of Bochum, and many craters seen between the two towns confirm the drift along the line of approach.

Daylight reconnaissance.

13. Daylight photographic cover of Bochum and the nearby town of Hattingen is complete. The centre of Bochum and the district of Hattingen, in the S.W. of the town, are very seriously damaged, mainly by fire. Considerable industrial damage, affecting 10 premises, includes severe damage to 3 branches of the Vereinigte Stahlwerke A.G.; 4 collieries and at least 5 engineering works are also included. The main railway station building, the goods station, and 2 engine round houses were partially destroyed. Many direct hits were scored on tracks and sidings, and a railway bridge on a main line collapsed. About 400 business or residential buildings were demolished or gutted, and a further 200 damaged. At least 200 craters lie between Bochum, Hattingen and Querenburg. In the town of Hattingen a small building of the Ruhrstahl A.G. (Heinrich Hutte) was partially demolished and 2 nearby houses were gutted. An unidentified shed H. of the town and a farmhouse were also destroyed. 17 craters are seen in open ground near the steelworks.

Alternative Targets.

14. 5 aircraft released their bombs, just before reaching the target, on flak concentrations, while 16 bombers attacked alternative targets near Cologne (5), Dusseldorf (2), Heinsberg (2), Dortmund, Krefeld, Suppertal, Aasel, Mattenscheid, Bonn and Schouwen, either owing to technical defects, or to interference by enemy fighters.

Special Equipment.

15. (a) Cee: The Eastern Chain was in operation on the Virginia frequency throughout the raid, and on the target frequency from 0130 to 0230 hours. All aircraft were fitted with Gee Mk. II. Useful information was returned by 315 aircraft, of which 89 had no difficulties with their equipment. An average range of 260 miles was obtained, and 13 aircraft reported reception in the target area. The 3 signal was the strongest. There was severe interference, especially near the Azores and the British Islands.

16. (b) Oboc: 3 Mosquitos and 2 reserves equipped with Oboc were despatched to find and guide near the target, 3 being controlled by each pair of ground stations. On this occasion 1 Mosquito and 1 night were the releasing stations. The first and second aircraft released 11's accurately, within 5 minutes of the specified time, but the equipment of the next four failed. The 7th and 8th aircraft received the signal to release 10 and 5 minutes late, while the first reserve attacked 20 minutes after the end of the raid. The second reserve failed. 5 Mosquitos released yellow 11's accurately at the turning point.

17. (c) 123: The 12 breakers-up were equipped with 123, which was used mainly as a navigation aid. Only 2 aircraft reported using 123 to mark the target, but both attacked about 3 miles short. 123 was unserviceable in one aircraft and failed owing to a manipulative error in another, which, as a result did not mark the target. One 123 failed to return early owing to a

/.....technical

technical defect. Good definition was reported by 5 aircraft.

Enemy Defences.

18. (a) Flak and Searchlights.

The briefed route lay between Cologne and Düsseldorf, in an attempt to avoid the ground defences of both. A reliable observer, however, reported that the defences merge, although they are less intense midway between the cities. Considerable heavy flak and much searchlight activity was reported in this area, possibly by aircraft which were a little off track. Over the target heavy flak was moderate and inaccurate, being most intense between 11,000 and 14,000 ft. The fire was mainly barrage, but there appears to have been some effort to co-operate with the searchlights. Flares were numerous and active, one report stating that there were 4 to 5 cones of 10-20 searchlights each, but they were rendered ineffective by haze and smoke. Two almost stationary cones of 20-30 beams were also reported, one N.W. and the other S.W. of Lochem. In addition 3 or 4 heavy guns and about 8 searchlights were in operation at Turnhout. 66 aircraft were damaged by flak.

19. (b) Fighters.

Enemy wireless traffic disclosed that the night fighter activity covered a large part of the continent, and it is not possible to separate exactly the patrols against the Bochum sorties from those against the Pilsen and Berlin sorties. Patrols in the Gilze Nijen and Albeer areas were responsible for 9 of the 11 claims overheard, the other 2 being in unlocated areas. It is probable that 8 or 9 of the bombers shot down were operating in the Bochum raid.

Returning crews reported 10 attacks and 77 other encounters (including 25 combats) with enemy aircraft. These were fairly evenly divided between the outward and return journeys, 1 attack and 3 combats taking place over the target itself. 7 bombers were damaged in combat, and enemy fighters suffered heavily. 2 Ju.110, 2 Ju.88, 1 He.109 and 1 F.7.190 were destroyed and 1 F.7.190 probably destroyed.

Casualties.

20.	No. of aircraft in danger.....	29 (5.2)
	" damaged { flak..... 63	}..... 74 (16.7)
	" { fighter..... 3	
	" { flak & fighter..... 4	
	" { non-on. action..... 4	

There were many observations of aircraft falling, but some of these were probably searchcrow flares. However, consideration of the observations and the claims of many fighter pilots indicate that 14 or 15 aircraft were shot down by fighters and 8 by flak. Fighter losses occurred mainly over Holland and E. Germany, but at least 2 bombers were brought down by fighters near Düsseldorf, and one over the North Sea on the return. 3 bombers fell to flak in the target area, one over Düsseldorf and 2 over H. Holland.

4 of the aircraft damaged by flak and one damaged by a fighter were rendered total losses, 2 coming down in the sea. One Stirling overshot on landing and 1 Wellington made a forced landing, both being seriously damaged. Two aircraft were damaged by incendiary bombs.

PILSEN - SORTIE FOR 2.

Plan of Attack:

21. Zero hour 0100 hours. Period of Attack 0100-0127 hours.

Briefed route: 53°44'N 03°13'E - Erfurt - 49°53'N 13°29'E - Pilsen - Erfurt - 53°44'N 03°13'E.

As aids to navigation en route for the target, 12 Halifaxes (Y type) were to drop yellow T.I.'s at 51°29'N 09°40'E. This marking was to be maintained by 8 backers-up of 156 Squadron. At 51°00'N 11°02'E, Y aircraft were to drop white T.I.'s the marking to be maintained by 12 backers-up. These markings were to be repeated on the return journey. At zero hour 8 Halifaxes were to mark the target with green T.I.'s released blindly on H2S, and 6 seconds later, on the same heading, each was to drop a stick of white flares at 6 second intervals. Two minutes later the same technique was to be adopted by 4 Y aircraft (w/t crews); 8 'visual markers,' at the same time, were to make every effort to identify the aiming point in the light of the flares, and to mark it with red T.I.'s if positively identified. If the illumination seemed insufficient to the captains they were to drop another stick of flares. If absolutely necessary, owing to complete inability to identify the aiming point, they were to drop their red T.I.'s on the centre of the pattern of greens on the ground. The 'visual markers' were to be followed by 12 backers-up attacking at 1 minute intervals, by aiming red T.I.'s at the exact centre of all reds visible and were instructed not, in any circumstances, to attempt to identify the aiming point for themselves.

The main force, consisting of Lancasters of 8 Group (detailed to attack at 0110 hours), and of 5 Group (between 0112 and 0127 hours), were to aim their bombs (H.E. only to be carried) at the centre of the area covered by all red T.I.'s visible. The 8 Group main force crews were to be permitted to attempt to identify the aiming point in the light of the flares, but 5 Group were instructed to ignore both flares and green T.I.'s and to make no attempt at visual identification.

Sorties

22.	(a)	Nb. of aircraft despatched.....	168
	(b)	" " reporting attack on primary area.....	141 (83)
	(c)	" " " alternative area.....	Nil
	(d)	" abortive sorties (technical and manipulative defects.....	18 (10)
	(e)	" aircraft missing.....	9 (5)

Weather Experienced.

23. Home Bases, route, target and winds: as for Bochum (para. 10).

Night Photographic Statistics

24.	Nb. of photographs, with bombing, examined.....	124
	Nb. of photographs showing ground detail	{ plotted within 3 miles..... 112
		{ " between 3 & 5 miles.... 2
		{ " outside 5 miles..... Nil
		{ unplotted..... 5
	Nb. of photographs showing fire tracks.	{ plotted within 3 miles..... 4
		{ " between 3 & 5 miles.... Nil
		{ " outside 5 miles..... Nil
		{ unplotted..... 1
	Nb. of aircraft reporting attack.....	141
	" " estimated from photographic evidence to have bombed within 3 miles of the aiming point.....	133

Narrative of Attack.

25. The attack was opened by 4 Y aircraft which released flares and green T.I.'s at 0110(2) 0111 and 0113. These fell near the Skoda Works, spaced fairly evenly round them, so that if the following aircraft had bombed the centre of these T.I.'s the attack would almost undoubtedly have been a success. However, these Y aircraft were followed by 2 "visual markers" at 0115. One of these obtained a photograph of the aiming point, but did not release his T.I.'s owing to an unserviceable bombsight, while the other dropped red T.I.'s 2 miles N.N.W. of the target. 4 backers-up aimed red T.I.'s at these markers, and a large

number of the main force bombed this concentration of reds. Later 3 "visual markers" bombed the same area, reporting an effective smoke screen, which was probably smoke from bombs, since another "visual marker", which identified the target correctly at the same time, reported only slight haze. Unfortunately 5 more bombers-up dropped their red T.I.'s on the concentration N.E.W. of the works, and almost the whole of the main force was attracted. Thus, although about 95% of the aircraft reporting attack bombed within 3 miles of the aiming point, very few hit the target. This is clearly illustrated by the plot of night photographs.

Daylight Reconnaissance

26. No cover of the Skoda Works has been obtained since the raid.

Alternative Targets

27. None of the bombers attacked an alternative target.

Special Equipment

28. (a) Gee: The Eastern Chain operated on the Virginia frequency throughout the raid, and on the target frequency from 2300 to 2350 hours. 142 of the aircraft, all of which were fitted with Mk. II sets, returned useful information. 11% of these aircraft reported unsatisfactory equipment. An average range of 330 miles was obtained, the maximum range reported being 415 miles. Severe interference on the Virginia frequency was ineffective as it was mainly during the period of operation of the target frequency.

29. (b) H2S: Of the 12 Y-type Halifaxes despatched, 1 returned early owing to unserviceable H2S equipment. 5 of the remainder dropped green T.I.'s accurately round the aiming point, 2 to 10 minutes late. Yellow warning T.I.'s were released at the correct point by 8 aircraft, all of which illuminated the target with white flares. H2S was reported faulty by 2 of these Halifaxes.

Enemy Defences

30. (a) Flak and Searchlights

The defences in operation were estimated as 20 heavy guns, 30 light guns and 30-50 searchlights. The heavy flak was predicted "open". The opposition appears to have increased since the last attack, although the aircraft attacked mainly from below 10,000 ft., both guns and searchlights were ineffective, suggesting a low standard of training.

There were several reports of an effective smoke-screen, but these came from aircraft which attacked 2 miles N.E.W. of the target, thus probably referring to smoke from bomb-bursts. The absence of a smoke screen is confirmed by a report from an aircraft which attacked late, but obtained a photograph of the aiming point.

Flak was also experienced en route, but only 9 returning bombers were hit.

31. (b) Fighters

Night fighter patrols were active as far as Pilsen, but successes were only located in the Gilze Rijen and Bergen/Alkmaar areas. Consideration of timing and position indicates that 2 aircraft returning from Pilsen were shot down by patrols from Bergen/Alkmaar. One of these is confirmed by reports from bomber crews.

.../Enc. unters

APPENDIX

BOCHUM

Timing of Attack

I. (a) Pathfinder Force

- (i) 5 Mosquitoes attacked at 0155, 0202, 0234(2), 0253.
- (ii) 11 Backers up attacked at 0207, 0209(2x), 0211, 0217, 0219, 0223, 0224, 0229, 0231, 0240.

* T.I's not dropped.

(b) Main Force

attacked between 0202 and 0210.....	33
" 0211 and 0220.....	118
" 0221 and 0230.....	147
" 0231 and 0235.....	31
" 1-5 minutes late.....	7
" 6-10 " 	2
" time unknown (crashed).....	1
	<u>339</u>

Bomb Loads Carried

II. (a) Pathfinder Force

T.I. only.....	5
T.I. + H.E.....	11

(b) Main Force

H.E. + 30 lb. inc. + 4 lb. inc.....	153
H.E. + 30 lb. inc.....	6
H.E. + 4 lb. inc.....	3
H.E. only.....	78
30 lb. inc. 4 lb. inc.....	97
	<u>339</u>

PISEN

Timing of Attack

III (a) Pathfinder Force

- (i) 8 Y-type Halifaxes attacked at:- 0110(2), 0111, 0113(2), 0115, 0118, 0125.
- (ii) 19 Backers-up attacked at - 0113, 0114, 0115(2x), 0116, 0118(2), 0119, 0120(3), 0122, 0123(2), 0125, 131.

* T.I's brought back.

...../(b) Main Force

(b) Main Force

(1) 8 Group (0110 hours)

10 aircraft attacked at 0114, 0118, 0120(3), 0121, 0122, 0124, 0125.

(ii) 5 Group (0112-0127)

attacked within prescribed period.....	92
" 1-5 minutes late.....	9
" 5-10 "	2
" 15 "	1
	<u>104</u>

Bomb Loads CarriedIV (a) Pathfinder Force

T.I.'s + Flares.....	3
T.I.'s + Flares + H.E.....	7
T.I.'s + H.Z.....	12
	<u>27</u>

(b) Main Force

H.E. only.....	114
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RTO/VF.
 BC/S. 26342/5/ORS.
12th August, 1943.

Target	Group	Type	Sorties	✓/C reporting attack on		abortive sorties		Missing	Damage			Interceptions		Results			
				prim. area	alt. area	over on. territ.	not over on. territ.		flak	fighter	not E/A	attacked	not attacked	Tons of Bombs			
														H.E.	Ino.		
BOHRN	B	Moq. IV	10	5	-	5	-	-	-	-	-	-	-	(P) 55.9	451.2		
		P.F.P. Str. I	12	11	-	1	-	2	1	-	-	-	-	(A) 21.2	40.4		
	Main Force	Hal. II Z	11	0	1	-	1	1	3	-	-	-	2	(M) 33.0	28.1		
		Str. I	4	4	-	-	-	-	-	-	-	-	-	-	-	-	
		Str. III	1	1	-	-	-	-	-	-	-	-	-	-	-	-	
	1	Lans. I	Well. X	3	3	-	-	-	-	-	-	-	-	-	-	-	
			Lans. I	3	3	-	-	-	-	-	-	-	-	-	-	-	
			Lans. I	3	3	-	-	-	-	-	-	-	-	-	-	-	
		3	Lans. II	Lans. I	33	27	1	1	3	1	1B+2C+5	-	-	1	7	(P) 4	58
				Lans. III	50	45	2	-	3	1	1B+6	-	-	-	8	(A) -	4
				Well. X	26	29	1	3	-	1	4	-	1	1	8	(H) -	3
		4	Hal. II Z	Str. I	12	12	-	-	-	1	1	-	-	-	1	-	-
				Str. I	23	14	3+1ax	1	4	1	2C+2	1B+2C+1x	1C	5	-	-	
				Str. III	55	42	4+1ax	1	5	3	1B+2C+7	1C	10C	5	18	-	
				Well. X	60	44	5	-	4	7	1B+7	1B	-	1	14	-	
		6	Hal. II Z	Hal. II-Is	23	19	-	-	3	1	2C+2	-	-	-	6	-	
				Hal. VE	15	13	-	-	2	-	-	-	-	-	-	-	
	Well. X			26	20	-	-	2	2	2	-	1B	1	3	-		
Well. X	26			19	2	-	2	3	1C+3	-	-	1	2	-			
BOHRN TOTAL			462	355	21+1ax	14	29	23	4B+1B+10C+4B	1B+2C+1+1B+1C+1x	2B+2C	18	77	-			

...../Contd.

...../Contd.

2.

Target	Group	Type	Sorties	✓/C reporting attack on		abortive sorties		Missing	Damage			Interceptions		Results	
				prim. area	alt. area	over on. territ.	not over on. territ.		flak	fighter	not E/A	attacked	not attacked	Tons of Bombs	
														H.E.	Ino.
PILSEN	P.F.P.	Lans. I	13	10	-	2	1	1	-	-	-	-	-	(P) 45.4	6.8
		Lans. III	9	9	-	-	-	-	2	-	-	-	-	(H) 4.4	0.2
		Hal. II Z	12	8	-	1	3	-	2	-	-	-	-	-	-
	Main Force	Lans. I	3	3	-	-	-	-	-	-	-	-	-	-	-
		Lans. III	7	7	-	-	-	-	-	-	-	-	1	-	-
5	Lans. I	Lans. I	47	38	-	1	5	3	1C+1	-	-	-	4	(P) 5	128
		Lans. III	77	66	-	1	2	5	1C+1	-	1B	2	7	(M) 1	8
PILSEN TOTAL			168	141	-	3	15	9	2C+7	-	1B	2	12	-	
BERLIN	2	Moq. IV	12	9	-	-	2	1	1	-	-	-	-	(P) 6.5	0.5
BOHRN TOTAL			622	505	21+1ax	17	46	33	4B+1B+12C+5B	1B+2C+1+1B+1C+1x	2B+2C	20	89	-	

ax also attacked the primary

x also damaged by flak but not included in the flak column.

...../Contd.

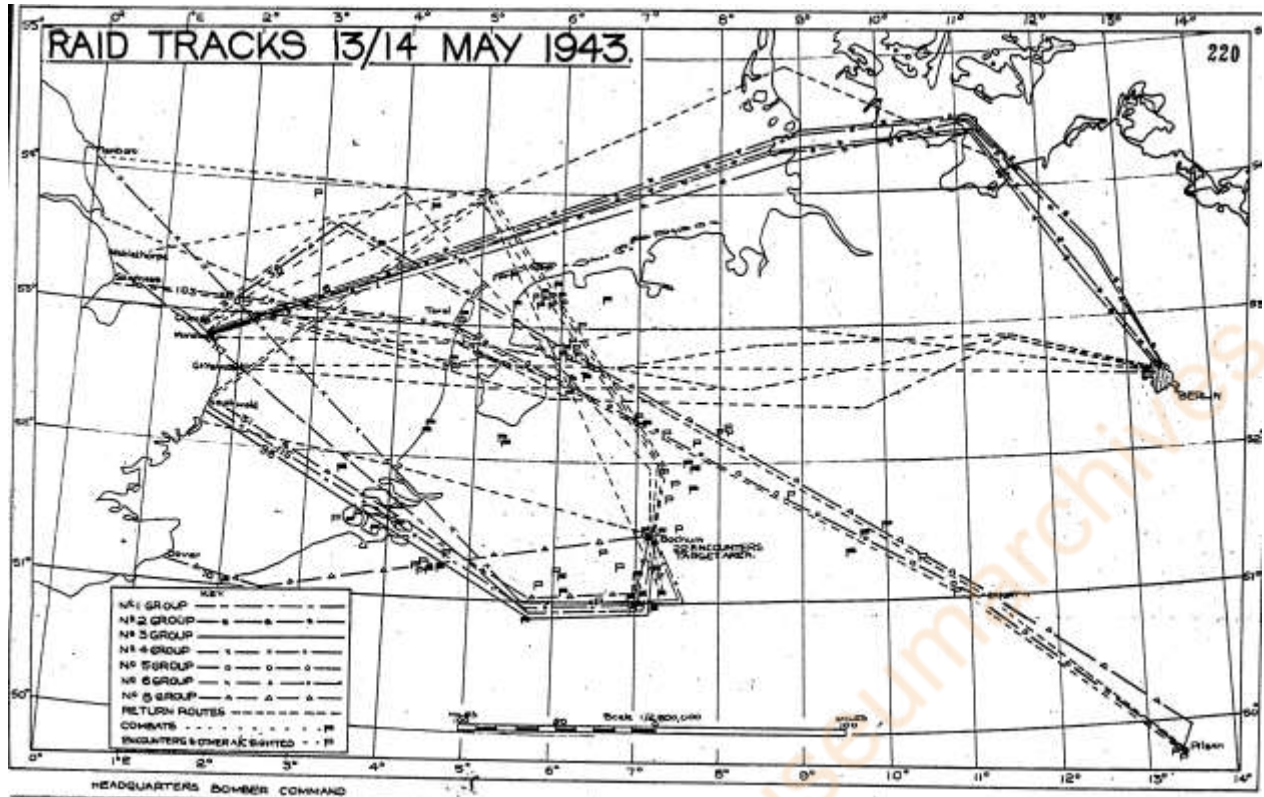
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3.

Target	Group	Type	Sorties	✓/C reporting attack on		abortive sorties		Missing	Damage			Interceptions		Results
				prim. area	alt. area	over on. territ.	not over on. territ.		flak	fighter	not E/A	attacked	not attacked	
BOHRN TOTAL			622	505	21+1ax	17	46	33	4B+1B+12C+5B	1B+2C+1+1B+1C+1x	2B+2C	20	89	-
MIDREYND	3	Str. I	7	7	-	-	-	-	-	-	-	-	-	43 Mines
FRISLAN IS.		Lans. II	1	1	-	-	-	-	-	-	-	-	-	
MIDREYND TOTAL			8	8	-	-	-	-	-	-	-	-	-	43 Mines
LE-PIETS HOUSE	91	Whit. V	5	5	-	-	-	-	-	-	-	-	-	-
		Well. III	2	2	-	-	-	-	-	-	-	-	-	-
		Well. Ic	4	4	-	-	-	-	-	-	-	-	-	-
		Whit. V	1	1	-	-	-	-	-	-	-	-	-	-
LE-PIETS TOTAL			12	12	-	-	-	-	-	-	-	-	-	-
T O T A L			642	525	21+1ax	17	46	33	4B+1B+12C+5B	1B+2C+1+1B+1C+1x	2B+2C	20	89	-

ax also attacked the primary

x also damaged by flak but not included in the flak column.

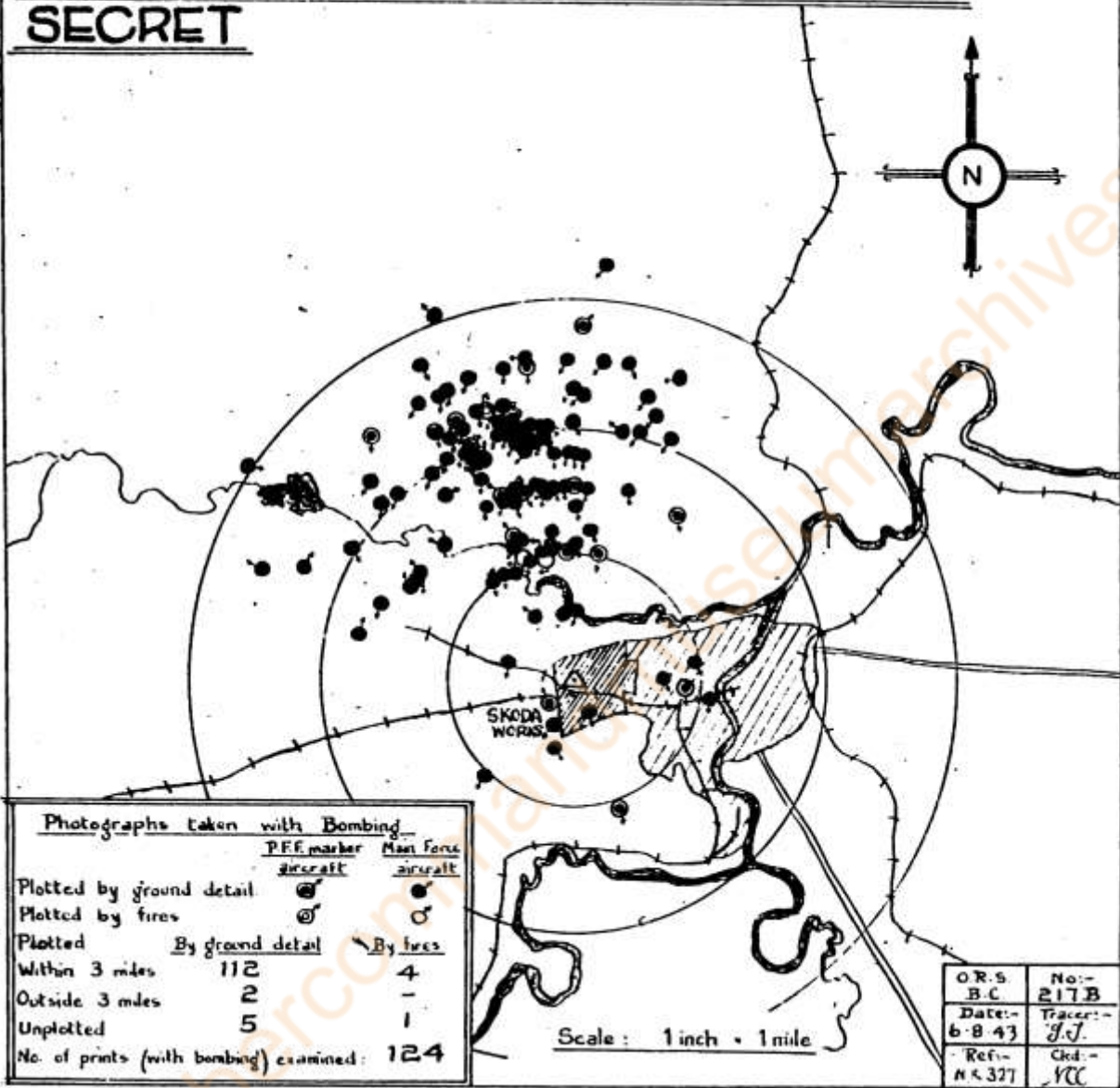


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FINAL PLOT OF NIGHT PHOTOGRAPHS
 TAKEN 13/14th MAY 1943 TARGET PILSEN

218

SECRET



Photographs taken with Bombing		
	P.F.F. marker aircraft	Main Force aircraft
Plotted by ground detail	⊙	●
Plotted by fires	⊙	⊙
Plotted	By ground detail	By fires
Within 3 miles	112	4
Outside 3 miles	2	-
Unplotted	5	1
No. of prints (with bombing) examined: 124		

O.R.S B.C	No:- 217B
Date:- 6-8-43	Tracer:- F.J.
Ref:- N 327	Cmd:- YCC

Scale: 1 inch = 1 mile

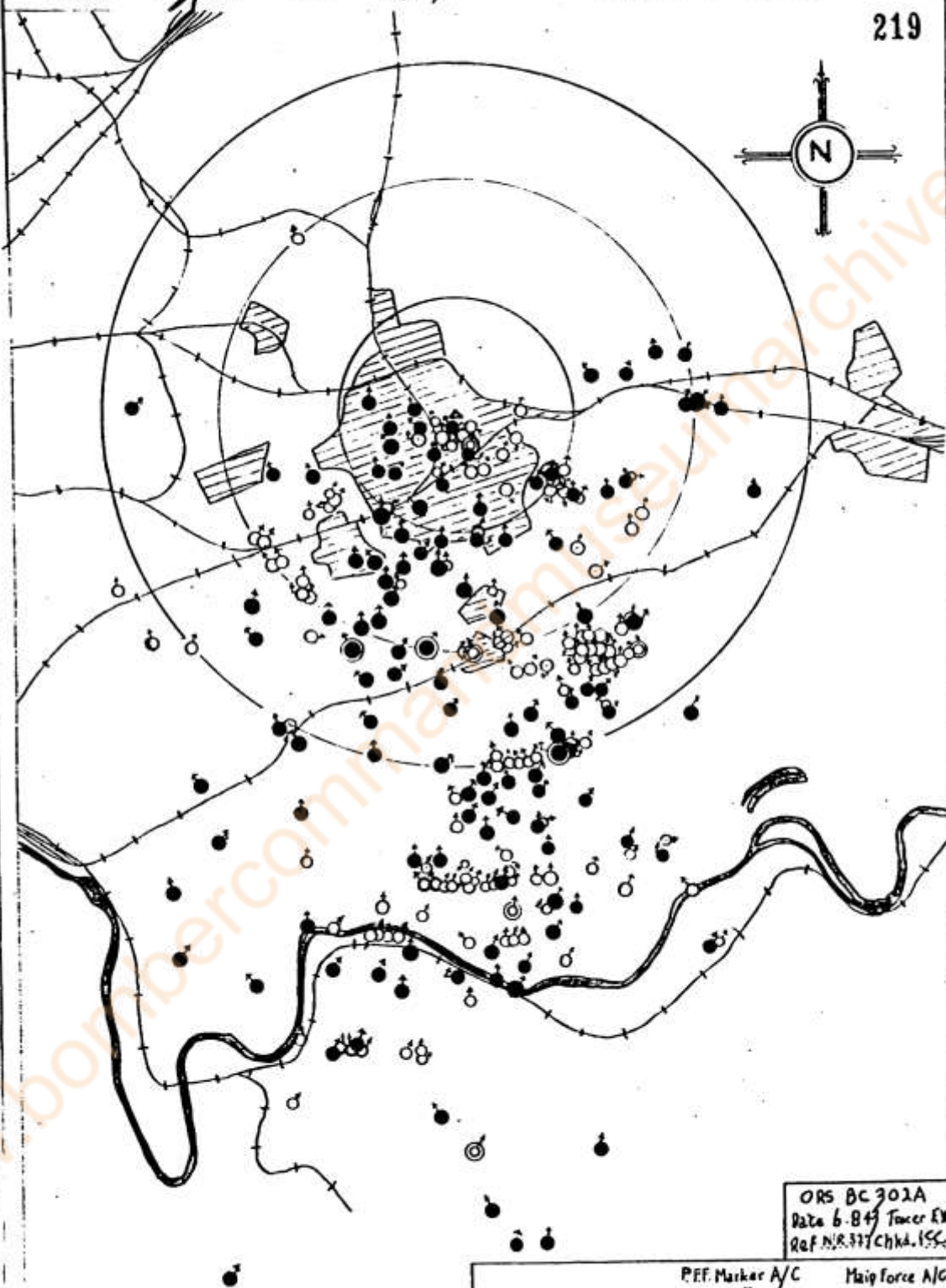
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FINAL PLOT OF NIGHT PHOTOGRAPHS

TAKEN 13/14th MAY 1943

TARGET BOCHUM

219



ORS BC 302A
Data 6-847 Tower EW
Ref N.R. 377 Chkd. ISS.

SECRET

Scale: 1 inch = 1 mile

	P.F.F. Marker A/C	Main Force A/C
Plotted by Ground Detail	⊙	♂
Plotted by Fires	⊗	♂
PLOTTED	By Ground Detail	By Fires
Within 3 miles	71	83
Outside 3 miles	48	52
UNPLOTTED	38	12
No. of prints (with bombing) examined	307	

BOMBER COMMAND REPORT ON NIGHT OPERATIONS, 14/15th JULY, 1943.LEAFLETSSUMMARY

1. 5 Wellingtons of 91 Group dispersed leaflets in the Rouen area without incident.

Meteorological Forecast

2. Midnight frontal positions:- cold from 62° N. 10° E. to Oslo to N.W. Denmark to Thames estuary to N.W. France.

Home Bases:- Variable amounts of medium and low cloud N.W. of front. Thunderstorms over East Anglia and near the front over S.W. England.

Germany and France:- Local thunderstorms in N.W., little cloud in centre and S. Cloud to great heights in frontal zone over North Sea.

Sorties

3. (a) No. of aircraft.....5
 (b) " reporting leaflets dropped in primary area.....5
 (c) " missing.....0

Weather Experienced

4. Clear. Slight haze. Moon above the horizon and 62% of full.

Enemy Defences

5. A little light flak was encountered from St. Aubin-sur-Mer, and some heavy flak at Lisieux. No fighters were observed.

Casualties

6. None.

Target	Gp.	Type	Sorties	1/C reaching P.A.	1/C Missing	Dam- age	Inter- ceptions
ROUEN	91	Well. III	3	3	-	-	-
		Well. X	2	2	-	-	-
TOTAL			5	5	-	-	-

MLJ/VP.
 BC/S. 26342/3/ORS.
 28th July, 1943.

BOMBER COMMAND REPORT ON NIGHT OPERATIONS, 15/16th MAY, 1943.BERLIN: LeafletsSUMMARY

Berlin 3 Mosquitoes of 2 Group were despatched on a nuisance raid on Berlin. 2 attacked the capital from 20-24,000', in clear weather and bright moonlight. No results were observed. Slight flak was encountered, and a few fighters were observed, but all our aircraft returned undamaged.

Leaflets 16 aircraft, out of a force of 17, dropped leaflets over Paris and the W. coast of France. No losses or casualties were sustained.

Meteorological Forecast

Midnight frontal position :- feeble cold from 60°N. 20°E. to 55°N. 50°E. to 50°N 05°E.

Home bases:- Pine N. of Humber. Slight risk of low stratus over higher ground in East Anglia and S.E. England. Little cloud in E.W.

Germany:- Sea fog and low stratus over North Sea Coast. Further inland, well broken medium and low cloud. Broken medium cloud, possibly with thunderstorms, near cold front. Pine over North Sea and over E.Germany.

France:- Little cloud.

Sorties

		<u>Berlin</u>	<u>Leaflets</u>
6.	(a) No. of aircraft despatched.....	3	17
	(b) " " reporting attack on primary area.	2	16
	(c) " abortive sorties (technical defect).....	1	1
	(d) " aircraft missing.....	0	0

Weather Experienced

Home Bases:- Fit all night.

Berlin:- Little or no cloud. Good visibility. Moon above the horizon and 69% of full. Little cloud en route.

France:- Clear. No cloud.

Enemy Defences6. (a) Berlin

A little inaccurate heavy flak co-operated with small searchlight cone. A few rounds were fired from anti-air. Some fighters were observed, but not encountered.

(b) France

Slight light flak was met at coastal points, and at Fecamp and Rouen. Searchlights attempted unsuccessfully to hold aircraft at Rouen and Stretat. Enemy wireless traffic revealed night fighter activity from Brest to Denmark: 2 encounters took place over the W.coast of France, but no attacks developed.

Casualties

6. None.

CLM/VP.
EC/S. 26342/3/ORS.
28th July, 1943.

15/16th May, 1943.

REPLAN: Minelaying: Leaflets.

Target	Group	Type	Sorties	A/C reporting attack on		Abortive sorties		Missing	Damage			Interceptions	
				prim. area	alt. area	over cn. territ.	not over cn. territ.		flak	fighter	not E/A	attacked	not attacked
BERLIN	2	Hess. IV	3	2	-	1	-	-	-	-	-	-	-
W. COAST OF FRANCE	92	Well. III	6	6	-	-	-	-	-	-	-	-	2
PARIS	93	Whit.	1	1	-	-	-	-	-	-	-	-	-
		Well. Ic	1	1	-	-	-	-	-	-	-	-	-
		Well. III	9	8	-	-	1	-	-	-	-	-	-
LEAFLETS	TOTAL		17	16	-	-	1	-	-	-	-	-	2
		TOTAL	20	18	-	1	1	-	-	-	-	-	2

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W H H A
15 SEP 1943

NIGHT RAID REPORT NO. 330.

COPY NO: 16

BOMBER COMMAND REPORT ON NIGHT OPERATIONS - 16/17th MAY 1943.

224

RUHR AND WESER DAMS.

BERLIN: DUSSELDORF: MUNSTER: COLOGNE: MINELAYING:
LEAFLETS.

RUHR AND WESER DAMS.

1. 19 special Lancasters set out in three waves to make low level attacks on dams in the Ruhr and Weser Valleys. The first wave, consisting of nine aircraft, successfully breached both the Moehne and Eder Dams, causing widespread floods, which wrecked rail and road bridges, swept away buildings and undermined canal embankments. The emptying of these huge reservoirs is also believed to have caused serious water shortage. The Sorpe Dam was attacked by at least one of the five aircraft in the second wave, and by one of the third wave. Damage was caused, but the dam was not breached. The Schwelme Dam was attacked by one Lancaster without visible results. It is not known whether the Lister or Emspe Dam was attacked by any of the eight missing Lancasters, but photographs show no damage to either. Most of the missing aircraft were shot down by light flak, and one was brought down by its own mine, which detonated on the parapet of the Eder Dam.

BERLIN, DUSSELDORF, MUNSTER AND COLOGNE.

2. No. 2 Group despatched 3 Mosquitoes to Berlin and 2 to each of the other three towns. With the exception of one Berlin sortie, which bombed Kiel as an alternative, all the aircraft attacked their primary targets. No damage was sustained by the bombers.

MINELAYING.

3. 54 aircraft were despatched to lay mines in enemy waters. A total of 154 mines were successfully laid by 50 aircraft, and one Wellington failed to return.

LEAFLETS.

4. Leaflets were dispersed in the Orleans area by 4 Wellingtons which returned without mishap.

RUHR AND WESER DAMS.

TARGETS.

5. The chief dam in the Ruhr and Weser areas was the Moehne Dam, which was built to control the level of the Ruhr and to store the winter rains to prevent serious shortages in the late summer and the autumn. It was 105 feet high, 2,100 feet long and increased in thickness from 25 feet at the top to 112 feet at the base. The capacity of the reservoir was about 134 million tons of water.

6. Second in importance was the Eder Dam, which compensated the River Weser for the water taken to feed the Mittelland Canal, and prevented winter flooding in the Kassel, Munden, Haselin and Minden areas. This Dam was 139 feet high, 1,310 feet long and increased from 19 feet thick at the top to 115 feet at the bottom. The reservoir, which was even greater than

than that of the Moeche Dam, contained 202 million tons of water.

7. Next, in order of importance, are the Sorpe, Lister, Schwelme and Ennape Dams, all of which are situated in the Ruhr Valley. The most vital of these, the Sorpe Dam, differs from the Moeche and Eder Dams in construction, being made of earth, with a concrete core. This could most effectively be attacked by cracking the concrete core, so that a leak would start which might eventually destroy the dam or cause the enemy to empty it to effect repairs.

8. It is obvious that the breaching of any one of these dams would seriously hamper the war effort of the enemy, owing to flood damage, and subsequent water shortage, loss of electrical capacity and the interruption of transport by the flooding of roads and the undermining of bridges and embankments. To cause the maximum interference, the reservoirs should be full, and the dry season just approaching; also, a successful attack could only be made in good weather and bright moonlight. These conditions are fulfilled only in the moonlight periods of May or possibly June. Thus, if any attempt were to be made to destroy the dams in 1943, the specially trained crews and special equipment had to be ready by 10th May.

TRAINING AND EQUIPMENT.

9. After a special mine capable of breaching the dams had been produced, it was necessary to equip a squadron with aircraft able to carry the mine, and to train crews to use it effectively. In order to achieve the surprise necessary to outwit the enemy defences and to carry the operation to a successful conclusion with a small force, the crews were to be trained to fly across country at low level by moonlight.

10. A squadron was formed of picked crews, and a modified Lancaster was chosen to carry the mine. Preliminary training was begun in March on normal Lancasters pending the production of the modified type. Two aircraft were fitted with the Boxoid Day-Night Synthetic Equipment so that moonlight low-level flying could be practised during the day. This was particularly useful during the moonless periods.

11. Crews were trained to use the Air Position Indicator and the Special Range Finder. Each aircraft was also fitted with a Spotlight Altimeter Calibrator, consisting of two lamps whose beams intersected 60 feet below the aircraft; this enabled the crews to see their precise height above water.

12. A special signals procedure was adopted, and training was received in the use of V.H.F., which was fitted in place of T.R.1196. Special W/T and R/T frequencies were allotted and tested. A very high degree of proficiency in signalling had to be attained by all members of the crews, and to this end an intercommunication system was fitted through both the Flight Commanders offices and the crew room. This saved many hours flying.

13. By mid-May training in the use of all the new or unfamiliar equipment had been completed, and much practice obtained in navigating under moonlight or simulated moonlight conditions, at low level. In addition, by flying over selected lakes and reservoirs, the final approach (at 100 feet and at a precise speed) and the release of the mine itself had been practised sufficiently often to ensure great accuracy.

PLAN OF ATTACK.

14. All special Lancasters with crews are to fly from base to target in moonlight at low level, following the briefed routes shown on the attached map. The squadron is to be divided into 3 main waves of 9, 5 and the remaining aircraft.

15. The 1st. Wave is to take off in 3 sections each of 3 aircraft, at 10 minute intervals, and fly to the Moeche Dam by the southern route.

Over England height is not to exceed 1,500 feet; after leaving the coast aircraft are to descend to low level and set their altimeters at 60 feet using the Spotlight Altimeter Calibrator, and are to remain at low level for the whole flight until crossing 05⁰⁰'E. on the return. By making an accurate landfall and following the briefed route to the target major flak opposition should be avoided.

16. 10 miles from the Moehne Dam the leader of each section is to climb to 1,000 feet, and all the other aircraft are to listen out on V.H.F. On arriving at the target each aircraft is to call the leader of the wave on V.H.F. The leader of the wave is to attack first, and is then to control all the other aircraft using the special signals procedure. The attack on the Moehne Dam is to be continued until it has been clearly breached. The remaining aircraft are to be diverted to the Eder Dam, and when that also has been breached any aircraft which has not attacked is to be diverted to the Sorpe Dam.

17. Both the Moehne and Eder Dams are to be attacked at right angles to the length of the dam, from 60 feet at 220 m.p.h., using the special range finder. Aircraft are to operate singly under the direction of the leader. Aircraft diverted to the Sorpe Dam are to use the tactics adopted by the 2nd. Wave. No. 2 of the first wave is to be deputy leader for the attack on the Moehne Dam with No. 3 as second deputy. At the Eder Dam No. 4 is to be Deputy with No. 7 second deputy. All other aircraft are to return to base by specified routes after completing their attack.

18. The 2nd. Wave (5 aircraft) is to take the northern route, to the Sorpe Dam, crossing the enemy coast in close concentration (not in formation) at the same time as the 1st. Wave, but at a different point. Aircraft of this wave will be controlled on the alternative V.H.F. channel. Attacks are to be made from the lowest practicable height at a speed of 150 m.p.h. Aircraft are to return to base independently by specified routes.

19. The 3rd. Wave is to consist of the remaining aircraft, forming an airborne reserve under the control of Group Headquarters. They are to fly to the Moehne Dam in close concentration, but not in formation, at low level, by the southern route, passing position 51⁰⁵²' N. 03⁰⁰⁰'E. 2½ hours after the leading section of the 1st. Wave. Orders for the 3rd. Wave will be passed to all aircraft on the special Group frequency, if possible before they reach the enemy coast, instructing them which target to attack. This wave may be recalled if the 1st. and 2nd. Waves have reported that all the targets have been breached. Failing the receipt of orders from Group, the aircraft are to proceed to the Moehne, Eder and finally last resort targets (Lister, Schwelme and Ennepe Dams) in that order, attacking any that have not been breached. Tactics are to be the same as those of the 1st. Wave when attacking the Moehne and Eder Dams, except that attacks on last resort targets are to be made independently. The return is to be made along the briefed homeward route, at low level, singly.

20. When attacking all targets the pilot is to be responsible for line, the navigator for height, the air-bomber for range and the flight engineer for speed. The interval between attacking aircraft is not to be less than 3 minutes, and all aircraft are to fly left-hand circuits, keeping as low as possible while awaiting their turn. On all targets except the Sorpe Dam each aircraft is to fire a red Vorey cartridge immediately over the dam during the attack. Aircraft attacking the Sorpe Dam are each to fire a red cartridge as the mine is released.

TIMING OF ATTACK.

21. The time of attack of each target by each wave is not important to within a few minutes. The time of crossing the enemy coast is, however, vital. Zero hour, 2248 hours, is the time at which the 1st. Wave is at

is at 51°52' N. 05°00' E. and the 2nd. Wave at 53°19' N. 04°00' E. The first 2 waves are to cross the enemy coast at 2302 hours, and the 3rd. Wave at 0132 hours.

CEE

22. The Eastern Chain is to operate on the target frequency throughout the raid.

WIRELESS SILENCE.

23. Strict W/T and R/T silence is to be maintained until after Z + 30 minutes for the 1st. and 2nd. Waves and Z + 3 hours for the 3rd. Wave. Any aircraft returning early is neither to break W/T or R/T silence nor to identify on the M.F./D.F. before this time, according to the wave in which it is flying. If the aircraft returns before Z + 30 minutes for the 1st. and 2nd. Waves or Z + 3 hours for the 3rd. Wave, it is to cross the English coast at 1,500 feet at the point of exit and proceed direct to base or the nearest suitable airfield.

METEOROLOGICAL FORECAST.

24. Anti-cyclone over the British Isles, spreading E.
Home Bases: Fine, with moderate visibility.
Denmark and North Sea coast of Germany: broken medium cloud and broken strato-cumulus cloud. Extreme S. and E. of Germany; scattered thunderstorms
Remainder of Germany: fine, with good visibility.
Berlin and Ruhr: cloudless but slight risk of well broken strato-cumulus at 2-4,000 feet towards dawn in Ruhr. Visibility good at Berlin and Munster, ground haze in Ruhr.
Frisians: small amounts of strato-cumulus cloud at 2-3,000 feet; good visibility.
France: fine, with moderate to good visibility.
Winds: W. of 05°00' E. North-westerly, less than 6 m.p.h.
05°00' E. - 05°30' E. 360°-030°/10 m.p.h.
Target area. 045°/30-35 m.p.h.

WEATHER EXPERIENCED.

25. Home Bases: fit all night.
Routes: small amounts of cloud, mainly high, moderate to good visibility.
Targets: small amounts of cloud, moderate to good visibility.
Ground haze in valleys after 0300 hours. Almost full moon, rising at 1100 hours and setting at 0431 hours.

AIRCRAFT DESPATCHED.

26. 1st. Wave: Leader, aircraft "G".
 Section 1. "G", "M", "P".
 Section 2. "I", "J", "L".
 Section 3. "Z", "B", "H".
2nd. Wave: "E", "K", "N", "W", "T".....5
3rd. Wave: "C", "S", "F", "O", "Y".....5

SUMMARY OF INDIVIDUAL RESULTS.

27. { "G" - Attacked Kochen Dam.
 " M" - " " " Missing.
 " P" - " " " "
1st. Wave { "A" - " " " Missing. Dr. breached.
 " J" - " " " 2nd. breach made.
 " L" - " Eder Dam. Small breach made.
 " Z" - " " " Missing.

- 1st Wave { "D" - Missing before target was reached.
 "H" - Attacked Eder Dam. Large breach.
- 2nd Wave { "E" and "K" - Missing, one at least before target was reached.
 "R" and "W" - Returned early.
 "T" - Attacked Serpe Dam. Crown of dam crumbled.
- { "C" - Missing. Detailed to attack Lister Dam, but no confirmation of the attack was given.
 "S" - Missing before reaching target.
- 3rd Wave { "P" - Attacked Serpe Dam. Top of dam crumbled further.
 "O" - Attacked Schwelme Dam.
 "Y" - Detailed to attack Lister Dam, which could not be found owing to mist in the valleys.

NARRATIVE OF ATTACK.

28. Moehne Dam. Eight aircraft of the 1st. Wave reached the Moehne Dam, the ninth being shot down en route. The plan of attack was followed exactly, 5 aircraft being required to breach the dam adequately. The attacks of the first 3 aircraft, though accurate, did not appear to affect the dam, but 2 adjacent breaches appeared after the fourth and fifth attacks. These breaches were estimated to cover 30 yards of the dam, and almost immediately water poured through them, inundating the power house below the dam. The river rose rapidly. Aircraft "F" of the 3rd. Wave, which flew over the Moehne Dam after attacking the Serpe Dam, reported that powerful jets of water were pouring through 2 large breaches. A sheet of water 7 miles long was seen by aircraft "O" returning from the Schwelme Dam.

29. Eder Dam. This dam was also attacked according to plan, by the 3 remaining aircraft of the 1st. Wave. The operation was controlled by aircraft "G", and 3 attacks were made. The first caused a breach estimated to be 9 feet wide on the eastern side of the dam, and the third a large hole below the top of the dam. The second aircraft "Z" reported an overshoot. It is believed that this aircraft was damaged and brought down by its own mine, which detonated on the parapet of the dam. A torrent of water was seen pouring through the breaches, causing a wall of water about 30 feet high to sweep down the valley.

30. Serpe Dam. Only one aircraft ("T") of the 2nd. Wave is known to have reached the Serpe Dam. An accurate attack, using the special method devised for this particular dam, resulted in the crown of the dam crumbling for a distance of 15 to 20 feet. "Y" of the 3rd. Wave attacked this dam 2½ hours later, causing the top to crumble over a much greater distance. No apparent leak was started.

31. Lister Dam. Orders to attack the Lister Dam were received by "Y" of the 3rd. Wave, but mist in the valleys made recognition difficult, and this aircraft failed to find its target. "C" was also detailed to attack this dam, but no message was received from this aircraft after the order was acknowledged at 0235 hours.

32. Schwelme Dam. Aircraft "O" of the 3rd. Wave was instructed to attack the Schwelme Dam. The mine exploded about 50 feet from the dam, and no damage was seen.

33. Ernepe Dam. No attack was made on this dam since no aircraft was available.

DANLIGHT RECONNAISSANCE.

34. Moehne Dam. Photographs taken on 17th May show a breach in the centre of the dam between the 2 valve houses. The breach measures 230 feet at the top and about 150 feet at the base. Water was seen pouring through the gap into the compensating basin, and the level of the water in the reservoir had fallen considerably. The main power station at the foot of the dam/had completely

had completely disappeared, but the auxiliary power station remained standing. The northern embankment of the compensating basin was completely destroyed and the southern embankment broken in several places.

35. Part of the village of Guenne below the dam was swept away, but between Guenne and Neheim (at the confluence of the Moeche and the Ruhr) the water was confined to the Moeche Valley. Further downstream several villages were flooded, the damage being particularly severe at Froendenberg, where canal embankments were destroyed and the power station isolated. The railway bridge and the road bridge were swept away, the railway station and sidings were inundated and a small factory was partly under water. At Langschede the bridge was partly submerged, and the water-works flooded, while the railways between Neheim and Froendenberg and between Neheim and Niederense were partly submerged, and in parts washed away. Floods were spreading towards Boesperde, up the valley of the small river Hoerne.

36. Photographs taken on the following day show that the reservoir was almost empty, and that the breach extended to the foundations of the dam, which were destroyed for a length of 70 feet on the upstream side. 2 bridges at Neheim, a small power station at Niederense, and a bridge at Wickede were washed away, and a canal at Froendenberg was silted up.

37. On the 19th. May photographs were taken of the lower reaches of the Ruhr Valley, below Schwerte. These showed considerable flooding between Schwerte and Hattingen, and while the effects of the flooding were less serious than in the upper reaches, the floods had not receded so quickly, and many factories were still standing in water. Near Mulheim and Duisburg there was little flooding of built-up property, the water being only in low-lying open ground. The most vital damage caused was the fracture of the railway viaduct near Herdecke, between Dortmund and Hagen. It is estimated that the total area inundated as a result of the breaching of the Moeche-Dam was 32 square miles.

38. Eder Dam. No photographic cover of the Eder Dam was obtained on 17th May, but serious flooding in the Eder valley was photographed. At Bringhausen the storage power station was inundated, and the whole valley between Hemfurth and Affeldoorn was under water. The village of Affeldoorn was partly submerged, the power station flooded, many houses demolished, and the approaches to the bridge and the embankment were washed away. The whole area between Wabern and Nelsberg, about 16 miles from the dam, was under water, and railway sidings and the station at Wabern flooded. Isolated houses showed above the water but the railways, roads and bridges were still submerged. The floods spread as far south as Utterhausen.

39. On 18th. May, the Eder Dam itself was photographed. A breach, 180 feet wide at the top and 100 feet at the base, was seen 400 feet from the south end of the dam. The water in the lake was almost drained, but was still pouring through the gap. Floods in the country up to 20 miles downstream were rapidly subsiding, but part of the town of Kassel was still under water. There was much evidence of the wide extent of the flooding and of the havoc caused by the rushing water. More bridges were destroyed and roads and railway tracks were silted up. Hangers, barracks, the ammunition dump and the landing ground at the Fritaler Airfield had been submerged, but the water had subsided; several huts were destroyed. It is estimated that at least 27 square miles of country below the dam were inundated.

40. Further photographs of the Eder Dam were taken on 17th July. These show that the Eder reservoir had been drained and that preparations were being made for probable reconstruction of the dam. Hatted camps had been built, and road and railway bridges built or repaired along the entire stretch of the valley photographed.

41. Sorpe Dam. On 17th May the crown of the dam was damaged over 200 feet of its length. The upstream parapet, which was part of the concrete core, and the downstream parapet had disappeared. The concrete core was visible over some distance, and had been exposed to a depth at which it was about 6 feet thick. A raised object about twice the height of the parapet was seen blocking the roadway at the point of greatest damage. Photographs taken 2 days later showed 2 distinct cavities, the deeper penetrating to the upstream side of the concrete core, which was exposed over a length of 35 feet, almost to water-level. Debris had been removed and preparations appeared to have been made to repair the dam. The downstream face of the dam below the break was discoloured by earth and gravel which was washed over the edge of the dam during the attack.

42. Schwelme, Lister and Erpepe Dams. No apparent damage was caused to these 5 dams.

ABOPTIVE SORTIES.

43. 1st. Wave - None.

2nd. Wave - "W" was damaged by flak at Vlieland, and returned early.

"H" flew too low over the Zuider Zee, and struck the water, losing the special mine. This aircraft also returned early.

3rd. Wave - "Y" reached the target area, but failed to find the Lister Dam owing to mist in the valleys.

ENEMY DEFENCES

44. Light flak was experienced over Vlieland, no further opposition being met by aircraft which kept on track until the Mochne Dam was reached, where both flak and searchlights were encountered. One Lancaster was shot down and another damaged in each of these areas. Light flak was experienced en route by other aircraft which were probably off track, two being damaged and possibly 4 shot down. No enemy aircraft was encountered.

CASUALTIES.

45.	No. of aircraft despatched.....	19
	" " " Missing.....	8
	" " " damaged { flak.....1	} ... 5
	{ fighters..... NIL	
	{ other causes.....1	

Aircraft "Z", which is missing, was damaged by its own mine, which detonated on the parapet of the Eder Dam. The crash was not observed, but this damage is believed to have brought down the aircraft. "S" exploded in mid-air near Tilburg; the reason for the explosion is unknown. 4 of the 6 other missing aircraft are known to have been shot down by light flak; "B" near Dorsten, "M" at the target (the Mochne Dam) after attacking, "K" or "E" near Texel and "K", "P", "C" or "A" near Hamm. "S", "B" and the aircraft which came down near Texel were lost on the outward route. If the aircraft which came down near Hamm was "K", "E" or "A" it was returning, but if it was "C" it was on the outward route. It is thought probable that light flak also brought down the 2 remaining missing aircraft.

Aircraft "H" hit the sea, and was seriously damaged, but returned safely.

BERLIN, DUSSELDORF, MUNSTER AND COLOGNE.

46. No. 1 Group despatched 19 Mosquitoes to Berlin (3), Dusseldorf (2), Munster (2) and Cologne (2). 2 aircraft bombed each target from a high level, but the only result seen was 2 fires in the centre of Dusseldorf. The third Berlin sortie attacked Kiel, owing to petrol shortage. No opposition was encountered, and all the aircraft returned undamaged.

MINE-LAYING.

Sorties.

47.	No. of aircraft despatched.....	54
"	" " " laying mines in allotted areas.....	50
"	" " mines laid.....	154
"	" " abortive sorties { technical defect.....1	}..... 3
	{ weather.....1	
	{ mines planted wild.....1	
"	" " aircraft missing.....	1

Narrative.

48. 54 aircraft were despatched to lay mines off the Prison Islands (36), St. Nazaire (6), Brest (6) and Lorient (6). The mission was completed by 50 aircraft, 3 returned early and one is missing without trace. Neither flak nor fighters damaged any of the aircraft, but one Stirling was hit by machine-gun fire from another Stirling.

LEAFLETS.

49. 4 Wellingtons scattered leaflets over Orleans, returning without incident.

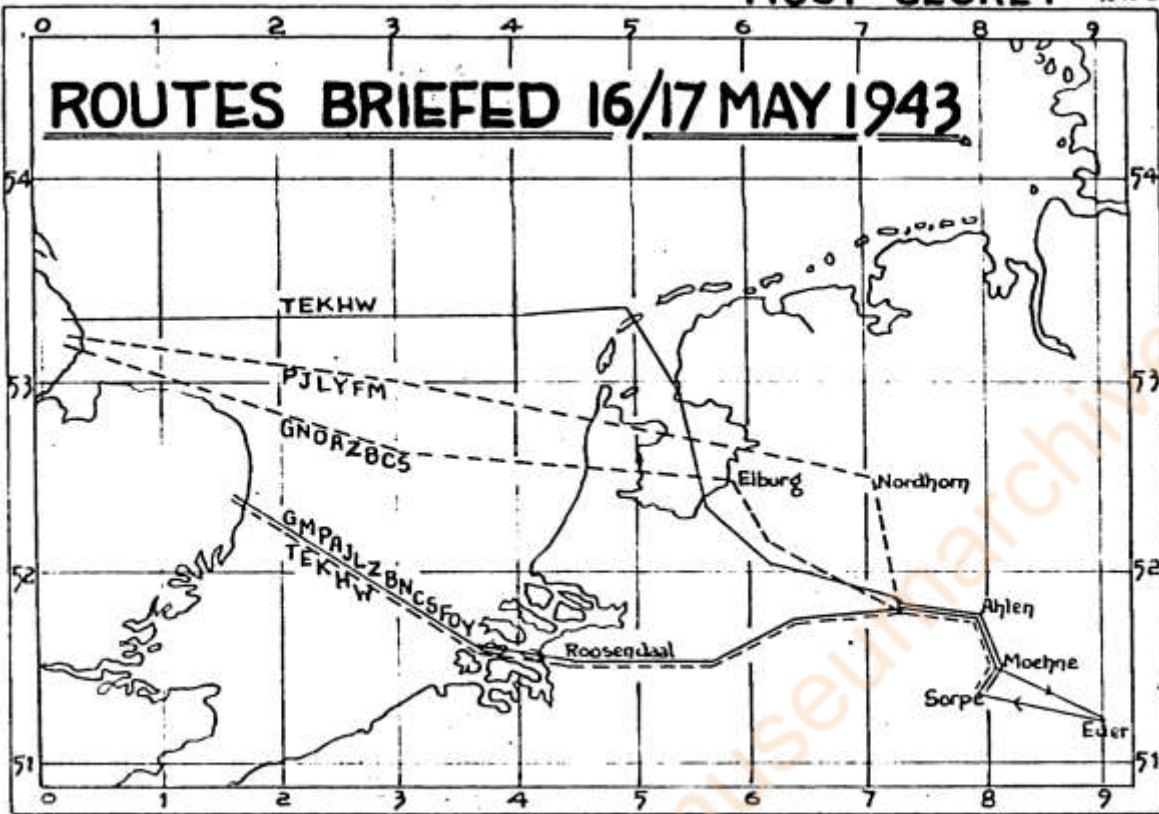
E.M.C./E.M.O.
BC/S.20312/S/O.R.S.
30th August, 1943.

TARGET	WAVE	GROUP	TYPE	SORTIES	A/C REPORTING ATTACK ON		ABORTIVE SORTIES		MISSING	DAMAGE			INTENTIONS		RESULTS	
					PRIME AREA	ALT. AREA	OVER EN. TERRIT.	NOT OVER EN. TERRIT.		FLAK	FIGHTER	NOT I/A	ATT-ACKED	NOT ATTACKED	Tons of Bombs	
															H. E.	Inc.
MOELLE DAM	1	5	Lanc. III.G.	6	5	-	-	-	3(2*)	1.0	-	-	-	(P)	20.2	-
EDGE DAM	1	5	Lanc. III.G.	3	3	-	-	-	1(1*)	-	-	-	-	(P)	12.1	-
SORPE DAM	2	5	Lanc. III.G.	5	1	-	2	-	2	1.0	-	1.0	-	(P)	8.0	-
	3	5	Lanc. III.G.	1	1	-	-	-	1.0	-	-	-	-			
LISTER DAM	3	5	Lanc. III.G.	3	-	-	1	-	2	-	-	-	-	(P)	-	-
SCHWELME DAM	3	5	Lanc. III.G.	1	1	-	-	-	-	-	-	-	-	(P)	4.0	-
			TOT. L.	19	11	-	3	-	8(3*)	3.0	-	1.0	-			
BRUNN	-	2	Mess. IV.	3	2	1	-	-	-	-	-	-	-	(P)	1.8	-
														(P)	0.9	-
DUSSELDORF	-	2	Mess. IV.	2	2	-	-	-	-	-	-	-	-	(P)	1.8	-
MUNSTER	-	2	Mess. IV.	2	2	-	-	-	-	-	-	-	-	(P)	1.8	-
COLOGNE	-	2	Mess. IV.	2	2	-	-	-	-	-	-	-	-	(P)	1.8	-
BOMBING TOTAL				26	19	1	3	-	8(3*)	3.0	-	1.0	-			
										+1						
HINDEL YING																
PRESLIN IS.	-	3	Stur. I	6	6	-	-	-	-	-	-	-	-		35 mins	
			Stur. III	7	7	-	-	-	-	-	-	-	-		10 "	
			Lanc. II	2	2	-	-	-	-	-	-	-	-		12 "	
ST. V. ELINE	-	4	Well. X	5	5	-	-	-	-	-	-	-	-		12 "	
BRESE	-	4	Well. X	6	2	-	-	-	1	-	-	-	-		10 "	
LORENT	-	4	Well. X	6	5	-	-	-	1	-	-	-	-		10 "	
PRESLIN IS.	-	6	Well. X	21	19	-	-	-	2	-	-	-	-		37 "	
HINDEL YING TOTAL				54	50	-	-	-	3	-	-	1	-		154 mins	
LE. FLATS	-	92	Well. III	3	3	-	-	-	-	-	-	-	-			
ORLEANS			Well. X	1	1	-	-	-	-	-	-	-	-			
TOTAL				86	73	1	3	3	9(3*)	3.0	-	1.0	-			
										+1						

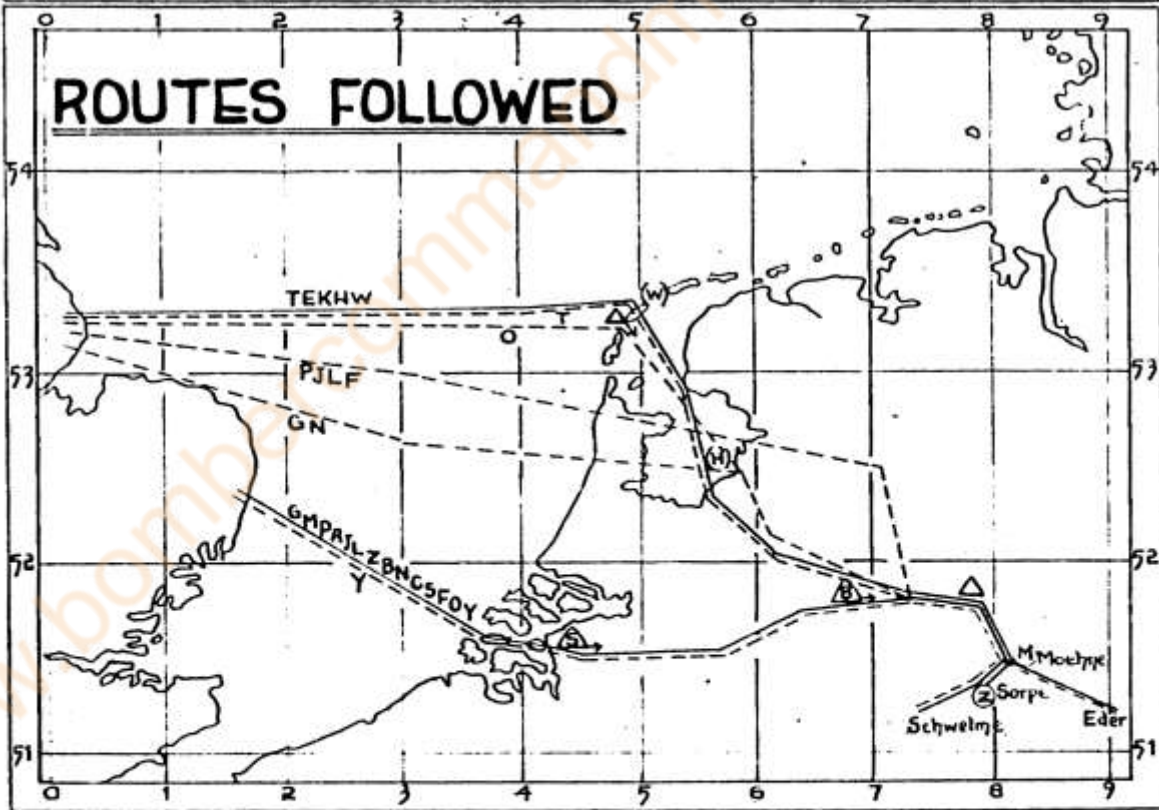
* Attacked Target.

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ROUTES BRIEFED 16/17 MAY 1943



ROUTES FOLLOWED



LEGEND

- Outward routes
- Homeward routes
- △ Aircraft "S" missing at this point; arrow denotes direction of flight.
- ⊙ Aircraft "M" missing at target. △ Other aircraft seen to crash.
- (W) Aircraft "W" turned back at this point, abortive

ORS/BC 223B
 Date: 21 8 43
 Ref: N/R 330
 Tracer: J.D.
 Chkd: E.M.D.

BOMBER COMMAND REPORT ON NIGHT OPERATIONS, 17/18th N.Y., 1943.MUNICH: Minelaying.SUMMARYMunich

1. 3 Mosquitoes of 2 Group were despatched on a nuisance raid against Munich. 2 attacked the target, their bombs falling in the N. and N.E. of the town. The third aircraft, unable to locate the primary, reported bombing Strasbourg and starting a fire W. of the city centre.

Minelaying

2. 6 Stirlings and Lancasters of 3 Group left on a mining operation to La Pallice. 5 completed their task, laying 22 mines. One aircraft did not return.

Meteorological Forecast

3. Midnight frontal positions:- occlusion from $61^{\circ}N 25^{\circ}E$ to $56\frac{1}{2}^{\circ}N 16^{\circ}E$, becoming warm to $52^{\circ}N 06^{\circ}E$ and cold to $54^{\circ}N 04^{\circ}E$ to $54^{\circ}N 01^{\circ}E$.

Home Bases:- Fine: 2,000 yards visibility, except locally in 2 and 3 Groups, where fog may form by 0100 hours.

Germany:- Broken layers of strato-cumulus and low stratus over North Sea coast; thence, broken strato-cumulus to warm front. Little cloud in central and S.Germany. Berlin and route: almost cloudless to Danish coast, thence 5-8/10ths strato-cumulus and medium cloud in well-broken and well-spaced layers between 5,000' and 12,000'. Moderate visibility. Munich and route: no cloud apart from a little cirrus. Hazy. Moderate visibility.

France:- Fine. No cloud. Good visibility.

Sorties

		Munich	Minelaying
4.	(a) No. of aircraft despatched.....	3	6
	(b) " reporting attack on prin. area....	2	5
	(c) " " alt. area.....	1	Nil
	(d) " missing.....	Nil	1

Weather Experienced

5. Home Bases:- Fine.
Munich:- No cloud. Excellent visibility.
La Pallice:- No cloud. Excellent visibility.

Moon above the horizon and 85% of full.

Enemy Defences

6. (a) Munich

Searchlights and some heavy flak, reported as inaccurate, were in action at Mannheim, Augsburg, and Munich. Many searchlights exposed on the Swiss shores of Lake Constance. No damage due to flak was reported. Enemy

...../Wireless

wireless traffic revealed some activity by controlled fighters over Holland and Western Germany but no pursuits or attacks developed.

(b) N. France

Crews reported light tracer from the French coast N. of Bayeux, and one searchlight on Ile de Re (N. of target area).

Controlled fighter patrols over the Breat Peninsula were detected from enemy wireless traffic. One claim from an unknown area that an aircraft had been shot down may have referred either to the missing bomber, or to one of Fighter Command's intruders lost on this night.

Casualties

7. 1 of our minelaying aircraft was missing. Nothing is known of its fate. None of our aircraft reported damage.

MLM/VP.
BC/S. 26342/2/ORS.
28th July, 1943.

17/18th May, 1943. MESSICK: Minelaying

Target	Group	Type	Sorties	A/C reporting attack on		Abortive sorties		Missing	Damage			Interceptions		Results	
				prim. area	alt. area	over en. territ.	not over en. territ.		flak	fighter	not R/L	attacked	not attacked	Tons of Bombs	
														H.E.	Inc.
MESSICK	2	Boeq. IV	3	2	1	-	-	-	-	-	-	-	-	(P) 1.8	-
MINELAYING	3	Stir. I	2	2	-	-	-	-	-	-	-	-	-	8 mines	-
LA PALLETTE		Stir. III	3	2	-	-	-	-	-	-	-	-	-	8 mines	-
		Lease. II	1	1	-	-	-	-	-	-	-	-	-	6 mines	-
MINELAYING TOTAL			6	5	-	-	-	1	-	-	-	-	-	22 mines	-
TOTAL			9	7	1	-	-	1	-	-	-	-	-		

P = Primary
.. = alternative

BOMBER COMMAND REPORT ON NIGHT OPERATIONS, 18/19th MAY, 1943.MINELAYINGSUMMARY

17 Lancasters and Wellingtons of 1 and 6 Groups were detailed on a minelaying operation off the French Atlantic coast. 14 reached their targets, laying 67 mines. No losses were sustained.

Metereological Forecast

Home Bases:- An anti-cyclone is moving slowly N.E. over the British Isles. All Groups will be fit at dusk. 1,3,5 and 8 Groups expect no trouble from low stratus or fog, but 2,4 and 6 Groups will probably be affected by 0300, (coastal stations 0100). Diversions to Training Groups, and S.W.

Germany:- There are no fronts of any significance over the continent. Weather conditions over Germany will generally be fine. Clear sky at Berlin.

W.France:- Clear skies. Risk of thunder S. of La Pallice. Visibility good.

Statistics

(a)	No. of aircraft despatched.....	17
(b)	" reporting mines laid in primary area....	14
(c)	" abortive sorties (weather.....2) (technical defect.....1)	3
(d)	" aircraft missing.....	0
(e)	" mines laid.....	67

Weather Experienced

Home Bases:- Very patchy low stratus near East Coast at 0300, became general in E. and S. England by 0600, but many stations remained fit until 0500.

W.France:- Cloudless to 46°N. Low stratus (base 600') off Gironde Estuary. Much layer cloud at 2,000 in Biarritz area. Visibility good. Moon above the horizon and 90% of full.

Enemy Defences

Light flak was encountered from several coastal points, as well as some heavy flak from Nantes, La Pallice and Biarritz.

29 sorties were made by controlled fighters, 2 of which were active against British aircraft; but no fighters were observed by our crews.

Casualties

All our aircraft returned safely. No damage was incurred as a result of enemy action. One aircraft hit the sea while taking evasive action and damaged its port propeller and fuselage.

W/VP.
S. 26342/2/ORS.
18th July, 1943.

MIDDELAYING 18/19th May, 1943.

Target	Gp.	Type	Sorties	W/C reporting	abortive sorties	Missing	Damage	Interceptions	Results
				attack on primary area	not over en. territ.		not on action		
ST. JEAN DE LUZ	1	Lanc. I	2	2	-	-	-	-	12 mines
GIRONDE	1	Lanc. I	4	4	-	-	-	-	30 mines
		Lanc. III	1	1	-	-	-	-	
BAYONNE	1	Lanc. I	1	-	1	-	-	-	17 mines
		Lanc. III	5	3	2	-	-	-	
BRST	6	coll. X	4	4	-	-	1AC	-	8 mines
TOTAL	1		17	14	3	-	1AC	-	67 mines

www.bombercommandmuseumarchives.ca

BOMBER COMMAND REPORT ON NIGHT OPERATIONS, 19/20th MAY, 1943.BERLIN: LeafletsSUMMARYBerlin

6 Mosquitoes of 2 Group were detailed on a nuisance raid against the German capital. 2 attacked the primary from 20-21,000'. The city was clearly seen and the bombs are believed to have fallen in the centre and E.E. One aircraft, experiencing engine trouble, bombed Westerland aerodrome on the Isle of Sylt, and the others returned early for technical reasons. No losses or casualties were sustained.

Leaflets

5 Wellingtons of 91 Group successfully dropped leaflets in the Orleans area.

Meteorological Forecast

Home Bases:- Minor front at midnight from Central Ireland to S.W. England to N.W. France. Operational bases will generally remain fit all night, with local fog or mist forming before dawn. Risk of low stratus in East Anglia. Low cloud at 1,000' in Training Groups and S.W. by 0300.

Germany:- Little cloud. Berlin: fine, with moderate visibility.

France:- Isolated thunderstorms inland. Broken layer cloud at 1,000' in N.W. 8-10/10ths strato-cumulus at 1,500' in S.W., with patches at 600-1,000'.

Sortics

		<u>Berlin</u>	<u>Leaflets</u>
(a)	No. of aircraft despatched.....	6	5
(b)	" reporting attack on prim. area....	2	5
(c)	" " alt. area....	1	Nil
(d)	" abortive sortics (technical defect).....	3	Nil
(e)	" aircraft missing.....	Nil	Nil

Weather Experienced

Home Bases:- Fine. Mist and fog patches near E. coast. Widespread mist in S.W.

Berlin & Orleans:- No cloud. Slight haze. Good visibility.

Enemy Defences

A little inaccurate heavy flak, assisted by a few searchlights, was experienced over Berlin at 20,000' and intense and fairly accurate flak at 19,000' in the area of Wilhelmshaven. No aircraft was hit.

35 sortics by controlled fighters were heard. 7 of these were active against British aircraft, mostly in areas which were not identified. In one instance Mosquitoes were mentioned. No attack developed.

Casualties

None.

LM/VP.
EC/S. 26342/2/ORS.
30th July, 1943.

BERLIN: Leaflets 19/20th May, 1943.

Target	Group	Type	Sorties	A/C reporting attack on		Abortive sorties		Missing	Damage			Inter-ptions		Results	
				prim. area	alt. area	over on. territ.	not over en. territ.		flak	fighter	not R/A	attacked	not att.	Tons of Bombs	
														H.E.	Inc.
BERLIN	2	Nonq. IV	6	2	1	-	3	-	-	-	-	-	1	(P) 1.8 (A) .9	-
LEAVILLETS ORLEANS	91	Well. Ic	5	5	-	-	-	-	-	-	-	-	-		
TOTAL			11	7	1	-	3	-	-	-	-	-	1		

(P) = Primary
(A) = Alternative

www.bombercommandmuseumarchives.ca

BOMBER COMMAND REPORT ON NIGHT OPERATIONS, '20/21st MAY, 1943.BERLIN: MINELAYINGSUMMARYBerlin

1. 3 Mosquitoes of 2 Group set out on another nuisance raid against Berlin. 2 attacked, their bombs being observed to fall near the centre of the city. The other aircraft returned early with engine trouble. One aircraft sustained slight damage from flak.

Minelaying

2. 17 Lancasters and Stirlings of 1 and 3 Groups, out of a force of 23, laid 80 mines off the French Atlantic coast without loss.

Metereological Forecast

3. Home Bases:- Little or no cloud, except in Devon and Cornwall. Local visibility troubles from 0300, becoming general in low lying areas.

Germany:- Isolated thunderstorms in S.W. Otherwise fine, with moderate to good visibility, local fog over North Sea.

W. France:- Risk of fog and low cloud in Brest area. S. of La Pallice: 7-10/10ths at 2,000', with slight chance of patches of low stratus.

Sorties

	<u>Berlin</u>	<u>Minelaying</u>
4. (a) No. of aircraft despatched	3	23
(b) " " reporting attack on prim. area	2	17
(c) " abortive sorties (technical defect..1) (weather.....Nil)	1 (....3)	6 (....3)
(d) " aircraft missing.....	Nil	Nil
(e) " mines laid.....		80

Weather Experienced

5. Home Bases:- Low mist or fog in East Anglia by 0300, becoming widespread by dawn. Local fog elsewhere. Slight showers in Lincolnshire and S. Yorkshire, cloud base 2,000'.

Berlin:- Variable layer cloud over North Sea, base 5-6,000'. Hazy. No cloud over target; visibility moderate.

W. France:- Variable convection cloud over England, base 5,000', tops 8,000', increasing to 10/10ths over Channel and N.W. France; tops 10-12,000', with slight icing and static. Target areas: variable medium cloud. Sea fog and low stratus at St. Nazaire. 4-6/10ths low cloud, base 1,000', tops 4,000' at La Pallice (locally 10/10ths.) Further S., scattered patches of cumulus. Winds light.

Moon above the horizon and 90% of full.

..../Enemy Defences

Enemy Defences

6. Intense heavy flak was encountered over a wide area around Berlin. One aircraft was held in searchlights and passed from one cone to another for 14 minutes at 20-22,000'. One incident of slight damage was reported. Our minelayers had to contend with flak from several coastal points, and one was hit.

On this night, altogether 46 sorties were made by enemy controlled fighters, 17 of which were active against British aircraft. 2 attempted interceptions were heard, but no combats and no claims. One of our mining aircraft sustained slight damage from a fighter in the Gironde area.

Casualties

7. Apart from the above-mentioned incidents of flak and fighter damage, and a heavy but not fatal landing by one of our minelayers, no damage or casualties were incurred. All our aircraft returned safely.

MLH/VP.
BC/S. 26342/2/ORS.
30th July, 1943.

BERLIN: MINELAYING 30/21st July, 1943.

Target	Group	Type	Sorties	A/C reporting attack on		Abortive sorties		Missin	Damage			Interceptions		Results		
				prim. area	alt. area	over on. territ.	not over on. territ.		Flak	fighter	not B/A	att-acked	not attacked	Tons of Bombs	H. E.	Inc.
BERLIN	2	Nonq. IV	3	2	-	-	1	-	1	-	-	-	-	-	(P) 1.8	
MINELAYING	1	Lanc. I	1	-	-	-	1	-	-	-	-	-	2	-		
GIRONDE		Lanc. III	6	3	-	-	3	-	1	-	1/C	-	-	-	18 mines	
ST. JEAN	1	Lanc. III	2	2	-	-	-	-	-	-	-	-	-	-	12 mines	
DE LAZ															(12 x 1000 lb.)	
RAYONS	1	Lanc. I	4	3	-	-	1	-	-	-	-	-	4	-	24 mines	
		Lanc. III	1	1	-	-	-	-	-	-	-	-	-	-	(22 x 1000 lb.)	
LA P. LAZ	3	Str. III	2	2	-	-	-	-	-	-	-	-	-	-	8 mines	
GIRONDE	3	Str. III	7	6	-	-	1	-	-	1/C	-	1	2	-	18 mines	
MINELAYING	TOTAL		23	17	-	-	6	-	1	1/C	1/C	1	5	-	80 mines	
TOTAL			26	19	-	-	7	-	2	1/C	1/C	1	5	-		

P=Primary

BOMBER COMMAND REPORT ON NIGHT OPERATIONS, 21/22nd MAY, 1943.BERLIN: Minelaying.SUMMARYBERLIN

1. 4 Mosquitoes of 2 Group were despatched on the third nuisance raid against the German capital in as many nights. 3 attacked the primary; their bombs are believed to have fallen in the S.W. and E. of the city. The fourth aircraft ran into a severe electrical storm near Lingen and jettisoned its bombs singly. No losses were sustained.

Minelaying

2. 104 aircraft of 1,3,4 and 6 Groups were detailed on a mining operation to the Frisians and the Bay of Biscay. 87 reached their targets, laying 226 mines. 4 aircraft did not return, and one was destroyed on landing.

Meteorological Forecast

3. Home Bases:- Fit at dusk, except locally in 6 Group. Visibility worries from Tynemouth to Yarmouth after 0100, spreading to 2 and 6 Groups by 0300. Radiation mist or fog in 1 Group after 0200 hours and locally elsewhere after 0400. 3 and 8 Groups fit all night.

Germany:- Isolated thunderstorms as far E as Hanover and Stuttgart, with very variable broken medium and high cloud. Large clear areas. Further E., fine weather and good visibility.

W.France:- Well broken cumulus and strato-cumulus at 1,500-2,600'. Visibility moderate, locally poor.

Frisians:- Little cloud. Chance of local thunder.

Sorties

		<u>Berlin</u>	<u>Minelaying</u>
4.	(a) No. of aircraft despatched.....	4	104
	(b) " reporting attack on primary area.....	3	87
	(c) " reporting attack on alternative area.....	1	Nil
	(d) " abortive sorties (technical defect.....9) (weather.....2) (planted wild.....1)		12
	(e) " aircraft missing.....	Nil	4
	(f) Result unknown (a/c crashed on return).....	Nil	1
	(g) " mines laid.....		276

Weather Experienced

5. Home Bases:- Fog and low stratus affected 4 and 6 Groups and the coastal strip of East Anglia by 0200, covering 1,2,4 and 6 Groups by dawn.

Berlin:- Small amounts of layer and convection cloud over the North Sea; thick sea fog off English coast. Heavy convection as far inland as 11°E. Tops at times to 2,000' with static. No cloud E. of 11°E., apart from a little cirrus. Very hazy over Continent.

Frisians:- Small amounts of layer and convection cloud. Hazy. Very light winds.

S.W. France:- Little or no cloud.

Moon above the horizon and 35% of full.

Enemy Defences

6. (a) Flak & Searchlights

Slight light flak was encountered from the Frisians, and from ships lying off Texel and Vlieland. One aircraft sustained minor damage. Heavy flak was also fired from several points on the French Atlantic coast, notably Pointe de la Coubre, Pointe de Grave, Bayeux and Nantes, but no damage was incurred in this area. One Mosquito was hit over Berlin, and returned on one engine.

(b) Fighters

Controlled enemy fighters flew 36 sorties, 11 of which were active against British aircraft. Few of these, however, had any apparent connection with Bomber Command activities, and the one claim that was overheard could not have related to any of the missing minelayers.

Casualties

7. 4 minelayers did not return, 3 from the Frisians and one from the Gironde Estuary. Nothing was heard from any of these aircraft. There is no evidence how they were lost, and only one possible observation near Ameland. All must be attributed to causes unknown.

HLM/VF.
BC/S. 26342/2/ORS.
30th July, 1943.

21/22nd July, 1943.

RECON. Birmingham

Target	Group	Type	Sorties	W/O reporting attack on		Abortive sorties		Wings	Damage			Interceptions		Results	
				prim. area	alt. area	over en. territ.	not over en. territ.		Flak	fighter	not 2/4	attacked	not attacked	Loss of Bombs	H.E.
RELU	2	Hesperite IV	4	3	1	-	-	-	1	-	-	-	1	-	(P) 2.7 (A) .9
LIDEL YING FRISLES	1	Hell. X	26	25	-	-	1	-	-	-	-	-	2	-	50 mines
	3	Stir. I	4	4	-	-	-	-	-	-	-	-	-	-	135 mines
		Stir. III	20	18	-	-	2	-	-	-	-	-	-	-	
		Long. II	3	3	-	-	-	-	-	-	-	-	-	-	
L. PALACE	3	Stir. III	3	4	-	-	1	-	-	-	-	-	2	-	16 mines
GERAGE	3	Stir. I	3	2	-	-	1	-	-	-	-	-	-	-	
		Stir. III	4	3	-	-	-	1	-	-	-	-	-	-	21 mines
		Long. II	1	1	-	-	-	-	-	-	-	-	-	-	
FRISLES	4	Hell. X	14	11	-	-	1	2	-	-	-	-	-	-	22 mines
	6	Hell. X	24	16+4*	-	-	6	1	1	-	1E	-	-	-	32 mines
LIDEL YING	TOTAL		104	87+1*	-	-	32	4	1	-	1E	-	4	-	276 mines
TOTAL			108	90+1*	1	-	12	4	2	-	1E	-	5	-	

(* result unknown - W/O crashed on return)

(P) = On Primary
(A) = On Alternative

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BOMBER COMMAND REPORT ON NIGHT OPERATIONS, 23/24th MAY, 1943.DORTMUND: Leaflets.SUMMARY.DORTMUND.

1. 826 aircraft were despatched to Dortmund. In cloudless conditions, an exceptionally accurate groundmarking attack was delivered, virtually devastating the town, and causing very severe industrial damage.

Ground defences in the target area and night fighters on the return route put up a strong opposition and 38 aircraft failed to return. Our gunners claimed to have destroyed 3 fighters.

LEAFLETS.

2. 15 aircraft were detailed to drop leaflets over Paris and Rouen. 9 completed their task. One aircraft was lost.

Metecological Forecast.

3. Midnight frontal positions:- Cold from Copenhagen to Nuremberg to Alps.

Home Bases:- Fit at dusk, with good visibility, and cumulus, base 2,500-3,000', tops 6-8,000', extending in places to 10-12,000'. (Similar conditions over North Sea). Considerable medium cloud for return (from Ruhr), visibility above 2,000 yards except in a few smoky localities.

Germany:- Drifting thunderstorms in N.W. with 8-9/10ths cumulo-nimbus, tops to 20,000' or above. W. Germany, behind cold front: well broken cumulus and strato-cumulus, generally less than 5/10ths, base 2,000', strato-cumulus tops 4,000', a few cumulus tops about 10,000'. Ruhr: little or no cloud by 0100, visibility moderate. E. of cold front: much cloud at all levels, with thunderstorms;

Winds at 18,000':- Bases to 05°E: 260°/45-50 m.p.h.
05°E to Ruhr: 250°/50-55 m.p.h.

W. France:- Convection and layer cloud, slightly broken in N., well broken in S.

DORTMUND.Plan of Attack.

4. Zero Hour: 0100 hours Period of Attack: 0058-0200 hours

As an aid to navigation en route to the target, 11 Gbee Mosquitoes were to drop yellow T.I's at 51°45'N 07°28'E.

These Mosquitoes were then each to drop 3 red T.I's (2 long burning) in salvo on the aiming point between 0058 and 0156 hours. 33 backscatters, between 0101 and 0157 hours, were to aim green T.I's at the red if seen, but otherwise at the estimated centre of the area covered by all green T.I's visible.

The main force aircraft, divided into three waves, were also to aim at red T.I's, if possible, otherwise at the estimated centre of the area covered by all green T.I's between 0102 and 0200 hours. In order to guard against scattered bombing owing

...../to lateness

to lateness of markers, the main force aircraft were to bomb nothing but markers till 0110 hours. If none were seen by that time, aircraft were to turn left and make a second run from north to south.

In all waves of the main force attack, both incendiary and H.B. bombs were to be used. The first wave (of about 250 aircraft) was to consist of the best crews all Groups, manning heavy and medium aircraft. These were to be followed by all remaining Stirlings, Halifaxes and Wellingtons and, in the last wave, all remaining Lancasters. P.F.F. main force aircraft were to be on target at the beginning of a wave.

Lancasters of 1 Group were to meet at Sheringham, at 16,000 ft. and were to climb in order to reach the enemy coast at as great a height as possible. They were also to fly to the target and bomb from the maximum possible height. After bombing they were to gather speed so as to get out of the defended area as quickly as possible climbing to the maximum height for the return journey. Wellingtons of 1 Group were to meet at Sheringham, above cloud, at 12,000 ft., climbing to cross the enemy coast at not lower than 16,000 ft. Bombing was to be carried out from between 12,000 and 16,000 ft., and the enemy coast to be crossed at not less than 10,000 ft. on the return. All crews of 1 Group were instructed to take the minimum amount of evasive action over the target area, particularly during the bombing-run, in view of the large number of aircraft involved in the attack and the previous success achieved by this tactic.

Between 0020 and 0220 hours, the Eastern Gee Chain was to be available on two frequencies.

Timing.

<u>Mosquitoes.*</u>	<u>Section I Backers-up.</u>	<u>Main Force.</u>
0058-0101	6 a/c at 1 min. intervals 0102-0107	0102-0125 <u>Section 2:</u> Best on all types.
0108	-	(Stirlings of 3 Gp. & Wellington incendiaries only).
-	5 a/c at 1 min. intervals 0109-0113	
0114	1 a/c at 0115	
-	2 a/c at 1 min. intervals 0117-0118	
0120	-	0120-0145 <u>Section 3:</u> Remainder Stirlings, Halifaxes & Wellington
-	1 a/c at 0121	
-	2 a/c at 1 min. intervals 0123 & 0124	
0126	1 a/c at 0127	
-	2 a/c at 1 min. intervals 0129-0130	
0132	1 a/c at 0133	
-	2 a/c at 1 min. intervals 0135 & 0136	
0138	1 a/c at 0139	0140-0200 <u>Section 4:</u> All remaining Lancasters.
-	2 a/c at 1 min. intervals 0141-0142	($\frac{1}{2}$ a/c of 3 Gp. & 4 of 61 Sq. carry 1 x 8000 H.C. each)
0144	1 a/c at 0145	
-	2 a/c at 1 min. intervals 0147 & 0148	
0150	1 a/c at 0151	
-	2 a/c at 1 min. intervals 0153 & 0154	
0156	1 at. 0157	

* plus 2 reserves.

....Bomb Loads.

Bomb Loads

<u>Markers(Section 1)</u>	<u>Yellow</u>	<u>Red</u>	<u>Green</u>	<u>H.E.</u>
Mosquitoes	1(L.B.)	3(2/3 L.B.)	-	-
Stirlings + Halifax(35 Sq.)	-	-	5(1/5 L.B.)	4 x 2000 6 x 1000 G.P. + 1 x 500 H.C.
Halifax(405 Sq.)	-	-	5(1/5 L.B.)	5 x 1000 G.P. + 4 x 500 H.C.
Lancaster	-	-	5(1/5 L.B.)	1 x 4000 H.C. + 6 x 1000 G.P.

8 Gp. Main Force

Stirlings+ 6 x 500 H.C. + 13 x 30 lb. I.
 Halifax + 5 x 1000 G.P. + 7 x 500 H.C.
 Lancaster 1 x 4000 H.C. + 4 x 1000 G.P. + 7 x 500 H.C.

+ (Bomb Loads of Y aircraft to be reduced by 1000 lb.)

Routes

P.P.F.: Cromer - 52°43'N 06°20'E - 52°05'N 07°25'E - Target - wide right turn -
 51°55'N 07°10'E - 53°14'N 02°00'E.

1 Group L Sheringham } 52°48'N 04°40'E - 52°40'N 06°20'E - 52°05'N 07°25'E -
 3 Group: Southwold } Target - wide right turn - 51°50'N 07°10'E - Egmond.
 4 Group & 6 Group }

(5 Group "as passed verbally")

Sorties

5. (a) No. of aircraft despatched.....826
 (b) " reporting attack on primary area.....726(87.9%)
 (c) " " alternative area..... 5(0.6%)
 (d) " abortive sorties (technical or manipulative
 defects.....52)
 (attacked by fighter..... 2) ... 57(6.9%)
 (sickness of crew..... 1)
 (flak..... 1)
 (thought bomb (1000 lb.) had
 fallen off..... 1)
 (e) " aircraft missing..... 38(4.6%)

Weather Experienced

6. Home Bases:- Pine. Visibility moderate to good. A little medium
 cloud in 91 and 92 Groups. By dawn, rain spread as far N. as Hertford-Cardiff.

Route:- Broken cumulus and strato-cumulus, dispersing to nil at Dutch
 coast. Contrails over Continent.

Target:- No cloud. Slight haze. Moderate visibility.
 Moon 69% of full, rising shortly after zero hour.
 Many condensation trails reported, mainly between 20,000' and
 24,000' by some down to 17,000'.

Wind at 15-20,000': 250-260°/50-60 m.p.h.
 Enemy aerodromes:- Fine.

...../Night Photographic Evidence

visited the target jettisoned some incendiaries 10 miles from Deventer, and four others bombed in the areas of Enkhuisen, Hasselt, Borkenberge and Buiderland. The sixth attacked a flakship off Haarlem.

Special Equipment

11. (a) Obce

13 Mosquitoes of 109 Squadron were despatched. 4 of these returned early on experiencing trouble with their special equipment, and a fifth for other technical reasons. The remaining 8 dropped T.I.'s. The first 3 of these attacked within 2 minutes of their allotted times, but the other 5 followed at intervals of 12, 8, 5, 12 and 12 minutes respectively. Fortunately, the timing of the backers-up was so good (see Appendix I) that the aiming-point was kept continuously illuminated for a full hour. 27 T.I. bombs were plotted within 1 mile of the aiming-point, 13 more within 2 miles and 11 more within 3 miles. Few, if any, better concentrations have been achieved on Obce.

12. (b) Gee

The Eastern Chain was operating on the Virginia frequency throughout and on the target frequency from 0020-0220. 91% of the 623 aircraft returning useful information had no set difficulties, and obtained an average range of 245 miles. 3 received Gee over the target, at a distance of 370 miles from the master station. Interference on the Virginia frequency was heavy, and extraneous pulses were reported. The signal was weaker than usual.

Enemy Defences

13. (a) Flak and Searchlights

In the absence of cloud and in conditions of good visibility, up to 300 searchlights exposed in and around the target areas. Cones of 50 to 60 beams were formed, mainly to the north and west of Dortmund on the line of approach and exit. Moderate to intense light flak co-operated with the searchlights, the main effort of the guns being aimed at visual targets in the cones. In the opinion of several crews, the activity of the ground defences decreased as the raid progressed, possibly because of the presence of fighters in the target area.

51 bombers were damaged by flak, including 49 over the Ruhr area. An analysis of these figures shows that the Stirlings and Wellingtons, bombing at a lower level than the other aircraft, suffered a greater percentage of damage. The Lancasters, bombing at an average height of 20,000 feet, sustained the least proportion of flak damage, but the fact that they were damaged refutes the suggestion that there was a flak ceiling above which fighters were operating.

Flak was encountered en route, chiefly in the coastal region. Only 3 bombers were hit, and, in general, the flak was only moderate in intensity and not very accurate. Light flak from a ship off the coast of Holland was responsible for one of the missing aircraft.

Crews reported a number of rocket-like phenomena in the approaches to the Ruhr and over Holland. These projectiles were mostly travelling horizontally at low altitudes, some being fairly near to the ground. None of the bombers reported being hit by these phenomena.

(b) Fighters

14. Enemy wireless traffic revealed the presence of 15 patrols in the area covered by the raid on Dortmund. 25 pursuits were undertaken by controlled fighters, of which approximately 10 were directed against returning bombers. / 2 of these

2 of these pursuits resulted in unsuccessful combats and 5 in the destruction of British aircraft. Of these 5 overheard claims, 4 were on V.H.F. R/T. Patrols were overheard reporting other 4 bombers shot down by neighbouring fighters, making a total of at least 9 successes by controlled night fighters.

Crews reported 21 attacks, 71 approaches and 4 followings. Two-thirds of all interceptions occurred on the homeward route.

Enemy wireless traffic confirmed that fighter activity was much greater on the return, by which time the moon had risen. The bombers followed a northerly route to the target, but returned over the south of the Zuider Zee, and met concentrated fighter opposition around Apeldoorn and over the coastal area of Holland.

2 attacks and 9 encounters occurred over the North Sea, all but one on the homeward journey. One of these attacks began near Amsterdam, when three Ju.88's and an Me. 109 attacked a Halifax, and lasted for 45 minutes, only ceasing when the bomber was close to the English coast. The Halifax sustained considerable damage, but the rear gunner claimed to have shot down one of the attacking Ju.88's.

Another missing Halifax sent an S.O.S. from a position 60 miles N.E. of Cromer, stating that it had been attacked by a fighter and that three members of the crew were wounded.

The gunners of a Wellington and a Lancaster each claimed to have shot down an attacking Ju.88. Both claims, which were confirmed by other observations, took place during the return, one in the Apeldoorn area and the other over the sea near the coast of Holland.

9 bombers were damaged by enemy fighters.

Casualties

15.	No. of aircraft missing.....	38(4.64)
	" damaged (a) flak.....	52
	(b) fighters.....	9
	(c) not enemy action....	2
		63

It appears that at least 7 of the missing aircraft were destroyed before they reached Dortmund, one by flak near Munster, four by fighter in the Coastal, Zuider Zee and Enschede areas, and two to unknown causes near Hengelo and the Zuider Zee.

In the area covered by the main Ruhr defences, there were over 100 reports of aircraft seen falling during the 50 minutes of the attack. It is not possible to assess the losses accurately, but it is likely that about 15 bombers fell in and around the target area. In the majority of these cases, the aircraft were held by searchlight cones prior to being shot down, and it is estimated that 12 fell in this way to flak and 3 to fighters.

During the return journey, 2 Halifaxes of 4 Group sent S.O.S. messages. 78 'P' reported at 0158 hours that it was off the Dutch coast and that the starboard engine was on fire. 10 'B' reported at 0237 hours, when 60 miles N.E. of Cromer, that it had been attacked by a fighter and that three members of the crew were wounded. Searches were arranged by A.S.R., but nothing further was heard from either of these aircraft.

Several observations referred to the loss of another aircraft during the return, to light flak from a ship off the Dutch coast.

...../Fighters were

Fighters were active on the homeward route, and at least seven more bombers may have been shot down by fighters after leaving the target. These losses occurred mainly in the Apeldoorn and coastal areas. Other bombers probably fell near Meppel, Edam and Hengelo, without evidence as to the cause.

Enemy wireless traffic suggested two further successes to fighters, but it is not possible to state whether these took place on the outward or return journeys.

It therefore appears probable that of the 33 missing aircraft, 17 were shot down by fighters, 14 by flak and the remaining 7 were lost to causes unknown.

4.6% of the force despatched was lost. This figure is about average for recent heavy raids on the Ruhr. Clear weather in the target area assisted the searchlight - flak co-operation while, on the return journey, intense enemy fighter activity persisted well out over the North Sea.

LEAFLETS

16. 15 Wellingtons and Whitneys of 93 Group were detailed to drop leaflets in the areas of Reuen and Paris. 9 completed their task, despite 10/10ths cloud, mist and rain. One Wellington did not return from Paris.

Moderate flak was encountered at the French coast, co-operating at Cherbourg with a small cone of searchlights. No damage was sustained. 3 fighters were observed, but no combats developed. There is no evidence to account for the missing Wellington.

APPENDIX

Timing of Attack

I. Pathfinder Force

8 Mosquitoes attacked, at: 0057, 0103, 0107, 0119, 0127, 0132, 0144 and 0156.

31 backers-up attacked, at: 0100, 0103, 0106, 0108(2), 0109(2), 0110, 0111, 0112, 0114, 0115, 0116, 0121, 0122, 0126, 0128(2), 0129, 0131, 0132, 0133, 0137, 0142, 0145, 0147(2), 0152, 0153(2) and 0159.

Main Force

272 aircraft	attacked	from	0100-0120
333	"		0120-0140
76	"		0140-0200
1	"	at	0210
<hr/>			
687	aircraft		

Bomb Loads

II. (of aircraft reporting attack)

Pathfinder Force

8 Mosquitoes carried T.I. only

31 backers-up " T.I. + H.E.

39 aircraft

Main Force

353 aircraft carried H.E. + 4 lb. + 30 lb. incendiaries

96 " " 4 lb. + 30 lb. incendiaries

86 " " H.E. + 30 lb. incendiaries

84 " " H.E. only

63 " " H.E. + 4 lb. incendiaries

687 aircraft

LM/VF.

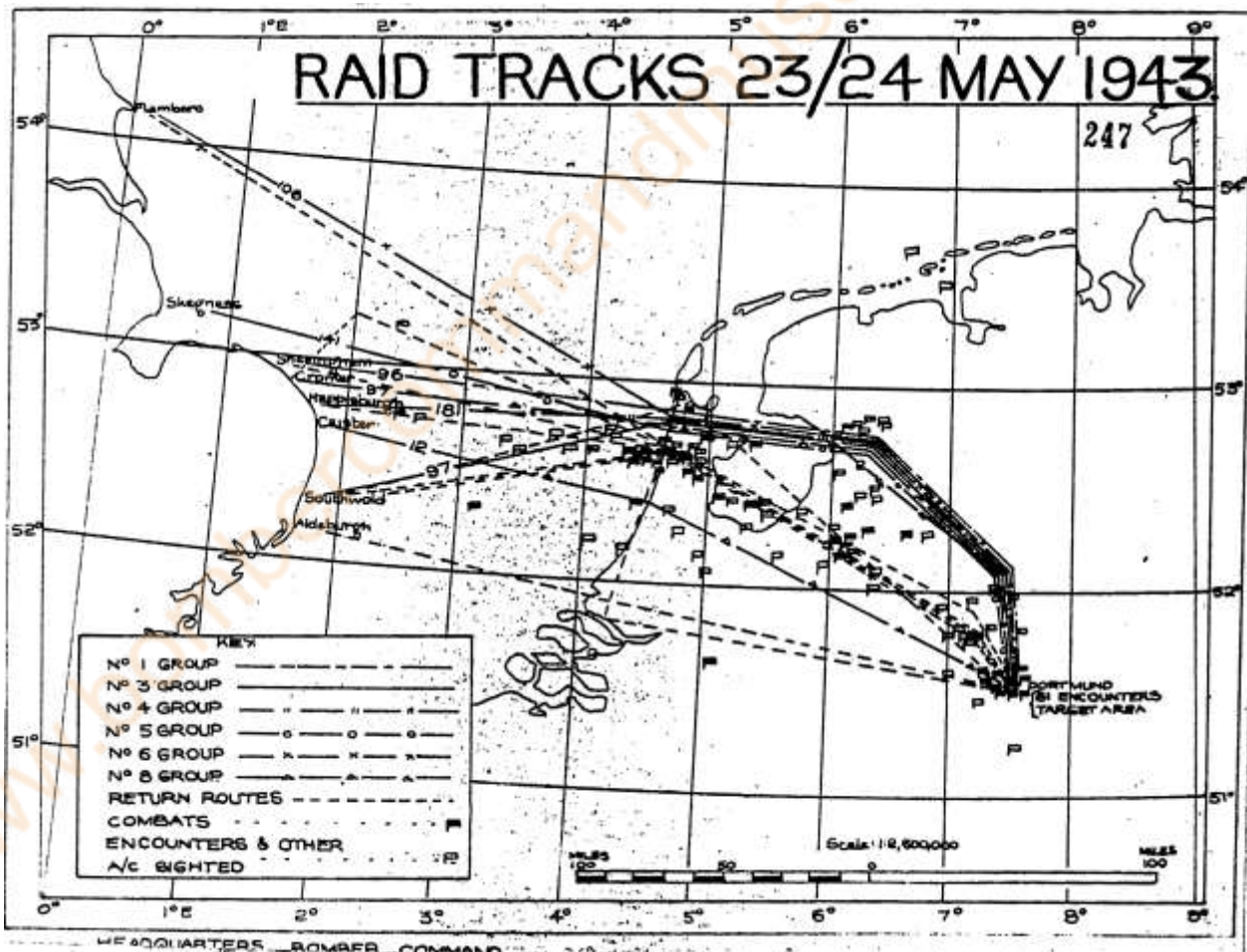
C/S. 263,2/5/ORS.

11th August, 1943.

Target	Group	Type	Sorties	A/C reporting attack on		Abortive sorties		Missing	Losses			Inter-operations		Results	
				prim. area	alt. area	over on. territ.	not over on. territ.		flak	fighter	not E/A	attacked	not attacked	Tons of Bombs	H.E.
DORTMUND	P.P.F.	Incq. IV	13	8	-	4	1	0	-	-	-	-	-	-	P) 1160.4 1023.0 A) 4.7 6.7 M) 46.2 57.6
		Strir. I	1	7	-	-	-	-	-	-	-	-	-	-	
		Hol. II E	6	6	-	-	-	-	-	1.0	-	-	-	-	
		Hol. II-L	5	5	-	-	-	-	-	-	-	-	-	-	
		Lans. I	4	4	-	-	-	-	-	-	-	-	-	-	
	Main Force	Lans. III	9	9	-	-	-	-	-	-	-	-	-	-	Heavy Bombs 5000 lb. 4000lb.
		Strir. I	11	9	-	-	1	1	-	1	1B	-	1	1	
		Strir. III	19	16	-	-	1	1	-	1	-	-	1	1	
		Hol. II E	5	5	-	-	-	-	-	1	-	-	1	1	
		Hol. II-L	14	13	-	-	1	1	-	1	-	-	1	1	
	1	Lans. I	38	33	-	-	1	1	-	2	2.0	-	3	3	P) 11 A) 1 M) 9
		Lans. III	105	77	-	-	1	1	-	1.0+3	1	1E	1	1	
		Well. X	56	43	-	-	-	-	-	1E+2.0+1	-	-	1	1	
	3	Well. III	2	2	-	-	-	-	-	-	-	-	-	-	
		Strir. I	21	17	-	-	2	2	-	1.0	-	-	1	1	
4	Strir. III	79	63	-	1+1*	1	1	-	1.0	-	-	1	1		
	Lans. I	16	18	-	-	-	-	-	1.0-5	-	-	1	1		
	Hol. II E	84	70	-	-	1	5	-	3	1B+1.0	1B	2	9		
5	Hol. II-L	37	32	-	-	-	-	-	3	-	-	-	-		
	Hol. V2	15	13	-	-	-	-	-	1.0+3	1B	-	1	2		
	Well. X	45	41	-	-	2	2	-	1.0	-	-	1	1		
6	Lans. I	57	50	-	-	1	1	-	1.0+5	1.0	-	1	1		
	Lans. III	97	90	-	-	3	3	-	1.0	-	-	1	1		
TOTAL	Hol. II E	20	24	-	-	2	2	-	1B+2.0+1	-	-	1	1		
	Well. X	41	41	-	-	-	-	-	1B+2.0+1	-	-	1	1		
DORTMUND TOTAL			1026	726	5(+1*)	12	45	39	2B+11.0 +30	3B+4.0 +2	1B+1B	21	75		
I.E. FLIGHTS															
ROUND															
P. RES															
I.E. FLIGHTS TOTAL			15	9	-	-	5	1	-	-	-	-	-		
TOTAL			1041	735	5(+1*)	12	50	39	2B+11.0 +30	3B+4.0 +2	1B+1B	21	75		

* also attacked primary.

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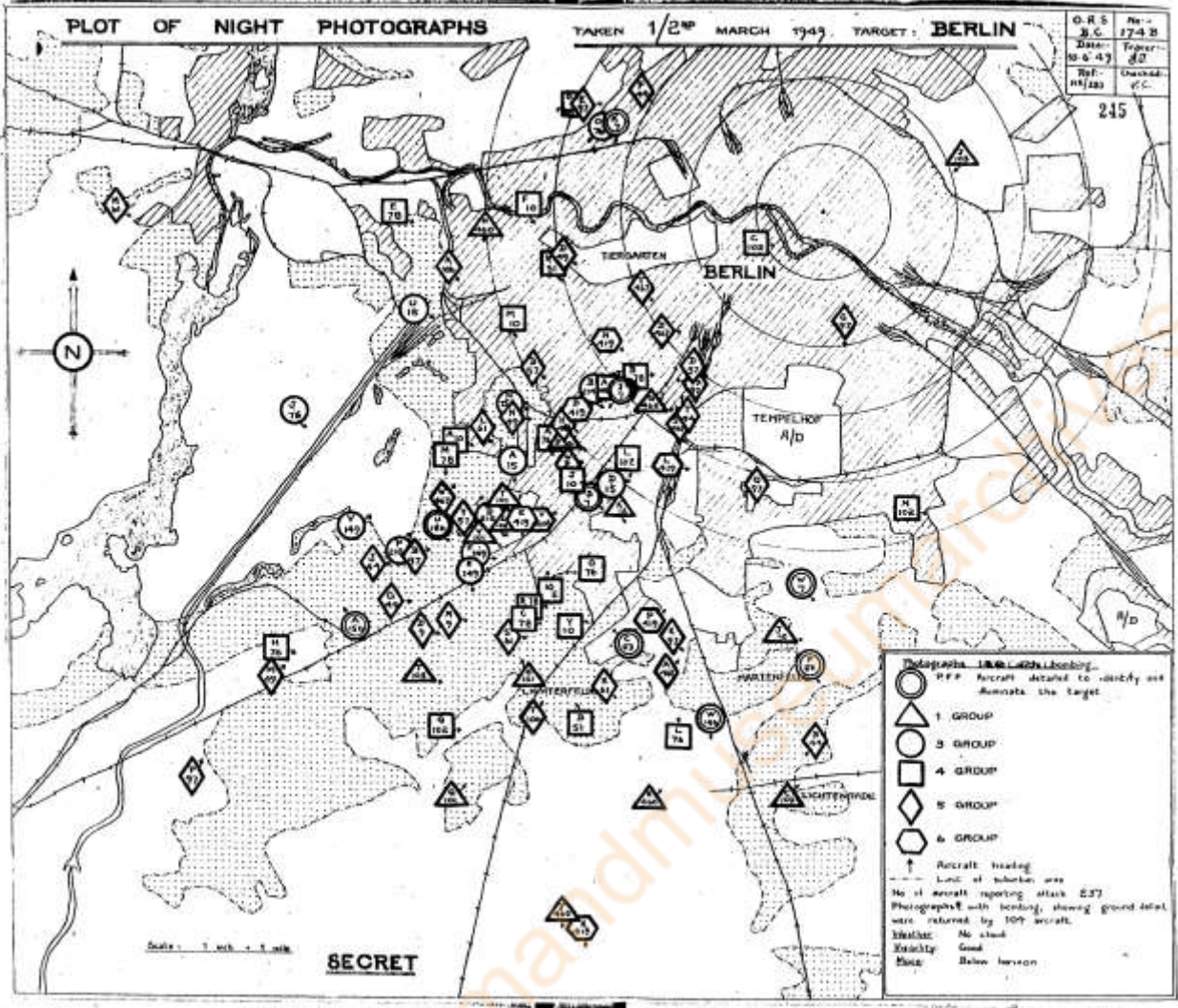


PLOT OF NIGHT PHOTOGRAPHS

TAKEN 1/2ND MARCH 1949 TARGET: BERLIN

G.R.S. No. 174-B
B.C. 174-B
Date: 10-6-49
Page: 87
Ref: G-1000
H/120
C.C.

245



Photographs taken during bombing.
 P.F.P. Aircraft detailed to identify and
 Annotate the target.

1 GROUP
 2 GROUP
 3 GROUP
 4 GROUP
 5 GROUP
 6 GROUP

↑ Aircraft heading
 --- Line of suburban area
 No. of aircraft reporting attack 237
 Photographs with bombing, showing ground detail
 were returned by 109 aircraft.

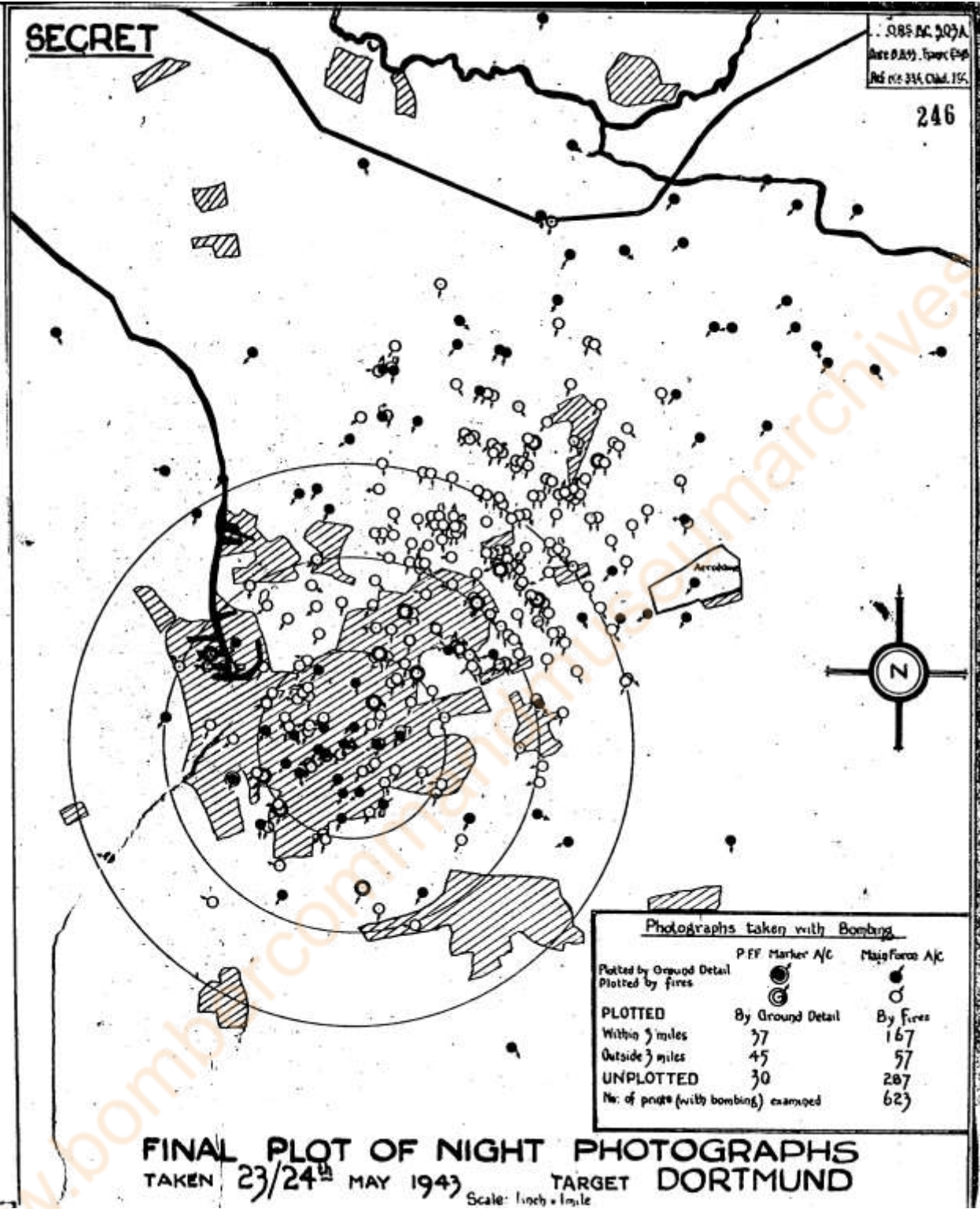
Weather: No cloud
 Visibility: Good
 Moon: Below horizon

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SECRET

OS 85 AC 302A
Date 2.12.43. Type 246
Ref No 334. Cont. 195.

246



BOMBER COMMAND REPORT ON NIGHT OPERATIONS, 25/26th MAY, 1943.

DUSSELDORFSUMMARY

759 aircraft were sent to Dusseldorf, but found the target obscured by layers of dense cloud. Accurate ground-marking by the early Mosquitoes thereby nullified and the attack became scattered over a wide area. Reconnaissance covered only a small area of the town, in which little fresh light was visible. We lost 27 aircraft, mostly to fighters, since the weather was suitable for surprise attacks; but 4 enemy aircraft were shot

Metological Forecast

Midnight frontal position - (1) occlusion from 55° N 10° E. to 45° E. to Breslau to 46° N. 10° E. (2) warm front from 52° N 13° W. to 50° N. 10° W. to 46° N 06° W.

Home Bases:- Bit at dusk. Medium cloud will spread to E. England about midnight, and light rain from medium cloud is expected before dawn. Cloud base should nowhere fall below 1,000'. Moderate visibility, generally less than 2,000 yards in 4 and 5 Groups.

Germany:- Hamburg-Kiel-Bremen area: much cloud with occasional breaks. Hanover-Berlin: variable amounts of cloud at various levels. Hamburg-Prague: broken medium and broken low cloud. Ruhr & Rhineland: broken medium in several broken layers between 10,000' and 18,000', with well developed strato-cumulus beneath. Increasing medium cloud on return route, becoming broken over most operational areas.

N. Italy:- Local thunderstorms.

France:- Increasing medium and low cloud in N.W., becoming broken over 47½° N. Little cloud inland.

Winds at 8,000': W. of 03° E.: 300°/25-30 n.p.h.
(backing to 270° on return)

E. of 03° E.: 310°/45 n.p.h.

at 18,000': W. of 03° E.: 310°/50 n.p.h.
(backing to 290/60 n.p.h. on return)

E. of 03° E.: 310°/50 n.p.h.

at 28,000': 300°/100 n.p.h.
(decreasing at target to 70 n.p.h.
(but increased at bases to 120 n.p.h. on return)

Time of Attack

Zero hour: 0130 hours. Period of attack: 0123-0225

As an aid to navigation en route to the target, yellow T.I's were to be dropped at 51°00'N. 06°34'E. by 10 Oboc Mosquitoes. This marking was to be maintained throughout the attack by 23 Lancasters(backers up).

.../Ground-marking

Ground-marking of the aiming-point with red T.I's was to be carried out by the Oboe Mosquitoes between 0128 and 0220, and with green T.I's by 13 backers-up. Between 0132 and 0150, 18 backers-up were to aim their green T.I's at red if visible, but otherwise at the estimated centre of all green T.I's seen. After 0150, the remaining 25 backers-up were to aim so as to overshoot by 5 seconds.

The main force crews were instructed to aim exactly at red T.I's if visible, otherwise at the estimated centre of all green T.I's seen.

The more experienced crews (about 250) of all Groups were selected to attack in the first wave of the main force, the Lancasters carrying mixed loads and being over the target early in this phase. Wellingtons and Stirlings were to carry pure incendiary loads. The second wave was to consist of the remaining Halifaxes, Stirlings and Wellingtons carrying incendiaries and H.E. The remaining Lancasters were to complete the attack, carrying mixed loads, except for 50% of the aircraft of 115 Sq. and 4 of 61 Sq. which were each to carry 1 x 8000 H.C.

On the way home, 18 aircraft (practice Y type) were to drop yellow T.I's at 51° 17' N. 06° 30' E., with a view to helping main force aircraft to avoid heavily defended areas after leaving the target.

Lancasters of 1 Group were to meet, at Southwold, at 16,000' and were to continue climbing so as to be as high as possible on reaching the enemy coast, to bomb from the maximum possible height. After bombing, they were to gain speed and leave the defended area as quickly as possible, thence climbing to maximum height for the return journey.

Wellingtons of 1 Group were to meet, at Southwold, above cloud at 12,000' and to continue climbing in order to cross the enemy coast at a height of not less than 16,000', and to bomb from between 12,000 and 18,000'. On return, the enemy coast was not to be crossed below 10,000'.

Between 0100 and 0230, the Gee Eastern Chain was to be available on the frequencies.

4. Timing

<u>Mosquitoes</u>	<u>Backers-Up</u>	<u>Practice Y type</u>	<u>Main Force</u>
0128 & 31+	-	-	-
-	2 at 0132		
-	2 at 0135	9 at 2 min. intervals 0132-0145	Most experienced crews 0132-0155
-	4 at 1 min. intervals 0134-37		
0138	1 at 0138		
-	4 at 1 min. intervals 0140-43		
0144	-		
-	5 at 1 min. intervals 0145-49		
0150	-		Remaining Hals., Stirlings & Wells. 0150-0210
-	2 at 1 min. intervals 0151-52	9 at 3 min. intervals 0151-0215	
-	2 at 0153		
-	2 at 1 min. intervals 0154-55		
0156	-		
-	5 at 1 min. intervals 0157-0201		
0202	-		
-	4 at 1 min. intervals 0204-07		Remaining Lancs. 0205-0225/over

<u>Mosquitoes</u>	<u>Backers-Up</u>	<u>Practice Y type</u>	<u>Main Force</u>
0208	-		
-	5 at 1 min. intervals 0209-13		
0214	-		
-	5 at 1 min. intervals 0215-19		
0220	-		
	+ plus 2 reserves		

Load Loads (P.F.F.)

	<u>Yellow</u>	<u>T.I.</u> <u>Red</u>	<u>Green</u>	<u>H.E.</u>
2 Mosquitoes	1(LB)	3(2/3 LB)	-	-
10 Mosquitoes	1(LB)	3(1/3 LB)	-	-
<u>Backers-up-</u>				
8 Stirlings	-	-	5(1/5 LB)	3x2000 H.C.+2x500 M.C.
8 Hals. (35 Sq.)	-	-	5(1/5 LB)	6x1000 G.P. (1/6 long delay)
4 Hals. (405 Sq.)	-	-	5(1/3 LB)	7x1000 G.P. (1/7 ")
23 Lancs.	1(LB)	-	4(1/4 LB)	1x4,000 H.C.+6x1000 G.P. (1/6 long delay)
<u>Practice Y -</u>				
6 Stirlings	1(LB)	-	-	4x2000 H.C.
Halifaxes	1(LB)	-	-	7x500 M.C. + 4x1000 G.P. (2/4 long delay)
Lancasters	1(LB)	-	-	1x4,000 H.C.+8x500 M.C. + 3 x 1000 G.P.

Routes

P.F.F. Southwold - $50^{\circ}57'N$ $06^{\circ}32'E$ - Dusseldorf - wide left turn -
 $51^{\circ}17'N$. $06^{\circ}30'E$. - Noordwijk.

1 Gp. Southwold.
3 Gp. Orfordness } - $51^{\circ}45'N$. $03^{\circ}50'E$. - $50^{\circ}55'N$. $06^{\circ}30'E$. - Dusseldorf -
4 Gp. Southwold } wide left turn - $51^{\circ}27'N$. $06^{\circ}30'E$. - Noordwijk.
6 Gp.
5 Gp. " as passed verbally".

Sorties

(a)	No. of aircraft despatched.....	759
(b)	" reporting attack on primary area.....	658(86.8%)
(c)	" " alternative area.....	11(1.2%)
(d)	" abortive sorties(technical or manipulative defects.....	60
	(sickness of crew..... 2)	63(8.3%)
	(late at turning-point..... 1)	
(e)	" aircraft missing.....	27(3.6%)

Weather Experienced

B. Home Base:- Little cloud. Hazy. Fog patches in N. of 6 Group by midnight. Considerable development of mist patches in Operational Groups between 0400 and 0500 with some fog in E. of 4. Group. Drizzle and low stratus was confined to the E.W. peninsula.

...../Route:-

Route:- Broken strato-cumulus over Dutch coast. Cloud increased towards target at higher levels.

Target:- Large amounts of cloud, mainly 7-9/10ths in two layers between 10,000' and 20,000'. This cloud occasionally 40/10ths, sometimes decreasing to 5/10ths. Hazy. Persistent contrails above 20,000'. No moon. Visibility poor.

Winds at 15-20,000': 310°/40-60 m.p.h.

Surface wind: 15 m.p.h.

Night Photographic Statistics

9. Owing to the dense cloud, only 3 plottable photographs were returned on this night. All lay over 10 miles from the aiming-point to the S. and S.W.

Narrative of Attack

10. The first 2 Oboe aircraft were on time, but there followed a gap from zero to zero + 14 during which no T.I's were dropped, unless by the 2 missing backers-up. No more markers were released by Oboe aircraft until zero + 24, but thereafter they fell at regular intervals of 5 minutes until zero + 45. Green T.I's dropped by the backers-up were burning continuously from zero + 14 until zero + 55, when the last of the bombing took place.

Owing to the unexpectedly poor weather, the attack at once became very scattered, probably S. of the target. At about zero + 15, the cloud cleared somewhat, but by then most of the fire-raisers had bombed blindly on D.R. from the warning markers, and crews were further confused by the enemy's liberal use of dummy red T.I's.

Day Reconnaissance

11. A reconnaissance sortie flown on 11th June, 1943, covered only the S. of the town and a narrow strip along the E. bank of the Rhine, on prints of large scale but moderate quality. A few scattered incidents of damage were revealed. 3 factory buildings and a number of houses suffered damage from fire.

Special Equipment

12. (a) Oboe

10 marker aircraft and 2 reserves were despatched by 409 Squadron. 3 returned early for technical reasons; the other 9 dropped red T.I's as planned. The marking is believed to have been accurate, although there is no photographic evidence to confirm this. One aircraft had its oil tank holed by flak over the target. All returned safely.

13. (b) Gee

The Eastern Chain operated on the Virginia frequency throughout, and on the target frequency from 0100-0230. 92% of the 583 Gee aircraft which returned useful information had no set difficulties, obtaining an average range of 260 miles. 50 aircraft received Gee to the target, at a range of 345 miles from the Master Station. The interference was heavy on the Virginia frequency but did not hinder the effective use of the target frequency except when the route crossed the Dutch coast. The B and C signals were strong and were received over the target by many navigators; but A was weak.

...../(o) H2S

(v) H2S

18 Y aircraft were despatched, using H2S for navigational purposes only. 4 reached the target by this method and 2 more despite unserviceable equipment. The remaining 2 sorties were abortive for technical reasons. All Y aircraft returned safely.

Alternative Targets

5. 10 aircraft bombed alternative targets; in the areas of Munchen-Gladbach(2), Amstede(2), Cologne, Dusseldorf, Julich, Rotterdam, Antwerp and Turnhout.

Enemy Defences16. (a) Flak and Searchlights

Ground defences in the target area were surprisingly slight, even allowing for the poor weather conditions. This may have been due to the scatter of the attack. Normally in the Ruhr searchlights expose even on cloudy nights, but during this raid very few were seen in operation. Predicted heavy flak, some of which was reported as accurate, was seldom intense and was described by several crews as "negligible". Moderate barrage flak was also reported.

En route to the target, many of our aircraft flew over Rotterdam, Hertogenbosch, Gladbach and Krefeld, and here and at other places, stiffer opposition was met. Up to 20 searchlights were reported in many places, combining with heavy flak of considerable intensity.

37 aircraft (5%) were damaged by flak, a low figure for a Ruhr target. At least 10 were hit in the target area.

(b) Fighters

Enemy wireless traffic revealed the presence of controlled fighter patrols operating in 14 areas, covering most of Holland, Munster, Krefeld/Coblenz and Cologne.

13 pursuits were overheard, resulting in 9 British aircraft claimed as destroyed. Returning crews reported 110 encounters with enemy aircraft, a surprisingly high number for a dark night. However, a contrary wind of 40-60 m.p.h. on the homeward journey must have been of assistance to the ground controls and cloud conditions appear to have given the fighters a greater chance of surprise. Thus, in spite of the large number of encounters, few were of long duration and, although 23 attacks developed, only three bombers were damaged.

3 Ju. 88's and one Mc. 109 were claimed as destroyed in combat, Halifaxes of 77 Squadron being responsible for two of these successes. 2 other enemy aircraft were damaged.

Casualties

18.	No. of aircraft missing.....	27(3.6%)
	" damaged (a) flak.....	37
	(b) fighter.....	3
	(c) other causes.....	5
		45 (5.9%)

2 bombers appear to have been lost to flak in the target area, and observations of other aircraft lost to the same cause at Hertogenbosch, Amsterdam, The Hague and Rotterdam show that they must have strayed over well-defenced areas just off the route.

...../Controlled

Controlled night fighters made attempts to success. Five of these were corroborated by British crew reports as having occurred principally in the Gilze-Venlo zone.

In addition, an analysis of crews observations indicated that 2 aircraft were lost to fighters in the way to the target area on the return route.

Causes of loss may therefore be summarised as - 6 aircraft to flak, 17 aircraft to night fighters and 4 aircraft to unknown causes.

The loss rate of 3.6% was low for a Ruhr target, partly no doubt because of the weather.

4 aircraft were damaged by British incendiary bombs over the target area.

APPENDIX

I. Pathfinder Force

9 Mosquitoes attacked, at: 0128, 0130, 0144, 0154, 0200, 0205, 0210, 0215 and 0231.

37 backers-up attacked, at: 0132, 0136, 0137, 0139(3), 0140, 0141, 0142, 0144(2), 0145(2), 0146, 0148, 0149, 0150(3), 0154, 0156, 0157, 0158, 0200, 0201, 0202, 0203(2), 0306(2), 0308, 0309, 0312(2), 0314, 0315 and 0319.

Main Force

258	aircraft	attacked	from	0130-0150
252	"	"	"	0150-0210
98	"	"	"	0210-0225
4	"	"	"	after 0225
<u>612</u>	aircraft.			

Bomb Loads

II. (of aircraft reporting attack)

Pathfinder Force

9	Mosquitoes	carried	T. I. only
37	backers-up	"	T. I. + H. E.
<u>46</u>	aircraft		

Main Force

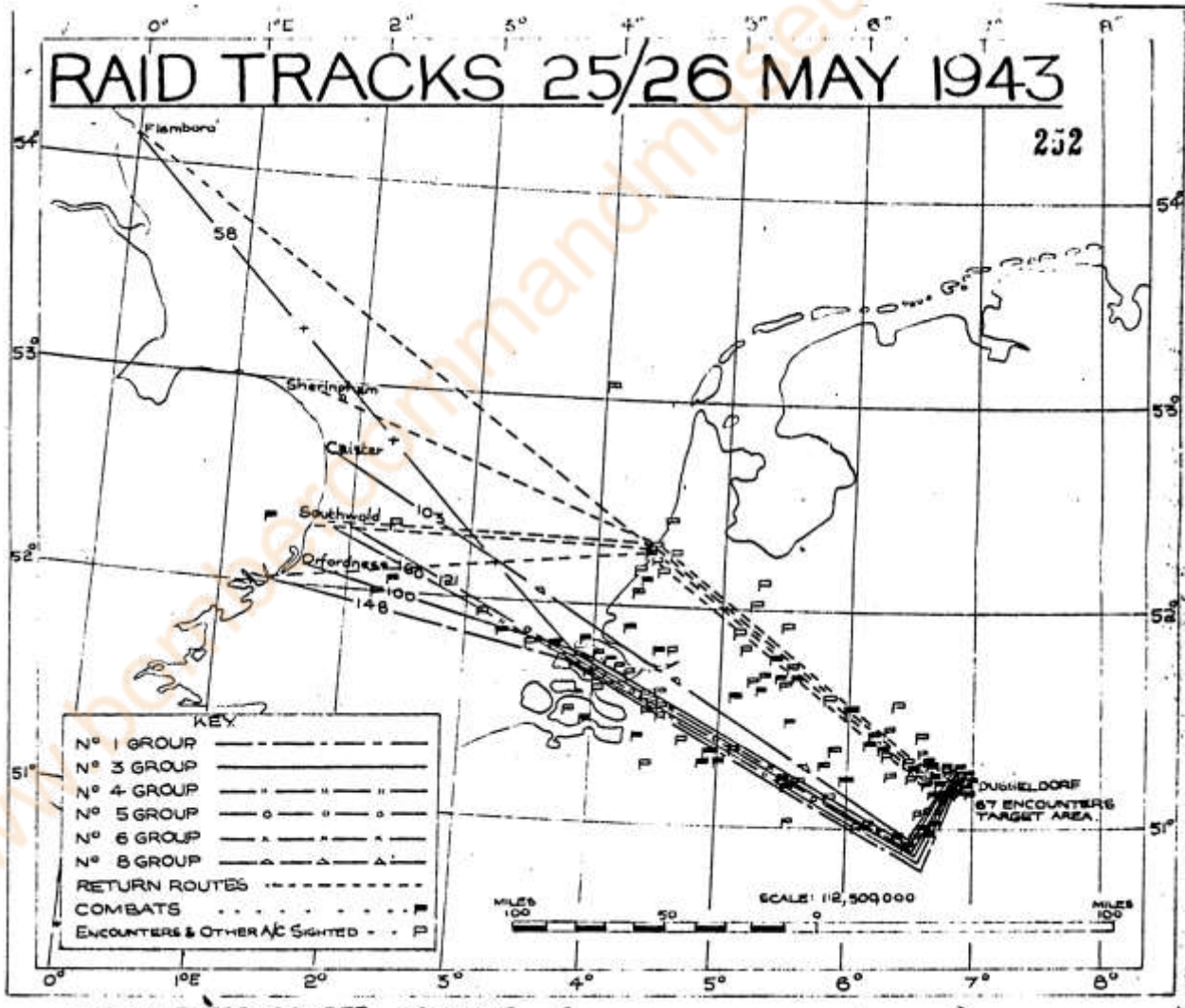
317	aircraft	carried	H. E. + 4lb. + 30lb. incendiaries
87	"	"	4lb. + 30lb. incendiaries.
69	"	"	H. E. only
65	"	"	H. E. + 4lb. incendiaries
61	"	"	H. E. + 30lb. incendiaries
13	"	"	H. E. + one yellow T. I.
<u>612</u>	aircraft.		

HLM/JT.

BC/S. 26342/5/ORS.

10 August, 1943.

TARGET	GROUP	TYPE	SORTIES	A/C REPORTING ATTACK ON		AGGRESSIVE SORTIES		MIS-FIRE	DAMAGE			INTERCEPTIONS		RESULTS		
				PRIMARY AREA	ALTERNATIVE AREA	OVER ENEMY TERRITORY	NOT OVER ENEMY TERRITORY		FLAK	FIGHTED	NOT ENEMY ACTION	ATTACKED	NOT ATTACKED	TONS OF BOMBS		
														H.E.	Inc.	
DUSSELDORF	P.P.F.	Mosq. IV	12	9	-	1	2	-	1	-	-	-	-	(P) 1049.7	915.3	
		Hal. II-2	7	6	1	-	1	1	-	-	-	-	2	(A) 18.3	13.8	
		Hal. II-1A	5	5	-	-	-	-	-	-	-	1E	-	-	(M) 32.6	42.1
		Stir. I	7	6	-	-	-	-	1	1	1	-	2	-	-	-
		Lanc. I	9	8	1	-	-	-	-	-	-	-	-	-	-	-
		Lanc. III	14	14	-	-	-	-	-	-	-	-	1	2	-	-
	NAVY FORCE	Hal. II-2	19	18	-	-	-	1	1	-	-	-	-	-	-	-
		Hal. II-1A	3	3	-	-	-	-	-	1	-	-	-	1	-	-
		Stir. I	9	6	1	-	-	2	-	-	-	-	-	-	-	-
		Stir. III	1	1	-	-	-	-	-	-	-	-	-	-	-	-
		Lanc. I	9	9	-	-	-	-	-	-	-	-	-	4	-	-
		Lanc. III	19	18	-	-	-	1	2	2	-	-	-	5	-	-
	1	Lanc. I	36	31	2	-	-	2	1	3	3	-	2	4	-	-
		Lanc. III	80	74	-	-	-	3	3	2	-	-	-	16	-	-
		Well. X	47	41	-	-	-	3	3	3	-	-	2	8	-	-
		Lanc. II	17	16	-	-	-	1	1	-	-	-	2	4	-	-
	3	Stir. I	23	15	-	-	-	6	2	-	1	-	1	3	-	-
		Stir. III	75	58	1	-	2	7	5	2	1A0	1B	4	8	-	-
		Hal. II-1A	91	81	2	-	-	6	2	9	-	-	4	8	-	-
	4	Hal. II-1A	55	34	-	-	-	-	1	-	-	1B+1A0	-	3	-	-
		Well. X	46	38	1	-	-	5	1	2	-	1B	-	2	-	-
		Lanc. I	56	51	-	-	1	1	1	4	-	-	2	4	-	-
	5	Lanc. III	85	69	1	-	-	11	4	3	-	-	-	9	-	-
		Hal. II-2	9	9	-	-	-	-	-	-	-	-	2	-	-	-
	6	Well. X	49	40	1	-	-	6	2	1A0-2	-	-	1	3	-	-
		TOTAL		799	658	11	4	99	27	+36	+2	+1.0	23	88		



BOMB PLOTS NOT AVAILABLE

BOEMER COMMAND REPORT ON NIGHT OPERATIONS - 27/28th MAY, 1943.ESSEN: Mineslaying: Leaflets.SUMMARY.ESSEN:

1. A large force of 518 aircraft set out to attack Essen, the target being sky-marked by Oboe Mosquitoes. The timing of both the main force, 461 of which reported attack, and the Mosquitoes was good, but despite this, and the accurate placing of the release point flares, many aircraft appear to have undershot by several miles. However, Krupp's Works again sustained considerable damage and a large number of buildings in the northern parts of the city were destroyed. 22 aircraft, including one Mosquito, failed to return, and one came down in the sea owing to flak damage.

Mineslaying:

2. 18 aircraft, of a force of 23, laid 89 mines off the Frisian Islands. One aircraft failed to return. It was probably lost to heavy flak ships or coastal batteries.

Leaflets.

3. Training groups sent 19 aircraft to scatter leaflets over Orleans, Paris, Lille. 17 sorties were completed, and all returned safely.

Metorological Forecast.

4. Estimated midnight position of fronts: (1) occluded front 57°N becoming warm southwards to Frankfurt and cold to 50 miles S.E. of Zuyder Zee - Amsterdam - Brest.

Home Bases:- Fine. Moderate visibility except in smoky areas, notably Group, where visibility of 2-4,000 yards is expected by 04.00 hours.

North Sea coastal areas of Germany and western Baltic:- Much cloud in upper layers broken. Over central Germany there will be strato-cumulus cloud, with few breaks and well broken layers at medium and high levels. Over S. Germany there will be well broken strato-cumulus with patches of medium and high cloud.

N.W. France:- Sea fog and low stratus cloud some distance inland.

S.W. France:- Fine.

Central and E. France:- Well broken strato-cumulus cloud.

Route and Target (Ruhr): small amounts of strato-cumulus to Don Holder will increase to less than 5/10 at the target. Cloud base 1,500-2,000 ft. tops above 7,000 ft.

Frisian Islands:- Broken strato-cumulus, base 1,200 ft. with patches of below, particularly in the E. Hazy.

Winds:-

750 mb.	Bases	290°/25 n.p.h.	Target	300°/25 n.p.h.
500 mb.	"	280°/40 n.p.h.	"	300°/35 n.p.h.
300 mb.	"	270°/55 n.p.h.	"	280°/55-60 n.p.h.

..../Plan of A

ESSEN.Plan of Attack.

5. Zero hour: 0045 hours. Period of attack: 0045-0134.

Briefed route: Egnond - 52°00'N. 07°05'E. - Essen - Turn left - 52°10'N. 07°25'33" E. 53°23'N. 05°17'E.

Tracking flares (red steady) were to be dropped at 51°48'N. 06°59'E. (19 nautical miles short of the release point) and preliminary warning flares (green steady) at 51°38'N. 07°00'E. (10½ nautical miles short of the release point) by 10 Oboe Mosquitoes.

The main force, consisting of 10 waves of about 50 aircraft each, were to aim their bombs at release point flares, (red with green stars + 1 white for longer burning, dropped by Mosquitoes at 5 minute intervals), on a heading of 200 M at 165 m.p.h. with bombsight setting for true height and air speed and zero wind. All flares were to be fused to ignite at 15,000' and, if no release point flares were seen on arrival, the main force was instructed to bomb on E.T.A.

With the exception of Wellington 423's (carrying 4000 lb. bombs), and 8 Lancasters of 115 Sq. and 2 Lancasters of 61 Sq. (carrying 8000 lb. bombs), all main force aircraft were to carry mixed loads of incendiaries and H.E.: 25% of all G.P. bombs were to be long delay.

Aircraft of 1 Group were to meet at Southwold (Lancasters at 16-17,000' and Wellingtons at 12,000'), and were to continue to climb in order to cross the enemy coast as high as possible. Lancasters were to bomb from above 20,000' and Wellingtons from above 16,000'. The defended area was to be left as quickly as possible and aircraft were to climb to maximum height for the return journey, crossing the enemy coast at not less than 14,000'. The minimum amount of evasive action was to be taken over the target area, particularly during the bombing run.

The Eastern Gee Chain was to be available on two frequencies between 0015 and 0145 hours.

Timing

6.

<u>Mosquitoes</u>		<u>Main Force</u>	
0045	1st wave	0045-0049	Lancasters of 5 Group
0050	2nd wave	0050-0054	Lancasters of 5 Gp. & 3 Gp.
0055	3rd wave	0055-0059	Lancasters of 1 Group
0100	4th wave	0100-0104	Halifaxes of 4 Group
0105	5th wave	0105-0109	Wells of 1 Gp. & 4 Gp.
0110	6th wave	0110-0114	Halifaxes of 4 Gp. & Wells of 6 Group.
0115	7th wave	0115-0119	Halifaxes of 4 Gp. & 6 Gp.
0120	8th wave	0120-0124	Lancasters & Halifaxes of P.F.F. & Halifaxes of 6 Group
0125	9th wave	0125-0129	Lancasters of 1 Gp. & 5 Gp.
0130	10th wave	0130-0134	Lancasters of 1 Gp.

Sorties

7.	(a)	No. of aircraft despatched	518
	(b)	" reporting attack on primary area	1472 (94.0%) ⁺
	(c)	" " alternative areas	4 (0.8%)
	(d)	" abortive sorties (technical defect or manipulative errors)	20 (4.1%)
		(late take-off)	1
	(e)	" aircraft missing	22 (4.3%)

+ including one missing aircraft.

..../Weather Experienced

Weather Experienced

Route and Target:- Mainly 6-8/10ths layer cloud, tops about 3,000 ft, increasing at times to 10/10ths. Patches of medium cloud at about 16,000 ft. Visibility deteriorated over land to 1-5 miles. to noon. Wind: at 15-20,000 ft. - 270°-190°/30-40 m.p.h.

Home Bases:- Well broken cloud with moderate visibility.

Night Photographic Statistics

Owing to cloud over the target, very few successful photographs were taken. These are not a representative sample, and therefore neither night photographic statistics nor a night photographic plot has been issued.

Narrative of Attack

10. The target was accurately sky-marked by 11 of the 12 Obbe Mosquitoes despatched, including both reserves. The timing was good with only two short gaps in the marking. Almost the whole of the main force bombed on release point flares, white flares or the estimated position of flares which had just gone out. Nevertheless, many aircraft appear to have bombed short of the target, as much damage was caused N. of Krupps, along the line of approach. The few night photographs showing ground detail also indicate that at least some of the main force dropped their bombs N. of the target.

The raid was fairly evenly spaced over the period of attack, only one of the main force being early and one late.

There were many reports of red flares shot up from the ground between the green tracking flares and the release point; these may have deceived some of the main force, aggravating the tendency to undershoot. Yellow pyrotechnics were seen scattered over a wide area N. of the target, but since yellow T.I.'s were not used on this night, no confusion arose.

Day Reconnaissance

11. Photographs taken after the attack cover the whole of Krupps works and the town of Essen. No complete cover had been obtained after the raid of 30th April, so that some of the fresh damage seen was probably caused by that attack. Owing to the lack of night photographic evidence, it is not possible to separate the incidents.

Damage from the two raids was confined almost entirely to Krupps Works and to the N.E. part of Essen, being heaviest in the districts of Stoppenberg and Altenessen. Compared with the earlier devastation, the damage to Krupps Works was not severe, but 20-30 fresh incidents were observed, including serious damage to the power houses adjoining the steam hammer shed. A large workshop covering 12 acres in the extreme west of the works was partially destroyed and a machine shop of about 5 acres in area was gutted over 700 square yards. This shop is believed to have been producing railway materials. Other industrial damage involved the pithead and by-product buildings of 4 collieries and sheds and workshops of Brune and Kappeler (Stoppenberg) (nuts and bolts), and 4 unidentified factories in Altendorfer, Stoppenberg, Altenessen and Vogelheir. Two road bridges over railways at Delvig and W. of Bahnhof Essen were destroyed, and a railway bridge over Gladbach Strasse (Altenessen) was damaged. Direct hits were scored on railway tracks and roads, and damage to railway stations included the destruction of the administrative office buildings at Altenessen. The remaining damage mainly concerned business and residential property, and it is estimated that about 670 buildings were partially or wholly demolished.

Alternative Targets

12. Alternative targets were attacked by 3 aircraft in the areas of Bochum, Gladbach, and Hengelo, while a fourth bomber released its load 10 miles N. of Essen.

Special Equipment

13. (a) Gee

The Eastern Chain operated on the Virginia frequency throughout and on the target frequency from 0015 to 0155 hours. 94% of the 415 aircraft which returned useful information had no difficulties with their equipment. An average range of 260 miles was obtained, as 12 aircraft received Gee over the target, at a distance of 350 miles. Jamming on the Virginia frequency was heavy, especially over the target area.

14. (b) Oboe

12 Mosquitoes (including 2 reserves) equipped with Oboe, set out to sky-mark the target. The 3rd aircraft, controlled by Walner and Trimmingham I, returned early owing to Oboe failure, and both reserves were called in. 6 Mosquitoes released their flares accurately at 4-5 minute intervals, after which there were gaps of 10, 1, 7, 1 and 5 minutes; thus the marking was almost continuous, the 2 periods during which no flares were visible being of only 4 and 1 minutes duration.

The 5th Swingate Mosquito, which failed to return, is believed to have been shot down by flak immediately after attacking.

15. (c) H2S

The main force included 7 Y-type Halifaxes, two of which carried crews which were insufficiently trained to use the equipment. The remaining 5 used H2S as a navigational aid only, reporting that the target was very accurately marked by the Oboe Mosquitoes. No failures were reported. One Y-type Halifax was lost.

Enemy Defences

16. (a) Flak and Searchlights

A continuous barrage of flak over the target, which was particularly intense near the release point flares, was responsible for at least 60% of the 107 aircraft damaged on the raid. Predicted flak was mainly "unseen" but occasional "seen" fire cooperated with searchlights through breaks in the cloud. En route, defences were particularly active at Munster, Gladbach, Rheine, Egmond and Terschelling, searchlights again operating intermittently.

An exceptionally high proportion (20%) of aircraft sustained flak damage.

17. (b) Fighters

Enemy wireless traffic revealed 16 patrols, 14 of which were located in the areas of Leeuwarden(2), Voochta(1), Den Helder(1), Twente/Enschede (3), Gilze/Rijen(1), Venlo(2) and Texel(1). Complaints by fighter pilots about contact with control stations included one report of unserviceable A.I.

41 encounters with enemy aircraft were reported, of which 5 took place in the target area. Only 9 attacks were made, 3 on the outbound and 6 on the homebound journey. The only bomber which was damaged by a fighter succeeded in damaging the attacking Ju.88.

...../Casualties

Casualties

18. No. of aircraft missing.....22(4.3.3)
 damaged (a) flak.....107
 (b) flak & fighter.. 1).....113(22.0.1)
 (c) other causes..... 5)

Observations of crews and overheard claims by enemy aircraft indicate that 11 or 12 aircraft were lost to fighters and 10 to flak. 7 or 8 of the fighter losses occurred over Holland and N.W. Germany, mainly on the return, and 4 in the target area. Aircraft were seen shot down by flak over Harderwijk(2), Dorsten(2), Gladbach(1), and the target (5 - including the missing Obco aircraft.)

One Wellington came down in the sea owing to damage by flak; 4 of the crew were rescued.

In addition to enemy action damage, one aircraft was hit by incendiary bombs, and 2 by British gun-fire, while a Halifax and a Lancaster collided over the target.

MINELAYING

19. 23 aircraft took off to lay mines near the Frisian Islands. 18 aircraft completed the task, 69 mines being laid. 2 Stirlings returned early owing to technical defects, and 2 Wellingtons brought back their mines owing to unsuitable weather conditions over the primary area. Heavy flak from ships and coastal batteries may have been responsible for the loss of one aircraft. The only enemy aircraft encountered was driven off by fire from the bombers. None of the returning aircraft were damaged.

LEAFLETS

20. Leaflets were scattered over Orleans, Paris and Lille by 17 out of 19 aircraft despatched by Training Groups. 2 aircraft returned early owing to technical defects. One enemy aircraft was seen, but no combat developed.

APPENDIXTiming of AttackI. (a) Pathfinder Force

11 Mosquitoes attacked at 0044, 0049, 0054, 0058, 0104, 0109, 0119, 0120, 0127, 0128, 0133 hours.

(b) Main Force

Attacked 1 minute early.....	1
" between 0045 and 0049.....	27
" " 0050 and 0054.....	64
" " 0055 and 0059.....	50
" " 0100 and 0104.....	59
" " 0105 and 0109.....	41
" " 0110 and 0114.....	40
" " 0115 and 0119.....	48
" " 0120 and 0124.....	50
" " 0125 and 0129.....	48
" " 0130 and 0134.....	32
" 4 minutes late.....	1
	<u>461</u>

...../Bomb Loads Carried

Bomb Loads CarriedII. (a) Pathfinder Force

Plares only.....11

(b) Main Force

H.E. + 30 lb. + 4 lb. inc.....275
 H.E. + 30 lb. inc.....60
 H.E. + 4 lb. inc.....61
 H.E. only.....48
 30 lb. inc. + 4 lb. inc.....17
 461

230/VF.
 BC/S. 26342/5/ORS.
 19th August, 1943.

Target	Group	Type	Aircraft	A/C reporting attack on		Abortive sorties		Missing	Damage			Interceptions		Results		
				prim. area	alt. area	over en. territ.	not over en. territ.		flak	fighter	not E/A	attacked	not attacked	H.E.	Inc.	
BOMBING	TOTAL	8 P.F.F.	12	11	-	-	1	1*	-	-	-	-	-	(P) 727.9	655.5	
		8	Hal. IIX	10	10	-	-	2	10C+3	-	-	-	-	(A) 5.8	6.6	
		Main Force	Hal. II-La	3	1	-	-	2	1	-	-	-	-	(M) 31.4	26.9	
		Lans. I	9	7	1*	-	1	1	-	1AC	-	-	-	-	-	
		Lans. III	12	12	-	-	-	-	-	-	-	-	-	-	-	
		1	Lans. I	30	28	-	-	2	7	-	-	1	5	8000	4000	
		Lans. III	74	68	1	-	3	6	-	-	1	1	9	(P) 8	251	
		Well. X	29	24	1	-	1	2	6	-	-	1	1	(A) -	5	
		3	Lans. II	16	15	-	-	1	1	-	-	-	-	-	(M) -	7
		4	Hal. IIX	70	63	-	-	1	4	20	-	3	6	-	-	-
		Hal. II La	34	28	-	-	-	3	10+1AC	1AC*	12AC	-	2	-	(P) On Primary	-
		Hal. VZ	14	13	-	-	-	1	3	1AC*	-	-	-	-	(A) On	-
Well. X	25	25	-	-	-	-	10C+7	-	-	1	1	-	(M) Carried by	-		
5	Lans. I	53	48	1	-	3	1	8	-	-	1	-	-	-		
Lans. III	80	75	1	-	3	1	19	-	-	1	1	3	(M) Missing	-		
6	Hal. IIX	23	22	-	-	-	1	4	-	-	-	3	-	-		
Well. X	27	22	-	-	-	3	2	1E+1AC	-	-	-	1	-	-		
BOMBING	TOTAL		518	472	4+1*	2	19	22*	1E+4AC +102	1AC*	2AC+3	9	32			

* Also attacked primary.

* Including one aircraft which attacked primary.

* Also hit by flak

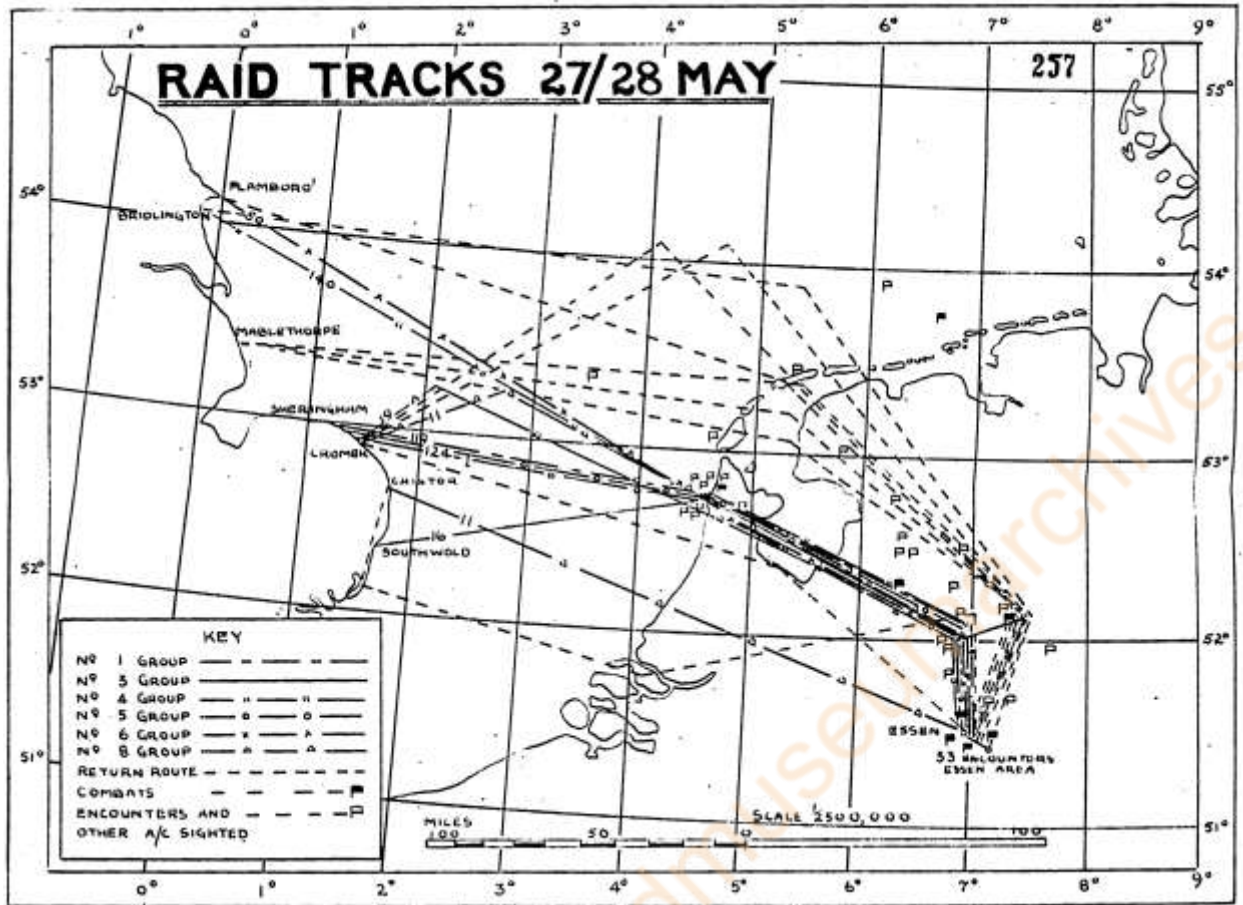
...../Contd.

Target	Group	Type	Aircraft	A/C reporting attack on		Abortive sorties		Missing	Damage			Interceptions		Results	
				prim. area	alt. area	over en. territ.	not over en. territ.		flak	fighter	not E/A	attacked	not attacked	H.E.	Inc.
BOMBING	TOTAL		518	472	4+1*	2	19	22*	1E+4AC +102	1AC*	2AC+3	9	32		
DREAYING	TOTAL	1	Well. X	5	3	-	-	2	-	-	-	-	-	6	Mines
		3	Stir. I	13	10	-	-	2	1	-	-	-	-	1	83 Mines
		5	Stir. III	5	5	-	-	-	-	-	-	-	-	-	
DREAYING	TOTAL		23	18	-	-	4	1	-	-	-	-	1	89 Mines	
DRAFTS	TOTAL	91	Well. Ic	5	4	-	-	1	-	-	-	-	-	-	-
		92	Well. III	4	4	-	-	-	-	-	-	-	-	-	1
DREAYING	TOTAL	93	Well. III	5	4	-	-	1	-	-	-	-	-	-	-
		Well. Ic	3	3	-	-	-	-	-	-	-	-	-	-	-
		Whit. V	2	2	-	-	-	-	-	-	-	-	-	-	-
DREAYING	TOTAL		19	17	-	-	2	-	-	-	-	-	-	1	
DREAYING	TOTAL		560	507	4+1*	2	25	23*	1E+4AC +102	1AC*	2AC+3	9	34		

* Including one which attacked primary

* Also hit by flak

* This aircraft also attacked primary



BOMB PLOTS NOT AVAILABLE

BOMBER COMMAND REPORT ON NIGHT OPERATIONS, 28/29th MAY, 1943.MINELAYINGSUMMARYMine-laying

34 aircraft of 1,3,4 and 6 Groups were despatched on a mining operation to the Frisians and the French Atlantic coast. 32 reached their targets, laying 103 mines. No losses were sustained.

Leaflets

5 aircraft of 91 and 92 Groups dispersed leaflets according to plan over Orleans and Nantes.

Micrological Forecast

Midnight frontal positions:- cold from 60° N 15° E to 55° N 17° E. to 47° N 11° E. to Mannheim to Paris to Scilly; becoming warm westwards to a centre of low pressure over the Atlantic.

Hanse Bases:- Fit all night, with variable cloud and moderate visibility (poor at isolated stations N. of Wash towards dawn).

Germany:- N. of cold front: variable layer and thundery cloud. S. of cold front, and North Sea coastal strip; broken strato-cumulus.

Helder to Heligoland:- Very little cloud. Possibly a few fog patches. Visibility moderate to good.

W. France:- Very little cloud. Fog patches in Channel and off shore Bay of Biscay; Brest area may be affected.

Statistics

	<u>Mine-laying</u>	<u>Leaflets</u>
(a) No. of aircraft despatched.....	34	5
(b) " " reaching primary area.....	32	5
(c) " abortive sorties (technical defect..1) (flak.....1)	2	Nil
(d) " aircraft missing.....	Nil	Nil

Weather Experienced

Hanse Bases:- Little or no cloud. Moderate visibility, apart from a few patches of fog and mist.

Frisians:- Patches of strato-cumulus (base 2,000') and of sea fog. Visibility moderate to poor. Wind at 2,000': variable 250-300°/15-20 n.p.h.

W. France:- Small amounts of strato-cumulus. Patches of sea fog in Channel. Moderate visibility in S. Wind at 4-5,000': 80-90°/10-15 n.p.h.

No moon.

Air Defence

5. Flak was encountered from various points on the French Atlantic coast, and from the Frisian Islands and outlying ships. 28 sorties by controlled fighters were overheard and 2 attacks were reported, but no damage was sustained.

Casualties

6. All our aircraft returned safely. 2 instances of minor flak damage were reported by the ninelayers, and one by an aircraft dropping leaflets.

MLH/VF,
BC/S. 26342/6/ORS.
6th August, 1943.

Target	Group	Type	Sorties	A/C reporting attack on		Hostile sorties		Missing	Damage			Interceptions		Results
				prin. area	alt. area	over en. territ.	not over on. territ.		flak	fighter	not R/L	atta. asked	not attacked	
<u>REPORTING</u>														
FRISLANDS	3	Lanc. II	1	1	-	-	-	-	-	-	-	-	-) 57 Misses
		Str. I	5	5	-	-	-	-	-	-	-	1	1	
		Str. III	6	5	-	-	-	-	1	-	-	-	-	
GIRONDE	3	Str. I	1	1	-	-	-	-	-	-	-	-	-) 19 Misses
		Str. III	5	4	-	-	-	-	-	-	-	1	-	
SW. N.Z. LINE	4	Well. X	5	5	-	-	-	-	-	-	-	-	-	10 Misses
SOUTH COAST	4	Well. X	5	5	-	-	-	-	-	-	-	-	-	10 Misses
		Well. X	6	6	-	-	-	-	-	-	-	-	-	12 Misses
<u>REPORTING TOTAL</u>			34	32	-	-	2	-	2	-	-	2	2	108 Misses
<u>LEAFLETS</u>														
OUTLINE	91	Well. Io	1	1	-	-	-	-	1	-	-	-	-	
ALICES	92	Well. III	4	4	-	-	-	-	-	-	-	-	-	
<u>LEAFLET TOTAL</u>			5	5	-	-	-	-	1	-	-	-	-	
<u>TOTAL</u>			39	37	-	-	2	-	3	-	-	2	2	

BOMBER COMMAND REPORT ON NIGHT OPERATIONS, 29/30th MAY, 1943.WUPPERTAL - BARMEN: Leaflets.SUMMARYWUPPERTAL

1. 611 aircraft, out of a force of 719, attacked the Barmen district of Wuppertal with very great success. The fire-raising technique was effectively employed, as a complement to ground-marking, resulting in the best concentration yet achieved by the Pathfinder Force. Immense damage was caused in the town, covering over 1,000 acres and affecting 113 industrial concerns, as well as totally disrupting the transport system and public utilities and rendering 118,000 people homeless. We lost 33 bombers, but destroyed at least 7 enemy fighters.

LEAFLETS

2. 3 aircraft despatched to drop leaflets over Lille were recalled owing to impending thunderstorms at base.

Metecorological Forecast

3. Home Bases:- Generally good. All fit at dusk, apart from local smoke in 6 Group. Threat of low stratus S. of Felixstowe - Ternhill, which may cause trouble in 4 and 6 Groups after 0500.

Germany:- Much strato-cumulus E. of 10° E along Baltic coast, breaking inland. Rhineland: 3-4/10ths. broken strato-cumulus at 15-20,000', gradually dispersing. Poor visibility, due to local haze and smoke.

W. France:- Fine.

WUPPERTAL - BARMENPlan of Attack

4. Zero hour: 0045 hours. Period of attack: 0042-0135 hours.

En route to the target, 4 special Y aircraft (2 Stirlings and 2 Halifaxes) were to drop yellow T.I.'s at 50° 59' N. 06° 26' E. This marking was to be maintained by 13 Y-type backers-up, dropping their yellow T.I.'s blindly on H2S, if serviceable, otherwise aiming them at existing T.I.'s. This marking was to be repeated at the same position by the same aircraft on the homeward trip.

At the target, 9 Oboe Mosquitoes were to mark the aiming point with red T.I.'s dropped in salvo at 6 minute intervals between 0042 and 0128 hours. Between 0048 and 0131 hours, 37 backers-up were to aim green T.I.'s so as to overshoot, by one second, red T.I.'s if seen, otherwise the estimated centre of all green T.I.'s visible. Main force crews were also to aim at red T.I.'s if visible, otherwise at the centre of all greens.

At 0047 hours, 55 "fire-raisers" of the P.F.F. carrying mixed loads, and including the 4 special Y-type aircraft which were to initiate the preliminary warning marking with yellow T.I.'s, were to attack by aiming their bombs at red T.I.'s if visible, otherwise at the estimated centre of all the green T.I.'s, again so as to overshoot by one second (plus the necessary delay for 4lb. incendiaries).

...../The main force was

The main force was to be divided into five sections, each consisting of about 130 aircraft; both incendiary and H.E. bombs were to be carried in each section, and 25% of G.P. bombs were to be long delay.

The Eastern Gee Chain was to be available on two frequencies between 23 and 0115 hours.

The tactics laid down for Lancasters and Wellingtons of 1 Group were similar to the orders given in other recent raids, with particular emphasis on the need for flying as high as possible on the return journey.

Timing

<u>Mosquitoes*</u>	<u>Backers-up</u>	<u>Main Force</u>
0042-0046	-	-
-	0048-51 at 1 min.intervals.	0047-57. Specially selected crews of Lancasters & Halifaxes.
0052	-	-
-	0053-57 5 at 1 min.intervals.	0055-0107. Specially selected crews of Wellingtons, Stirlings & Halifaxes.
0058	-	-
-	0059-0103 5 at 1 min.intervals.	-
0104	-	0105-17 Remaining Wellingtons & Stirlings.
-	0105-09 5 at 1 min.intervals.	-
0110	-	-
-	0111-15 5 at 1 min.intervals	-
0116	-	0115-27 Lancasters of 5 Group remaining Halifaxes.
-	0117-21 5 at 1 min.intervals	-
0122	-	0120-35 Remaining Lancasters
-	0123-27 5 at 1 min.intervals	-
0128	-	-
-	0129-31 3 at 1 min.intervals.	-

* plus 2 reserves.

Bomb Loads (P.F.P.)

6. Backers-up { Mosquitoes: 4 T.I. red (1/4 LB)
 4 Stirlings (Y): 2 T.I. yellow (LB) + 4 T.I. green + 3x2000HC + 1x500 MC
 6 Halifaxes (Y): 2 T.I. yellow (LB) + 4 T.I. green + 6x1000 G.P.
 23 Lancasters (Y): 2 T.I. yellow (LB) + 4 T.I. green + 1x4000 HC + 5x1000 G.P.
- Fire-raisers { 2 Stirlings (Y): 2 T.I. yellow (LB) + 3x500 MC + 19x8x30lb. I.B.
 11 Stirlings 3 x 500 MC + 21 x 8 x 30 lb. I.B.
 2 Halifaxes (Y): 2 T.I. yellow (LB) + 1 x 2000HC + 12x90x40 lb. I.B.
 18 Halifaxes : 1 x 2000 MC. + 13 x 90 x 4 lb. I.B.
 22 Lancasters : 1 x 4000 HC. + 12 x 90 x 4 lb. I.B.

Route Briefed

7. All Groups: 51°34'N. 03°30'E. - 50°59'N. 06°26'E. - Target - 51°20'N. 07°21'E - 50°33'N. 07°23'E - 50°38'N. 06°00'E - 51°22'N. 03°20'E.

...../Sorties.

Sorties

8.	(a)	No. of aircraft despatched.....	719	
	(b)	" " " reporting attack on primary area.....	611	(85.0%)
	(c)	" " " " " alternative area.....	13	(1.8%)
				+3*
	(d)	" " abortive sorties (technical or manipulative defect.....)	59	
		(sickness of crew.....)	2	
		(flak.....)	1	
			62	(8.6%)
	(e)	" " aircraft missing.....	33	(4.6%)

* (also attacked primary area)

Weather Experienced

9. Home Bases:- Isolated patches of low stratus in E. England from 0100. Local thunderstorms with rain broke out in the W. of Training Groups after 0300, and spread E. to Greenwich Meridian by dawn. Most bases remained fit all night.

Route:- Variable cirrus. Patches of alto-cumulus at 15-20,000', increasing on return. Hazy.

Target:- Variable, usually small amounts of cirrus above 24,000'. Some contrails at 20,000'. Ground haze. No moon. Visibility good.

Wind at 15,000': 300°/25 n.p.h.

Wind at 20,000': 310°/40 n.p.h.

Fight Photographic Statistics

10.	No. of photographs examined.....	519	
	" " " showing ground detail (plotted within 3 miles.....)	73	
		" between 3 & 5 miles.....	13
		" outside 5 miles.....	9
		(unplotted.....)	13
	" " " " fire-tracks only (plotted within 3 miles.....)	279	
		" between 3 & 5 miles.....	1
		" outside 5 miles.....	Nil
		(unplotted.....)	131
	No. of aircraft reporting attack.....	611	
	" " " estimated, from photographic evidence, to have bombed within 3 miles off the aiming point.....	475	

Narrative of Attack

11. The first Mosquitoes marked accurately at zero + 2, but no more arrived until zero + 20, by which time 12 bombers-up and 44 fire-raisers had already bombed. The timing of the Mosquitoes was throughout extremely poor, (see paragraph 14), but this was atoned for by the continuously accurate marking of the bombers-up and fire-raisers. The unmistakable cascade of green T.I's nullified the effect of the enemy's decoys. No creep-back developed until the end of the attack, and this did not extend outside the important built-up area. About one-fifth of the main force attacked from zero to zero + 15, one-half from zero + 15 to zero + 35, and three-tenths from zero + 35 to zero + 60.

Day Reconnaissance

12. Very heavy and concentrated damage was revealed in the centre of Barmen, spreading to the S. and S.E. Over 90% of the fully built-up area and more than half of the rest of the town was devastated. 5 out of the 6 priority factories and 108 other industrial concerns were hit, many of them seriously. Public

..../utilities

utilities were widely affected, including 2 electric power stations, 2 gasworks, a waterworks and the main railway station. The total damage in Barmen covers over 1,000 acres. By contrast, only 4 H.E. incidents have been recorded in Elberfeld.

Full details of the results of this operation are set out in Interpretive Report No. K. 1585.

Damage Assessment

13. It was estimated that approximately 2,450 people were killed, a similar number seriously injured, and 118,000 rendered homeless in Barmen as a result of this attack. 34,000 housing units were rendered uninhabitable.

Special Equipment

14. (a) Oboe 11 Oboe Mosquitoes were despatched. 3 returned early for technical reasons; the remaining 8 dropped red T.I's. The timing was bad, both ground stations bringing in their aircraft almost simultaneously, with the result that the Mosquitoes attacked in pairs with long intervals during which red T.I's were dropped. Fortunately, the backing-up and fire-raising was of such high quality that the concentration was perhaps the best achieved to date. 51 T.I's were plotted within 1 mile of the aiming point.

15. (b) Gee The Eastern Chain was operating on the Virginia frequency throughout, and on the target frequency from 2345-0215. 92% of the 534 Gee aircraft which returned useful information had no set difficulties, and obtained an average range of 360 miles - the distance of the target from the east station. 177 reported reception over the target, and many beyond to a range of 400 miles. The route lay well S. of those normally followed. Interference was light, except in the coastal area. Signals were stronger than usual, especially B. A was weakest.

16. (c) H2S 34 Y aircraft were despatched, using H2S for navigational purposes only. 22 reached the target by this method, while 7 others arrived despite unserviceable equipment. One aircraft returned early for technical reasons, and 4 (all Halifaxes) were lost.

Alternative Targets

17. 16 aircraft (including 3 which also attacked the primary) bombed alternative targets, in the areas of Cologne (2), Dusseldorf (2), the Ruhr (3), Aachen, Coblenz, Witten, Rheydt, Turnhout, Ghent, Tholen, Solingen and Weskapelle.

Enemy Defences

18. (a) Flak and Searchlights

Opposition by ground defences in the target area was slight, the flak being reported as "inaccurate" and "ineffective." A few searchlights were exposed during the later stages of the attack, but with little success. Defences en route, however, were extremely heavy, particularly along the Dusseldorf-Cologne-Bonn line, which many reports described as a continuous belt of intense heavy flak, co-operating with large numbers of searchlights. Further west, over the Scheldt Basin and Flanders, flak was concentrated in the Louvain-Ostend-Schouwen triangle, being particularly intense over Antwerp, Bruges, and Walcheren Island, and generally co-operating in each area with up to 60 searchlights.

60 aircraft were damaged by flak. Most of these instances occurred over the Ruhr W. of the target, where 22 aircraft were hit, as against 9 over the target area.

19. (b) Fighters

Enemy wireless traffic revealed the presence of 17 controlled fighter patrols, operating chiefly in the Gilze and Venlo areas. 35 pursuits were/undertaken,

undertaken, and 15 victories were claimed, of which at least 10 were substantiated by crew reports.

Since the route lay to the S. of much of the Ruhr ground defences, our bombers had to fly over the Dutch Islands - Antwerp area, where fighter activity is normally very efficient, and 18 bombers are estimated to have been lost in this way. Crews also reported a total of 76 encounters with enemy aircraft, including 16 attacks.

As usual, fighter activity was greater on the return journey, this feature being possibly accentuated by the more southerly route home, and by the scatter induced by the strong flak defences which the force had to cross after leaving the target. But only two aircraft reported damage by fighters, one on the outward and one on the return journey.

7 enemy aircraft were claimed to have been destroyed, including 4 Ju.88's, 1 Me. 110 and 2 unidentified aircraft. 3 more enemy aircraft were probably damaged.

Casualties

20.	No. of aircraft missing.....	33
	" " " damaged (a) flak.....	60
	(b) fighter.....	2
	(c) not enemy action.....	9

Observations suggest that at least 22 aircraft were lost to night fighters. 8 aircraft were seen to go down off the Dutch Islands (3 outward and 5 homeward), 6 in the St. Trond area (3 outward and 3 homeward), 6 between Aachen/Venlo and the Rhine, one at Antwerp and one at Bonn. There is no evidence that fighters had any successes over the target area. 7 aircraft were reported to have been shot down by flak - 4 over the Ruhr and one each at Maeseyck, Antwerp and Bergen-op-Zoom. The 3 other missing aircraft must be attributed to "causes unknown."

One Stirling and one Wellington crashed on return. Both were destroyed, although some of each crew were rescued. 6 aircraft were hit by British incendiaries over the target.

LEAFLETS

21. 3 aircraft of 93 Group were detailed to disperse leaflets in the Lille area, but were recalled owing to impending thunderstorms at base.

APPENDIX.

Timing of Attack

I. Pathfinder Force

8 Mosquitoes attacked, at: 0047(2), 0105(2), 0129, 0130, 0140, and 0146.

34 bombers-up attacked at: 0049, 0050(2), 0051(2), 0053(2), 0055, 0056, 0058(2), 0102, 0103, 0105, 0106, 0107, 0111, 0112, 0114(2), 0115, 0116, 0117, 0118(2), 0119, 0120, 0122, 0123, 0126(3), 0129, and 0131.

Fire-Raisers

46 fire-raisers attacked at: 0040, 0047(2), 0048(2), 0049(6), 0050(7), 0051(3), 0052(7), 0053(2), 0054(3), 0055(2), 0056(2), 0057(2), 0059, 0100(2), 0100(2), 0101, 0102, 0106, and 0107.

Main Force

104 aircraft attacked from 0047-0100

257 " " " 0100-0120

161 " " " 0120-0145

511 aircraft.

(One aircraft crashed on return, and the time of its attack is unknown.)

..../Boob Loads.

Bomb Loads

II. (of aircraft reporting attack)

Pathfinder Force

8 Mosquitoes carried T.I. only.

34 backers-up carried T.I. + H.E.

Fire-Raisers

46 aircraft carried H.E. + 30lb. incendiaries

Main Force

293 aircraft carried H.E. + 4-lb + 30-lb. incendiaries

81 " " 4-lb. + 30-lb. incendiaries

59 " " H.E. + 30-lb. incendiaries

56 " " H.E. + 4-lb. incendiaries

34 " " H.E. only

523 aircraft.

MLJ/JT.

EC/S. 26342/5/ORS.

12th. August, 1943.

TARGET	GROUP	TYPE	SORTIES	A/C REPORTING ATTACK ON		A/C REPORTING SORTIES			MISSING	DAMAGE			INTERCEPTIONS		RESULTS		
				PRIMARY AREA	ALTERNATIVE AREA	OVER ENEMY TERRITORY	NOT OVER ENEMY TERRITORY	FLAK		FIGHTER	NOT ENEMY ACTION	ATTACKED	NOT ATTACKED	Tons of Bombs			
														H.E.	Inc.		
WUPPERVAL	P.P.P.	Moq-IV	11	8	-	2	1	-	1	-	-	-	-	-	(P) 865.3 (A) 20.8 (N) 33.3	946.7 17.7 50.0	
		Stir-I	2	2	-	-	-	-	-	-	-	-	-	-			
		Stir-III	2	2	-	-	-	-	-	-	-	-	-	-			
		Hal-II-IA	4	4	-	-	-	-	-	-	-	1	1	-			
		Hal-III	7	6	1	-	-	-	-	1	-	1	-	-			
		Lano-I	6	6	-	-	-	-	-	-	-	-	-	-			
	Lano-III	14	14	1	1	-	-	-	-	-	-	-	3	Heavy Bombs 8000 4000			
	Stir-I	7	6	-	-	1	-	-	1.0	-	-	2	1				
	MAD FORCE		Stir-III	8	8	-	-	-	-	-	-	-	-	-	-	(P) - 9 (A) - (N) -	258 9 11
			Hal-II-L	9	8	-	-	-	-	-	-	-	-	-	-		
			Hal-III	15	10	10	-	2	3	-	1AC+G	-	1.0	-	-		
			Lano-I	8	6	-	-	2	-	-	-	-	1.0	-	-		
			Lano-III	23	22	-	-	1	-	-	2	-	1.0	-	1		
			Lano-I	25	22	-	-	-	-	-	-	-	-	-	9	(P) ON PRIMARY (A) ON ALTERNATIVE (N) CARRIED BY MISS./C.	
			Lano-III	71	62	3	-	3	3	-	4+	-	-	-	5		
			Well-423	1	1	-	-	-	-	-	-	-	-	-	-		
			Well-X	30	28	2	-	-	-	-	3+	-	-	-	2		
			Lano-II	16	15	-	-	-	1	1.0	1E	1.0	2	-	-		
Stir-I			13	8	-	-	3	2	2	-	1E	-	-	-			
Stir-III			86	72	-	-	8	6	2+	-	1.0	3	7	-			
		Hal-II-IA	27	24	-	-	1	2	1	-	-	-	-	-			
		Hal-III	73	67	-	-	4	2	6	-	1	3	19	-			
		Hal-VE	12	12	-	-	-	-	2	-	-	-	-	-			
		Well-X	38	30	-	-	4	4	1+	-	1E	-	-	-			
		Lano-I	23	39	4+10	-	8	2	6	-	-	-	-	4			
		Lano-III	76	67	1	1	6	1	6+	-	-	1	1	1			

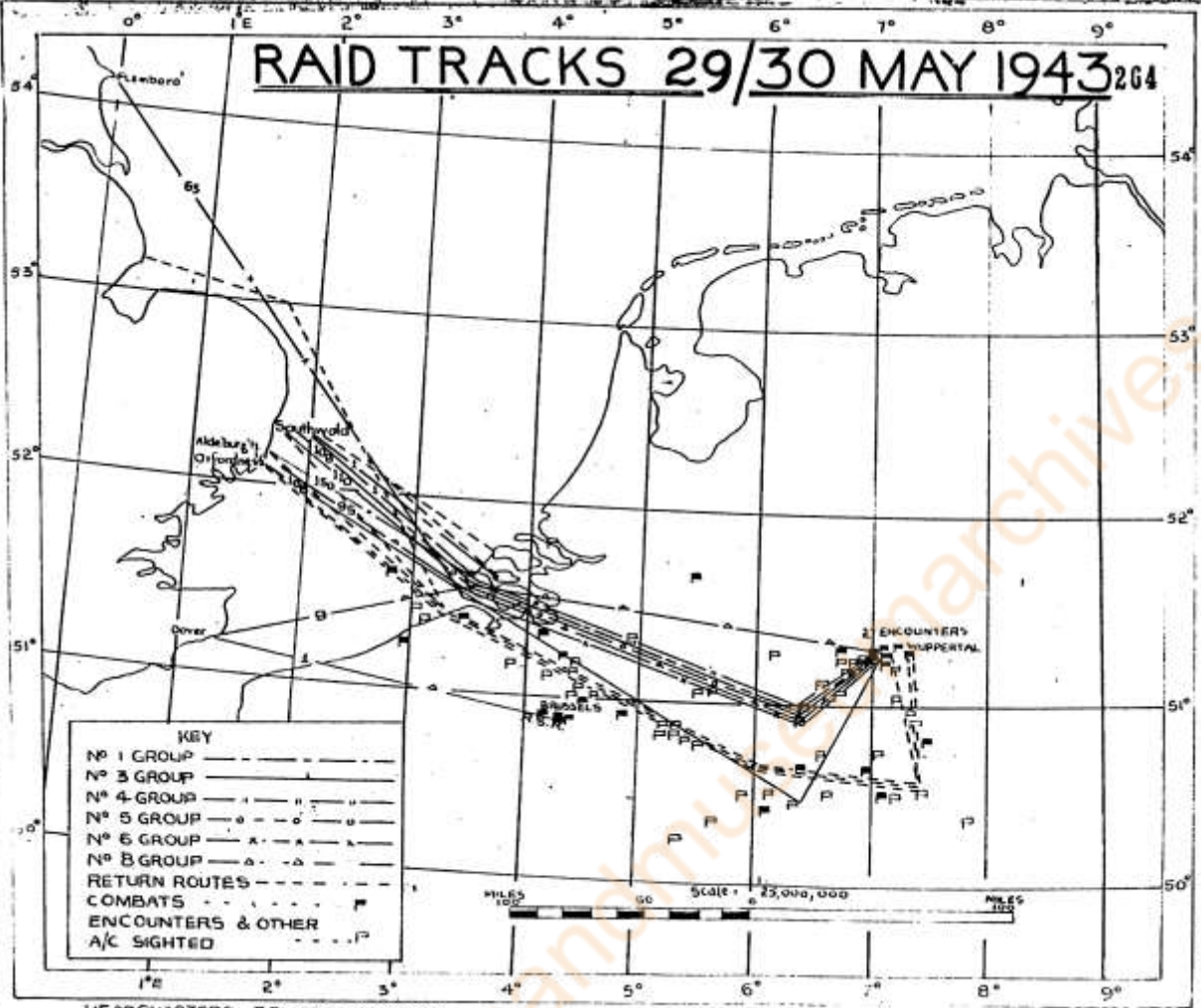
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TARGET	GROUP	TYPE	SORTIES	A/C REPORTING ATTACK ON		A/C REPORTING SORTIES			MISSING	DAMAGE			INTERCEPTIONS		RESULTS
				PRIMARY AREA	ALTERNATIVE AREA	OVER ENEMY TERRITORY	NOT OVER ENEMY TERRITORY	FLAK		FIGHTER	NOT ENEMY ACTION	ATTACKED	NOT ATTACKED		
WUPPERVAL	6	Hal-III	23	21	-	-	-	2	1	-	-	2	6	* ONE OF THESE A/C BROUGHT BACK T.L.S. * ALSO ATTACKED PRIMARY	
		Hal-VE	15	10	-	-	-	5	2	-	-	-	-		
		Well-X	44	31	2	-	-	7	4	5+1AC	-	-	1		2
BOMBING TOLL			719	611	13+30	4	58	33	50+10AC	1E+1	2E+4AC+1E+2	15	66		
LE-PIETS TOWNS	93	Well-Id	3	-	-	-	3	-	-	-	-	-	-		
TOTAL			722	611	13+30	4	61	33	50+10AC	1E+1	2E+4AC+1E+2	15	66		

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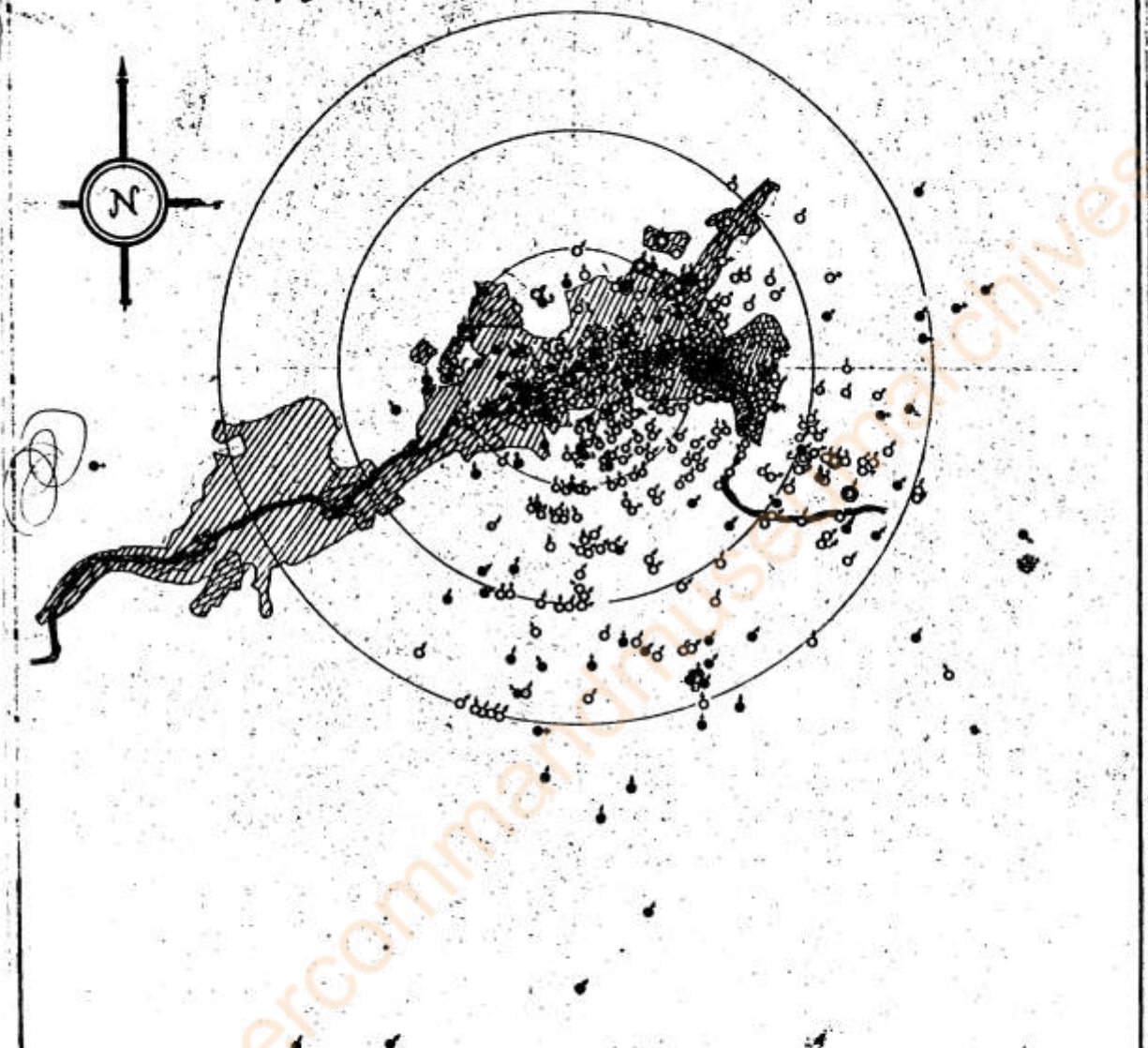
SECRET

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FINAL PLOT OF NIGHT PHOTOGRAPHS

TAKEN 29/30th MAY 1943


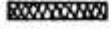
TARGET WUPPERTAL



...ORS. BC 308A...
 Date 15.8.43. Tesser. ESB.
 Ref MR 442 Cbkd 126...

Scale: 1 inch = 1 mile

Photographs taken with Bombing.

	P.F.F. Marker A/C	Main Force A/C
Plotted by Ground Detail	●	○
Plotted by fires	⊙	⊘
PLOTTED	By Ground Detail	By Fires
Within 3 miles	73	279
Outside 3 miles	22	1
UNPLOTTED	16	131
No. of prints (with bombings) examined 519		
	Residential built-up area	
	Industrial area	

BOMBER COMBINED REPORT ON NIGHT OPERATIONS, 30/31st May, 1943.

MESSAGE: LEAFLETS.

SUMMARY

Landings

24 aircraft, out of a force of 27, laid 80 mines off the French Atlantic coast.

Leaflets

14 aircraft dispersed leaflets over France.

All our aircraft returned safely from both these operations.

Metereological Forecast

Midnight frontal positions: (1) cold from Orkney to 55°N 03°E to Amsterdam to 50°N. 06°E. (2) cold from Stornoway to Harbør to Thames estuary.

Home Bases:- Generally fit at dusk, with well broken cloud. Group expect widespread fog by 0100-0200. Visibility troubles in 5 Group before dawn. Safe diversion areas: 8, and S.W., 8, 91 and 92 Groups.

Germany:- Thunderstorms and thunder rain will persist in N.W. Germany, over S. North Sea and Low Countries. Variable cloud at various levels in S. Little cloud E. of 10°E.

W.France:- Well broken cumulus and strato-cumulus at 2,000', S. of Lorient. Moderate to good visibility.

Sorties

		<u>Landings</u>	<u>Leaflets</u>
(a)	No. of aircraft despatched.....	27	14
(b)	" " reaching primary area.....	24	13
(c)	" " " alternative area (Rouen)	Nil	1
(d)	" abortive sorties (weather.....2)..... (technical defect.....1)	3	Nil
(e)	" aircraft missing.....	Nil	Nil
(f)	" mines laid.....	80	

Weather Experienced

Home Bases:- Fit, apart from ground mist in East Anglia.

W.France:- Small amounts of cloud at low, medium and high levels. Moderate visibility.

Paris:- No cloud. Good visibility.

Lille:- 2-5/10ths strato-cumulus. Good visibility.
No moon./Enemy defences

Enemy Defences

6. A little light and heavy flak was encountered at Vannes, and also off the mouth of the Gironde. One aircraft received minor damage. Some activity by controlled fighters was overheard in the areas of the Brest and Cherbourg peninsulas and St. Brieuc. 5 interceptions were reported, but no combats developed.

Casualties

7. Apart from one instance of minor flak damage, no casualties were sustained on this night.

HM/VF.
BC/S. 26342/6/ORS.
7th August, 1943.

Ministry of Defence 20/10/43, 1943

Target	Group	Type	Sorties	VC reporting attack on		abortive sorties		Missing	Damage			Interceptions		Results
				prim. area	alt. area	over en-territ.	not over en-territ.		flak	fighter	not E/L	att-acked	not attacked	
ST. NAZAIRES	1	Woll. X	6	6	-	-	-	-	-	-	-	-	-	12 mines
LORENT	1	Woll. X	6	6	-	-	-	-	-	-	-	-	-	12 mines
L. PALICE	3	Str. I	3	2	-	-	1	-	-	-	-	-	-	15 mines
		Str. III	2	2	-	-	-	-	-	-	-	-	-	
GERONS	3	Str. I	3	2	-	-	1	-	-	-	-	-	-	11 mines
		Str. III	2	1	-	-	1	-	1	-	-	-	-	
		Lone. I	1	4	-	-	-	-	-	-	-	-	1	30 mines
		Lone. III	1	1	-	-	-	-	-	-	-	-	-	
NINELYES	TOTAL		27	24	-	-	3	-	1	-	-	-	1	80 mines
LE FLIS	92	Woll. III	3	3	-	-	-	-	-	-	-	-	-	
PARIS	93	Woll. V	2	2	-	-	-	-	-	-	-	-	-	
		Woll. Ic	3	3	-	-	-	-	-	-	-	-	-	3
		Woll. III	5	4	1	-	-	-	-	-	-	-	-	-
		Woll. X	1	1	-	-	-	-	-	-	-	-	-	1
LE FLIS	TOTAL		14	13	1	-	-	-	-	-	-	-	4	
	TOTAL		41	37	1	-	3	-	1	-	-	-	5	