

BOMBER COMMAND REPORT ON NIGHT OPERATIONS, 28th Feb./1st March, 1943.ST. NAZAIRE: Ruhr: Minelaying: Leaflets.SUMMARY

1. St. Nazaire: A concentrated and destructive attack was delivered against the U-boat base of St. Nazaire on a cloudless night. 409 of the 437 aircraft despatched reached the target. Reconnaissance revealed severe and widespread damage.

5 aircraft (1.1%) did not return.

Ruhr: One P.F.F. Mosquito, equipped with Oboe, carried out an accurate nuisance raid against Essen. 2 others, detailed for Krefeld and Munchen-Gladbach, turned back early. All returned safely.

Minelaying: 4 out of 5 aircraft laid mines off St. Nazaire during our attack on the port. No casualties were incurred.

Leaflets: 2 aircraft set out to drop leaflets over Clermont-Ferrand. One completed its mission; the other crashed on return, and was destroyed.

Metecological Forecast

2. Home Bases: Warm front at midnight from Helder to Yorkshire to S.W. Scotland, then N.W.wards. At dusk, visibility will be good in N., moderate in S., but remaining above 2 miles (except locally) till 0200. South of the frontal belt, there will be variable amounts of strato-cumulus, base 2,000 feet, with local fog. After 2400, N. of the Wash, cloud will be well broken. Training Groups: 10/10ths strato-cumulus expected to persist, with moderate visibility.

Germany:- Cold front at midnight from 58°N. 19°E to 55°N. 13°E. to Helder. Much medium cloud, with rain and low cloud, will prevail in the frontal belt. N.E. of a line running approximately S.E.wards from Wilhelmshaven, there will be much strato-cumulus cloud, base 2,000 feet, tops 5,000 feet; S.W. of this line, the amount of strato-cumulus will vary, many areas being clear but hazy.

N. Italy:- Fine. Fog developing.

N. France:- Generally fine, but hazy. St. Nazaire: no cloud. Route:- 10/10ths strato-cumulus over S.W. England and W. Channel, unlikely to extend much beyond Brest.

ST. NAZAIREPlan of Attack

3. Zero hour: 2100 hrs.
4 Mosquitoes fitted with Oboe were detailed to mark the aiming point with red T.I. markers at the following times:-

2 at zero - 1 minute
1 at zero + 10 "
1 at zero + 22 "

...../26 heavies

26 heavies of P.F.P. were to act as "backers-up", aiming their green T.I. and H.E. in a salvo together at the red T.I. dropped by the Mosquito. If the red T.I. failed, 3 Lancasters of the "backer-up" force were to drop white flares at zero hour so as to identify the aiming point visually before dropping their T.I. and H.E. The green T.I. bombs were to be dropped at intervals of one minute between zero + 1 and zero + 33.

The main force (of approximately 400 aircraft, including 2 P.F.P.) was to attack in 3 sections as follows:-

- Section 1: All Lancasters.....zero + 4 - zero + 20
- Section 2: Wellingtons and Stirlings.....zero + 15 - zero + 30
- Section 3: Halifaxes.....zero + 25 - zero + 40

All the main force aircraft were instructed to bomb the red T.I. markers if these were seen, otherwise the greatest concentration of green T.I. It was emphasised that in no circumstances must they bomb before the green T.I. were seen. Aircraft of 1 Group were instructed to aim their bombs slightly to the N.E. of the centre of the concentration of markers, in order to destroy a special portion of the target.

5 Group crews were instructed to make an accurate timed run from a point 10 miles south of the target, and all crews were warned to expect a Gee interference belt centred at Lorient.

Bomb loads were to be in the ratio of 2/3rds incendiary to 1/3rd H.E. the H.E. to be fitted with No. 845 fuses and 37 pistols.

Four routes taken, see route map.

Sorties

- 4. (a) No. of aircraft despatched.....437
- (b) " " reporting attack on primary area.....409(93.6%)
- (c) " abortive sorties (technical and manipulative defects.....23).... 23(5.3%)
- (d) " aircraft missing.....5(1.1%)

Weather Experienced

5. Home Bases:- Fit for take-off and return, apart from fog and mist patches near industrial areas.

Route:- Much layer cloud over S.England, breaking to nil over Channel. Belt of layer cloud over N.French coast, breaking again to nil. Tops 4-5,000 feet. Visibility moderate. Haze over Channel and N.French coast. Wind at 10,000 feet: 090°/20-30 m.p.h.

Target:- Little or no cloud. Some ground haze. Visibility moderate. No moon.

Narrative of Attack

6. The first Mosquito, which should have bombed at zero-1 minute, dropped its markers 1½ minutes early after an indifferent run. The second Mosquito, which was due to follow a minute later, made a correct run but was unable to drop its bombs - a fate which also befell the fourth Mosquito, at zero + 32 mins. 6 backers-up dropped green T.I.'s before the first Main Force aircraft started their attack at zero + 4; 4 of these have been plotted, all 1-1½ miles from aiming point, N., N.N.E., S.E. and S.S.E. respectively. This suggests that the leading Mosquito marked very accurately.

No green T.I.'s were dropped between zero + 4 and zero + 11 minutes, but only 4 Main Force aircraft attacked during this period, at least 2 of which were within 3 miles of the aiming-point. From zero + 11 until zero + 33, the

.... /target

was consistently illuminated by the P.F.P. backers-up (together with 1st Mosquito, at zero + 14), except for a period of 6 minutes from zero + 16 to zero + 24, during which only the Pathfinder attacked; but at zero + 42, two sets of green T.I.'s were dropped, 3 miles W. and 4 miles N.W. of the aiming-point, which somewhat diverted the main effort. (See the attached plot of night photographs.) Smoke screens to the north of the town were observed, but a heavy weight of bombs was concentrated on the aiming-points. The special crews detailed to reconnoitre the target were unanimously agreed in this opinion.

Graphic Evidence

(a) Night Photographs (see accompanying diagram)

Of the prints examined, 14 showed smoke screens but no other ground detail. Aircraft in question must, therefore, have been within 4 miles of the aiming-point. Details of the remainder are tabulated below. No fire plot was undertaken.

	<u>With ground detail</u>	<u>With fire tracks only</u>	<u>Total</u>
Within 3 miles	59		59
Between 3 and 5 miles	36		36
Outside 5 miles	15		15
Not plotted	34*	187	221
Total	144	187	331

No. of aircraft reporting attack.....409
 No. of aircraft estimated, from the evidence of photographs showing ground detail, to have bombed within 3 miles of the A.P.....168

33% of the aircraft claiming attack secured photographs with ground detail, of these have been plotted. As the diagram shows, there was a fair concentration of aircraft over the docks extending north to the opening of the Canal de Trigmac at Le Boisineau, but a large number were scattered as far as 6 miles to the west and north-west of the aiming point.

(b) Day Reconnaissance

A sortie flown on the morning following the attack covered the whole area. Prints of excellent scale and quality, although some areas were obscured by smoke from fires.

Fresh damage throughout the town and docks was seen to be severe and widespread. Many fires were still burning, especially at the south end of the town in the coal dumps and depots between Rue Leferme and Bassin de Penhouet. The shipbuilding Yard of Ateliers et Chantiers de St. Nazaire (Penhouet) covering an area of 8½ and 2½ acres were devastated, and many other buildings suffered damage. These include the heavy and light sheet metal shops; the acrofoil shop; the girder steelworks, the sawmill and joinery shops, the sail loft, the warehouse, turret and machine shops, the munitions store, the carpenter's shop, the pipe and tube works, the drawing office and the canteen. Many incidents were reported in Bassin de Penhouet, Bassin de St. Nazaire and the Marshalling Yard. 9½ acres of the Coalage Company's yards and premises were laid waste, and the House, on Quai du Deland, an electrical substation and stores, a power assembly plant, a shed of the Bassin Loire power company, an accumulator house, two hutted camps and a number of industrial sheds and public buildings were damaged or severely damaged.

...../s result

As a result of this and previous raids, approximately half the buildings in the old town appear to have been destroyed.

Navigation Aids (Gee)

8. 375 aircraft equipped with Gee took part in the raid; 200 of these received signals over the target, which is 250 miles from the Southern "A" Station. Signal strengths were good, B being the weaker. Interference was light. 10 Mk. II sets were used; 2 were faulty and 7 received signals to the target.

Enemy Defences

9. (a) Flak and Searchlights

In the target area up to twenty five searchlights were operating with moderate amount of light and heavy flak. These ground defences were reported as weaker than expected and, after the first fifteen minutes of the attack, were much diminished in intensity.

There was considerable ground activity at various places on the Breton Peninsula, especially at Lorient and Vannes, where flak and searchlights were almost as active as in the target area.

Fourteen returning aircraft received minor damage from heavy flak. As is usual in Brittany, several searchlights and ground lights were seen track-indicating.

(b) Fighters

Enemy wireless traffic revealed controlled fighters in operation at St. Nazaire for the first time. There were three pursuits, but no success claims. The details of two of these pursuits agree with two reported interceptions by returning crews, and it appears that each controlled fighter carried lights. Another controlled fighter was heard patrolling near Brest but British aircraft did not come within its area of activity.

Returning crews reported fourteen approaches and four followings, five of which were over the target area and coincided in time with the decrease of the ground defences. Not one of our returning a/c reported any fighter damage.

Casualties

10. No. of aircraft missing.....5(1.3)
 damaged (a) flak.....14)
 (b) fighter.....NIL).....21
 (c) not enemy action..... 7)

In the target area there were several reports of aircraft seen falling, but use of scarecrow phenomena by the defences makes it difficult to estimate our losses accurately. Two or three aircraft were shot down in the target area, one at least by flak. Another aircraft crashed in the Fougères area with no evidence as to the cause. The other missing aircraft, a Wellington (4275) landed in Eire, but again the cause is not known.

A Stirling of 3 Group crashed while taxiing before take-off and was destroyed. The crew escaped injury. 2 aircraft suffered slight damage from incendiaries dropped by other bombers.

RINGS

11. 3 P.F.F. Mosquitoes, equipped with Oice, were despatched on nuisance raids against Essen, Krefeld and München-Gladbach. The first attacked its target accurately and dead on time, dropping 3x500 H.C. bombs from 20,000 ft through patchy cloud and a low layer of 5-7/10ths thin strato-cumulus./aircraft

aircraft was subjected to intense heavy flak for 15 miles up to the target. Both the other aircraft turned back for technical reasons before reaching the enemy coast. All returned undamaged.

MINELAYING

12. 5 Wellingtons of 1 Group set out with the Main Force of bombers to lay mines off St. Nazaire. 4 reached their target, which was free of cloud, although visibility was restricted by haze. Each laid 2 mines. The fifth aircraft returned early with engine trouble. No opposition was encountered and no damage or casualties were sustained.

LEAFLETS

13. 2 Wellingtons of 92 Group were sent to disperse leaflets in the Clermont-Ferrand area. One completed its mission without incident, seeing nothing except a single searchlight near Vichy. The other crashed into a hillside on return, and was destroyed with all hands. This loss is presumed not to have been due to enemy action. It is not known whether the aircraft reached its target.

APPENDIX (ST. NAZAIRE)

Timing of Attack

I. Pathfinder Force

The 2 successful Mosquitoes dropped their markers at 2057½ and 2114 respectively.

The 25 backscramblers attacked at the following times: 2101(2), 2102, 2103, 2104(2), 2111(4), 2112(4), 2113, 2115, 2116, 2119, 2124, 2127, 2128, 2129, 2130, 2132 and 2134.

Main Force

Section 1

89 aircraft attacked within planned period (2104-2130)

41 " " 0-20' late

2 " " more than 30' late

132 aircraft

Section 2

9 aircraft attacked 10-0' early

134 " " within planned period (2115-2130)

16 " " 0-20' late

159 aircraft

Section 3

9 aircraft attacked 10-0' early

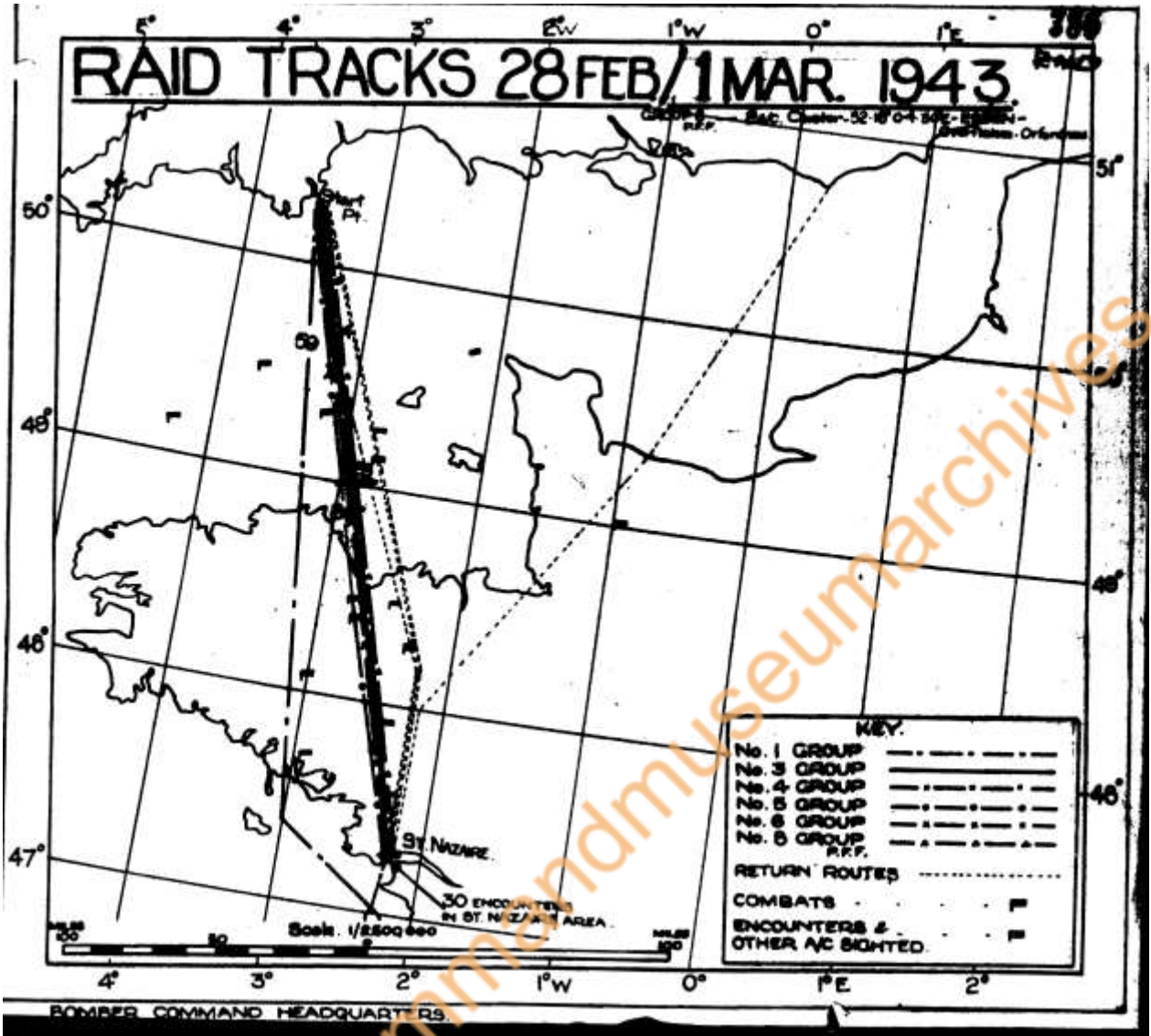
74 " " within planned period (2125-2140)

8 " " 0-25' late

91 aircraft

...../Bombing Loads

RAID TRACKS 28 FEB/1 MAR. 1943



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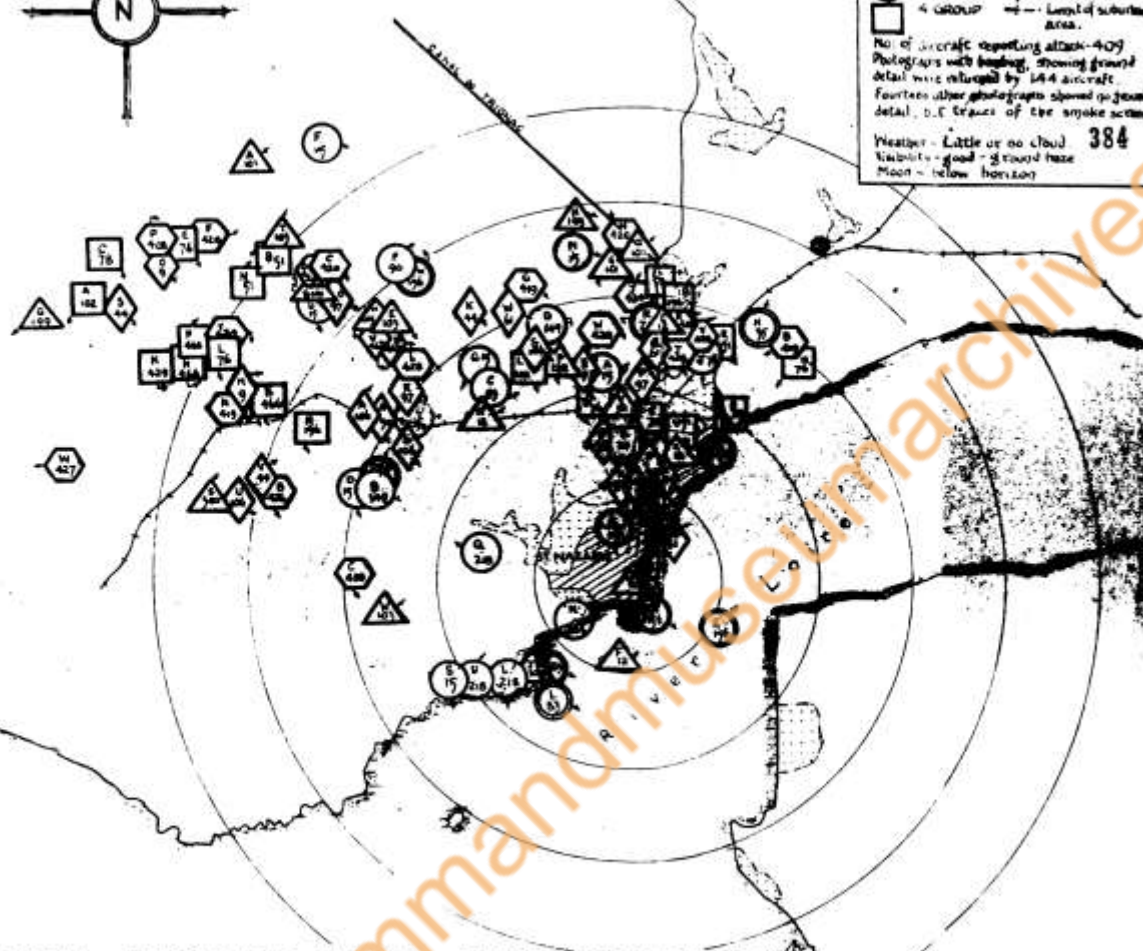
SECRET

Photographs taken with Bombyx
OFF AK (taken) 5 GROUP
ON (taken) 6 GROUP
ILLUMINATED TARGETS
1 GROUP
2 GROUP
3 GROUP
4 GROUP
APC HEADING
Limit of sub-area

No. of aircraft reported attack - 409
Photographs with headings, showing ground detail were obtained by 144 aircraft
Fourteen other photographs showed no ground detail, D.C. traces of the smoke action

Weather - Little or no cloud
Visibility - good - 3 round haze
Moon - below horizon

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FINAL PLOT OF NIGHT PHOTOGRAPHS
TAKEN 28/2-1/3 1943 TARGET ST. NAZAIRE
Scale: 1 inch = 1 mile

ORs BG 250A
Date 21/5/43 Rev. C. 49
Ref No. 21. April 1944

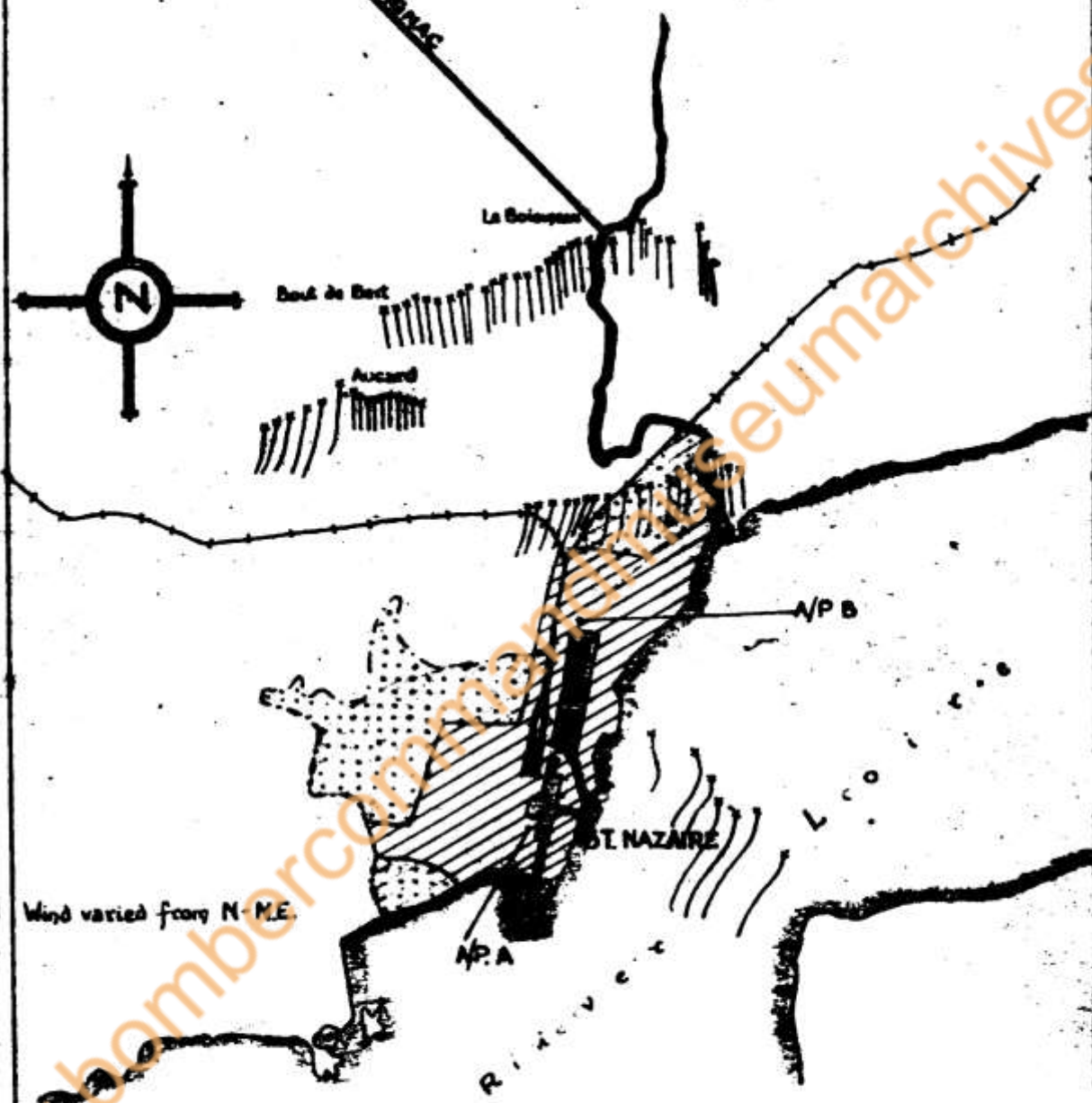
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OS 1000 2354
Date 1943
Ref 1000 2354

SECRET

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XXXX Position of generators
plotted from night photographs



ST. NAZAIRE. PLAN OF SMOKE SCREEN IN OPERATION ON THE NIGHT OF 28/2-1/3 1943

Scale 1: 50,000.

BOMBER COMMAND REPORT ON NIGHT OPERATIONS, 1/2nd MARCH, 1943.BERLIN: Ruhr: Minelaying: LeafletsSUMMARY

1. Berlin 237 heavy aircraft (of a force of 302) delivered the most successful attack to date against the German capital. The Y-aircraft of P.F.F. experienced difficulty in identifying the specific aiming-point in so large a built-up area, and their flares were widely scattered; nevertheless, a great concentration of bombs fell on the S.W. district of Berlin. Some 20 factories were partially destroyed and 22 acres of the Railway Repair Shops were devastated by fire. Residential and business property sustained tremendous damage. 17 of our aircraft were lost, and 2 crashed on return. 2 enemy fighters were claimed as destroyed.

Ruhr 5 Mosquitoes carried out Oboe raids against specified targets in the Ruhr; a sixth bombed an alternative. All returned undamaged.

Minelaying 37 aircraft (of a force of 49) laid 70 mines off the European coastline, from the Bay of Biscay to the Kattegat. 2 aircraft did not return.

Leaflets 4 aircraft dispersed leaflets in the Lille area.

Meteorological Forecast

2. Home Bases:- Occluded front at midnight from 63°N. 10°E. to 59°N. 07°E., becoming warm to Lincs and cold from 59°N. 07°E. to S.Scotland to central Eire, with a second cold front some 200 miles further N.W. All Operational Groups should be fit for early take-off. For return between 0200 and 0400 hours, variable amounts of strato-cumulus are expected, base about 1-2,000 feet. Visibility 2,000 yards, but locally 1,500 yards or less in 4 and 5 Groups, 1,000 yards in 2 Group. Training Groups: variable strato-cumulus, visibility 1,500-2,000 yards in 93 Group, 1,000 in 91 Group; visibility 1-2 miles with much strato-cumulus at 1,000-1,500 up to feet by 0200-0300.

Germany:- Variable amounts of strato-cumulus, with many clear areas. Hazy. BERLIN: cloud uncertain, probably well broken cumulus and strato-cumulus, tops to 5,000 feet, with small amounts of upper cloud in layers of 1,000 feet, becoming thick at about 15,000 feet. Visibility good. Route: Cloud over E.North Sea, tops not above 6,000 feet.

Winds:- Bases to 05°E., (1800 hours) - 10,000 feet, 310°/25 m.p.h.
18,000 feet, 350°/30 m.p.h.
25,000 feet, 360°/40 m.p.h.

5°E - 10°E..... 10,000 feet, 310°/40 m.p.h.
18,000 feet, 320°/55 m.p.h.
25,000 feet, 340°/65 m.p.h.

10°E. - Target (2200 hours) 10,000 feet, 310°/55 m.p.h.
18,000 feet, 330°/70 m.p.h.
25,000 feet, 340°/80 m.p.h.

...../over

Slight decrease and backing on return to bases.

N. Italy:- Fine. Fog patches.

Frisians and coasts of Denmark:- Well broken strato-cumulus, not below 1,500 feet. Possibly local fog patches. Good visibility.

W. France:- Fine, hazy, poor visibility.

BERLIN

Plan of Attack

3. Zero hour: 2200 hrs.

16 "Y" aircraft were detailed to lead the attack on Berlin. They were each to drop 1 T.I. yellow at position 53.51 N. 11.59 E. on the outward route, to act as a navigational aid. The 23 "backers up" were to maintain this landmarking by each aiming 1 yellow T.I. in passing at those previously dropped. 12 miles short of the target, the Y aircraft were to release red steady warning flares to indicate the line of approach. On reaching the target, provided conditions were suitable for ground marking, they were to drop red T.I. in salvo on the aiming point at the following times:-

8 at zero - 1
8 at zero + 12

The 23 "backers-up" were to use green T.I. bursting at 3000 or 6000 feet, which they were to aim, together with H.E., in salvos at the red T.I. They were to attack at intervals of 1 or 2 minutes from zero + 1 to zero + 25. Until zero + 10 they were to aim at the centre of the concentration of T.I., after this time at its S.E. edge. The 4 remaining P.F.F. aircraft were to attack with the Main Force.

The Main Force of approximately 267 aircraft was divided into 3 sections.

Section 1 (all Halifax aircraft).....	Z + 4 to Z + 15
Section 2 (Stirling aircraft).....	Z + 10 to Z + 20
Section 3 (Lancaster aircraft).....	Z + 15 to Z + 20

Crews were advised to fly below 5000 ft. on the outward journey to within 100 miles of the coast, whence they were to climb steadily to the target. Then they were to aim at the greatest concentration of T.I. visible, irrespective of colour. Their bomb loads were to be in the ratio 2/3rd incendiary to 1/3rd H.E. One half of all the H.E. bombs carried were to be fitted with No. 845 fuses. No. 37 pistols, giving long delay over the whole range, all the 1000 lb. bombs carried were to be M.C., if available.

Each Y aircraft was detailed to drop 1 S.B.C. of 4 lb. incendiaries in a position on the return route to act as a navigational aid.

If cloud conditions over the target were such as to render ground marking ineffective, the Y aircraft were to release sky marker flares (red with green stars) at the following times:-

4 at zero + 2
4 at zero + 9
4 at zero + 16
4 at zero + 22

In this case, the P.F.F. "backers-up" were to attack from zero + 4 with the Main Force, bombing the release point flares on an exact heading of 120°.

.../Route br...

Route briefed: Mano - 5432N. 1115E. - BERLIN - Wunsdorf - Texel.

For routes taken, see route map.

Sorties

4. (a) No. of aircraft despatched.....302
 (b) " reporting attack on primary area....237(78.5%)
 (c) " " alternative area 9+2* (3.6%)
 (d) " abortive sorties (technical and
 manipulative defects...32)
 (sickness of crew..... 1)
 (late..... 1)
 (attacked by fighter.... 1) : 35(11.6%)
 (e) " aircraft missing..... 17(5.6%)
 (f) Result not known (aircraft crashed on return)..... 2(0.7%)

(* also attacked primary)

Weather Experienced

5. Home Bases:- At Cusk, no cloud in Lines and East Anglia, well broken layer cloud in Yorkshire. Hazy. Patches of low cloud below 1,000 feet formed in 3 Group towards midnight, becoming extensive in East Anglia and in 92 Group between 0200 and 0400, with visibility everywhere more than 2,000 yards, especially in the north.

Route:- Little cloud in W.North Sea, 7-8/10ths (tops 6-8,000 feet) in E.North Sea, breaking a short distance inland to little or none. Very thick ground haze in Heligoland Bight.

Winds

Outward

- To 06°E. at 4-8,000 feet: 330°/30 m.p.h.
 06-10°E. at 15-20,000 feet: 330°/60-70 m.p.h.
 10°E. - Berlin at 16-20,000 feet: 330°/65-85 m.p.h.

Return

- 52½°N, 11°E., at 20,000 ft: 310°/55 m.p.h. (possibly more)
 10°E. - 04°E., at 10,000 feet: 340°/50 m.p.h.

Target:- Cloudless. Visibility good. No moon.

Surface wind: W - W.N.W. 20 m.p.h.

Night Photographic Statistics

6. Plotted by ground detail (within 3 miles.....6)
 (between 3 and 5 miles.....26).....99
 (outside 5 miles.....67)
 Unplotted - with ground detail..... 5
 Unplotted - with fire tracks.....75
 Total no. of photographs examined.....205
 No. of aircraft reporting attack.....237
 " estimated (from the evidence of photographs showing
 ground detail) to have bombed within 5 miles of
 the aiming point..... 78

...../Narrative of Attack

Narrative of Attack

7. Since no illuminator flares were used, and the moon was down, the effectiveness of this blind-bombing attack depended entirely on the accuracy of the ground-marking. The fact that the effort was spread over an area of 100 square miles must therefore be attributed to scattered bombing by the Pathfinders. (Of the 16 Y-aircraft despatched only 8 laid T.I.'s blindly on H2S).

The first Y aircraft whose position has definitely been plotted dropped red T.I.'s about 3 miles N.W. of the aiming point, and it is highly probable that two others marked in the same area at about the same time, i.e., during the three minutes before zero hour. This marking was too early to attract much attention, however, and there followed two more Y-aircraft and a backer-up from 4 to 7 miles to the S.W. After Z+3 there was a gap of 6 minutes during which no T.I.'s were dropped. All the later red T.I.'s of both the first and second waves were placed some miles to the S. or S.W. The red T.I.'s to the S. were, apparently, effectively backed up by green T.I.'s, but few of the main force, approaching as they did from the N.W., penetrated beyond the S.W. markers.

Most of the bombing was scattered over the S.W. suburbs of Berlin, being centred about 6 miles from the aiming point. Although considerable damage was done in this area, nothing like the planned concentration was achieved. This was mainly because Berlin is far too big a target for the effective use of H2S alone, the vic-ing-screen/being completely filled by reflections from the built-up area. This makes it virtually impossible to find the aiming-point without such assistance as illumination, or a timed run from an easily identifiable point in open country.

Day Reconnaissance

8. D.A. sorties flown on 5rd, 9th and 19th March, 1943, covered the whole town and suburbs of Berlin on photographs of for the most part excellent scale and quality. Very heavy damage was revealed in the districts centred upon Wilhelmsdorf to the W. and S.W. of the city. About 20 factories were partly destroyed, as well as the Railway Repair Shops adjoining the Templehof Marshalling Yards, where 22 acres of workshops were devastated by fire. 2 large manufacturers of wireless sets, the Telefunken and Blaupunkt-Werke, were severely damaged, as were 2 makers of telephone equipment, a manufacturer of roller-bearings and 2 branches of the Askania Werke, makers of optical and precision instruments. Many warehouses and store sheds were demolished in the suburbs, especially in the inland docks at Hafenwest. Besides the destruction of a number of hutted camps housing factory workers, many barrack huts and military installations were burnt out.

Railway communications were apparently interrupted only in one place, by a direct hit on the trackway, but platforms of Zehlendorf Mitte Station, railway buildings at Lankwitz and Anhalter Stations and an Underground Depot at Schöneburg were damaged.

Residential and business property suffered heavily. The most characteristic structure in Berlin is the large building block, containing flats or offices, and about 5,000 of these, together with some 600 detached or semi-detached houses, were destroyed or very severely damaged.

Navigational Aids (Go)

8. 192 aircraft used Mk.I and 29 Mk.II sets. 89% of the former and 83% of the latter had no difficulties; the average ranges were 310 and 290 miles respectively. U of 35 Squadron, using a Mk.II set, obtained the maximum range of 409 miles. Interference was, as usual, negligible across the North Sea, but the range appears to have been limited by the weakness of the C and a signal B was received 60 miles from Berlin. The Eastern Chain was used on Virginia frequency.

.../Blind Bombing Aids(H2S)

Blind Bombing Aids (H2S)

9. This was the first occasion on which Y-type aircraft were used to mark a very large target. Most navigators reported that the built-up area filled the screen, making it impossible to identify the exact aiming-point. 8 aircraft marked successfully on H2S, the positions of 4 of which have been plotted by photographs; all were more than 3 miles from the aiming-point, towards the west and south. 4 aircraft attacked despite unserviceable Y-equipment, but only one of these released any markers. One Y-aircraft was lost.

Enemy Defences10. (a) Flak and Searchlights

Up to 200 searchlights exposed in the Berlin area, forming large cones of 20 to 30 beams. They were deployed round the city and in a broad band to the north. The cones seemed to remain fairly steady and did not always appear to co-operate with flak, possibly because there were night fighters in the target area. Heavy flak was only moderate in intensity, and the general opinion of crews was that it was rather less formidable than expected.

Stragglers en route crossed several heavily defended areas, which sent their guns and searchlights into action. Defences of Sylt, Aero Island, Kiel, Lubeck and Rostock were all very active during the journey to the target. The briefed return route was overland, crossing the coast at Texel, but from observations it appears that there was a considerable scatter of aircraft. Ground defences at Magdeburg, Hanover, Bremen, Munster, Osnabruck and the Ruhr were reported as intensely active.

38 of our aircraft were damaged by heavy flak, 4 on the journey out, 21 in the target area and 13 on return. In 8 of these cases, including 5 during the return, the damage was sustained while the bomber was held in a searchlight cone. Nearly all the aircraft damaged by flak during the return journey were flying at heights of 6-12,000 feet.

(b) Fighters

Enemy wireless traffic revealed great activity by controlled night fighters. 20 patrols were located and 32 pursuits attempted. 3 attacks and one success claim were heard. Much of the R/T traffic was fragmentary, because of strong interference, and on 16 occasions the G.C.I. controller ordered a change of frequency. A large amount of this interference appears to have been caused by Tinsel.

Crews reported 4 attacks, 17 approaches and 5 followings, the majority of which occurred after our aircraft had left the target. Fighters were sighted in the Berlin area and 3 approached, but no combats developed. The gunners of a Halifax (78 'Q') and of a Stirling (175 'J') each claimed to have destroyed an enemy fighter during the return. Confirmatory observations from other crews support these claims.

2 of our aircraft sustained fighter damage.

Casualties

11.	No. of aircraft missing.....	17
	" damaged (a) flak.....	38
	(b) fighter.....	2
	(c) not enemy action.....	4
		44

..../A missing Halifax

A missing Halifax (76 'V') sent a message at 2148 hours to say that it had been attacked by a fighter and was returning to base. A fix was given at 2216 hours near the island of Terschelling, but nothing further was heard from this aircraft. The position of another missing Halifax (35 'O') was estimated to be near the Zuider Zee at 0035 hours, but nothing further was heard.

An outbound aircraft was coned over Flensburg, and was probably shot down in flames by flak.

In the Berlin area there were numerous reports of aircraft falling in flames from searchlight cones. It is estimated that 4 aircraft were lost in this area, of which at least 2 were shot down by heavy flak with searchlight assistance.

The remaining 10 aircraft were probably lost after having left the target, and there were several observations of aircraft falling at scattered places en route. 2 of these occurred over Bremen and Hanover, where intense heavy flak co-operated with searchlight cones.

4 other successes can probably be credited to the night fighters, leaving 4 losses to causes unknown.

Thus the probable causes of loss may be summarised as follows:-

	Flak	Fighter	Unknown	Total
Outj.	1	-	-	1
Target Area	2	-	2	4
Home	2	5	5(or Out)	12
Totals	5	5	7	17

Two Lancasters crashed on return, becoming total wrecks. One (57 'A') hit an electric power cable and all the crew were killed. The other (9 'J') flew into the ground and three members of the crew were killed. In conditions of low cloud and poor visibility, both crashes may be presumed not to have been due to enemy action.

On this night the Germans made a very large controlled fighter effort, directed against our aircraft both on the outward and return routes. This effort appears to have been unsuccessful during the flight to Berlin, probably because of the jamming effect of Tinsel and the high concentration achieved by our bombers, both of which countermeasures are at their most effective on a dark night. After leaving the target, the British aircraft scattered and lost height, and became easier targets for controlled night fighters. Moreover, some aircraft strayed over heavily defended areas, where at least 2 were shot down.

RUHR

12. 6 Mosquitoes of 109 Squadron were despatched on Oboc tests against the towns of Cologne, Ruhrort, Bochum, Dortmund, Duisburg and Essen. The first five bombed their objectives in clear conditions from 28-30,000 feet; the sixth, experiencing technical trouble, attacked Gladbach. All returned undamaged.

MINELAYING

Results

13. 49 aircraft set out to lay mines in the Kattegat, Heligoland Bight, the Elbe estuary, off the Frisians and the west coast of France. 8 returned early /on account

on account of the weather and 4 for technical reasons; 35 reached their targets, laying a total of 70 mines. 2 aircraft were lost.

Enemy Defences

14. (a) Flak and Searchlights

<u>Biscay Ports</u>	Searchlights, co-operating with light flak, were exposed at Vannes and on Belle Ile. No flak damage was sustained by our aircraft.
<u>Frisians</u>	Light flak was fired from Spiekeroog and from 10 ships off the islands. 2 aircraft sustained damage by flak.
<u>Kattegat</u>	Light flak was fired from Sletterhage, damaging one aircraft.

(b) Fighters

There was evidence of controlled fighter activity in the Bight and one success claim was overheard. 2 crews reported approaches by fighters off the Frisians but no combats developed.

Casualties

15. No. of aircraft missing.....2
 " damaged (a) flak.....3
 (b) fighters.....NIL
 (c) not enemy action.....NIL

There were no observations of aircraft seen falling, but it seems probable that the overheard wireless claim was genuine, and that one aircraft was shot down by controlled fighter. There is no evidence as to the cause or place of loss of the other missing aircraft.

LEAFLETS

16. 4 aircraft from 92 Group dispersed leaflets in the Lille area. Up to 20 searchlights were active at St. Valery-sur-Somme, co-operating with a little light flak, but none of our aircraft was damaged.

APPENDIX (Berlin)

Timing of Attack

I. Pathfinder Force

12 Y-aircraft attacked, at the following times: 1957, 1959(3), 2203, 2205x, 2210(1+1x), 2211, 2212x, 2213, and 2220x.

x (H2S u/s)

19 hackers-up attacked, at: 2200, 2209, 2210(2), 2211(2), 2212, 2213, 2216, 2217, 2218(3), 2223, 2224 and 2225. = 31 aircraft.

Main Force

Section 1 (Halifaxes)

1 aircraft	attacked	3' early
50 aircraft	attacked	within planned period (2204 - 2215)
5	"	0-15' late
56 aircraft		

...../Section 2

Section 2 (Stirlings)

6 aircraft attacked 5-0' early
 17 " within planned period (2210-2220)
 12 " 0-10' late
 35 aircraft

Section 3 (Lancasters)

53 aircraft attacked 15-0' early
 47 " within planned period (2215-2220)
 15 " 0-15' late
 115 aircraft

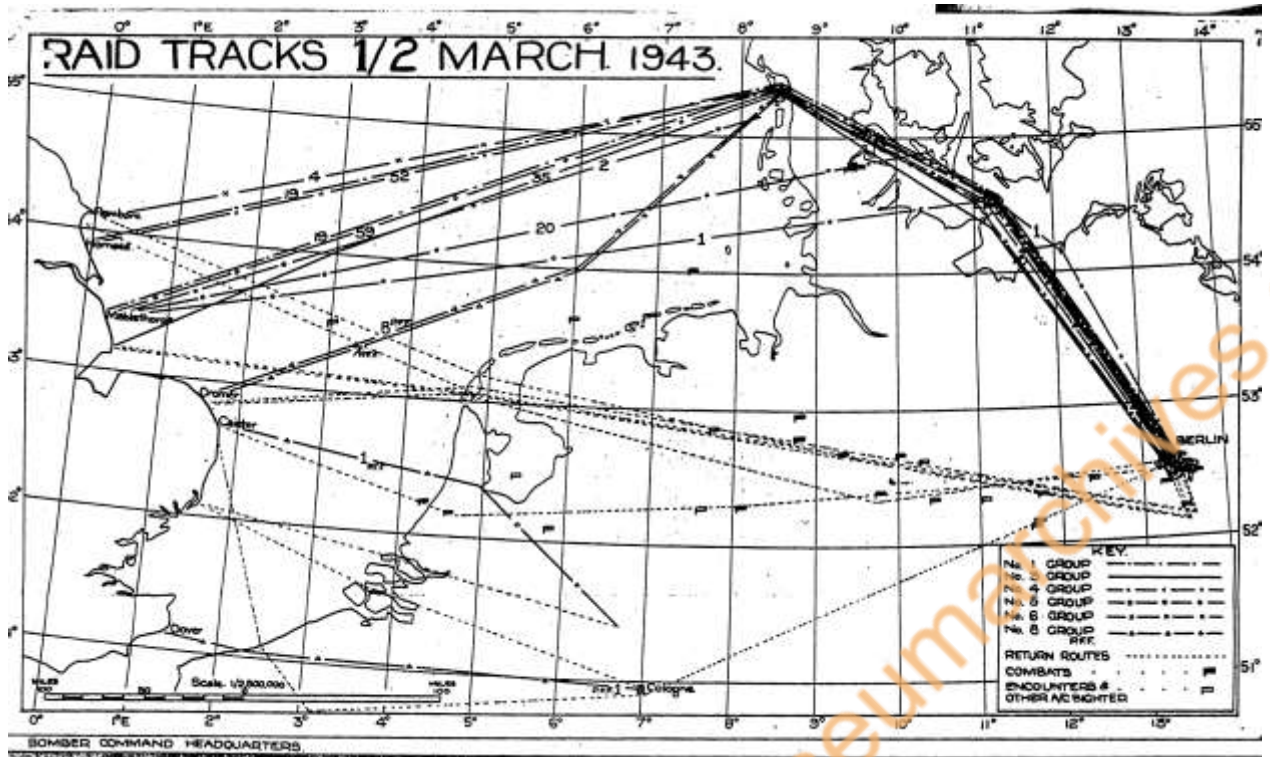
HLM/VP.
 DC/S. 26342/6/ORS.
 14th June, 1943.

1-2nd March, 1943. RESULTS: BOMB TARGETS: MINELAYING: LEAPLETS

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 E/A	attacked	not attacked	Tons of Bombs	H.E. Inc.	
BERLIN	P.F.F.	Halifax 'F'	6	5	-	-	-	1	-	-	-	-	-	-	12.6	10.2
		Halifax 'G'	7	5	-	2	2	-	1AC	-	-	-	-	-	11.7	8.9
		Stirling I	10	7	1	2	2	-	2	-	1E	-	-	-	18.0	17.7
		Lancaster I	16	16	-	-	-	-	1AC+1	-	-	-	1	-	3.6	1.9
	1	Lancaster I	40	34	2	-	2	2	1AC+2	-	-	-	2	-	5.6	2.4
		Lancaster III	2	2	-	-	-	-	-	-	-	-	-	-	-	-
	5	Stirling I	38	27	1	1	6	3	3	1	1E	-	2	8	Primary	
		Stirling III	12	8	1	-	2	1	1	1	1E	-	1	1	Alternative	
	4	Halifax 'G'	52	43	1	-	5	3	1E+4	-	-	-	1	3	Malicious	
		Lancaster I	58	46	-	1+1a	7	3	1AC+3	-	1E	-	-	3	Jettisoned	
5	Lancaster I	40	33	2*	1a	2	2	9	-	1E	-	2	2	E.T.		
	Halifax 'G'	21	13	3	1	2	2	3	-	-	-	2	2	U-Boat Unknown		
BERLIN	TOTAL	302	237	9+2*	5+2a	30	17	1E+1AC +33	2	4E	-	4	22			
COLOGNE	B	Mosquito	1	1	-	-	-	-	-	-	-	-	-	-	(P) 0.7	-
DUISBURG	B	Mosquito	1	1	-	-	-	-	-	-	-	-	-	-	(P) 0.7	-
DORTMUND	B	Mosquito	1	1	-	-	-	-	-	-	-	-	-	-	(P) 0.7	-
DUISBURG	B	Mosquito	1	1	-	-	-	-	-	-	-	-	-	-	(P) 0.7	-
ESSEN	B	Mosquito	1	1	-	-	-	-	-	-	-	-	-	-	(A) 0.7	-
BOMBING	TOTAL	6	5	1	-	-	-	-	-	-	-	-	-	-		
BOMBING	TOTAL	308	242	10+2*	5+2a	30	17	1E+1AC +33	2	4E	-	4	22			
MINELAYING																
LORLET	1	Well. III	5	5	-	-	-	-	-	-	-	-	-	-	10 mines	
ST. NAZAIRE	1	Well. III	2	1	-	-	1	-	-	-	-	-	-	-	2 mines	
	1	Well. IV	6	1	-	-	5	-	-	-	-	-	-	-	2 mines	
PRISLAN IS.	3	Well. III	4	3	-	-	-	1	-	-	-	-	1	-	6 mines	
KAPTEMAT	4	Halifax 'G'	5	5	-	-	2	-	1AC	-	-	-	-	-	6 mines	
HELENSBURGH	6	Well. X	10	6	-	-	1	1	-	-	-	-	-	-	16 mines	
NEW BOSTON	6	Well. III	4	4	-	-	-	1	-	-	-	-	1	-	8 mines	
PRISLAN IS.	6	Well. III	10	10	-	-	3	-	1AC	-	-	-	-	-	20 mines	
MINELAYING	TOTAL	49	35	-	-	12	2	2AC+1	-	-	-	2	2	70 mines		
LEAPLETS																
LITTLE	22	Well. III	4	4	-	-	-	-	-	-	-	-	-	-		
TOTAL			361	281	10+2*	5+2a	48	19	1E+1AC +34	2	4E	4	24			

* Result not known: crashed on return

= Jettisoned



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BOMBER COMMAND REPORT ON NIGHT OPERATIONS, 2/3RD MARCH, 1943.Ruhr: Minelaying (Frisians - W. France)SUMMARYRuhr

1. 6 P.F.F. Mosquitoes were despatched on nuisance raids against targets in the Ruhr. 4 attacked their objectives, and one other bombed an alternative. All returned undamaged.

Minelaying

60 aircraft of 1,4,5 and 6 Groups set out to lay mines off the French Atlantic coast, IJmuiden and the Frisians. 40 reached their targets, where 94 mines were laid. 2 aircraft were lost, and 2 others crashed and were destroyed on the return route.

Metereological Forecast

2. Main cold front at midnight from 55°N. 20°E. to 50°N. 10°E. to Thorney Island to Lough Erne. Another cold front about 100 miles ahead of this.

Home Bases:- Variable strato-cumulus, often small amounts, not below 1,500 feet. Visibility generally moderate to good till midnight, but smoke troubles in 5 and 2 Groups, with visibility decreasing locally to 1,000-1,500 yards by about 2300. 3. and 4. Training Groups: cloud at 1,000 feet, local smoke after midnight. 6 Group good for diversion all night.

Germany:- High heavy convection cloud over Bight and N. German plain E. of 10°E. W of 10°E., convection will be more limited, but some broken medium cloud may persist in the Cologne area. Ruhr: about 8/10ths., base 1,500-2,000 feet, tops 6-8,000 feet. Patches of medium above.

N. Baltic:- 6-8/10ths cumulus, base 1,000-1,500 feet. Frequent showers. Route: 8-10/10ths. cumulus and strato-cumulus over W. Denmark, base 1,500 feet, tops 6-8,000 feet, perhaps locally to 11,000 feet. Freezing level 1,500 feet. Wind at 10°E., 300°/100 m.p.h.

Frisians:- 8/10ths cumulus and strato-cumulus, below 1,000 feet in E. with showers; otherwise, breaks in cumulus at 1,500 feet. Risk of low patches. Rather strong winds, 310°/50-60 m.p.h. at 5°E.

W. France:- To Brest: much strato-cumulus and patches of stratus, main base 1,500 feet with patches below. Thence southwards, fine but hazy. Front to be crossed with much cloud, probably 10/10ths, at 1,200-5,000 feet, maybe to 8,000 feet. Bay of Biscay:- cloudy in N. cloudless in S.

RUHR

3. 6 P.F.F. Mosquitoes, equipped with Oboc, were despatched on nuisance raids against Rheinhausen, Cologne, Essen, Lusseldorf, Eochum, and Hanberth respectively. 4 attacked their objectives from 27,500-28,000 feet; one bombed an alternative target, and one returned early. Details: /over

the Frisian Islands, and from three or four flak ships. One aircraft of 6 Group successfully escaped from a small cone of searchlights by diving to a height of only one hundred feet. Not one of our aircraft was hit by flak.

Enemy wireless traffic revealed that controlled fighters were operating over both the West and East Frisians. Three patrols were located and, although only one unsuccessful pursuit was overheard, it appears from other references that the controlled fighters achieved at least one attack and a possible success.

The G.C.I. controller warned his fighters that the British aircraft were flying very low and on one occasion gave instruction that a bomber at zero height over the sea was not to be attacked.

Crews only reported the approach of one fighter. No attack developed.

W. France

The 8 Lancasters minelaying in the Gironde Estuary followed a route out into the Atlantic and across the Bay of Biscay. They only encountered slight flak defences near the Gironde Estuary.

There was one approach over the Bay of Biscay by an enemy fighter, but the Lancaster evaded successfully. None of our aircraft sustained flak or fighter damage.

Casualties

8. Frisians

No. of aircraft missing.....1
" Damaged (a) flak.....Nil).....3
(b) fighter.....Nil)
(c) not enemy action 3)

The missing aircraft of 427 Squadron was probably shot down by controlled night fighters.

A Wellington (429 X) crashed into the sea, following the failure of both engines. One member of the crew was rescued by the Air Sea Rescue Service two-and-a-half days later, but was unable to account for the failure.

A Halifax of 78 Squadron overshot on landing and was burnt out, two members of the crew being killed.

W. France

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

There is no evidence as to either the place or cause of loss of the missing Lancaster.

CM/VF.
C/S. 26342/1/ORS.
25th May, 1943.

Target	Group	Type	Sorties	No reporting attack on		Sortive sorties		Lossing	Damage			Inter. actions		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.	Ino.	
NEPTUNE	8	Mosquito	1	1	-	-	-	-	-	-	-	-	-	(P) 0.7		
COLOMBE	8	Mosquito	1	1	-	-	-	-	-	-	-	-	-	(P) 0.7		
BEEN	8	Mosquito	1	1	-	-	-	-	-	-	-	-	-	(P) 0.7		
DE WERP	8	Mosquito	1	1	-	-	-	-	-	-	-	-	-	(P) 0.7		
BOUEN	8	Mosquito	1	-	-	1	-	-	-	-	-	-	-	-		
H. B. EN	8	Mosquito	1	-	1	-	-	-	-	-	-	-	-	(A) 0.7		
BOMBING TOTAL			6	4	1	1	-	-	-	-	-	-	-			
NESTLE	1	Well. X	4	1	-	-	-	-	-	-	-	-	-	2 mins		
LEWIS	1	Well. III	5	4	-	-	1	-	-	-	-	-	-	8 mins		
BOUEN	1	Well. III	4	1	-	-	3	-	-	-	-	-	-	2 mins		
NESTLE IS.	4	Well. III	5	4	-	-	1	-	-	-	-	-	-	8 mins		
		Well. X	8	5+*	-	-	2	-	-	-	1E	-	-	10 mins		
		Halifax 2	11	11	-	-	-	-	-	-	1E	-	-	26 mins (including 8x1000 lbs.)		
SECOR ESTUARY	5	Le no. 1	8	5	-	-	2	1	-	-	-	-	1	20 mins		
NESTLE IS.	6	Well. III	13	8	-	-	6	1	-	-	1E	-	-	1	16 mins	
		Well. X	3	1	-	-	2	-	-	-	-	-	-	-	2 mins	
INFLUENCING TOTAL			60	40+*	-	-	17	2	-	-	-	-	2		30 mins	
T O T A L			66	44+*	1	1	17	2	-	-	2E+1E	2	2			

* aircraft crashed in sea - result unknown.

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BOMBER COMMAND REPORT ON NIGHT OPERATIONS, 3/4th MARCH, 1943.HAMBURG: Ruhr: Minelaying: LeafletsSUMMARY

1. Hamburg Hamburg was the intended target for a large-scale attack, on which 417 aircraft were detailed. Weather conditions were excellent, but misidentification by Y-type aircraft of the P.F.F., together with the effective decoy at Wedel - which has spoilt previous raids on Hamburg - almost completely diverted the effort to the villages of Wedel, Schulau and Rissen.

Reconnaissance revealed negligible damage in Hamburg, whereas the abovementioned villages were virtually devastated and the surrounding countryside pitted with craters. The Schulau oil refinery was, however, partially destroyed.

3.4 aircraft reported attack. 10 aircraft (2.4%) did not return, this low loss rate being partly due to good concentration en route in dark conditions, which assisted Tinsel to interfere seriously with the controlled fighter defences.

Ruhr Targets 5 Mosquitoes carried out Oboc tests against selected targets in the Ruhr.

Minelaying 11 of a force of 14 aircraft laid 30 mines off the Frisians. One bomber did not return.

Leaflets 2 out of 5 aircraft dispersed leaflets in the area of Linoges. All returned undamaged.

Meteorological Forecast

2. Home Bases:- Generally fit till late, with much strato-cumulus cloud at 4,500 feet (possibly lower at times on E. coast, in very slight showers), tops not above 5-6,000 feet. Medium cloud may persist at about 15,000 feet. Freezing level 1,000-1,500 feet, moderate icing index. Cloud may break and clear in S.

Germany:- W. of 15 E: small variable amounts of strato-cumulus cloud, moderate to good visibility. Hamburg area: probably cloudless, with good visibility. E. of 15 E.: broken convection cloud, tops probably not above 15,000 feet. Strong upper winds E. of 10°E., 60-70 m.p.h. at 15-20,000 feet, increasing eastwards. Route over S. North Sea.: similar to bases at first, medium cloud clearing quickly and low cloud gradually dispersing on second half.

N. Italy:- Fine, local haze.

N. France:- Possibly low cloud and rain, but developments in the Bay of Biscay are obscure.

...../HAMBURG

HAMBURG

Plan of Attack

3. Zero hour: 2115 hrs.

13 "Y" aircraft were to take part in this attack. They were each to drop one white T.I. on the coast at position 542N. 0854E., and one yellow T.I. as a preliminary warning 15 miles short of the target. Other P.F. aircraft were to maintain this marking by each dropping one marker of the same colour in passing.

On reaching the target, 7 of the Y aircraft were to mark the aiming point with red T.I. at zero - 4, by means of their special equipment. The 6 other Y aircraft were to remark the A.P. in a similar manner at Z + 15.

19 'backer-up' aircraft of P.F.F., not equipped with H2S, were to attack at intervals of 1 or 2 minutes from zero to zero + 26, aiming green T.I., together with H.E. and incendiaries, at the estimated centre of the concentration of T.I. already dropped. 5 other P.F. aircraft were to join the main force.

The main force was to be divided into 4 sections, which were to attack at the following times, aiming their bombs at the greatest concentration of T.I. seen, irrespective of colour:-

<u>Section 1</u>	Lancasters of 1 Group.....	Z+4-Z+15
<u>Section 2</u>	All Halifaxes.....	Z+8-Z+18
<u>Section 3</u>	Wellingtons & Stirlings.....	Z+10-Z+25
<u>Section 4</u>	Lancasters of 5 Group.....	Z+20-Z+35

Bomb loads were to be in the proportion of 1/3rd H.E. to 2/3rds incendiary, 1/3rd of all G.P. bombs carried being fitted with No. 845 fuses and No. 37 pistols, giving long delays.

On the return route, Y aircraft were to drop white T.I. as a navigational aid at position 5344N. 0832E. The "backers-up" were to maintain this landmarking as they passed.

Route briefed: 5440N. 0600E. - 5420N. 0920E. - HAMBURG - 5320N. 0950E. - 5430N. - 0600E.

Sorties

4.	(a) No. of aircraft despatched.....	417
	(b) " reporting attack on primary area.....	344 (82.5%)
	(c) " " alternative area.....	9 (2.0%)
	(d) " abortive sorties { technical defect.....41	} 56 (13.0%)
	{ sickness of crew..... 6	
	{ attacked by E/A..... 4	
	{ late..... 2	
	{ weather..... 1	
	(e) " aircraft missing.....	10 (2.4%)

Weather Experienced

5. Home Bases:- Much layer cloud above 2,000 feet. Visibility moderate to good.

Route:- 10/10ths, base 2,000 feet, tops 4,000 feet, with medium cloud above, breaking up about 03°E. and clearing completely towards the German coast. One report of slight icing (rime) near English coast.

...../Winds:

Winds: to 05°E., at 5-10,000 feet: 130°/30 m.p.h. falling light in mid North Sea, becoming 330°/50 m.p.h. towards Hamburg at 15-20,000 feet.

Target:- No cloud. Visibility moderate. Some haze. No moon.

Surface wind: 360°/10-15 m.p.h.

Enemy Airfields:- Fine. Little cloud. Good visibility.

Night Photographic Statistics (see accompanying diagram)

6.	<u>Plotted</u>	<u>With ground detail</u>	<u>With fire-tracks</u> <u>Only</u>	<u>Total</u>
	Within 3 miles	7	-	7
	Between 3 and 5 miles	5	-	5
	Outside 5 miles:	105	-	105
	<u>Unplotted</u>	21	151	172
	Total	138	151	289

No. of aircraft claiming attack.....344

No. of aircraft estimated, from the evidence of photographs showing ground detail, to have bombed within 3 miles of the A/P..... 17

Narrative of Attack

3. As the diagram shows, the main weight of the effort was centred on Wedel, some 10 miles west of the aiming point (the Altona railway station). A detailed analysis of the available data (mainly sortie raid reports and night photographs) makes it tolerably clear that there were three main reasons for the diversion: misidentification by some of the Y-aircraft, the existence of an effective decoy at Wedel, and (apparently) an error in track marking on approach to the target.

Of the 14 Y-aircraft despatched, only eight reached the target with the Y-apparatus serviceable, 3 in the first wave and 5 in the second. Immediately after the first red T.I.'s had fallen close to the aiming point, a second Y-aircraft dropped red T.I.'s at Wedel. This aircraft approached up the Elbe, complained of weak signals, and bombed at the estimated centre of the target "where river narrows". Zero hour was at slack water, when extensive sand banks were uncovered, so that the river in effect narrowed to the west of Wedel instead of, as at high water, to the west of Altona. The third Y-aircraft of the first wave bombed between the other two; all three markings were backed up with green T.I.'s so that three distinct concentrations were established. Unfortunately, only the Wedel concentration was well patronised by the main force.

On the S.E. edge of Wedel a stream, the Wedeler Aue, is dammed to form a millpond. By raising the dam the enemy has produced a small lake similar in shape to the Aussen Alster. The decoy lake is much smaller, having only one quarter of the linear dimensions of the Aussen Alster, but it is notoriously difficult to estimate size from a great height at night, and many of the main force are known to have been deceived by this decoy.

Since the planned approach was overland from the N.W., it has still to be explained why the Wedel concentration was so extensively preferred to the markers available at Altona. There is good evidence that some of the yellow T.I. track markers, dropped 15 miles short of the target, were placed too far to the west. Since the white T.I.'s were correctly placed at the turning-point on the coast of Schleswig near Husum, the misplacing of the yellow T.I.'s had the effect of swinging the course to the south. Thus, main force aircraft approached close to Wedel, were deceived there by the established concentration and the decoy lakes, and regarded the small Altona concentration as a diversion.

...../A decoy

A decoy was active to the north of Hamburg early in the raid; but the fires were evidently extinguished when the Wedel diversion became well established.

Alternative Targets

8. 9 aircraft attacked alternative targets, in the area of Rendsburg(2), Hüggen, Joldelund, Friedrichskoog, Wessalburen, Michaelis (near Brunsbüttel), Elmshorn(20 miles N. of Hamburg) and Arum Island,

Day Reconnaissance

9. Photographic reconnaissance revealed very little fresh damage in Hamburg. The craters at the west bank of Holz Hafen caused damage to sheds or greenhouses. A warehouse on the quay of Altonaer Hafen was gutted, and a pair of sheds on the jetty between Waltershofen Hafen and Griesen Wader Hafen sustained roof damage.

Very considerable destruction was caused in the villages of Schulau, Rissen and Wedel. The southern half of the Schulau Oil Refinery of the Deutsche Vacuum Öl A.G. was heavily hit, 14 or 15 sheds and at least 3 oil tanks having been gutted. The adjacent power station apparently escaped unscathed, but 2 large military huts half a mile to the west were burnt out. 2 direct hits occurred on the railway line between Rissen and Wedel. In the latter village, and in the northern half of Schulau, 150-200 houses were destroyed. The surrounding country is pitted with craters.

Navigational Aids (Gee)

10. The Eastern Chain was in operation on the Virginia frequency. 271 aircraft used Mk.I and 40 used Mk.II sets; 88.5% of the former and 77.5% of the latter had no set difficulties. The average ranges were 301 and 320 miles for aircraft using Mk.I and Mk.II sets respectively. W. of 424 Squadron, using a Mk.I set, obtained the medium range of 375 miles. This aircraft had its aerial tied forward to prevent it bending in flight. Interference was only light, and the order of signal fading was: C,A,B.

Blind Bombing Aids (H2S)

11. 10 Stirlings of 7 Squadron and 3 Halifaxes of 35 Squadron were equipped with H2S. 8 aircraft dropped groundmarkers by means of their special equipment, but photographic evidence shows that these were widely scattered, the majority falling into two concentrations, one on Hamburg and one on Wedel. This failure was partly due to misuse of the Y apparatus; navigators tried to guess the aiming-point from the narrowing of the river Elbe, instead of judging it from the shape of the built-up area.

Defences

12. (a) Flak and Searchlights A dark and cloudless night favoured the use of searchlights, which were intensely active, up to 200 exposing in and around the target area. Initially there were two very large cones to the north of Hamburg but, as the raid progressed, several smaller cones were formed. Intense heavy flak was fired up the cones, but crews reported that outside these the flak was only mild. Late arrivals found the ground defences comparatively quiet, possibly because the attack had become scattered.

En route to the target, flak and searchlight defences were active at Husum, where the aircraft crossed the coast, and in the Kiel canal zone. After leaving Hamburg, the bombers had to cross a heavily defended coast line, and intense ground activity was reported from Cuxhaven, Bremerhaven and Wesermünde. Defences on the eastern Frisians and Heligoland, assisted by several flak ships in the Bight, added to the difficulties of the returning aircraft.

Twenty-three aircraft sustained damage by flak, including 15 over the target area and 7 during the return route.

(b) Fighters

Enemy wireless traffic revealed a large effort by controlled night fighters in the area of our operation on Hamburg. Sixteen patrols attempted thirty pursuits, resulting in two unsuccessful attacks and five success claims. Controlled fighters were operating against the bombers before they made landfall, probably from Heligoland, and then continuously until they were out to sea on the return. Wireless traffic was subject to considerable interference and Tinsel seems to have succeeded in jamming nearly half of the operational frequencies in use by night fighters.

Crews reported 9 attacks, 37 approaches and 4 followings. The enemy apparently received early warning of this raid; for two attacks and three approaches were made by fighters sixty miles off the Frisians. An analysis of all the reported encounters confirms that fighters were operating continuously against the bombers. In particular, there were numerous sightings of fighters in the target area, where 6 approaches were reported but no attacks developed. Two of the bombers sustained fighter damage.

Three enemy fighters were claimed as destroyed by returning crews. Independent observations confirm these claims, one made by a Wellington (305 'X') and two by a Halifax (419 'L').

Casualties

13.	No. of aircraft missing.....	10
	"	
	damaged (a) flak.....	23
	(b) fighter.....	2
	(c) not enemy action.....	3
		.....28

Several observations support the overheard controlled fighter claims of five British aircraft destroyed. Four of these claims referred to bombers returning from the target.

An outgoing bomber was coned soon after crossing the enemy coast at Heide and was probably shot down by heavy flak.

It seems likely that three aircraft were shot down in the Hamburg area. Two of these were observed to fall from searchlight cones after heavy flak engagement during the first twenty minutes of the attack, and the fact that no aircraft were seen to fall during the closing fifteen minutes confirms the opinion of crews that the defences weakened as the raid progressed.

There are several individual observations which may account for the loss of the other missing aircraft, but the concentrated nature of the raid makes assessment difficult.

Of the ten aircraft lost, therefore, at least three may be put down to flak and at least five to fighters. It is considered that the low loss rate (2.4%) was due partly to good concentration en route in dark conditions, which assisted Tinsel to interfere seriously with the controlled fighter defences. The flak defences were only slight in intensity particularly towards the end of the attack, possibly because the main weight of bombing had by this time moved away from the more heavily defended area.

RUHR

14. 5 Mosquitoes of 109 Squadron carried out Oboe tests against the towns of Bochum, Cologne, Dortmund, Dusseldorf and Essen. All bombed their objectives according to plan from 28,000 feet. The Mosquito attacking Essen reported 40 searchlights coning on the vapour trails. Intense and heavy accurate heavy flak was encountered, from which the Mosquito sustained minor damage. Intense searchlight and flak activity was also reported from Bochum and Duisburg. All aircraft returned safely.

MINELAYINGResults

15. 14 aircraft of 3 and 4 Groups were detailed to lay mines off the Prisians. 11 reached the target area, where weather conditions were good, with no cloud. 30 mines were laid. 2 aircraft returned early, for technical reasons. One aircraft did not return.

Defences16. (a) Flak and Searchlights

Flak and searchlights were in action from the islands and from outlying ships. One aircraft sustained minor damage.

(b) Fighters

It is difficult to distinguish the controlled fighter activity directed against the minelayers from that associated with the main raid on Hamburg, but enemy wireless traffic suggests that at least three unsuccessful pursuits were attempted in the minelaying area. Crews reported an attack, in which the bomber sustained damage, and one approach, both over the sea.

Casualties

16. No. of aircraft missing.....1
 " damaged (a) flak.....1
 (b) fighter.....1) ... 2
 (c) not enemy action.....1)

There is no evidence of the cause or place of loss of the missing Stirling of 3 Group.

LEAFLETS

17. 5 aircraft of 91 Group set out to disperse leaflets in the Limoges area. 2 completed their task, the other 3 returning early for technical reasons. Slight heavy flak was reported from Caen, and near the target area a night fighter was seen to approach, but no attack developed. All our aircraft returned undamaged.

APPENDIX (HAMBURG)Timing of AttackI. Pathfinder Force

8 Y-aircraft attacked; at the following times: 2114(2), 2114½, 2127, 2129(2), 2130 and 2130½.

17 bombers-up attacked at: 2116½, 2119(2), 2120(2), 2122, 2124½, 2125, 2126, 2128, 2130, 2131, 2131½, 2134 and 2141.

...../2 Y-aircraft

2 Y-aircraft bombed as backers-up at 2117 and 2135, and one attacked with the Main Force at 2132. = 28 aircraft

Main Force

Section 1 (Lancasters of 1 and 8 Groups)

31 aircraft attacked within planned period (2119-2130)
 6 " " 0-10' late
 37 aircraft

Section 2 (All Halifaxes)

12 aircraft attacked 10-0' early
 54 " " within planned period (2123-2133)
 1 " " 6' late
 67 aircraft

Section 3 (All Wellingtons and Stirlings)

27 aircraft attacked 15-0' early
 99 " " within planned period (2125-2140)
 9 " " 0-15' late
 135 aircraft

Section 4 (Lancasters of 5 Group)

28 aircraft attacked 10-0' early
 49 " " within planned period (2135-2150)
 77 aircraft

Bomb Loads

II. Pathfinder Force

16 aircraft carried T.I's + H.E. + 30 lb. incendiaries
 12 " " T.I's + H.E.
 28 aircraft

Main Force

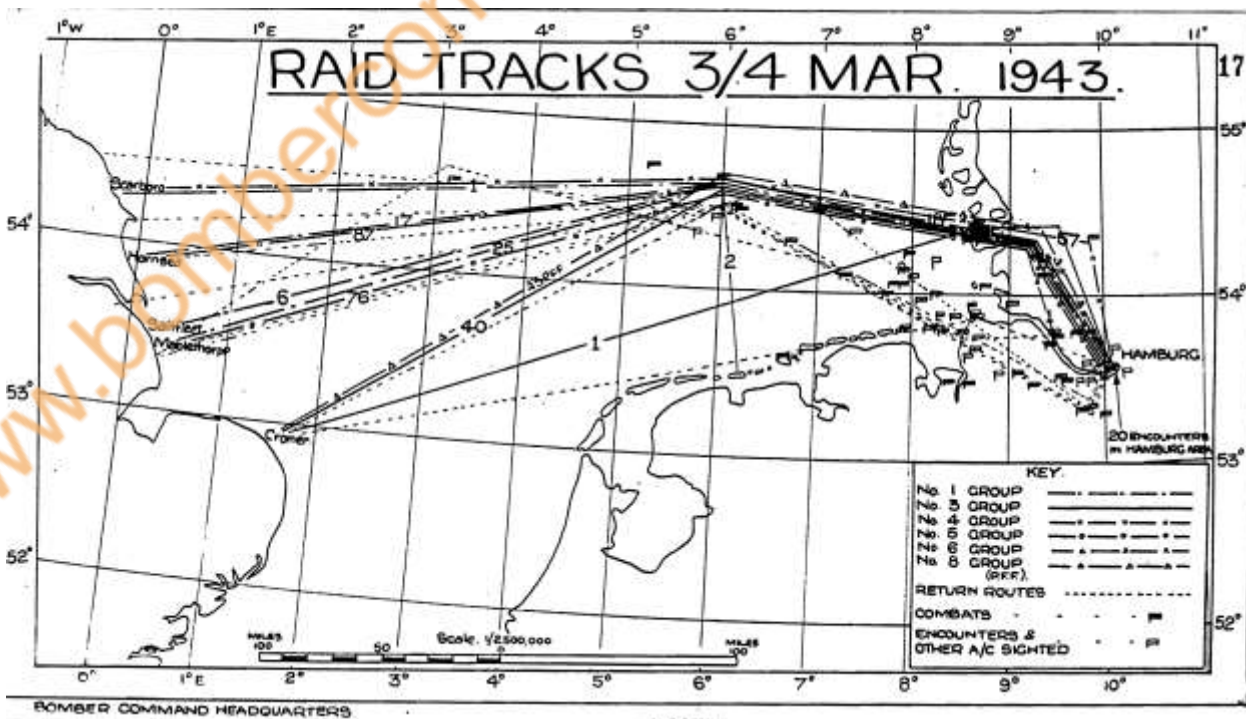
162 aircraft carried H.E. + 4 lb. + 30 lb. incendiaries
 53 " " H.E. + 4 lb. incendiaries
 33 " " H.E. only
 32 " " 4 lb. + 30 lb. incendiaries
 24 " " H.E. + 30 lb. incendiaries
 6 " " 4 lb. incendiaries only
 6 " " 30 lb. incendiaries only
 316 aircraft

MLM/VP.
 BC/S. 26342/2/ORS.
 20th June, 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 E/A	attacked	not attacked	Tons of Bombs (M.E.)	Incs.	
HAMBURG	8 P.F.F.	Lanc. I	16	16	-	-	-	-	-	-	-	-	1	P 435.8m	477.6	
		Halifax 'Z'	5	4	-	-	-	-	1m	-	-	-	-	A 3.4	11.2	
		Stirling I	11	8	1	-	2	-	-	-	-	-	-	J 0.3	3.9	
	8	Lancaster I	1	1	-	-	-	-	-	-	-	-	-	-	K 10.1	12.5
		Halifax 'Z'	1	1	-	-	-	-	-	-	-	-	-	-	* Includes 1x5000 + 145m/000	
	1	Lancaster I	42	35	-	-	5	2	1m	-	-	-	-	4	P Primary Target A Alternative J Jettisoned over enemy territory. M Missing	
		Lancaster III	1	1	-	-	-	-	-	-	-	-	-	1		
		Well. III	22	13	2	-	6	-	-	-	-	3	2			
		Well. IV	6	3	-	-	1	2	-	-	-	1	1			
	3	Well. X	3	3	-	-	-	-	-	-	-	-	-	-		
		Stirling I	36	29	1	-	3	2	7m	-	-	-	1	4		
		Stirling III	13	9	-	-	4	-	-	-	-	-	-	2		
	4	Well. III	6	4	-	-	1	1	-	-	-	-	-	-		
		Halifax 'Z'	55	48	-	-	1	4	2m	-	-	1	2	3		
		Halifax II	3	3	-	-	-	-	-	-	-	-	-	-		
		Well. III	3	2	-	-	1	-	-	-	-	-	-	-		
	5	Well. X	26	24	-	-	1	1	1AC	-	-	-	-	2		
		Lancaster I	52	44	2	-	4	2	2m	-	-	1	-	5		
		Lancaster III	37	33	1	-	3	-	1AC	-	-	-	1	3		
	6	Halifax 'Z'	18	15	-	-	3	-	3m	-	-	-	-	6		
		Well. III	52	42	2	-	6	1	2AC + 3m	-	-	-	1	2		
		Well. X	5	4	-	-	1	-	1m	-	-	1	-	-		
	TOTAL			417	364	9	6	48	10	3AC+ 30m	1AC+ 1m	3	9	41		

...../Contd.

Target	Group	Type	Sorties	A/C reporting attack on		abortive sorties		Missing	Damage			Interceptions		Tons of Bombs (M.E.)
				prim. area	alt. area	over en. territ.	not over en. territ.		flak	fighter	not E/A	attacked	not attacked	
BOCHUM	8 P.F.F.	Mosquito IV	1	1	-	-	-	-	-	-	-	-	-	P 0.7
COLOGNE	8 P.F.F.	Mosquito IV	1	1	-	-	-	-	-	-	-	-	-	P 0.7
DOETMUND	8 P.F.F.	Mosquito IV	1	1	-	-	-	-	-	-	-	-	-	P 0.7
DUESSELDORF	8 P.F.F.	Mosquito IV	1	1	-	-	-	-	-	-	-	-	-	P 0.7
ESSEN	8 P.F.F.	Mosquito IV	1	1	-	-	-	1m	-	-	-	-	-	P 0.7
MUNSTER	8 P.F.F.	Mosquito IV	1	1	-	-	-	-	-	-	-	-	-	P 0.7
MINOR ISLANDS														Minor Isld
Trinian Is.	3	Stirling I	3	2	-	-	1	-	-	-	-	1	-	12
4	Halifax Z	4	4	-	-	-	-	-	-	-	-	-	-	8
	Well. X	7	5	-	-	1	1	1m	-	-	1	-	-	10
TOTAL			14	11	-	-	1	1m	1m	-	1	1	-	30
ISLANDS	91	Well. Io	4	1	-	-	2	-	-	-	-	-	1	-
Lanzos		Well. III	1	1	-	-	-	-	-	-	-	-	-	-
TOTAL			441	362	9	6	50	11	3AC+ 21m	1AC+ 2m	3	10	43	



SECRET

FINAL PLOT OF NIGHT PHOTOGRAPHS

TAKEN 3/4th MARCH 1943

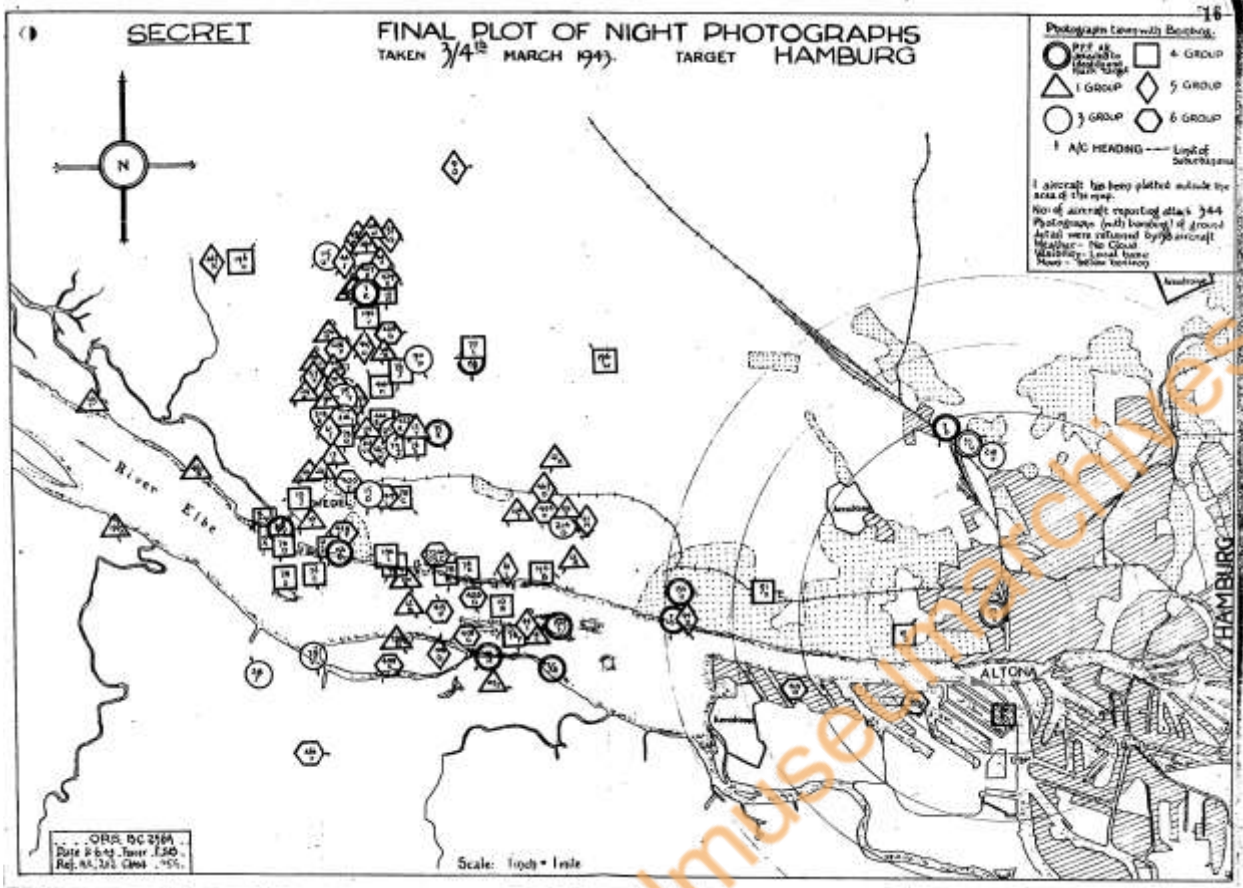
TARGET HAMBURG

Photograph Centers with Bearing

- 1st GROUP
- △ 1 GROUP
- 3 GROUP
- 4 GROUP
- ◇ 5 GROUP
- 6 GROUP

↑ A/C HEADING — Limit of Submarine

1 aircraft has been plotted outside the area of this map.
 No. of aircraft reporting attack: 344
 Photographs (with bearings) of ground targets were obtained by 36 aircraft
 Weather: No Cloud
 Visibility: Local haze
 Moon: Below horizon



ORR BC 2164
 Date: 8-6-43 - Tower J.20
 Ref. No. 225. GMS -56

Scale: 1 inch = 1 mile

www.bombercommandmuseum.ca

BOMBER COMMAND REPORT ON NIGHT OPERATIONS, 4/5th MARCH, 1943Ruhr: Minelaying (Danzig; Kattegat, Frisians, W. France):Leaflets:Ruhr

1. 6 P.P.F. Mosquitoes, equipped with Oboe, were despatched on nuisance raids against the Ruhr. 2 attacked Bochum and Hamborn according to plan, while 3 others, troubled by technical difficulties, dropped their bombs in the areas of Cologne, Dusseldorf and Munster. All our aircraft returned undamaged, despite intense opposition from flak.

Minelaying

23 out of 27 aircraft laid mines off the west coast of France, the Frisians, Danzig, Gdynia and in the Kattegat. One aircraft did not return from the Gironde estuary, and another was destroyed on landing.

Leaflets

15 out of 16 aircraft from Training Groups dispersed leaflets in the Lillo area. The sixteenth aircraft did not return.

Meteorological Forecast

2. Home Bases:- Variable amounts of cloud, generally small; no low cloud, visibility moderate to good. Training Groups will be affected by smoke, but should hold visibility of 1-2 miles.

Germany and Low Countries:- Fine. Moderate visibility but local haze. Ruhr: small amounts of medium and high cloud. Anti-cyclone moving from N.W. to S.E. Germany.

N. Italy:- Layer cloud with breaks.

Frisians and Baltic:- No cloud

N.E. Denmark:- Risk of some strato-cumulus and medium cloud, base of strato-cumulus 2,000 feet.

W. France:- Cold front lying along the coast at midnight. Much cloud, occasional rain and showers. Biarritz area: variable medium and low cloud, base not below 1,500 feet, risk of thundery rain.

RUHR

3. 6 P.F.F. Mosquitoes, equipped with Oboe, were despatched on nuisance raids against Bochum, Hamborn, Cologne, Dusseldorf, Dortmund and Mulheim. Each carried 2x500 M.C. and 2x250 G.P. bombs. The first two were estimated to have bombed within 100 yards of their respective aiming-points, but all the others experienced technical defects and failed to hit their objectives. 3 dropped their bombs, i.e. 10 miles N. of Dusseldorf and in the areas of Cologne and Munster. Visibility was good, with 0-3/10ths cloud. The sixth aircraft returned before crossing the European coastline.

...../There was

Casualties

8. No. of aircraft missing.....1 (Gironde estuary)
 " " " " damaged (flak.....NIL)
 (fighter.....NIL).....2
 (not enemy action.1)
 (unknown cause....1)

There is no evidence to indicate either where or how the missing Lancaster came to grief. Another Lancaster of 100 Squadron crashed on return and became a total wreck. The only survivor was dangerously injured, and the cause of the crash is unknown.

LEAFLETS

9. The sixteen Wellingtons detailed to disperse leaflets approached Lille from the south. There were reports of moderate heavy flak over Cambrai and Lille, but none of the bombers sustained any damage. Near Cambrai, the Wellingtons came within range of controlled fighters, and enemy wireless traffic revealed two patrols making two unsuccessful pursuits. There was no sighting of a fighter in this area, but no attack developed.

One of our aircraft was lost, but there is no evidence as to either the place or cause. The others dispersed their leaflets according to plan and returned safely to base. One was slightly damaged by a bundle of leaflets dropped from another aircraft.

MLM/VF
 BC/S. 26342/4/ORS.
24th May, 1943

Target	Group	Type	Sorties	A/C reporting attack on		Aberative sorties		Missing	Damage			Interceptions		Results		
				prim. area	alt. area	over en. territ.	not over en. territ.		flak	fighter	not E/g	att-acked	not attacked	Tons of Bombs	E.E.	Incoml.
BORTVEND	8	Mosquito	1	-	1	-	-	-	-	-	-	-	-	-	(A)0.7	-
HAMBORN	8	Mosquito	1	1	-	-	-	-	-	-	-	-	-	-	(P)0.7	-
BOCHUM	8	Mosquito	1	1	-	-	-	-	-	-	-	-	-	-	(P)0.7	-
DUSSELDORF	8	Mosquito	1	-	1	-	-	-	-	-	-	-	-	-	(A)0.7	-
COLOGNE	8	Mosquito	1	-	1	-	-	-	-	-	-	-	-	-	(A)0.7	-
MULHEIM	8	Mosquito	1	-	-	-	1	-	-	-	-	-	-	-	-	-
BOMBING	TOTAL		6	2	3	-	1	-	-	-	-	-	-	-		
MONELAYING																
BOYDRE	1	Lancaster III	2	1	-	-	1	-	-	-	-	-	-	-	4 mines	
ST. JEAN DE LEE	1	Lancaster III	2	2	-	-	-	-	-	-	-	-	-	-	8 mines	
GIRONDE ESTUARY	1	Lancaster III	4	2	-	-	1*	1	-	-	1E	-	-	-	10 mines	
FRISIAN IS.	1	Well. III	6	6	-	-	-	-	-	-	-	-	-	-	12 mines	
	3	Well. IV	4	4	-	-	-	-	-	-	-	-	-	-	8 mines	
	3	Stirling I	2	2	-	-	-	-	-	-	-	-	-	-	12 mines	
COYDEL	5	Lancaster I	2	2	-	-	-	-	-	-	-	-	-	-	8 mines	
KATTEGAT	2	Lancaster I	2	2	-	-	-	-	-	-	-	-	-	-	10 mines	
DANZIG	5	Lancaster I	3	2	-	-	1	-	-	-	-	-	-	1	8 mines	
MINING	TOTAL		27	23	-	-	3	1	-	-	1E	-	-	-	60 mines	
IS. FIRES																
LILLE	03	Well. Ic	5	4	-	-	-	1	-	-	-	-	-	-		
		Well. III	10	10	-	-	-	-	-	-	-	-	-	-		
		Well. X	1	1	-	-	-	-	-	-	1/C	-	-	-		
TOTAL			49	40	3	-	4	2	-	-	1E+ 1/C	-	-	1		

* 1 Result unknown: a/c crashed on return

www.bombercommandmuseumarchive.ca

BOMBER COMMAND REPORT ON NIGHT OPERATIONS, 5/6th MARCH, 1943.ESSEN: MinelayingSUMMARY

Essen For the first time, Mosquitoes equipped with Obde were detailed to find and ground-mark the target. The resulting attack was by far the most successful yet delivered against Essen. Damage was exceptionally severe and widespread, at least 53 separate shops of Krupps Works sustaining severe damage, while 13 of the main buildings were virtually destroyed. Several smaller factories were partly gutted, together with the Gasworks, the Power Station and the Municipal Tram Depot, the last named being one of the main sources of transport in the town. Some 450 acres of residential and commercial property were devastated. We lost 14 of the 442 bombers despatched; 367 of these reported attack.

Minelaying 5 of the 7 aircraft detailed laid 14 mines off the Prisians.

Meteorological Forecast

2. Home Bases:- All just fit for early take off. For return from 2300, 1 and 5 Groups expect serious visibility troubles due to smoke, and will require diversion. 8,6,4 and 3 Groups should hold 2 miles visibility till 0200 hours, except very locally. Fog will develop after midnight, especially in S. Diversions to 2 Group, N.W. England, N.E. Ireland, Scotland, S.W. England (except Exeter and Chivenor) Pershore and localities in 92 Group.

Germany:- Cold front at midnight from 60°N. 20°E. to Kiel, becoming warm to N.Scotland. The exact positioning of this front is doubtful, owing to a development over the E.North Sea. S. of the front, in N.W.Germany, there will be broken medium and broken strato-cumulus cloud. Over N.E. Germany, much medium cloud will prevail, associated with the development over the North Sea. In Central Germany, strato-cumulus cloud will be broken, with good clearances; this area includes the Middle Rhine. Ruhr: risk of variable amounts of strato-cumulus, not thicker than 1,500 ft. Medium cloud is expected to have moved away eastwards. Haze should not be serious.

Winds en route (1st Half):	10,000' - 320°/30-35 m.p.h.
	18,000' - 300°/35-40 m.p.h. in S. 300°/40-45 m.p.h. in N.
	25,000' - 300°/60 m.p.h.
(2nd Half):	10,000' - 320°/20-25 m.p.h.
	18,000' - 300°/40-45 m.p.h.
	25,000' - 290°/60 m.p.h.

No troubles en route except that Dutch coast may be obscured locally.

N.Italy:- Layer cloud with breaks.

...../ESSEN

ESSENPlan of Attack

3. Zero Hour.....2100 hours.

Route briefed: Egnond - Dorsten - ESSEN - Haltern - Egnond.

This attack was to be led by 8 Mosquitoes, fitted with Oboe, and 22 other Pathfinders to act as backers-up. All P.F.F. aircraft were to drop yellow T.I.'s on track 15 miles short of the target, to guide the Main Force. The Mosquitoes using their special equipment, were to mark the aiming-point with salvoes of red T.I.'s at the following times:-

1 at zero
1 at zero + 3
1 at zero + 10
1 at zero + 13
1 at zero + 20
1 at zero + 23
1 at zero + 30
1 at zero + 33

The backers-up were to attack at intervals of 1 to 2 minutes between zero and zero + 38, aiming green T.I.'s and H.E. in salvoes at the red T.I.'s, with a delay of 1 second before releasing the incendiaries.

The Main Force, consisting of approximately 6 Pathfinders and 417 aircraft other Groups, was to attack in 3 sections, viz:

Section 1. Halifaxes.....(zero + 2) to (zero + 20)
Section 2. Wellingtons and Stirlings.....(zero + 15) to (zero + 25)
Section 3. Lancasters.....(zero + 20) to (zero + 40)

All Main Force crews were warned that the method of placing the red T.I. markers was a new and very accurate one, and were instructed to aim at these with maximum precision. If these could not be seen, they were to bomb on the green T.I. markers. No Main Force aircraft were to bomb anything but T.I.'s before zero + 15; if none had been dropped by then, they were to turn left and perform a circuit, making another run up.

Bomb loads were to be in the ratio of two-thirds incendiary to one-third H.E. One-third of all H.E. bombs were to be long delay, fitted with No. 845 fuses and No. 37 pistols.

Sorties

4. (a) No. of aircraft despatched.....44
(b) " reporting attack on primary area.....36
(c) " " alternative area.....
(d) " abortive sorties (technical and manipulative defects.48)
(attacked by E/A..... 2)
(downed by S/L..... 1)
(hit by flak..... 1) ... 5
(sickness of crew..... 1)
(collided with British a/c.....1)
(oxygen tube forgotten.....1)
(cause unknown (crashed on take-off).1)
(e) " aircraft missing..... 11

Weather Experienced

5. Home Bases:- No low cloud. Mist and fog gradually thickened towards dawn, but never became widespread.

Route:- Variable high cloud above 20,000 ft, with well-broken medium cloud (base 16-17,000 feet, tops 18,000 feet) beneath. 4-7/10ths layer cloud (base 3-4,000 feet, tops 5,000 feet) over sea and Dutch coast, clearing to small amounts inland. Visibility moderate. Average wind at 15,000 feet, 330°/40

...../Target:-

Target:- 3-6/10ths cirrus, base 21-24,000 feet.
 3-7/10ths medium cloud, base 16,000 feet. tops 18,000 feet,
 clearing at times to nil.
 0-5/10ths very thin strato-cumulus. Thick smoke haze.
 Visibility 1-5 miles. No moon.
 Wind at 20,000 feet: 320-330°/45-50 m.p.h.
 Surface wind: N.W. 5-10 m.p.h.

Night Photographic Statistics

6.	No. of photographs showing ground detail.....	32
	" plotted by ground detail (within 3 miles.....)	13
		{ between 3 & 5 miles..... 7
		{ outside 5 miles..... 2
	" that show fire tracks only.....	254
	" plotted by fire-tracks - within 3 miles.....	104
	No. of aircraft reporting attack.....	367
	" estimated (from photographic evidence) to have bombed within 3 miles of the aiming point.....	153

Narrative of Attack

7. Immediately after the first red T.I. markers had been dropped at 2058, they were attacked by a number of main force aircraft, and sticks of incendiaries were seen burning round them. The green T.I. markers, which followed a few minutes later, were laid very accurately, close to the red T.I.'s. By 2105, fires had begun to take hold in the target area, and a tremendous explosion was reported within the next few minutes. The raid continued to be well concentrated, and most of the bombs fell in an area of about 2 miles radius. As the attack progressed, the fires increased in intensity and, by the end, the whole target area seemed covered with fire and smoke. The later red T.I.'s were seen to fall into the centre of the conflagration, except some at 2130, which dropped to the S.W. (This agrees with the report of Oboe aircraft 109/T, which bombed at this time and, owing to a technical defect, dropped its red T.I.'s 2½ miles S.S.W. of the aiming point). 2 further large explosions were observed shortly after 2120. Almost all crews reported that the attack was throughout well concentrated around the T.I.'s. A few crews mentioned that there was some outlying bombing and some, including that of one Oboe aircraft, considered the effort to be centred slightly N.E. of the aiming point. This view is supported by the evidence of night photographs (see plot at end of this report).

Day Reconnaissance

8. 3 D.A. sorties, flown on 7th and 8th March, 1943, covered the whole town and suburban areas except the N.E. districts of Stoppenburg and Alten Essen. The damage revealed includes the effects of 5 raids carried out by single aircraft on various dates between 19th February and 7th March, as well as those of the operation under review.

Destruction was exceptionally severe and widespread, the heaviest concentration being in the town centre, which was virtually devastated; an area of over 160 acres was laid waste. It is estimated that in the town proper and its environs, there are approximately 450 acres where at least 75% of the buildings were demolished or damaged by H.E. bombs, or gutted by fire. Notable havoc was caused in the Nord Essen and Holsterhausen districts. By far the greater part of the damage appears to have resulted from fire.

In Fr. Krupps A.G., at least 53 separate shops were affected, and 13 main buildings were destroyed or severely damaged. Other incidents in the same area include the partial destruction of the pit-head installations and buildings of 3 coal mines and damage to a saw-mill, an iron foundry and screw works. Several factories were partly gutted, the most significant of these being the plant of Th. Goldschmidt/A.G., a metal smelter and maker of sulphuric acid, and the Maschinenbau Aktien Gesellschaft Union, where several workshops were destroyed and stockyards damaged. The Power Station, Gasworks and Municipal Tram Depot
 .../severely

severely hit. Sheds at the Neuer Goods Station and Segereth Suburban Station were disintegrated, and the roofing of an engine house was burned out. At Essen Main Station, 2 trains were gutted and damage was caused to rolling stock in the Marshalling Yards.

In the areas of devastation in the centre of the town, the number of houses, blocks of flats, offices and small business premises that sustained complete destruction is estimated at not less than 700 while, in the rest of the town, over 2,000 buildings were rendered uninhabitable. A number of hutted camps, presumably housing workers, were severely damaged. Many public buildings were completely or virtually gutted, including the Town Hall, Town Council Offices, Exchange, Town Baths, 4 buildings of the Post Office, a market, 9 churches, 5 schools and a theatre.

Full details of the damage caused in this raid will be found in Interpretation Report No. K.1497.

Alternative Targets

9. 5 aircraft bombed alternative targets, in the areas of Bocholt, Gladbeck, Alkmaar, Leuwarden and Akersloot.

Navigational Aids (Gee)

10. The Eastern Chain was operating on the Virginia frequency. 8% of the 289 Gee aircraft despatched used Mk.II sets. 12% of these and 11% of Mk.I were faulty. The average ranges were 230 and 220 miles respectively. X of 426 Squadron obtained the maximum range of 290 miles. Interference was heavy, beginning 60 miles from the Dutch coast, and few aircraft obtained fixes over enemy territory.

Defences

11. (a) Flak: Searchlights

Searchlights were deployed in a broad band to the N. and W. of the target area, and in an inner ring around the town. Heavy flak was intense during the early stages of the attack, but reports state that the ground defences deteriorated as the raid progressed. There was only partial co-operation between flak and searchlights, probably owing to the presence of fighters in the target area. Several crews reported the firing of a rocket type of flak, which gave out long white streamers on bursting. Searchlights were also active in Holland, but there the flak was spasmodic and moderate in intensity. 27 aircraft sustained damage from flak, nearly all over the target area. In 4 of these cases, the bombers were coned by searchlights.

(b) Fighters

Enemy wireless traffic revealed 9 patrols in the area of our operations on Essen. 11 pursuits were attempted, resulting in one combat and no success claims. The intercepted traffic was subjected to marked interference, and on occasion 2 patrols used identical or approximate frequencies. Much of this interference was due to R/T jamming by Tinsel.

Crews reported 8 attacks, 21 approaches and one following, the majority of which took place during the return route. Fighters were active in the target area, where one attack and 6 approaches were reported, in addition to several sightings. During this attack and 2 of the approaches, the bombers were coned by searchlights.

Searchlights, ground-lights and flares fired from the ground assisted the night fighters in making 3 attacks and 2 approaches on the return journey. A Mosquito, flying at 24,500 feet, was approached over Duisburg by 2 enemy aircraft, but evaded them successfully by reason of its superior speed.

5 bombers sustained fighter damage. The crew of a Wellington (305/A) claimed to have destroyed a Me. 110 off the Dutch coast. 2 of the fighter's crew were seen to bale out, and there were several confirmatory observations.

...../Casualties

Casualties

12.	No: of aircraft missing.....	14(3.2 ¹)
	" " damaged (a) flak	27
	(b) fighter.....	5
	(c) non-enemy action.....	6
		38

Although fighters are known to have been operating on route, no aircraft were seen to be shot down before reaching the Ruhr. In the target area, 7 aircraft were probably destroyed, 4 at least of which may be credited to heavy flak, co-operating with searchlight cones. During the return journey, there were numerous observations which would account for the remaining 7 losses. 5 of these were probably destroyed by fighters, near Bochelt, Zutphen, Soesterburg, Zwolle and Den Helder.

It therefore seems likely that 4 aircraft were lost to flak, 5 to fighter and 5 to "causes unknown".

2 Wellingtons (196/J) and (466/L) collided over the North Sea on the way out. Both aircraft were damaged, but one proceeded to attack the target and both returned safely. Another Wellington (429/Z) crashed on take-off and became a total wreck. The navigator was killed.

MINELAYING

13. 7 aircraft of 4 Group were despatched to lay mines off the Frisians. 2 returned early for technical reasons, the other five reached their target in cloudless but hazy conditions, and laid 14 mines. Flak was encountered from ships off Sinesland, and one aircraft sustained damage. No enemy fighters were observed, and no losses were sustained.

APPENDIXTiming of AttackI. Pathfinder Force

22 Pathfinders attacked, at: 2058 $\frac{1}{2}$, 2103, 2104, 2105, 2109(3), 2116(3)
2117 $\frac{1}{2}$, 2118 $\frac{1}{2}$, 2121 $\frac{1}{2}$, 2122, 2124, 2128, 2130 $\frac{1}{2}$, 2131(1 $\frac{1}{2}$ + 1) 2134, 2135 $\frac{1}{2}$ and 2138.

Main ForceSection 1. (Halifaxes)

4 aircraft	attacked 2-0' early
70	" within planned period (2102-2120)
1	" 1' late
<u>75</u>	aircraft

Section 2. (Wellingtons and Stirlings)

35 aircraft	attacked 11-0' early
100	" within planned period (2115-2125)
6	" 0-15' late
<u>141</u>	aircraft

Section 3 (Lancasters)

43 aircraft	attacked 10-0' early
86	" within planned period (2120-2140)
<u>129</u>	aircraft

...../Bomb Loads

Bomb LoadsII. Pathfinder Force

5 aircraft (Mesquitos) carried T.I. only
 13 aircraft carried T.I. + H.E. + 30 lb. incendiaries
 4 " " T.I. + H.E.
 22 aircraft

Main Force

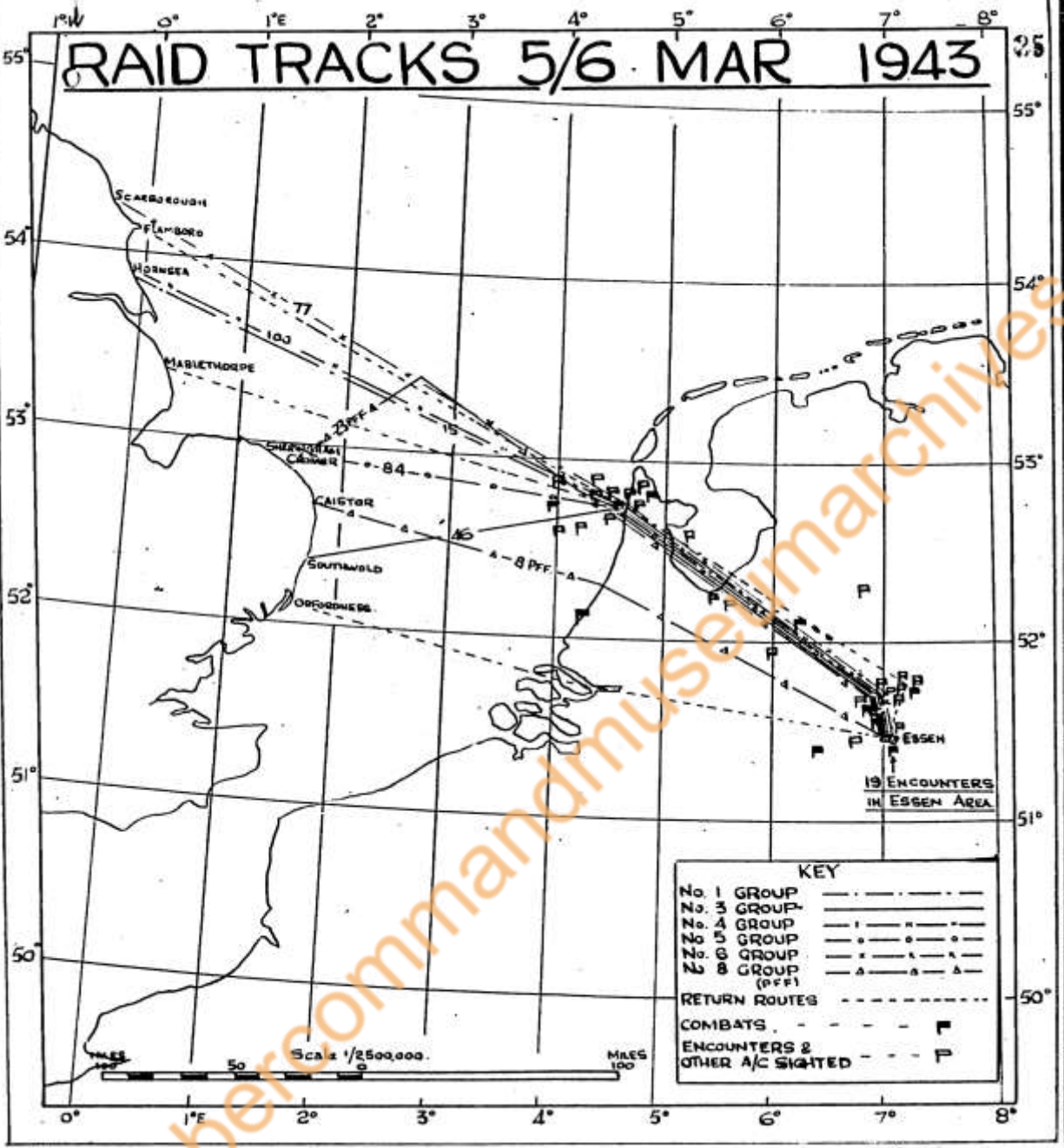
183 aircraft carried H.E. + 4lb. + 30 lb. incendiaries
 56 " " H.E. + 4 lb. incendiaries
 35 " " H.E. only
 32 " " H.E. + 30 lb. incendiaries
 29 " " 4lb. + 30 lb. incendiaries
 6 " " 4 lb. incendiaries only
 3 " " 30 lb. incendiaries only
 1 " " 4,000 lb. gcl. only
 345 aircraft

MLM/VF.
 BC/S. 26342/1/ORS.
 21st June, 1943.

Target	Group	Type	Sorties	Reporting attack on		Abortive sorties		Dis- ing	Damage			Inter-ptions		Results			
				prim. area	alt. area	over en. territ.	not over en. territ.		flak	fighter	not R/A	att- acked	not attacked	Tons of Bombs	H.E.	Ink	
BOON	P.F.F.	Mesquite IV	5	5	-	3	-	-	-	-	-	-	1	P 490.4*	52.1		
		Lanc. I	15	13	-	-	2	1m	-	-	-	-	1	A 353	8.7		
	B	Halifax 2	5	18	4	-	-	1	-	-	-	-	-	J 8.5	3.4		
		Lanc. I	4	4	-	-	-	-	1AC	-	-	-	-	M 19.0	19.1		
		Halifax 2	3	7	1	-	-	-	-	-	-	-	-	-	-	-	
		Stirling I	2	1	-	-	-	1	1m	-	-	-	-	-	-	-	
	1	Lanc. I	40	36	-	-	3	-	1m	-	-	-	3	-	-	-	
		Lanc. III	1	1	-	-	-	-	-	-	-	-	-	-	-	-	
		Well. III	85	79	16	1	2	5	1AC 1m	2AC	-	2	1	-	-	-	
		Well. IV	9	6	-	-	1	2	-	1B+1m	-	3	-	-	-	-	
		Well. X	4	3	-	-	1	-	-	-	-	-	-	-	-	-	
		Stirling I	31	21	1	1	6	2	-	-	1B, 1AC	-	2	-	-	-	
	3	Stir. III	19	54	15	1	-	2	1	1AC, 1m	-	-	-	1	-	-	
		Well. III	4	3	-	-	-	-	-	-	-	-	-	-	-	-	
4	Halifax 2	68	58	-	-	2	6	2	1AC, 1m	1m	1AC	3	1	-	-		
	Well. III	7	100	22	-	-	2	1	-	-	1B	-	-	-	-		
	Well. X	28	22	-	-	-	2	1	1m	-	1AC, 1m	-	-	-	-		
	Lanc. I	56	48	-	-	7	1	1m	-	-	-	-	3	-	-		
5	Lanc. III	41	97	40	-	-	7	1	1m	-	-	-	1	-	-		
	Well. III	20	16	1	-	-	2	1	2m	-	-	-	2	-	-		
6	Halifax 2	52	77	44	-	-	6	2	2AC, 3m	-	-	-	6	-	-		
	Well. X	5	5	-	-	-	-	-	1m	-	-	-	-	-	-		
1	0	7	-	L	442	367	5	11	45	14	6AC	1B+2AC	2B+	8	22		
					7						21 m	+2m	3AC+	1m			
1000-YING	4	Halifax 2	3	3	-	-	-	-	1AC	-	-	-	-	-	-	Mines laid	
Prison Is.		Well. X	4	2	-	2	-	-	-	-	-	-	-	-	10		
1	0	7	-	L	449	372	5	13	45	14	7AC	1B+2AC	2B+	8	22		
											21 m	+2m	3AC+	1m			

* These aircraft not fitted with Goc.

RAID TRACKS 5/6 MAR 1943



KEY	
No. 1 GROUP	-----
No. 3 GROUP	—————
No. 4 GROUP	.....
No. 5 GROUP	-----
No. 6 GROUP	-----
No. 8 GROUP (PFF)	▲▲▲▲
RETURN ROUTES	.....
COMBATS	— P —
ENCOUNTERS & OTHER A/C SIGHTED	- - - P

19 ENCOUNTERS IN ESSEN AREA

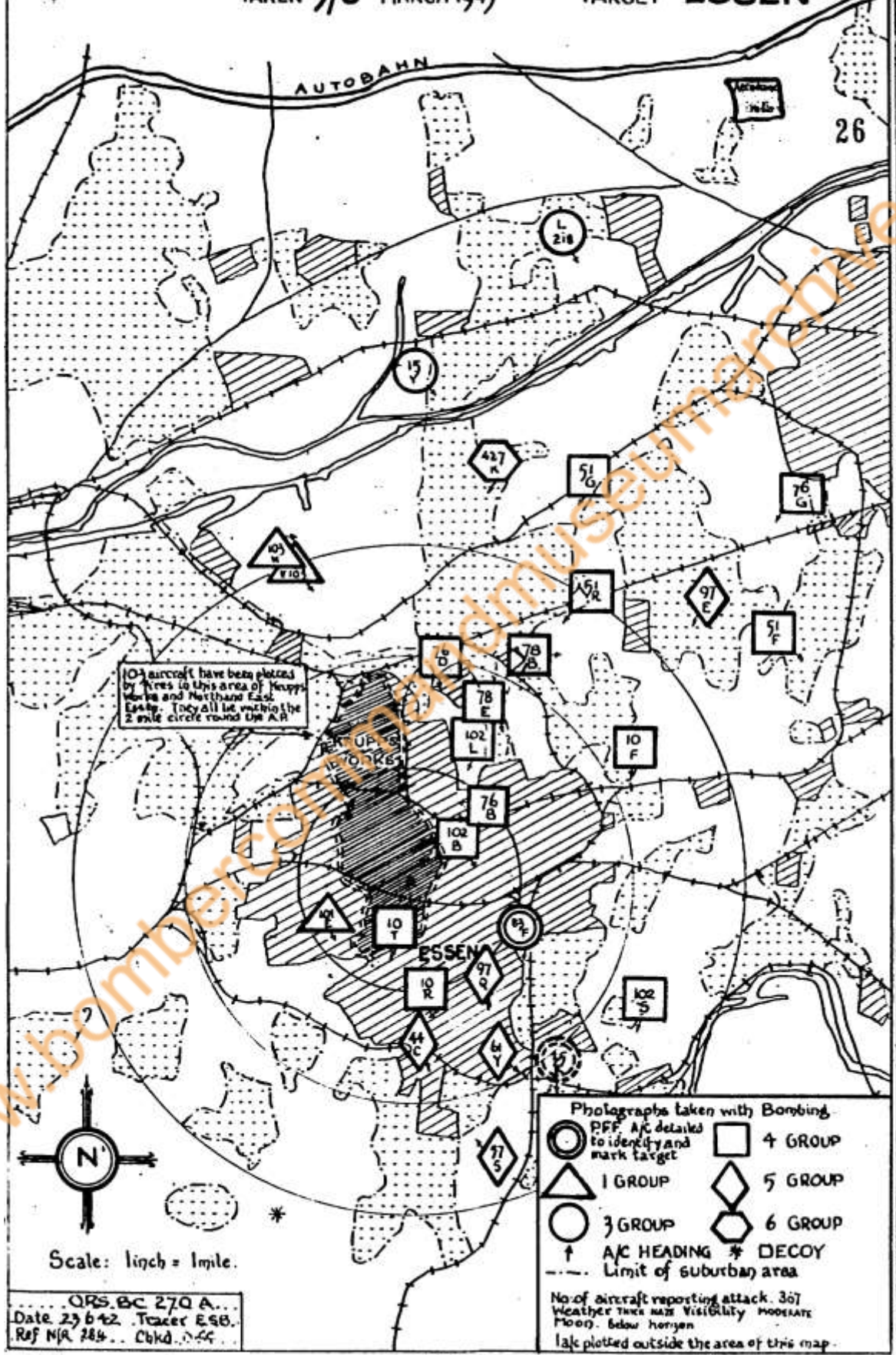
www.bombercommandmuseumarchives.ca

SECRET

FINAL PLOT OF NIGHT PHOTOGRAPHS

TAKEN 5/6th MARCH 1943

TARGET ESSEN



www.bombing.com/usa/submit/indexes.ca

BOMBER COMMAND REPORT ON NIGHT OPERATIONS, 7/8TH MARCH, 1943.Mine-laying (Frisians): LeafletsSUMMARYMine-laying

1. 20 Halifaxes and Wellingtons of 4 Group set out towards dusk to lay mines off the Frisians. 13 reached their targets, where 30 mines were laid. 2 aircraft did not return.

Leaflets

2 Wellingtons of 91 Group dropped leaflets in the Limoges area without incident.

Meteorological Forecast

Home Bases:- All Operational Groups will just be fit for take-off, but very doubtful for return; 2, 3 and 8 Groups may have 2,000 yards visibility. Fog will become widespread after midnight. Low stratus from the North Sea may cover the east coast, and hills inland. Diversions to E.Scotland, S. and S.W. England, 91 Group (Pershore, Horston, Honeybourne and Boscombe - 2,000 yards until 0100) and 92 Group (Chipping Warden and perhaps Heyford until 0200).

Germany:- Weak warm front at midnight, travelling in the neighbourhood of the North Sea coast, giving much low cloud (base 1,000 feet, tops below 2,000 feet), with well broken medium cloud above. Hamburg: cloudless. Visibility moderate to good. Ruhr: little or no cloud, thick haze.

W.France:- Little or no cloud. Slight haze.

Frisians:- Cloudless but hazy.

MINELAYINGStatistics

(a)	No. of aircraft despatched.....	20
(b)	" " reporting mines laid in primary area.....	13
(c)	" abortive sorties (weather.....3) (technical defect.....1) (sickness of crew.....1)	5
(d)	" aircraft missing.....	2(10.0%)
(e)	" mines laid.....	30

Weather Experienced

Home Bases:- Mainly clear skies, with moderate visibility until 0200 hours, with fog patches developed. These became fairly extensive W. of Greenwich and E. of London by 0600 hours.

Frisians:- Cloudless. Visibility poor. No moon. Wind at 2,000 feet: 1/25 n.p.h.

...../Results

Results

5. 20 Halifaxes and Wellingtons of 4 Group set out towards dusk to lay mines off the Frisians. 13 reached their targets; 30 mines were laid. 2 aircraft did not return.

Enemy Defences6. (a) Flak: Searchlights

Moderate heavy and light flak co-operated with searchlights on the islands of Juist, Borkum and Rottumeroog. Further light flak was fired from ships off the islands. Two of our aircraft sustained flak damage.

(b) Fighters

Enemy wireless traffic revealed the presence of five patrols of controlled fighters in the area of our operation in the Frisians.

A Wellington (431 J) was attacked near the island of Nordoney by a Ju.88 carrying four lights in its nose. References in overheard traffic suggest that this fighter was G.C.I. controlled, and confirm a previous indication that controlled night fighters sometimes carry lights (see Night Raid Report No. 279 - St. Nazaire 28/2 - 1/3/43.)

There are details of another attack by a G.C.I. fighter near the island of Juist and, although the final instructions were missed owing to interference the G.C.I. station announced soon afterwards that a Wellington had crashed.

Casualties

7. No. of aircraft missing.....2
 " damaged { (a) flak.....2 }2
 { (b) fighter.....- }
 { (c) not enemy action.....- }

The missing Wellingtons of 431 Squadron was probably shot down by a controlled night fighter, as described above.

There are observations of an aircraft falling in flames off the Western Frisians which may refer to the missing Halifax of 51 Squadron, but there is no evidence of the cause.

LE FLEETS

8. 2 Wellingtons of 91 Group dispersed leaflets in the Linoges area with incident.

MLM/VF.
 EC/S. 26342/5/ORS.
20th May, 1943.

Target	Group	Type	Sorties	A/C reporting attack on		Abortive sorties		Missing	Damage			Interceptions		Results
				pris- area	alt. area	over en- territ.	not over en. territ.		Floak	Fighter	not S/A	atta- cted	not attacked	
UNDEVELOPED ISLANDS	4	Hullfax Z	6	4	-	-	1	1	1AC	-	-	-	2	12 mines (incl. 8x1000 lb.) 10 mines 8 mines
		Well. X	10	5	-	-	4	1	1	-	-	1	-	
		Well. III	4	4	-	-	-	-	-	-	-	-	-	
DURING TOTAL			20	13	-	-	5	2	1AC +1	-	-	1	2	30 mines
UNDEVELOPED ISLANDS	91	Well. Io	2	2	-	-	-	-	-	-	-	-	-	
TOTAL			22	15	-	-	5	2	1AC +1	-	-	1	2	

www.bombercommandmuseumarchives.ca

BOMBER COMMAND REPORT ON NIGHT OPERATIONS, 8/9th MARCH, 1943.NUREMBURG: Ruhr: MinelayingSUMMARY

Nuremburg 294 out of a total force of 335 heavy aircraft carried out a bombing attack on the industrial targets of Nuremburg.

Most of the Y-type aircraft detailed to mark the target experienced difficulty with their special equipment, resulting in considerable scatter of the bombs and markers. The attack was therefore widely dispersed in its early stages, later became more concentrated, and subsequent reconnaissance revealed tremendous damage to industrial and commercial targets, which are largely concentrated in the northern and western suburbs of the town.

The use of Tinsel probably hampered the enemy night fighters, which were operating in fair strength, and only 7 aircraft failed to return.

Ruhr 4 Mosquitoes were despatched on Oboc tests against objectives in the Ruhr. 3 bombed according to plan; the fourth sortie was abortive. All returned safely.

Minelaying 11 aircraft, of a force of 16, laid mines off the Frisians. No losses or casualties were sustained.

Metereological Forecast

Home Bases:- Midnight position of cold front: 60°N. 12½°E. to N. Denmark to mouth of W. Channel. For take-off at 1900 hours, narrow frontal belt from Stanthorpe to Portland Bill, with cloud base not below 1,500 feet except locally light showers. Freezing level, 2,000 feet. N. of front: variable cloud, scattered showers. Visibility moderate to good, poor locally in Yorkshire. Strato-cumulus cloud S.E. of front. No cloud for return: moderate visibility with scattered showers, except locally in 1 and 4 Groups.

Germany:- Little cloud inland, cloudless over much of S. and central Germany. Visibility moderate to good. Industrial haze in Ruhr. North Sea coast: increasing amounts of strato-cumulus. Nuremburg: cloudless, moderate visibility. Note: cold front (position as stated above) to be crossed, cloud base generally above 1,500 feet, tops not above 10,000 feet. Cloudless from Channel to target.

N. Italy:- Variable amounts of layer cloud.

<u>Winds:</u>	<u>To N. France</u>	<u>To Scarborough</u>	<u>To Nuremburg</u>
10,000 feet:	230°/55 m.p.h.	180°/30 m.p.h.	180°/15 m.p.h.
18,000 feet:	230°/65 m.p.h.	180°/35 m.p.h.	130°/20 m.p.h.
28,000 feet:	230°/75-80 m.p.h.	180°/40 m.p.h.	120°/25 m.p.h.

NUREMBURGTime of Attack

Zero hour: -- 2315 hours

Route briefed: Cayeux - 4917N. 0826E. - NUREMBURG - 4910N. 1100E. - 4917N. 0826E. - Cayeux.

Y-aircraft were to drop yellow T.I's en route at Speyer. This landmarking was to be maintained by P.F.F. backers-up in passing. At zero - 3, 5 Y-aircraft were to drop long sticks of illuminator flares across the target using their special equipment. They were then to revert to the role of backers-up, visually identifying the main-point and marking it with green T.I's. 9 other Y-aircraft were to attack/at zero - 1.

at zero - 1. If ground detail could be identified by the light of the flares, they were to aim their green T.I.'s visually at the aiming-point. Extra flares might be used if necessary for illumination.

If ground detail was obscured by cloud or haze, all Y-aircraft were to aim the aiming-point with red T.I.'s, using their special equipment.

The 22 back-up were to attack at intervals of 1 minute between zero - zero + 22, aiming their T.I.'s and H.E. at the aiming-point, if visible, otherwise at the centre of the T.I.'s already burning.

The Main Force was to attack in 3 sections, at the following times:

<u>Section 1</u>	About 88 Halifaxes	(zero + 4) to (zero + 15)
<u>Section 2</u>	" 53 Stirlings	(zero + 10) to (zero + 20)
<u>Section 3</u>	" 157 Lancasters	(zero + 15) to (zero + 30)

All the Main Force were to aim their bombs at the centre of the concentric of T.I. markers, irrespective of colour, but were not to rely on visual identification of ground detail. To guard against the risk of scattered bombs in the event of the T.I. markers being late, aircraft of the Main Force were instructed not to bomb anything but T.I. markers before zero + 15, and to stand and wait if T.I. markers were not seen before this time.

Sorties

4.	(a)	No. of aircraft despatched.....	335
	(b)	" " reporting attack on primary area.....	294
	(c)	" " alternative area.....	X
	(d)	" abortive sorties (technical or manipulative errors..22).....	
		(attacked by E/A.....)	2
		(sickness of crew.....)	3
		(navigator's error.....)	2
		(pilot's error.....)	1
	(e)	" aircraft missing.....	7
	(f)	Result not known (a/c crashed on return).....	1

Weather Experienced

5. Home Bases:- Overcast in S. Fair to fine in N. Moderate visibility the night, with local fog in Essex and S.Linos.

Route:- 10/10ths cloud to Channel, tops 10,000 feet, breaking rapidly towards French coast; thence clear, with local fog patches over France.

Winds: N. of front, at 10-13,000 feet - 270°/30-35 m.p.h.

To French coast, at 15,000 feet - 240°/40 m.p.h.

To target at 10-12,000 feet - 230°/20-25 m.p.h.

Target:- Cloudless. Moderate visibility. No moon.

Wind at 15,000 feet: 180°/15 m.p.h.

Night Photographic Statistics (see accompanying diagram)

6.		<u>With Ground Detail</u>	<u>With fire tracks only</u>
	<u>Plotted</u>	142	8
	Within 3 miles	74	7
	Between 3 and 5 miles	39	1
	Outside 5 miles	29	-
	<u>Unplotted</u>	11	103

Total:

No. of aircraft claiming attack.....
No. of aircraft estimated, from the evidence of photographs showing ground detail, to have bombed within 3 miles of the A/P.....

...../Narrative

Narrative of Attack

7. Although the target was free of cloud, the moon was down and ground haze rendered visibility moderate; so that, while some of the 14 Y-aircraft laid illumination flares and green T.I.'s (as planned for conditions of good visibility), others used red T.I.'s. Six aircraft had unserviceable Y-apparatus, but 5 of these nevertheless dropped flares and/or markers of some kind. 2 failed to return, but there is circumstantial evidence that both dropped red T.I.'s.

For this raid, the evidence of ground detail photographs is supported by a plot of fire-track photographs and a plot of T.I. markers. These make it clear that in the first 10 minutes, markers were dropped 2 to 3 miles N. of Nuremberg and also 4½ to 7 miles S.E. and S. Later in the attack, a considerable concentration of markers fell ½ to 2 miles N.W. of the aiming-point, and a smaller concentration ½ miles S.S.E., just south of the extensive railway sidings. These various concentrations of markers were duly supported by the main force, the greatest dispersal of whose bombing occurred in the second 10 minutes of the raid. Approach was from the W.S.W., and the main force displayed once more the common tendency towards undershooting, so that the bombing during the second 10 minutes covered an area some 12 miles long and 4 miles wide, running N.W. and S.E. In the last part of the raid, the proportion of ground-detail photographs plotted within 3 miles of the aiming-point rose from 50% to 64%. Most of the plotted fire-track photographs also belong to this period, and lie mainly from 1 to 3 miles from the aiming point. Thus the raid is an example of scattered marking by the P.F.F. with a late recovery by the main force, as a result of which most of the quite considerable damage was probably caused. There is evidence that some of the early T.I.'s and incendiary loads set fire to woods in open country, and this probably explains the early dispersal. The bad marking by the Y-aircraft early in the raid was probably due to incorrect timing and poor serviceability of the H2S equipment.

Alternative Targets

8. 3 aircraft bombed alternative targets, in the areas of Speyer, Ligny and Berck-sur-Mer.

Day Reconnaissance

9. A reconnaissance sortie flown on 10th March, 1943, covered the whole town of Nuremberg on prints of excellent scale and quality.

Industrial targets suffered very heavily, especially the main group south of the city, including Siemens-Schuckert Werke, M.A.N. Werke (Maschinenfabrik Augsburg-Nürnberg) and the Railway Workshops. More than two-thirds of the main Siemens Workshop, which covers an area of 5 acres, was destroyed by H.E. and fire. In the same works, a timber yard covering 3 acres and two large workshops were gutted, while many other buildings sustained violent damage. Destruction in the M.A.N. works, which turn out submarine engines, Diesel engines, heavy tanks and aircraft components, was even more thorough. A workshop 280' x 200', containing a Diesel test bed, was burnt to the ground. 3 acres of miscellaneous buildings in the north of the works were devastated. 2 large workshops, 280' x 100' and 220' by 140' respectively, were more than half demolished, and a large building covering 3 acres, which used to house the Works Administration, the Director's Office and the Main Drawing Office, was seriously damaged and partly gutted. Many other installations were also affected.

6 acres of Aluminiumwerke Nürnberg and 1½ acres of Sueddeutsche Apparatefabrik (producing selenium discs for V/T rectifiers) were completely gutted. The sum damage to the latter factory and to the adjacent C. Geyer Werke (Electrical Engineering) covers at least 16½ acres. Many unidentified industrial buildings in this area and several warehouses on the bank of the Ludwig-Donau-Kanal were destroyed or damaged. A carriage and wagon repair shop covering 5 acres in the Railway Workshops was altogether burnt out, and a large workshop nearby (225' x 140') was one-quarter gutted. The main building of the Bohner Chemical Works was destroyed by fire, as were the two main multi-bay shops of Steinmesse and Stolberg Engineering Works, a large area of Sueddeutsche Metallindustrie (Pressed Steel), and long sheds in Fruhwald Jaeger (Engineering) and Felten und Guillaume (Electrical Engineering). 10 acres in the area of the Gasworks, containing sheds, small buildings and goods stacked in open yards, were devastated by fire.

...../In addition

In addition to these industrial incidents, much commercial damage was caused. 16 acres of the Railway Traffic Centre, 30 acres in the Sandreuth district, and a Goods Yards covering 4 acres at Schniegling (N.W. of Nuremberg) were wiped out. The Schweinau, Gleisshammer and Cavalry Barracks were badly hit; 2,000 square yards of the last-named were gutted. A number of hitted camps, (probably housing industrial workers), the Germanic National Museum, the Gasworks, the new Nazi buildings in Bayern-Strasse, the Broadcasting House, the Municipal Buildings, the Customs House and the Industrie und Kultur Verein sustained various degrees of damage.

Hundreds of residential buildings were also destroyed. In the old town there are 2 notable areas of devastation covering 3 and 4 acres respectively. Near the main railway station; 3 similar areas, each of 3 acres, may be observed. The various H.E. incidents and points of scattered damage are too numerous to mention.

Intelligence Information

10. A Nuremberg paper of 13th March, 1943, contained the following announcement:

1. The great damage caused in the raid requires the assistance of the entire population. Consequently, next Saturday and Sunday every Volksgenosse should be prepared to assist in the work of clearing up. Citizens whose property has been damaged must do their own repairs. Neighbours should be asked for assistance. All other Volksgenossen will meet at their Ortsgruppen to receive instructions regarding their work. On Saturday, work will last from 1400 hours, and on Sunday from 0800 hours to 1800 hours, with a two-hour interval for lunch. Tools should be brought.
2. All people possessing a Nuremberg-Furth ration card for 1942-43 will receive an extra ration.

Navigational Aids (Geo)

11. The Eastern Chain operated on the Virginia frequency throughout. Of the 238 aircraft despatched were fitted with the Mk.II set. 17% of these aircraft and 12% of those carrying Mk.I had set difficulties. The average ranges of the former and latter were 225 and 240 miles respectively. G of 100 Squadron, with trailing aerial, obtained the maximum range of 340 miles. Considerable interference was encountered at the French coast. The A.J. circuits of Mk.II were not generally successful. The B signal was weakest.

Blind Bombing Aids (H2S)

12. The H.S serviceability was very poor. Some aircraft attacked when the sets were insensitive, which undoubtedly increased the scatter. Insufficient flares were dropped at the opening of the attack, and it appears that, when a few Y-aircraft are available, some of the early backers-up should also be provided with flares. Confusion was caused by only a few red T.I's being dropped. Backers-up again tended to aim at a single red if unable to identify the target satisfactorily themselves, which again caused a number of groups of T.I's to be widely separated.

Defences

13. (a) Flak and Searchlights

Estimates of searchlights operating in the target area varied from over 100. As usual, cones were formed but, in general, searchlight activity decreased as the raid progressed. Flak co-operation with the searchlight was in moderate intensity.

Searchlights and heavy flak were active en route, in particular at Abbeville, Strasbourg, Saarbrücken, Stuttgart and Mannheim/Karlsruhe. At Speyer, where yellow T.I. markers were dropped, a large searchlight cone was
/9 of our

9 of our returning aircraft were damaged by heavy flak, including a direct hit which passed through a Halifax and exploded above. In 5 cases the damage was sustained in the target area.

Scarecrow phenomena were reported, particularly during the early stages of the attack.

(b) Fighters

Overheard wireless traffic revealed a fair amount of controlled fighter activity, but there was considerable jamming and interference in the R/T control. Patrols in the area of our operations undertook 16 unsuccessful pursuits. There is one reference to a success by a neighbouring patrol.

Crews reported 6 attacks, 29 approaches and 5 followings by enemy fighters. There were several observations of fighters in the target area, where 4 of the approaches occurred.

The gunners of two Stirlings (15 'S' and 213 'D') each claimed to have shot a night fighter down in flames. These combats took place in the night fighter belt and were confirmed by other aircraft.

3 aircraft were damaged by enemy fighters

Casualties

4.	No. of aircraft missing.....	7
	damaged (a) flak.....	9
	(b) fighter.....	3
	(c) not enemy action.....	3
		15

The use of scarecrow phenomena makes it difficult to estimate the number of aircraft shot down over the target, but two aircraft were probably lost here. At least one of these aircraft was bombed and destroyed by heavy flak. Another aircraft was probably lost to heavy flak in the Speyer area.

There were several observations of aircraft falling en route to the target, and it seems probable that three bombers were shot down by fighters in the Saar, Luxembourg and Munheim areas. The first of these losses was probably the basis for the claim heard in the wireless traffic.

There were no observations of losses after leaving the target but, in view of the fighter activity, it seems probable that the other missing aircraft was lost on the homeward journey.

The whole of the crew of a Stirling of the P.F.F., except the mid-upper gunner, baled out over the French coast, possibly owing to shortage of petrol. The mid-upper gunner later baled out over Kent, leaving the aircraft to crash eventually in the Thames Estuary.

Losses on this night were low, probably owing to a reduced effectiveness of the fighter defences. Fighters were operating on a moderate scale, but it seems likely that, in the dark conditions, Tinsel interfered with directions given from the ground.

RUHR

5. 4 P.F.F. Mosquitoes, equipped with Obes, were detailed to carry out nuisance raids against Hagen, Essen, Cologne and Dusseldorf. The first three attacked their objectives in clear conditions from 28,000 feet; the fourth returned early for technical reasons. Signals were poor, because of bad propagation conditions.

The Mosquitoes were engaged at several places by intense heavy flak, but only a few single searchlights were exposed. All our aircraft returned undamaged.

...../MINELAYING

MINELAYING

16. 16 Wellingtons of 6 Group set out to lay mines off the Frisians. A heavy sea mist in the target area made it difficult for crews to pinpoint accurately. 4 aircraft were unable to identify their objectives. Another returned early for technical reasons. The remaining 11 aircraft accomplished their task, each laying 2 mines.

Flak and searchlight opposition was encountered from the islands of Borkum, Nordene, as well as from outlying ships. No fighters were seen, and no losses or casualties were sustained.

APPENDIX (NUREMBERG)Timing of Attack17. Pathfinder Force

10 Y-aircraft attacked at the following times: 2314, 2317, 2318(2), 2320, 2322, 2327(2) and 2330.

17 bombers attacked, at 2317, 2318, 2321(2), 2322, 2327, 2328, 2329, 2330(2), 2333, 2334, 2335, 2338 and 2340(2). = 27 aircraft.

Main ForceSection 1 (Halifaxes)

22 aircraft	attacked	within planned period (2319 - 2330)
56	"	0-20' late
2	"	more than 20' late
<u>80</u>	aircraft	

Section 2 (Stirlings)

4 aircraft	attacked	10-0' early
32	"	within planned period (2325-2335)
9	"	0-20' late
<u>45</u>	aircraft	

Section 3 (Lancasters)

8 aircraft	attacked	10-0' early
126	"	within planned period (2330-2345)
8	"	0-15' late
<u>142</u>	aircraft	

Bomb Loads

II. (of aircraft reporting attack)

Pathfinder Force

14 aircraft	carried	T.I's + H.E. + 30 lb. incendiaries
10	"	flares + T.I's
3	"	T.I's + H.E. + 4 lb. incendiaries
<u>27</u>	aircraft	

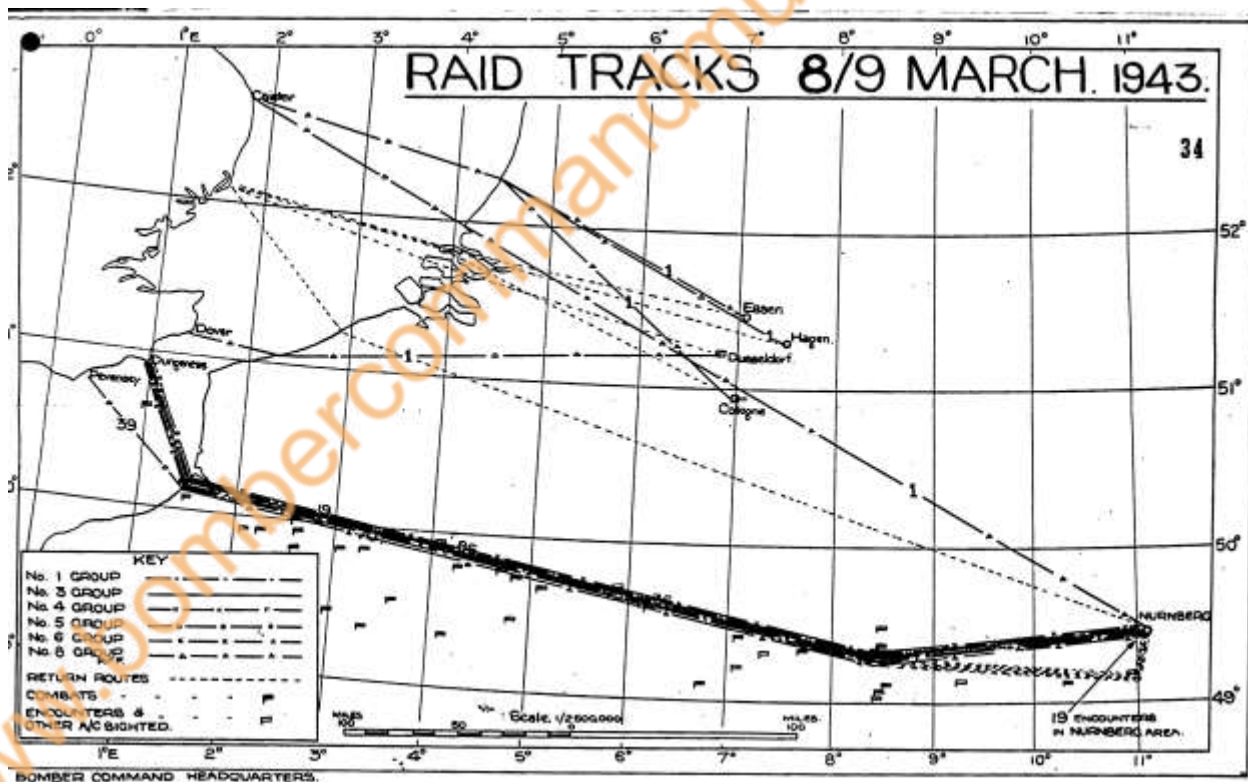
Main Force

123 aircraft	carried	H.E. + 4 lb. + 30 lb. incendiaries
65	"	H.E. + 4 lb. incendiaries
30	"	H.E. + 30 lb. incendiaries
24	"	4 lb. + 30 lb. incendiaries
17	"	H.E. only
4	"	4 lb. incendiaries only
4	"	30 lb. incendiaries only
<u>267</u>	aircraft	

MIN/VP.
BC/S. 26342/5/ORS.
13th June, 1943.

Target	Group	Type	Sorties	√C reporting attack on		Abortive sorties		Missing	Losses			Interceptions		Results	
				prim. area	alt. area	over en. territ.	not over en. territ.		Flak	fighter	not R/n	attacked	not attacked	W.E.	Inod.
NURNBERG	8 P.P.F.	Star. I	9	6	-	2	-	1	-	-	1R	-	-	(P) 309.3	431.8
		Hol. Z	9	7	-	1	-	1	-	1aC	-	1	-	(A) 2.2	1.7
		Lane. I	16	14	-	-	1	1	1	-	-	-	4	(H) 12.9	2.5
	8	Star. I	3	2	-	1x	-	-	-	-	-	-	-	(U) 1.9	-
		Hol. Z	2	2	-	-	-	-	-	-	-	-	-	-	-
		Lane. I	1	1	-	-	-	-	-	-	-	-	-	-	-
	1	Lane. I	40	37	-	-	3	-	-	-	-	-	3	-	-
		Lane. III	8	8	-	-	-	-	-	-	-	-	1	1	-
	3	Star. I	30	26	-	-	3	1	2	1aC	1B	1	8	-	-
		Star. III	20	17	-	-	2	1	1	1aC	-	1	-	-	-
	4	Hol. Z	73	60	3	6	3	1	1aC+3	-	-	-	6	-	-
		Lane. I	64	57	-	3	3	1	1	-	1aC	1	7	-	-
5	Lane. I	41	39	-	-	2	-	-	-	-	-	2	-	-	
	Lane. III	19	18	-	1	-	-	-	-	-	-	1	3	-	
NURNBERG TOTAL			335	294	3	14	17	7	1aC+8	3aC	2B+1aC	6	34	-	-
RUHR	8	Mosquito	1	1	-	-	-	-	-	-	-	-	-	-	0.7
DRESDEN	8	Mosquito	1	-	-	-	1	-	-	-	-	-	-	-	-
COLOGNE	8	Mosquito	1	-	-	-	-	-	-	-	-	-	-	-	0.
RUHR	8	Mosquito	1	1	-	-	-	-	-	-	-	-	-	-	0.7
RUHR TARGETS TOTAL			4	3	-	-	1	-	-	-	-	-	-	-	-
BOMBING TOTAL			339	297	3	14	18	7	1aC+8	3aC	2B+1aC	6	34	-	-
DRESDEN			11	8	-	-	3	-	-	-	-	-	-	-	16 mines
Prison Is.			5	3	-	-	2	-	-	-	-	-	-	6 mines	
DRESDEN TOTAL			16	11	-	-	5	-	-	-	-	-	-	22 mines	
TOTAL			355	308	3	14	23	7	1aC+8	3aC	2B+1aC	6	34	-	-

x Result not known (√C crashed in sea)

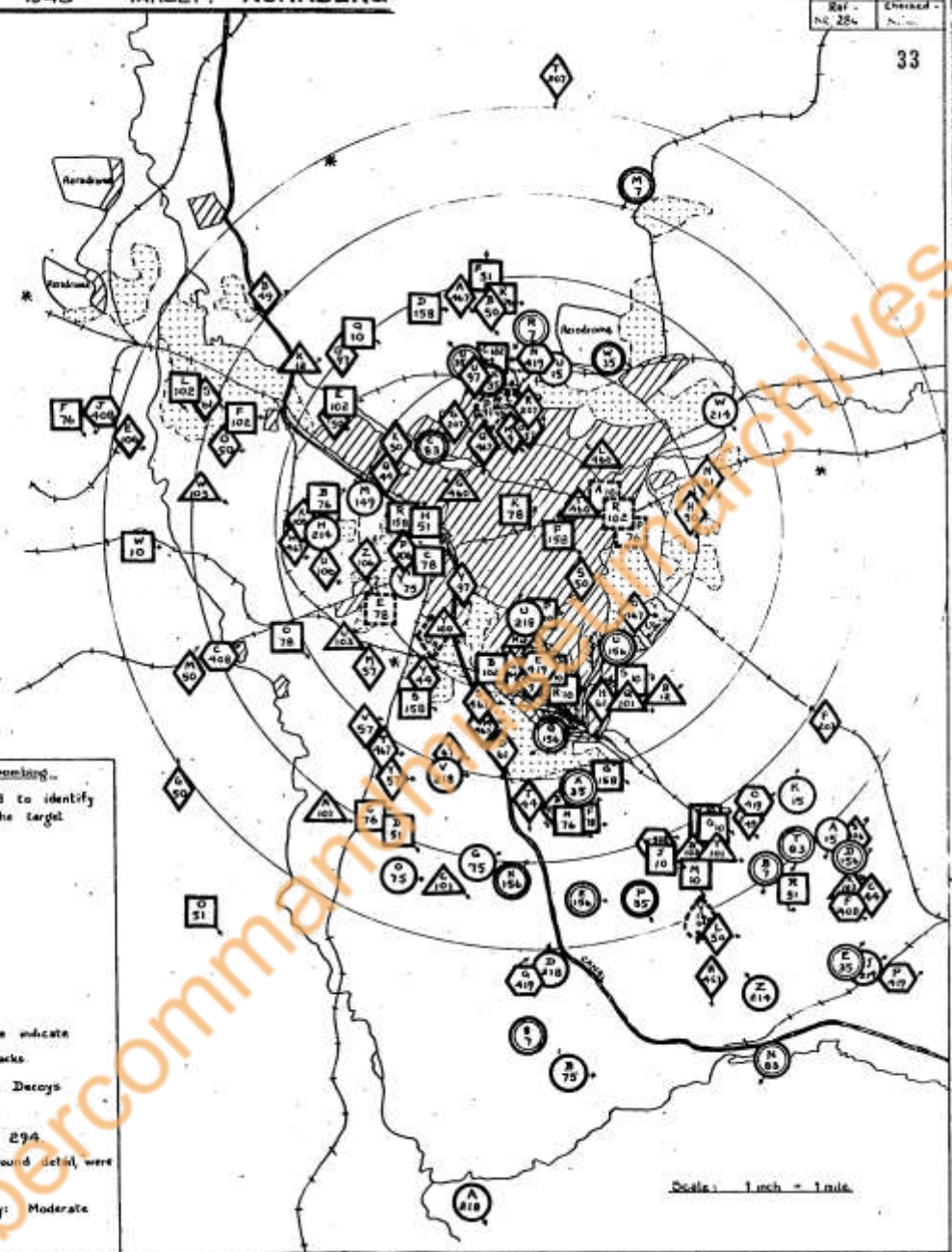
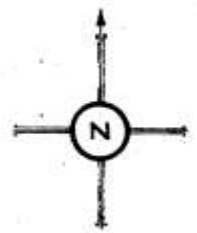


FINAL PLOT OF NIGHT PHOTOGRAPHS
 TAKEN 8/9th MARCH 1943 TARGET: NURNBERG

SECRET

OR 5	No-175B
BC	Tracer
Date-12 6-43	JF
Ref-10	Checked-
No 284	

33



Photographs taken with bombing..

- PFF Aircraft detailed to identify and illuminate the target
- △ 1 GROUP
- ◐ 3 GROUP
- ◑ 4 GROUP
- ◒ 5 GROUP
- ◓ 6 GROUP

Symbols with a broken outline indicate photographs plotted by fire tracks

↑ Aircraft heading * Decoys

--- Limit of suburban area

No. of aircraft reporting attack 294

Photographs, with bombing, of ground detail, were returned by 153 aircraft

Weather: Cloudless Visibility: Moderate

Moon: Below horizon

Scale: 1 inch = 1 mile

www.bombercommand.com archives.ca

BOMBER COMMAND REPORT ON NIGHT OPERATIONS, 9/10th MARCH, 1943.MUNICH: Ruhr: Minelaying: Leaflets:SUMMARY

Munich 218 of 264 heavy aircraft despatched (82.6%) delivered a heavy blow against the industrial district of Munich. An unexpected change of wind was mainly responsible for the attack being concentrated on the western half of the city, where all the factories and barracks are congregated, rather than on the metropolis, which consists of commercial and residential property. Consequently, severe damage was caused to industrial and military establishments, while residential property was damaged comparatively lightly. 8 aircraft (3.0%) did not return, but 2 enemy fighters were claimed to have been destroyed.

Ruhr 8 Mosquitoes carried out Oboe nuisance raids against targets in the Ruhr without loss.

Minelaying 47 of a force of 62 aircraft laid 115 mines in the areas of the North Sea, Kiel, the Little Belt, Heligoland Bight, the Frisians and the Bay of Biscay. 3 aircraft (4.5%) were lost.

Leaflets 4 aircraft dispersed leaflets in the Nantes area without incident.

Metereological Forecast

Home Bases:- Midnight position of fronts: (1) warm front 62°N. 02½°E to England (2) cold front 62°N. 02½°E. to Inverness to Blacksod. All Groups fit for take-off at dusk and for return from 0200-0400, apart from local smoke troubles in 1, 5, and Training Groups. Broken low cloud, base 1,500-2,000 feet, in 4, 5, 6 Groups, with chance of slight rain. Increasing high and medium cloud elsewhere. Cold front may affect northern bases late in night.

Germany:- Cold front at midnight from 60°N. 24°E. to Stettin to Kassel to Berlin. Over W. Germany the front is dissolving, and in its vicinity cloud is expected to be in broken layers, not extending above 15,000 feet. Ruhr: small amounts of strato-cumulus with haze. North of the front there will be well broken strato-cumulus with good visibility. South of the front, there will be well broken strato-cumulus, decreasing to small amounts S. of 49°N. Munich: fine, with small amounts of high cloud. Route: no serious worries, residual cloud in the strato-cumulus zone, tops not above 8-10,000 feet.

N. Italy:- Variable amounts of layer cloud.

N. France:- Broken strato-cumulus in N., little cloud in S.

N. Baltic:- Well broken strato-cumulus, not below 2,000 feet, in N., 5/10ths. Broken strato-cumulus, not below 1,500 feet, in S.

Frisians:- As S. Baltic.

Winds to Munich:- (1) to 50°N. 06°E. (2) Thence to Munich

at 10,000'	-	350°/25 m.p.h.	-	light variable
18,000'	-	340°/40 m. p. h.	-	230°/30 m. p. h.
28,000'	-	320°/40 m.p.h.	-	220°/35 m. p. h.

...../MUNICH.

MUNICHPlan of Attack

3. Zero hour: 2345 hours.

13 "Y"-type aircraft of P. F. F., "backed-up" by 16 aircraft not equipped with H2S, were detailed to lead this attack. White T. I. landmarks were to be dropped on the outward journey at position 4903N. 0612E. by the Y aircraft, and the backers up. In addition, the northern tip of the Ammer See was to be illuminated with white and green flares so that aircraft of the main force could do a timed run from this point. These flares, bursting at 20,000 ft., were to be dropped by all P.F.F. aircraft.

When the target was reached, the "Y" aircraft were to mark the aiming point blindly with red T.I., at the same time releasing white flares at 4 sec. intervals in attacks across the target. These flares were to be supplemented if necessary similar flares, dropped by 2 of the backers-up.

Backers-up were to drop green T.I. and were to aim these visually, if the aiming point could be identified with certainty by the light of the illuminator flares. Otherwise they were to aim at the centre of the greatest concentration of T.I. already dropped. The timing of the P.F.F. was to be as follows:-

13 "Y" aircraft at zero - 1

17 "Backers-up" at 1 or 2 minute intervals between zero + 1 and zero + 2

The main force was to consist of 5 aircraft of P.F.F. together with about 253 heavies from other groups. They were to make an accurate timed run from the illuminated tip of the Ammer See, and to attack between zero + 4 and zero + 30, aiming their bombs at the centre of the concentration of ground markers without attempting to identify the target visually. They were to be divided into sections as follows:-

<u>Section 1</u>	44 Lancasters of 1 Group.....	Z + 4 - Z + 15
<u>Section 2</u>	83 Halifaxes.....	Z + 8 - Z + 18
<u>Section 3</u>	40 Stirlings.....	Z + 10 - Z + 20
<u>Section 4</u>	86 Lancasters of 5 Group.....	Z + 18 - Z + 30

On the homeward journey, white T.I. were to be dropped by "Y" aircraft "backers-up" at position 4836N. 0912E.

Route briefed: 5000N. 0115E. - 4805N. 1108E. - MUNICH - 5000N. 0115E.

Sorties

4.	(a)	No. of aircraft despatched.....	264
	(b)	" " " reporting attack on primary area....	218 (82.6%)
	(c)	" " " " " " " " " alternative area.....	6 (2.3%)
	(d)	" " " abortive sorties { technical defect.....	27
		{ sickness of crew.....	2
		{ hit by flak.....	1
		{ off track.....	1
		{ W/Op. not aboard.....	1
	(e)	" " " aircraft missing.....	8 (3.0%)

Weather Experienced

5. Home Bases:- Fit for take-off. By midnight, fog and mist in lee of industrial areas, affecting 1 and 5 Groups. By 0400, bases again generally due to increasing pressure gradient, although visibility locally 2,000 yards in some, and showers in Yorkshire.

Route:- Little cloud over England and enemy coastlines. Belt of layer cloud, 20-30 miles long, lying approximately E. N. E. - W. S. W. through 49°N. tops 7-8,000 feet. Thence cloudless to target. Ground haze over lakes and in area; otherwise, good visibility.

...../Targets:-

Target:- Cloudless. Ground haze.

Moon 15 $\frac{1}{4}$ of full, setting at zero - 56 minutes.

Winds at 15-20,000 feet: 020-030⁰/30-35 m.p.h. over enemy coast.
340-360⁰/35 m.p.h. at 49⁰N.
SW-W/20 m.p.h. in target area.

(N.B. unexpected lateness of veer from N. to S.W.)

Night Photographic Statistics

6.	No. of films examined.....	214
	No. of films showing ground detail.....	92
	" " " plotted by ground detail (within 3 miles.....27)	82
	" " " " (between 3 & 5 miles.....44)	
	" " " " (outside 5 miles.....11)	
	No. of films showing fire-tracks.....	98
	" " " plotted by fire-tracks (within 3 miles.....13)	43
	" " " " (between 3 & 5 miles.....29)	
	" " " " (outside 5 miles.....1)	
	No. of aircraft reporting attack.....	218
	" " " " estimated (from the evidence of night photographs)	163
	to have bombed within 5 miles of the aiming-point.....	

Narrative of Attack

7. Owing to the faulty wind forecast (compare paragraphs 2 and 5), all aircraft tended to arrive late, and the number of Pathfinders which actually marked the target was considerably smaller than had been planned. Y-aircraft were particularly weakly represented, since the apparatus is as yet only fitted on our slower aircraft. Only 4 sets of red T.I. markers were dropped, one of these by an aircraft whose H2S set was unserviceable. Only 9 sticks of flares were dropped altogether, and at no time were more than 3 sticks burning. The target was, therefore, never brilliantly illuminated. Nevertheless, T.I. markers were burning continuously from 0003 to about 0025, during which period about 128 of the 196 Main Force aircraft claiming attack dropped their bombs. The rest were later.

2 Y aircraft dropped red T.I.'s blindly on H2S at 0003 and 0004. These were followed by 2 pairs of green T.I.'s at 0009 and 2 more at 0010, all close to the first red T.I.'s. Photographic evidence suggests that these markers were centred about 4 miles - 3500' from the aiming-point (about 1 mile N.E. of Oberwiesenfeld aerodrome). From about 0012 to 0015, 2 concentrations of T.I.'s were visible, one based on the above mentioned cluster and the other about $\frac{1}{2}$ mile N. of the aiming-point. The former concentration (i.e., that further from the aiming-point) appears to have attracted the majority of the Main Force bombing at this time.

After 0015, the centre of the attack shifted to S.W. of the Oberwiesenfeld aerodrome, and at about 0017 a gas-holder was blown up here with a great explosion. The main concentration of bombing remained in this area until the end of the raid, moving slightly south-westwards but no more than 1 mile. A certain amount of scatter was caused by T.I. markers dropped further north of the aerodrome and S.W. of the marshalling-yards ($4\frac{1}{2}$ m - 2650' from the aiming-point), which were photographed at 0022 and at 0025 and 0030 respectively. But neither of these attracted many of the Main Force.

Alternative Targets

8. 6 aircraft bombed alternative targets, in the areas of Stuttgart, Saarbrücken, Lendsberg, Ulm and Mezieres.

Day Reconnaissance

9. 2 D.A. sorties were flown on 10th and 11th March 1943. Together they provided adequate cover, apart from the eastern district of Pasing (around the railway station) the main Junkers factory at Allack and the B.M.W. factory at Riesenfeld. The last detailed Interpretation Report on Munich was issued on 5th October 1942, so that the damage herein referred to includes that caused on the night of 21/22nd. October, 1942, when 110 aircraft reported attack in conditions of poor visibility.

...../Fresh damage by F.E.

Fresh damage by H.E. and fire was most apparent in the central, N., N.W. and W. districts. No large areas were devastated but there were many points of heavy damage. The industries and military establishments of Munich, which are concentrated in the W. of the city, suffered particularly severely. A direct hit by H.E. on the main machine shops of Bayerische Motorenwerke (aero-engines) spread destruction over $1\frac{1}{2}$ acres. Motorenwerke Mannheim (submarine engines), Deutsche Amerioensche Petroleum Gesellschaft, Max Fach (sheet metal), Krauss (locomotives and armoured cars) Nymphenberg (porcelain), and J. Rathgeber (railway wagons) all sustained violent damage particularly the last-named factory. Many small industrial and commercial buildings were gutted and a number of railway installations and military depots were partly destroyed. The town gas works suffered heavy damage from blast. Various public buildings were affected, notably the Finance, Revenue and Statistical Record Offices and the Reichsbank, while the top floor of the famous Brown House was burnt completely out. Residential property escaped comparatively lightly, although a surprising number of large blocks had sections of their top storeys gutted.

Full details are set out in Interpretation Report No. K. 1502.

Navigational Aids (Cee)

10. The Eastern Chain was operating on the Virginia frequency. 26% of the 191 C aircraft despatched were fitted with Mk.II sets. 18% of these and 8% of Mk.I had some difficulties. The average ranges were 240 and 250 miles respectively. U. of 75 Squadron, using a Mk.I set, obtained the maximum range of 345 miles. Interference was heavy and the B. pulse was weak.

Blind Bombing Aids (H2S)

11. The performances of Y-aircraft were as follows:-

Dropped red T.I. and flares blindly on H2S.....	2
" red T.I. only blindly on H2S.....	1
" red T.I. and flares visually (H2S w/s).....	4
" flares only visually (H2S w/s).....	3
Abortive (H2S w/s).....	2
Abortive (other causes).....	3
	<u>12</u>

On this occasion, as at Wilhelmshaven on 19/20th February, Y-aircraft obtained an unexpectedly large response from recent suburban construction. Bombing as they did some 4 miles N. of the aiming-point, they should have seen the aerodrome and barrack buildings in the centre of the picture, with the main mass of the city clearly visible to the S. The change of wind, as explained above, and the consequently incorrect D.R. run were primarily responsible for the error in marking, but the response from the lightly built-up outskirts should have been so weak as to make this error obvious.

Defences

12. (a) Flak: Searchlights

Numerous searchlights, estimated by some crews at 200, exposed in the target area in cones of 10-40 beams. These co-operated with the guns, and also assisted night fighters. Some Lancaster crews reported that searchlights were coming on their vapour trails. Heavy flak was only moderately intense, and appeared to decrease as the raid progressed. Light flak was negligible throughout.

There were two turning-points en route, one at Dieppe and one at the Ammer See, about 30 miles from Munich. At both places a considerable amount of heavy flak was fired. On such a long route, some aircraft strayed over gun-defended areas. Flak and searchlights were active at Metz, Searbrücken, Strasbourg, Stuttgart and Augsburg.

No aircraft were damaged by heavy flak, all in the target area but none seriously.

(b) Fighters

Enemy wireless traffic was subject to considerable interference, but 5 patrol were located and 8 pursuits were overheard, resulting in one success claim near Le/on the return

the return route. Altogether, 6 attacks and 15 approaches were reported - 5 attacks and 8 approaches after our aircraft had left the target. No attacks took place in the Munich area, although several fighters were observed.

The crews of a Stirling (149/B) and of a Halifax (102/L), each claimed to have down an enemy fighter, but there were no confirmatory observations.

Casualties

No. of aircraft missing.....	8
" " " damaged	(a) flak.....16
	(b) fighter.....1
	(c) non enemy action...Nil
	.....17

2 aircraft were probably shot down en route, one by fighter at Rheims and one at Brussels to unknown causes. Another 2 may have fallen to the flak defences of the Ruhr. The remaining 4 aircraft were all probably destroyed by fighters in the area between 03°E. and 05°E., where controlled fighters are most active. Thus, of the missing aircraft, 5 may be assessed to fighters, 2 to flak and one to "causes unknown".

RUHR

8 Mosquitoes, equipped with Oboc, were despatched on nuisance raids against the Ruhr - 2 to Essen and one each to Mulheim, Duisburg, Rheinhausen, Ruhrort, Bochum and Harbom. All bombed their objectives in clear conditions from 28,000 feet, except the 2 aircraft detailed for Essen, which experienced technical trouble and did not reach Harbom visually.

Considerable opposition was encountered from searchlights and heavy flak. Up to 100 beams exposed at Essen, Duisburg, and Bochum, and tried to find the aircraft coming on their vapour trails. The flak was accurate as regards height, but fell short. Overheard wireless traffic revealed one pursuit, but the fighter was at 30,000 feet and could not climb quickly enough to establish contact. All our aircraft returned undamaged.

MINELAYING

Casualties

(a) No. of aircraft despatched.....	62
(b) " " " reporting mines laid in primary areas.....	47
(c) " " abortive sorties (technical and manipulative	
defects.....	3
weather.....	3
flak.....	1
	.....12
(d) " " aircraft missing.....	3(4.5%)
(e) " " mines laid.....	115

Weather Experienced

Bight area: Variable amounts of layer cloud; patches of 10/10ths; base 2,000 feet, tops 2,000 feet. Good visibility.

Rotterdam:- No cloud. Visibility 15 miles.

Kiel:- No cloud. Hazy. Good visibility.

Little Belt:- 6-10/10ths strato-cumulus at 1,500 feet. Moderate visibility.

Gironde:- 10/10ths. cloud, base 2,000 feet, tops 9,000 feet. Thick haze. Poor visibility.

Moon above the horizon and 15% of full.

Results

62 aircraft from all Groups were despatched to lay mines in the areas of Kiel, the Little Belt, Heligoland Bight, the Frisians and the Bay of Biscay. 47 reached their targets, and laid 115 mines. One aircraft, on encountering heavy flak from Pickeroog Island, jettisoned 2 mines live just north of the recognised area.

...../Enemy defences.

Enemy Defences18. (a) Flak: Searchlights

Light flak and searchlight defences were encountered at Esbjerg and Danish islands in the W. Baltic. One aircraft sustained slight damage.

(b) Fighters

Wireless traffic revealed the presence of 5 patrols of night fighters in area of Heligoland Bight and the W. Baltic. 5 unsuccessful pursuits were over and 2 indirect references to the destruction of bombers. No enemy aircraft was sighted by our crews, but this was to be expected, as our force was well scattered the night was dark and cloudy.

Casualties

19. No. of aircraft missing.....
 " " " damaged (a) flak.....1)
 (b) fighter.....nil)
 (c) non-enemy action.....2)

One aircraft was seen to crash near Esbjerg, corresponding with one of overheard wireless claims. There is no evidence to account for the other 2 lost Stirlings crashed on return and were extensively damaged; but none of the crews were killed.

LEAFLETS

20. 4 Wellingtons of 92 Group dispersed leaflets in the Nantes area without incident.

APPENDIX (MUNICH)Timing of AttackI. Pathfinder Force

(a) Y aircraft 7 Y aircraft attacked as follows.

0004 T.I. + flares	0016 flares only *
0005 flares only *	0022 T.I. + flares *
0012 T.I. + flares	0030 T.I. only
0015 flares only *	

(* 125 w/s)

(b) Backers-up 14 aircraft, at 0009(2), 0010(4), 0012(2), 0013(2), 0017, 0018(2) and 0020

Main Force

Section 1 Lancasters of 1 and 8 Groups (planned period: 2349-2400)

18 aircraft attacked at 2400-0015

25 " " " 0015-0040

43 aircraft

Section 2 Halifaxes (planned period: 2353-0003)

47 aircraft attacked at 0005-0020

9 " " " 0020-0050

56 aircraft

Section 3 Stirlings (planned period: 2355-0005)

23 aircraft attacked at 0010-0030

6 " " " 0030-0055

29 aircraft

Section 4 Lancasters of 5 Group (planned period: 0003-0015)

63 aircraft attacked at 0010-0040

6 " " " 0040-0050

69 aircraftLoads(a) Pathfinder Force

8 aircraft carried T.I's + H.E.

7 " " T.I's + flares

3 " " T.I's + flares + H.E.

3 " " T.I's + H.E. + 30lb. incendiaries

21 aircraft(b) Main Force

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

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

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

16 " " 4 lb. + 30 lb. incendiaries

13 " " H.E. only

2 " " 4 lb. incendiaries only

1 " " 30 lb incendiaries only.

197 aircraft

VF

S. 26342/1/ORS.

June, 1943.

2/10th March, 1943.

MISSION: BOMBING: MONSIEUR: LEAPLETS

Target	Group	Type	Sorties	A/C reporting attack on		Abortive sorties		Missing	Damage			Interceptions		Results		
				prim. area	alt. area	over en. territ.	over en. territ.		flak	fighter	not R/h	attacked	not attacked	Tons of Bombs		
														H. E.	INC.	
MINICH	P.F.P.	Lanc. I	13	11	1	-	-	1	1	-	-	-	1	(P)	283.8	275.0
		Hal. 2	8	6	1	-	1	-	1	-	-	-	-	(A)	5.1	5.2
		Stir. I	10	5	-	-	4	1	1	-	-	-	-	(N)	9.4	10.6
		Hal. 2	1	1	-	-	-	-	-	-	-	-	-	-	-	-
	1	Lanc. I	37	33	-	-	3	1	2	-	-	-	1	-	-	-
		Lanc. III	10	9	-	-	-	-	1	-	-	-	1	-	-	-
	3	Stir. I	20	19	1	-	-	-	2	1	-	-	3	1	-	-
		Stir. III	11	9	-	-	2	-	-	-	-	-	-	-	-	-
	4	Hal. 2	53	4	2	4	4	2	3	-	-	-	2	-	-	-
	5	Lanc. I	41	41	-	-	3	3	2	3	-	-	-	-	-	-
Lanc. III		32	28	-	-	4	-	1	-	-	-	-	-	-	-	
6	Hal. 2	18	14	-	-	4	-	2	-	-	-	-	-	-	-	
MINICH TOTAL			264	218	6	-	9	23	8	16	1	-	6	15	-	-
MILDETH	8	Mosquito	1	1	-	-	-	-	-	-	-	-	-	(P)	0.9	-
DUISBURG	8	Mosquito	1	1	-	-	-	-	-	-	-	-	-	(P)	0.9	-
HEININGEN	8	Mosquito	1	1	-	-	-	-	-	-	-	-	-	(P)	0.9	-
BRUCH	8	Mosquito	1	1	-	-	-	-	-	-	-	-	-	(P)	0.9	-
BOLMUM	8	Mosquito	1	1	-	-	-	-	-	-	-	-	-	(P)	0.7	-
R. MOCHU	8	Mosquito	1	1	-	-	-	-	-	-	-	-	-	(P)	0.7	-
RESEN	8	Mosquito	2	1	1	-	-	-	-	-	-	-	-	(P)	0.7	-
BOMBING TOTAL			272	225	7	-	9	23	8	16	1	-	6	15	-	-
MINELAYING	1	Well. III	8	6	-	-	1	1	1	-	-	-	-	-	-	12 mines
		Well. I	6	5	-	-	1	-	-	-	-	-	-	-	-	10 mines
KATZBACH	3	Stir. I	2	1	-	-	1	-	-	-	2E	-	-	-	-	3 mines
		Stir. III	1	1	-	-	-	-	-	-	-	-	-	-	-	3 mines
GERODE	3	Stir. I	4	3	-	-	1	-	-	-	-	-	-	-	-	12 mines
		Stir. III	1	-	-	-	1	-	-	-	-	-	-	-	-	-
La. BELLE	3	Well. III	4	4	-	-	-	-	-	-	-	-	-	-	-	8 mines
HEE BACH	4	Well. I	7	6	-	-	1	-	-	-	-	-	-	-	-	12 mines
FRISCH IS.	4	Well. I	1	-	-	-	1	-	-	-	-	-	-	-	-	-
LITTLE BELT	4	Well. III	4	1	-	-	2	1	-	-	-	-	-	-	-	2 mines
		Well. I	2	2	-	-	-	-	-	-	-	-	-	-	-	4 "
KATZBACH	5	Lanc. I	3	3	-	-	-	-	-	-	-	-	-	-	-	12 mines
		Lanc. III	1	1	-	-	-	-	-	-	-	-	-	-	-	5 mines

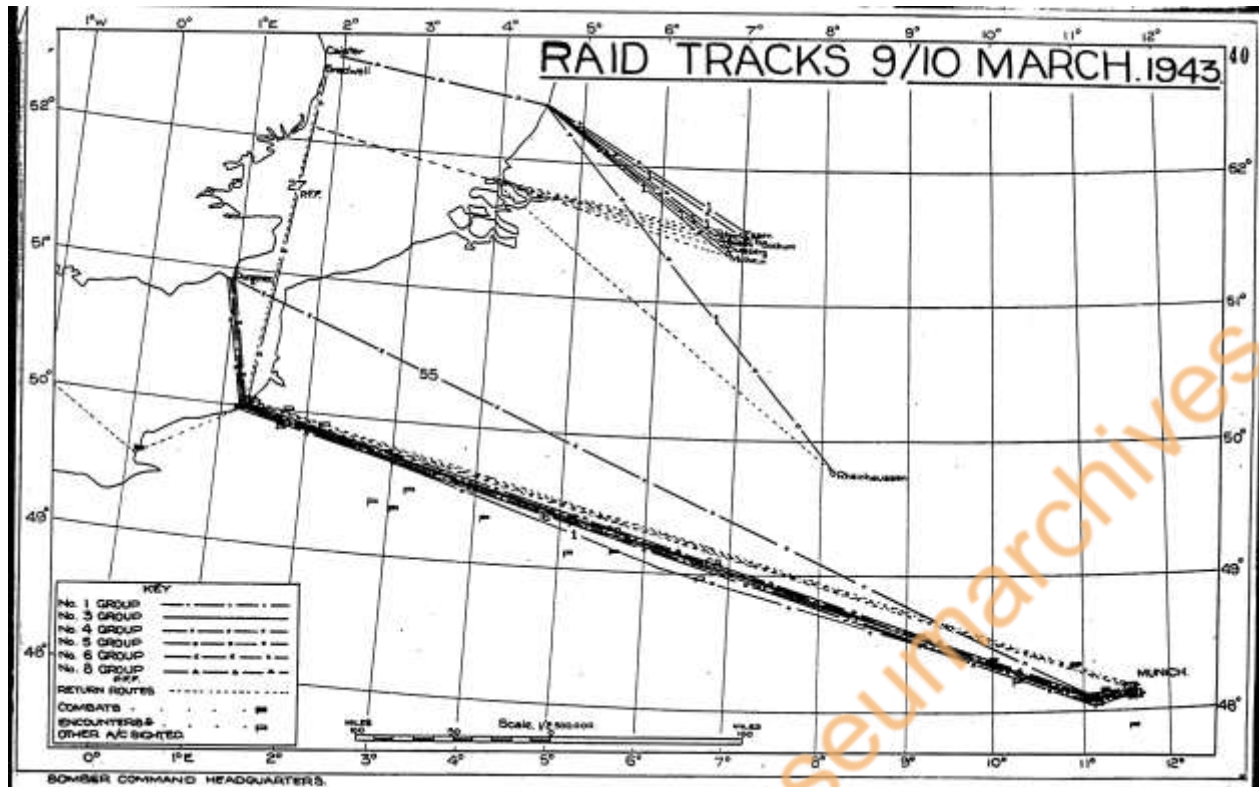
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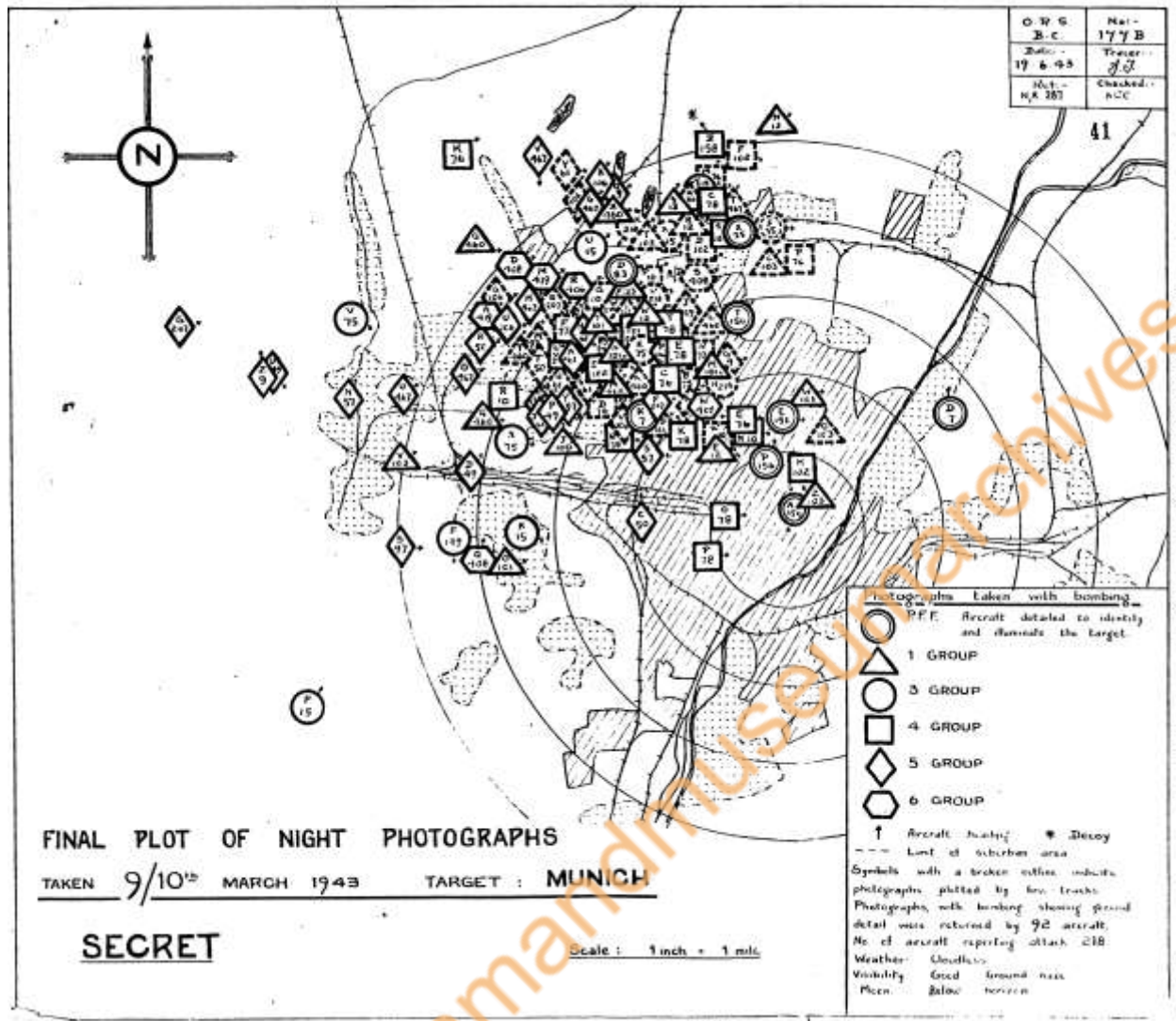
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...../Contd.

Target	Group	Type	Sorties	A/C reporting attack on		Abortive sorties		Missing	Damage			Interceptions		Results
				prim. area	alt. area	over en. territ.	over en. territ.		flak	fighter	not R/h	attacked	not attacked	
HELLIGLAND	6	Well. III	4	12	-	-	2	-	-	-	-	-	-	24 mines
RIGHT														
LITTLE BELT(N)	6	Well. III	2	2	-	-	-	-	-	-	-	-	-	4 mines
LITTLE BELT	6	Well. III	2	-	-	-	-	1	-	-	-	-	-	-
MINELAYING TOTAL			62	47	-	-	12	3	1	-	2E	-	-	115 mines
LEAPLETS	92	Well. III	4	4	-	-	-	-	-	-	-	-	-	-
TOTAL			338	276	7	-	9	35	11	17	1	2E	6	15

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BOMBER COMMAND REPORT ON NIGHT OPERATIONS, 10/11th MARCH, 1943.Ruhr: Minelaying: Leaflets.SUMMARY

Ruhr 2 P.F.F. Mosquitoes, equipped with Oboe, carried out nuisance raids on Mulheim and Essen. Both returned safely.

Minelaying 35 heavy aircraft of 3 and 5 Groups were detailed to lay mines in areas of Danzig, Gdynia, Pillau, Sassnitz, Swinemunde, Bornholm, the Cadet Channel and the Gironde estuary. 30 reached their targets, laying 115 mines. 2 aircraft did not return.

Leaflets 5 Wellingtons of 91 Group dispersed leaflets in the Clermont-Ferrand area, and returned without loss.

Metorological Forecast

Midnight positions of fronts:- (1) occluded from 59°N. 20°E. to 56°N. 11°E., bringing warm to Brussels and cold to 53°N. 05°E. to London to S.W. England. (2) cold (anticyclone) from 63°N. 05°E. to Orkney to Stornaway (3) warm over Alps.

Home Bases:- Well broken convection cloud N. of cold front. 10/10ths at 1000 ft., N.W. of a line Kattegat - Spurn Head - Ternhill - Bristol - Brest; over cloud in patches with showers or drizzle. Visibility 2-4 miles in N. S.E. of this line: broken strato-cumulus at 1,500 feet, with moderate visibility till midnight; then low cloud from Bristol Channel, spreading to Midlands. Cloud tops not expected to be above 15,000 feet over this country in the frontal belt, but they probably extend higher over E. North Sea.

Germany:- Cloud will decrease southwards, becoming well broken at medium levels over central Germany. Much medium cloud in the south. Ruhr: well broken medium cloud above 15,000 feet; well broken strato-cumulus.

N. Italy:- Much low cloud. Alps covered.

W. France:- Brest: 7-10/10ths at 1,000 feet. Lorient: 5-7/10ths at 1,500 feet, with a risk of 10/10ths at 1,000 feet. Gironde: little cloud.

Kattegat:- 9-10/10ths at 600-1,000 feet, possibly fog banks and intermittent rain. Improvement after 0300 hours.

Baltic:- Kiel to Stettin: 5-8/10ths at 1,500 feet, with fog patches to 0300 hours lowering. Conditions as for Kattegat after midnight. Danzig: 3-5/10ths at 2,000 feet, increasing during evening to 5-8/10ths.

RUHR

2 Mosquitoes of 109 Squadron, equipped with Oboe, attacked Mulheim and Essen at 28,000 feet in clear conditions. Intense heavy flak in co-operation with at least 30 searchlights was encountered but both aircraft returned undamaged.

...../MINELAYING

MINELAYINGSorties

4.	(a)	No. of aircraft despatched.....	3
	(b)	" reporting mines laid in primary area.....	3
	(c)	" abortive sorties (weather.....2) (technical defect.....1).....	
	(d)	" aircraft missing.....	
	(e)	" mines laid.....	11

Weather Experienced

5. Home Bases:- Fit till night.

Baltic:- Layer cloud, tops 4,000 feet, across North Sea. Bank of low cloud at 16,000 feet, with layer cloud below up to 8,000 feet. over E. North Sea; Denmark; breaking to nil over the Baltic. Visibility moderate. Wind at 10,000 feet: 270°/40 m.p.h.

W. France:- Variable layer cloud over Channel, becoming 10/10ths (base 2,500 ft. tops 4,000 feet) over N. French coast, breaking to nil inland. Target cloudless but hazy. Visibility moderate.

Moon above the horizon and 24% of full.

Enemy Defences

6. (a) Flak and Searchlights

Baltic

Light flak defences were active at Skanor in the south of Sweden, which the point from which the bombers dispersed to their various areas. Further light flak was encountered in the vicinity of the targets, but not one of our aircraft sustained any damage.

W. France

Flak and searchlight defences were active at Angers, Nantes, La Rochelle and l'Ile d'Oléron. One bomber sustained slight damage.

(b) Fighters

Enemy wireless traffic revealed the presence of three patrols in the area this operation. The first patrol, near Bornholm, undertook one unsuccessful attempt at reporting an aircraft shot down by light flak. The second patrol, Blewands, claimed that he had shot down a Lancaster after making contact with his A.I. device. The third patrol, located near Schleswig, made a series of pursuits over a period of forty-five minutes. These apparently resulted in the attacks reported by the crew of a Lancaster (61 'S') as made by a No. 110.

The crew of another Lancaster also reported an attack by a night fighter on the return over Denmark. Both of the attacked Lancasters were damaged.

There was no evidence of any fighter activity over France.

Casualties

7.	No. of aircraft missing.....	
	" damaged (a) by flak.....1	
	(b) by fighter.....2	
	(c) not enemy action.....0	
	Total Damaged	

There were confirmatory observations of an aircraft destroyed by light flak west of Bornholm. The claim by a controlled night fighter to have shot down another missing Lancaster, although unconfirmed, was probably genuine.

...../IE

3.

LEAFLETS

8. 5 Wellingtons of 91 Group dispersed leaflets over Clermont-Ferrand. 4 enemy fighters were seen between Caen and Chartres, but no attacks developed. All aircraft returned safely.

AM/VF.
C/S. 26342/6/ORS.
9th June, 1943.

Target	Group	Type	Sorties	A/C reporting took on		Abortive sorties		Sinking	Damage			Interruptions		Results		
				prim. area	alt. area	over en. territ.	not over territ.		flak	fighter	not E/A	attacked	not attacked	Tons of Bombs	H.K. Inc.	
BOISSEIN	8	Mosquito	1	1	-	-	-	-	-	-	-	-	-	-	0.7	-
BOISSEIN	8	Mosquito	1	1	-	-	-	-	-	-	-	-	-	-	0.7	-
BOISSEIN TOTAL			2	2	-	-	-	-	-	-	-	-	-	-	-	-
MONTELYNG	3	Stir. I	11	11	-	-	-	-	-	-	-	-	-	-	-	-
GIRONDE RIVER		Stir. III	4	4	-	-	-	1	-	-	-	-	-	-	-	53 mines
B. JUNG	5	Lanc. I	1	-	-	-	1	-	-	-	-	-	-	-	-	-
B. JUNG	5	Lanc. I	3	2	-	-	1	-	-	-	-	-	-	-	-	8 mines
BOISSEIN	5	Lanc. I	2	2	-	-	-	-	-	-	-	-	-	-	-	8 mines
CHARENTAIS	5	Lanc. I	2	2	-	-	-	-	-	-	-	-	-	-	-	15 mines
		Lanc. III	1	-	-	-	-	-	-	-	-	-	-	-	-	-
VELAY	5	Lanc. I	2	2	-	-	-	-	1AC	-	3	-	-	-	-	8 mines
CHARENTAIS	5	Lanc. I	1	-	-	-	1	-	-	-	-	-	-	-	-	12 mines
CHARENTAIS	5	Lanc. III	3	3	-	-	-	-	-	-	-	-	-	-	-	-
CHARENTAIS	5	Lanc. I	1	1	-	-	-	1	-	-	-	-	-	-	-	3 mines
CHARENTAIS	5	Lanc. III	1	1	-	-	-	-	-	-	-	-	-	-	-	8 mines
CHARENTAIS	5	Lanc. I	3	2	-	-	-	1	-	1AC	-	1	-	-	-	8 mines
CHARENTAIS TOTAL			35	30	-	1	2	2	1	2AC	-	4	-	-	-	115 Mines
CLERMONT-FERRAND	91	Well. III	3	3	-	-	-	-	-	-	-	-	-	-	-	-
CLERMONT-FERRAND		Well. X	2	2	-	-	-	-	-	-	-	-	-	-	-	-
T O T A L			42	37	-	1	2	2	1	2AC	-	4	-	-	-	-

BOMBER COMMAND REPORT ON NIGHT OPERATIONS, 11/12th MARCH, 1943.STUTTGART: MinelayingSUMMARY1. Stuttgart 314 heavy bombers set out for Stuttgart.

Accurate marking of the target by the Pathfinder Force, led by Y-type aircraft, was nullified by the very late arrival of the Main Force. The attack was diverted into open country S.W. of the city - possibly because of the enemy's use of dummy target indicators - with the result that the main target escaped almost unscathed. The small town of Vaihingen sustained considerable damage.

11 bombers were lost, of which at least 7 were probably shot down by fighters.

Minelaying 13 aircraft of a force of 14 laid 73 mines off the Frisians and the West coast of France. All returned safely.

Metorological Forecast

2. Home Base:- Scattered showers, variable cloud, good clear periods, moderate visibility. Fit throughout operational period, except for local smoke trouble on return.

Germany:- Occluded front at midnight from 55°N. 21°E. to 58°N. 15°E., becoming warm to Leipzig and Mannheim and cold to Berlin to Kassel (to Paris to Lorient). N. North Sea: convection cloud with tops above 20,000 feet, hail and thunder showers, high icing index. E. of cold front: convection and strato-cumulus, with a few breaks. Along the cold front, cloud tops should not extend above 10,000 feet in W., and not above 15,000 feet in E. In the warm sector, there will be broken layer cloud. S. of warm front, cloud will decrease quickly small amounts of high and medium cloud; hazy.

N. Italy:- Variable amounts of medium and low cloud.

W. France:- Well broken strato-cumulus. Hazy in S.

Route to Stuttgart:- Broken convection cloud over England, tops not above 8,000 feet. Medium cloud not above 12,000 feet in S. England. Strato-cumulus and medium cloud continuing to 06°E., thence decreasing rapidly to small amounts of cloud above 15,000 feet.

Frisians:- Convection cloud not above 8,000 feet, base 2,000 feet. Slight showers.

<u>Winds to Stuttgart</u>	<u>(1) to 51°N</u>	<u>(2) 51°N. to 06°E.</u>	<u>(3) Stuttgart</u>
10,000'	170°/45 n.p.h. (decreasing to 35 n.p.h.)	280°/20 n.p.h.	Light, variable
13,000'	270°/70 n.p.h. (decreasing to 40 n.p.h.)	290°/30 n.p.h.	"
28,000'	290°/80 n.p.h. (decreasing to 50 n.p.h.)	300°/45 n.p.h.	340°/30-35 n.p.h.

...../STUTTGART

STUTTGARTPlan of Attack

3. Zero hour: 2245 hours.

12 'Y' type aircraft, backed-up by 16 other Pathfinders, were detailed to lead the attack. The 'Y' aircraft were each to drop 1 S.B.C. of 4 lb. incendiaries over Baden-Baden on the outward journey, and this landmark illumination was to be maintained by the "backers-up" in passing. On reaching the target the 'Y' aircraft were to mark the aiming-point blindly with red T.I. at zero - 1, releasing sticks of illumination flares at 4 second intervals after continuing on the same heading.

The "backers-up" were to aim their green T.I. at the aiming-point if able to identify it visually by the light of the illuminator flares, otherwise at the centre of the concentration of red T.I. or, if these had ceased to burn, at the green T.I. already dropped. The "backers-up" were to attack at intervals of 1 or 2 minutes from zero - 1 to zero + 22.

5 other P.F.F. aircraft were to join the main force of heavies, aiming their bombs at the centre of the concentration of ground markers, irrespective of colour. The timing of the main force was to be as follows:-

<u>Section 1</u>	Halifaxes of 6 Group.....	Z+4-Z+15
<u>Section 2</u>	Halifaxes of 4 Group.....	Z+10-Z+20
<u>Section 3</u>	Stirlings of 3 Group.....	Z+15-Z+25
<u>Section 4</u>	Lancasters of 1 and 5 Groups.....	Z+18-Z+30

No incendiaries were to be dropped before zero + 10.

1, 4 and 5 Groups were to carry mixed loads of H.E. and I.B. Aircraft of 3 Group were to carry 100% incendiary loads, one-third of which was to be made up of 30 lb. incendiaries. One-third of all H.E. bombs carried were to be fitted with long delay fuses.

On the homeward route, aircraft of P.F.F. were each to drop one S.B.C. of 4 lb. incendiaries at Baden-Baden as a navigational aid to aircraft of the main force.

Route briefed: 5000N. 0115E. - Chalens-sur-Marne - Bischmiller - STUTTGART - same return.

Sorties

4.	(a)	No. of aircraft despatched.....	314
	(b)	" reporting attack on primary area.....	268(85.4%)
	(c)	" " alternative area.....	6(1.9%)
	(d)	abortive sorties (technical and manipulative defects....)	26
		{ icing.....	1
		{ sickness of crew.....	1
		{ l.t.c.....	1
	(e)	" aircraft missing.....	11(3.6%)

Weather Experienced

5. Home Bases:- Little clouds. Moderate visibility.

Route:- 10/10ths cloud to 05°E., (tops 5,000 feet over England, 8,000 feet towards French coast) - thence quickly dispersing. Wind at 15,000 feet: 270°/50-60 m.p.h. to 50°N., decreasing towards target.

Target:- Fine. 2-5/10ths thin medium cloud at about 18,000 feet. Hazy.

Contrails above 17,000 feet. Moon 3/4 full, setting at about zero + 60 minutes. Surface wind: light northerly.

Enemy Aerodromes:- Fit. 10/10ths cloud, base probably 1,500 feet or above with a few shadows from French coast to 05°E.

...../Night Photographic Statistics

Air Photographic Statistics

Number of prints examined... 231

	<u>With ground detail</u>	<u>With fire-tracks only</u>	<u>Total</u>
<u>Plotted</u>			
Within 3 miles	44	-	44
Between 3 and 5 miles	42	-	42
Outside 5 miles	27	-	27
<u>Unplotted</u>	24	94	118
TOTAL	137	94	231

No. of aircraft reporting attack... 268

No. of aircraft estimated, from the evidence of photographs showing ground detail, to have bombed within 3 miles of the aiming-point...

86

Narrative of Attack

Of the 12 Y-aircraft and 17 backers-up despatched, 9 Y-aircraft and 14 backers-up are known to have attacked according to plan. The Y-aircraft were from 10 to 16 minutes late; the earlier backers-up were also late in starting but, with the exception of one which bombed at 2320, they had all attacked by 2310—only 3 minutes after the appointed time. Thus, the P.F.F. as a whole was very little behind schedule. The evidence of night photographs and sertie raid reports shows that their marking was thoroughly accurate, 6 of the 9 Y-aircraft bombing within 3 miles of the aiming-point, while 12 out of 14 backers-up dropped their T.I's within 3 miles. The backers-up tended to drift towards the S.W. of the 3 mile circle, but were far less scattered than in previous successful raids.

The Main Force, however, were too late to take advantage of this accurate marking. The first arrivals found only the later T.I's burning, so that their bombing was centred some $3\frac{1}{2}$ miles S.W. of the aiming-point, i.e. 2 miles outside the town. From zero + 27 to zero + 36 minutes, two separate concentrations developed, centred respectively 1 mile N. and 2 miles S.W. of the bombing of the first arrivals. From zero + 36 until zero + 50, the second of these concentrations (in the area of Vaihingen) monopolised the attention of the last aircraft to bomb. Thus, after a promising start, the attack drifted right away across open country to the S.W. of Stuttgart, culminating in a concentrated effort in the area of Vaihingen.

It is noteworthy that 37 aircraft reported red T.I's and 12 claimed green T.I's in their bombights after all those dropped by the P.F.F. had presumably burnt out. If, as seems possible, the enemy used dummy T.I's of both colours about 5 miles S.W. of the target, this would explain the rapid drift in that direction.

Alternative Targets

6 aircraft attacked alternative targets, in the areas of Baden-Baden, Amiens, Reims-sur-Marne(2), Nancy and Bar le Duc.

Air Reconnaissance

A reconnaissance sertie, flown on 12th March, 1943, covered the whole town, most of the suburbs and nearly all the Bosch works at Feuerbach on prints of excellent scale and good quality.

apart from some damage to residential property and to a small group of buildings in the S.W. district, no incidents could be seen in the town of Stuttgart. Very heavy destruction was apparent in the small town of Vaihingen, $4\frac{1}{2}$ to 5 miles S.W. of the city centre. Two-thirds of a factory, probably electrical engineering works, were gutted, and nearly 300 houses were rendered uninhabitable.

...../other

Other examples of scattered damage to residential property occurred in the suburban districts of Kaltental, Heslach, and Botnang.

Blind Bombing Aids (H2S)

9. The performance of Y-aircraft (9 Stirlings and 3 Halifaxes) may be tabulated as follows:-

Dropped red T.I. and flares blindly on H2S.....	.....
" " " " on H2S with visual confirmation.....	.....
" " " " visually (H2S partly u/s).....	.....
" green " " visually (H2S u/s).....	.....
Abortive (H2S and all guns u/s).....	.....
Abortive (engine trouble).....	.....

Although the target conformed in appearance to the shape on the map, the result was not generally good. The picture was confused by responses from the surrounding hills, and in at least 4 cases the target itself could not be seen from more than 10 miles away. Reception would probably be improved and a clearer indication obtained if this target were approached from the north, or less hilly country.

Navigation Aids (Got)

10. The Eastern Chain was operating on the Virginia frequency. 32% of the Gee aircraft despatched were fitted with Mk.II sets. 14% of these and 12% of those using Mk.I had set difficulties. Both average ranges were 280 miles. N of 62 Squadron obtained the maximum range of 347 miles. Interference was heavy and the B signal weak; the good ranges were due to excellent propagation conditions.

Enemy Defences

12. (a) Flak and Searchlights

Fire from the heavy guns, which engaged almost entirely by 'unseen' predictor control, was inaccurate and slight to moderate in intensity. Light flak was slight at first but became more intense as the raid progressed; it was fired mostly from the north of the town.

Few searchlights were observed in the target area. Extensive searchlight and flak activity was, however, reported from Ludwigsburg, 10 miles to the north, probably operating in conjunction with a decoy. The main weight of the attack fell to the south-west of the target, and the ground defences of Stuttgart were probably not fully active.

Numerous searchlights exposed at Karlsruhe and Strasbourg, and were apparently used mainly as track indicators for night fighters, although there were reports of spasmodic heavy and light flak co-operating with cones of searchlight. Flak was also fired from Dieppe, Paris and isolated places en route.

11 bombers sustained damage from flak, nearly all in or near the target area.

(b) Fighters

Enemy wireless traffic revealed the presence of at least 5 patrols of controlled fighters operating against our bombers attacking Stuttgart. Interference was strong and much of the overheard traffic was in consequence very scrappy, but there were details of 2 attacks and 2 references to successful neighbouring fighters. Aerodromes at Stuttgart and Karlsruhe were heard to despatch 9 fighters each and, as this is an area outside the usual controlled fighter belt, it may be that these fighters were largely freelance or assisted by groundlights and searchlights.

Crews reported 8 attacks, 29 approaches and 5 followings of which 5 approaches occurred in the target area and the remainder en route, half on the approach and half on the return journey. There is evidence that groundlights, searchlights, and/or flares

ares were used to assist the fighters in 3 attacks and 6 approaches.

5 aircraft were damaged by fighters.

The crew of a Halifax (405 'X') claimed to have shot down an enemy fighter Chalon-sur-Marne.

Statistics

No. of aircraft missing.....	11
" damaged (a) flak.....	11
(b) fighter.....	5
(c) not enemy action.....	5
	21

There were few observations of aircraft falling in the target area, and it is likely that only one aircraft (possibly a Stirling) was lost near Stuttgart. Bombs were seen and the aircraft spiralled down with the starboard inner engine out, probably caused by heavy flak, which was reported in the vicinity.

5 aircraft were probably lost before reaching the target, 3 of which fell in the Chalon-sur-Marne - Nancy area to night fighters. There is some evidence that the other 2 losses occurred in the Dieppe-Paix area, and near Metz, possibly by flak.

Losses on the homeward journey again occurred in the area around Chalon-sur-Marne, and of the 5 aircraft probably shot down, fighters accounted for at least 3.

Of the 11 aircraft lost on this night, it appears likely that at least 7 were lost to night fighters and possibly 3 to flak.

MINELAYING

11 Stirlings of 3 Group laid 63 mines off the Frisians according to plan. Masters of 5 Group were also despatched on a mining operation to the Gironde estuary. The engine of one caught fire and the crew were forced to jettison bombs in the Channel Islands; the other 2 laid 10 mines in the target area.

Visibility was good in the Frisians area, with small amounts of cloud, but haze made pinpointing difficult off the west coast of France.

Light flak was fired from Terschelling and from flak ships off the Frisian coast. One Stirling was actively engaged by light flak on its bombing run at 10,000 ft. but managed to take successful evasive action. Aircraft in the Bay of Biscay encountered light flak from Corduan Island and Pont de Grave, but no damage sustained.

Overheard wireless traffic revealed the presence of two patrols of night fighters, based on Leeuwarden, operating against the minelayers in the Frisians area. One pursuit was attempted but, although the fighter was vectored down to 10,000 ft. he was unable to make contact. Crews reported one approach, but the fighter dived below 1,000 feet and the fighter was lost in the clouds above.

All our minelaying aircraft returned safely.

APPENDIX (SUMMARY)

of Attack

Pathfinder Force

10 Y-aircraft attacked at: 2245, 2248, 2249, 2253(3), 2254(2), 2257 and 2300.

14 back-up aircraft attacked at: 2250, 2252, 2254, 2256, 2259, 2301, 2303, 2305, 2307, 2310, 2317, 2320, 2325 and 2326. = 24 aircraft

...../Main Force

Main ForceSection 1 (Halifaxes of 6 and 8 Groups)

2 aircraft	attacked 1 st early
8 aircraft	attacked within planned period (2249-2300)
15	" 0-10 th late
<u>25</u>	aircraft

Section 2 (Halifaxes of 4 Group)

3 aircraft	attacked within planned period (2255-2305)
57	" 0-35 th late
<u>60</u>	aircraft

Section 3 (Stirlings of 3 Group)

9 aircraft	attacked within planned period (2300-2310)
28	" 0-45 th late
<u>37</u>	aircraft

Section 4 (Lancasters of 1, 5 and 8 Groups)

25 aircraft	attacked within planned period (2303-2315)
97	" 0-45 th late
<u>122</u>	aircraft

Bomb LoadsII. Pathfinder Force

8 aircraft	carried T.I. + flares
7	" T.I. + H.E.
4	" T.I. + H.E. + flares
3	" T.I. + H.E. + 4 lb. incendiaries
2	" T.I. + flares + 4 lb. incendiaries
<u>24</u>	aircraft

Main Force

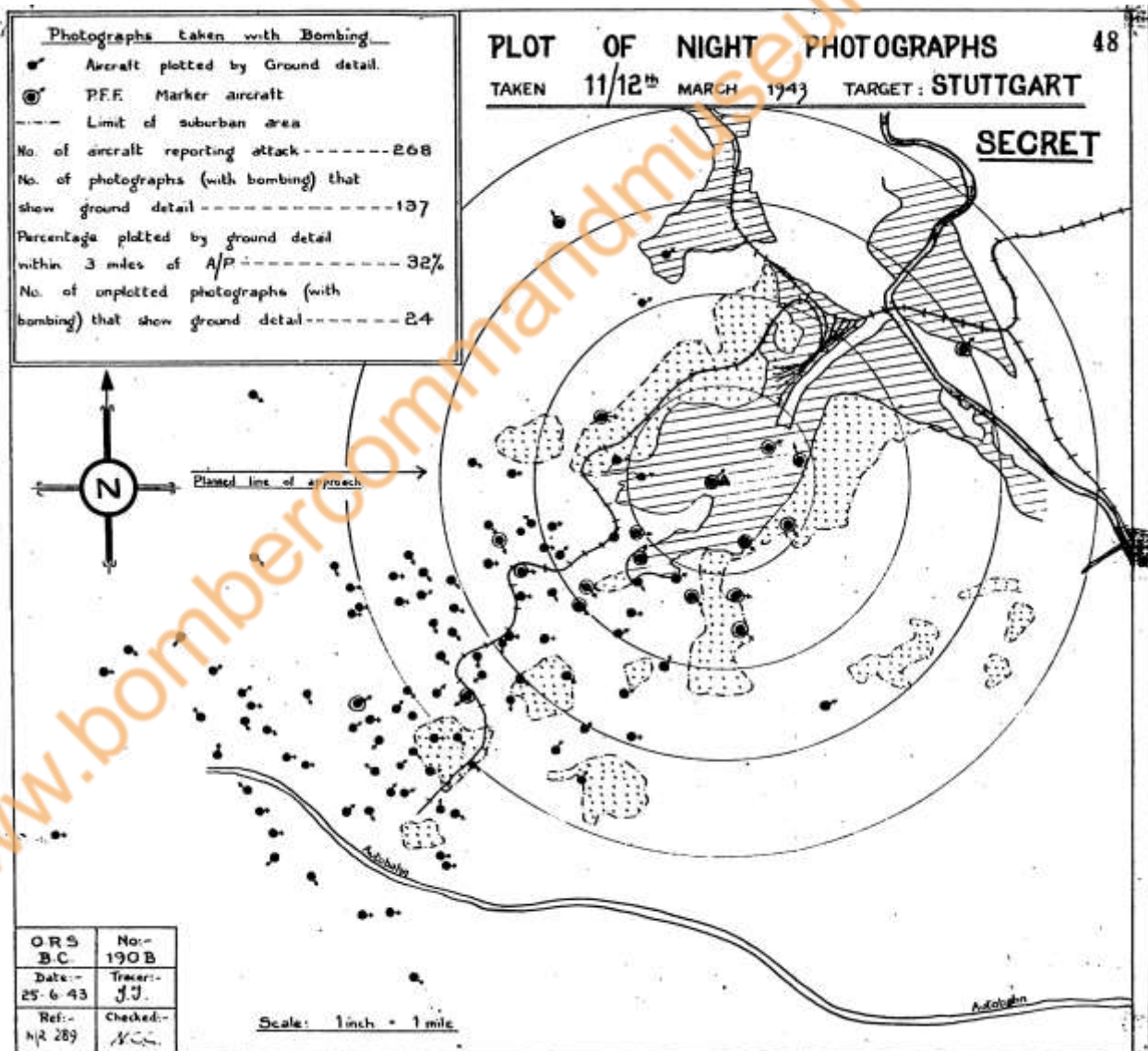
97 aircraft	carried H.E. + 4 lb. + 30 lb. incendiaries
59	" H.E. + 4 lb. incendiaries
32	" 4 lb. + 30 lb. incendiaries
27	" H.E. only
24	" H.E. + 30 lb. incendiaries
5	" 4 lb. incendiaries only
<u>244</u>	

HLJ/VF.
 BC/S. 26342/3/ORS.
 24th June, 1943.

				Attack on		over on. territ.	not over on. territ.		Flak	Fighter	not E/A	attacks	not attacked	H.E.	Inc.	
				prim. area	alt. area											
STUTTGART	8 (P.F.F.)	Stir. I	9	8	-	-	1	-	-	1uG	-	1	1	(P) 362.4	412.0	
		Lano. I	12	11	-	-	1	1	1	-	-	-	4	(A) 8.7	15.2	
		Hnl. '2'	6	5	-	-	1	-	2	-	-	-	-	(M) 17.2	9.3	
	8	Stir. I	1	-	-	-	-	1	-	-	-	-	-	-	(J) -	1.7
		Lano. I	3	3	-	-	-	-	-	-	-	-	-	-	-	-
	1	Lano. I	33	30	-	-	1+	2	-	-	-	-	-	-	-	-
		Lano. III	8	7	-	-	-	1	-	-	-	-	-	-	-	-
	3	Stir. I	26	23	-	-	-	2	1	1	-	1B+2uG	-	-	-	-
		Stir. III	17	14	1	-	-	1	1	1uG	1uG	1uG	1	-	-	-
	4	Hnl. '2'	67	60	3	-	-	3	1	1E	-	-	-	-	-	-
Lano. I		52	41	1	1	-	9	-	-	-	1uG	-	-	-	-	
4	Lano. III	44	41	-	-	-	2	1	-	-	-	-	1	-	-	
	Hnl. '2'	35	24	1	-	-	3	3	4	2uG+1	-	-	3	-	-	
STUTTGART	TOTAL		314	268	6	2	27	11	1E+1uG+9	1uG+1	1B+1uG	8	34			
REPLAYING	3	Stir. I	9	9	-	-	-	-	-	-	-	-	1	53 mines		
REPLAYING	5	Stir. III	2	2	-	-	-	-	-	-	-	-	-	10		
REPLAYING	5	Lano. III	3	2	-	-	1	-	-	-	-	-	-	8		
REPLAYING	TOTAL		14	13	-	-	1	-	-	-	-	-	1	71 mines		
T	O	T	A	L	328	281	6	2	28	11	1E+1uG+9	1uG+1	1B+1uG	8	35	

* Jottisoned * mainly due to a British incendiary bomb.

RAID TRACKS NOT AVAILABLE



BOMBER COMMAND REPORT ON NIGHT OPERATIONS, 12/13th MARCH, 1943.

ESSEN : Minelaying : Leaflets

SUMMARY.

Essen 457 bombers were despatched to Essen. 384 of these reached the target, carried out an attack no less devastating than that of the previous week. The Oboe Mosquitoes again marked most efficiently on Oboe, and reconnaissance revealed Groups sustained even heavier damage than in the earlier raid, 196,300 square yards of the work being laid waste, as compared with the previous figure of 136,000 square yards. We lost 23 aircraft (5.0). 2 enemy fighters were destroyed.

Minelaying 9 aircraft laid 50 mines off the Frisians, and returned without loss.

Leaflets 7 aircraft dispersed leaflets in the Rouen area.

Metereological Forecast

Haze Bases:- Little or no cloud, but fog (from smoke) late in night. Groups 6 and 8 expect local visibility troubles, but 80% of bases in these Groups will hold visibility of 1 mile till 0600 hours. 1 Group expects similar conditions till 0200, then a general deterioration. Half the stations in 5 Group will have less than 2,000 yards by earliest possible time of return. Diversions to 91 and 92 Group to dawn.

Germany:- Little cloud in N., good visibility near industrial centres. Central Germany: an occluded front will lie from 49 N. 13° E. to Breslau, then N.E'wards, giving a thin layer cloud with haze. Ruhr: no cloud, except small amounts above 15,000 feet. Visibility moderate to poor, because of smoke haze. Wind at 15,000 feet, E. of 8°. E. of 53° N.: 270°/60 m.p.h.

N. Italy:- Little cloud.

ESSEN.

Plan of Attack

Zero hour 2115 hours.

This operation was planned as an Oboe groundmarking attack. 7 Oboe Mosquitoes, carrying dropping warning T.I. white, 15 miles short of the target, were to keep the target-point marked with red T.I. throughout the duration of the attack. 16 other P.P.F. aircraft were to act as "backers-up", aiming green T.I., together with H.E., on the red T.I. - or, if this could not be seen, at the centre of the concentration of red T.I.'s on the ground. The timing of the P.P.F. was to be as follows:-

- | | |
|---------------------------------------|-------------------------|
| 1 Mosquito..... | zero |
| 2 Backers-up..... | zero + 2 |
| 1 Mosquito..... | zero + 3 |
| 4 Backers-up at 1 min. intervals..... | zero + 4 - zero + 7 |
| 1 Mosquito..... | zero + 9 |
| 2 Backers-up..... | zero + 10 and zero + 11 |
| 1 Mosquito..... | zero + 12 |
| 4 Backers-up at 1 min. intervals..... | zero + 13 - zero + 16 |
| 1 Mosquito..... | zero + 18 |
| 1 Backer-up..... | zero + 19 |
| 1 Mosquito..... | zero + 21 |
| 3 Backers-up at 1 min. intervals..... | zero + 22 - zero + 24 |
| 1 Mosquito..... | zero + 27 |
| 1 Mosquito..... | zero + 30 |

4 other P.P.F. aircraft were to join the main force of about 265 heavies and mediums which were to attack between zero + 4 and zero + 40, aiming their bombs on the red T.I. if these were visible, otherwise at the centre of the concentration of the green T.I.'s. The main force was to be divided into 3 sections as follows:-

Section 1 All Halifaxes..... 2 + 4 = 2 + 20

- Section 2 Wellingtons and Stirlings..... z + 15 -
- Section 3 All Lancasters..... z + 20 -

Bomb loads were to be in the ratio 2/3rd incendiary to 1/3rd H.E., 1/3rd of H.E. bombs to be long delay.

Sorties

4.	(a)	No. of aircraft despatched.....	457
	(b)	" " reporting attack on primary area.....	384 (84.0)
	(c)	" " " or alternative area.....	7 (1.5)
	(d)	" abortive sorties (Technical defect..... 41)	
		(attacked by E/A..... 4)	43 (9.4)
		(sickness of crew..... 1)	
	(e)	" aircraft missing.....	23 (5.0)

Weather Experienced

5. Home Bases:- Fit for take-off and return, apart from mist in Lincoln and Yorkshire.

Route:- Small amounts of layer cloud, with some medium cloud at 10,000 feet over North Sea. Nil from Dutch coast to target. Contrails over England but none over Continent below 20,000 feet. Visibility moderate. Industrial haze inland. Wind at 18,000 feet: 260/40-45 m.p.h. veering slightly and decreasing over Continent.

Target:- No cloud. Ground haze.

Moon above the horizon and 42% of full.

Wind at 18,000 feet: 270-280°/25-30 m.p.h.

Surface Wind: light easterly.

Night Photographic Statistics.

6.	Total photographs with bombing that show ground detail.....	
	Plotted by ground detail, within 3 miles.....	
	" " between 3 and 5 miles.....	
	" " outside 5 miles.....	
	Total photographs with bombing that show fire tracks only.....	
	Total prints examined.....	

Narrative of Attack

7. The first red T.I. markers were dropped at 2115 hours, and the second follow at 2120. Until this time there was virtually no other bombing. The second T.I. were rapidly followed by a number of well-placed green T.I.'s, close to the red T.I. which themselves fell close together. The attack of the Main Force was rather slow to develop, and fires did not begin to catch hold until after 2125; but soon after 2130, large fires were raging around the T.I. markers. Photographic evidence shows that those aircraft which bombed before 2130 were mainly concentrated on Krupp's Works or slightly to the W. and N.W. A number of large explosions were reported, the most violent being at about 2135.

Between 2130 and 2140, there was a good deal of bombing short to the N.W. and N.E. of the target. All the aircraft concerned claimed to have aimed at both red and green markers. All the Pathfinders, however, asserted that their markers fell into the midst of the conflagration started by the first Mosquitoes, which is known to have been centred on Krupp's, and several crews suggested that the enemy had again laid down dummies.

The timing of the Main Force was excellent, and late arrivals were unanimous agreed as to the success of the raid. 2 P.P.F. Mosquitoes, carrying out a nuisance raid one hour after the first markers had been dropped, found the target area a mass of flames.

Alternative Targets

8. 7 aircraft attacked alternative targets, in the areas of Dorsten (2),

hausen, Bocholt, Gladbach, Wesel and Osterfeld.

Reconnaissance

The damage resulting from this attack was most concentrated in the Krupp works and in suburban areas to the N.W. Almost as many shops and administrative buildings of Krupp were affected as in the previous raid (5/6th March), and the damage was on a scale altogether more severe. Some 48 shops and administrative buildings were hit, including 12 main workshops, where half the total area was actually destroyed. Damage in the locomotive works, the largest individual shop, covered over 85,000 square yards. Altogether, 196,300 square yards of Krupp were devastated, as compared with 136,000 square yards for the previous raid.

The most significant incident outside the Krupp Works was the destruction of the pithead installations and buildings of 10 collieries. Severe damage was caused to a large zinc and sulphuric acid works at Borbeck which, at the time of photography, on the afternoon following the attack, appeared to be wholly inactive. Unidentified factories and brickworks were also hit. Railways and sidings in the N. of the town suffered heavily. The tracks were disrupted in a number of places, and rolling stock was destroyed at the sidings near Schwaneberg Station, between Frillendorf and Huttrop and at the Bergedorbeck Station. The main line to Gerhausen appeared to have been temporarily cut by direct hits on the tracks.

Although no large areas of devastation were apparent in the town, many incidents were scattered throughout the N.W. districts of Borbeck and Gerschede and, to a lesser degree, in the N.E. districts of Stoppenburg and Schonnebeck. The greater proportion of buildings damaged were of the type of workmen's dwellings. A great number of hatted camps in the N. suffered damage, some 120 huts being destroyed. A rough estimate suggested that, as a result, accommodation for at least 6,000 men was no longer available.

Navigation Aids (Geo).

10. The Eastern Chain was in operation on the Virginia frequency. 210 Geo aircraft fitted with Mk.I and 84 with Mk.II were despatched. 88% of the former and 84% of the latter had no set difficulties, obtaining average ranges of 240 and 235 miles respectively. A of 12 Squadron, using a Mk.I set, obtained the maximum range of 312 miles. As usual, heavy interference was encountered at the Dutch coast. However, although the total number of aircraft was of the same order as on the 5/6th., March, more than three times the number of fixes were obtained over enemy territory. The C signal was the weakest.

Defences.

11. (a) Flak and Searchlights

150-200 searchlights were extremely active in the target area, forming cones of 15 to 30 beams. As well as co-operating with flak, searchlights assisted night fighters in the target area by either coning or indicating the bomber's position. Heavy flak was intense and accurate, especially to the north of Essen on the line of approach of the bombers. Many crews reported that the flak defences had been reinforced since the previous raid on the 5/6th March, and this opinion is confirmed by the increased number of aircraft damaged by flak.

A number of "scarecrow" phenomena were reported, as well as examples of a rocket type of flak which, on bursting, threw out "fingers" of burning material.

Coastal ground defences were also active, searchlights with heavy and light flak being reported at Amsterdam, Alkmaar, IJmuiden, Egmond and Hilversum. In addition, light flak was encountered from ships off the coast of Northern Holland.

61 bombers sustained damage by flak. Approximately one-tenth of this damage was caused by the coastal defences, and the remainder by the main Ruhr defences.

(b) Fighters

Enemy wireless traffic revealed that 36 frequencies were used for controlling

night fighters, but the traffic on more than half of these was unintelligible because of interference. Of the remainder, only 4 were controlling patrols in the area of the operation on Essen. 8 pursuits were attempted, resulting in 3 success claims, all over Holland. One of these claims was made during the outward journey, and all were confirmed by other observations of falling aircraft.

Crews reported 11 attacks, 40 approaches and 7 followings, of which 2 attacks and 10 approaches occurred within the target area. The interceptions en route were evenly distributed between out and return, including 4 in each direction over the sea.

An attack on a Stirling (13 'A') by two Me.110's is interesting in that the first fighter made a series of long range feint approaches before seeming to attack in on the port quarter. As soon as the Stirling was committed to evasive action (turn in to port) the second fighter attacked from the rear, and severely damaged the bomber, which only escaped destruction through the resourcefulness of the gunner, who shot the second fighter down.

Another enemy fighter was probably destroyed by the gunners of a Wellington (431 'S') over the target area.

3 bombers sustained fighter damage.

Casualties

12.	No. of aircraft missing.....	23 (5.0%)
	" " damaged (a) flak.....	61
	(b) fighter.....	3
	(c) not enemy action.....	5
		69

3 aircraft were probably shot down over Holland on the way to the target one by flak over Amsterdam and the other two by fighters, one claim being overheard on R/T traffic. A fourth aircraft was seen to fall near Dorsten to the outer Ruhr flak defences.

In the area covered by the main Ruhr defences, there were many observations of falling aircraft during the half hour of the attack. It is estimated that 10 aircraft were lost within a 10 mile radius of Essen 2 of which probably fell to night fighters and the remainder to flak.

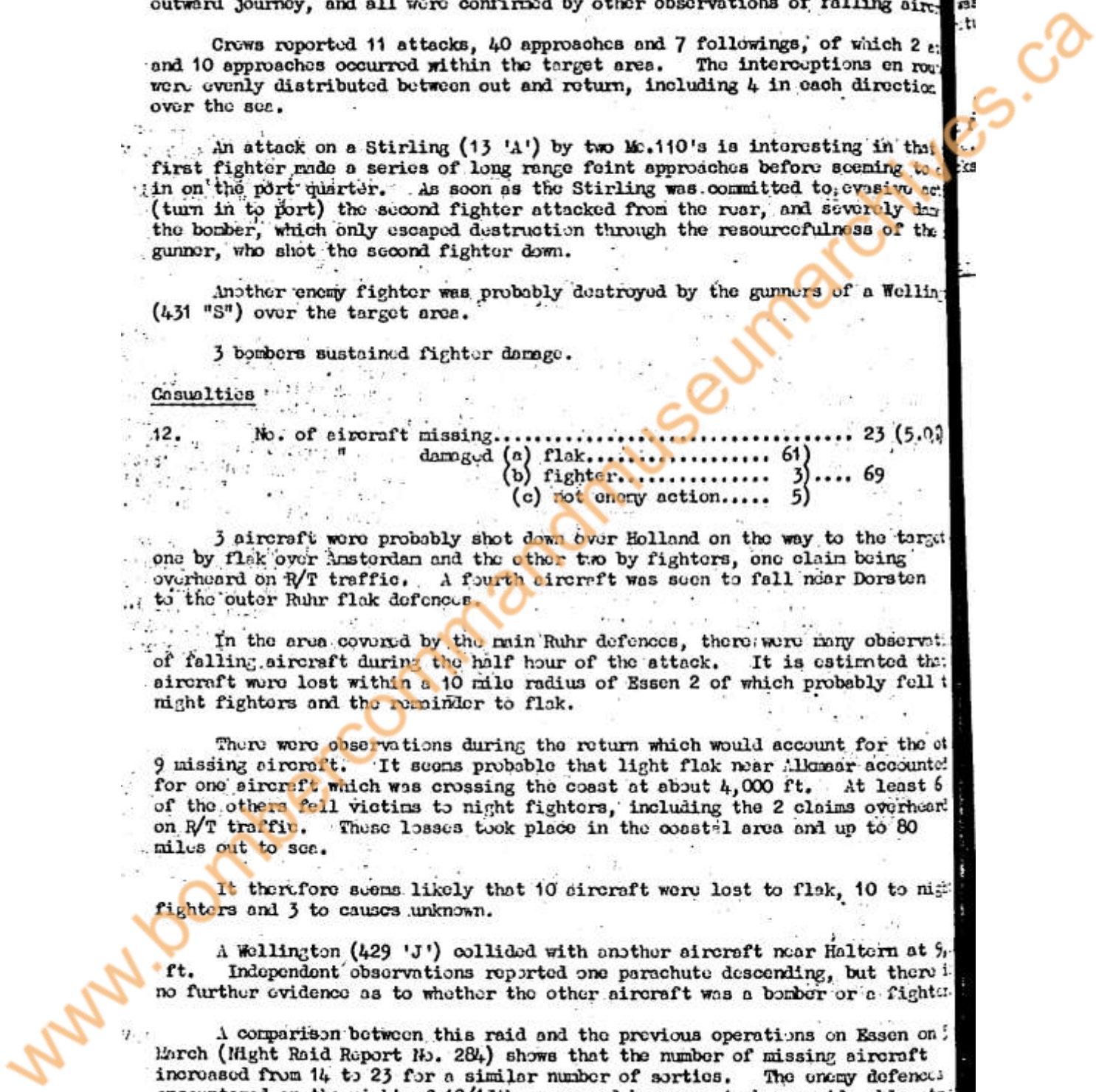
There were observations during the return which would account for the loss of 9 missing aircraft. It seems probable that light flak near Alkmaar accounted for one aircraft which was crossing the coast at about 4,000 ft. At least 6 of the others fell victims to night fighters, including the 2 claims overheard on R/T traffic. These losses took place in the coastal area and up to 80 miles out to sea.

It therefore seems likely that 10 aircraft were lost to flak, 10 to night fighters and 3 to causes unknown.

A Wellington (429 'J') collided with another aircraft near Haltern at 9,000 ft. Independent observations reported one parachute descending, but there is no further evidence as to whether the other aircraft was a bomber or a fighter.

A comparison between this raid and the previous operations on Essen on 12 March (Night Raid Report No. 284) shows that the number of missing aircraft increased from 14 to 23 for a similar number of sorties. The enemy defences encountered on the night of 12/13th, appeared however, to be considerably stronger. Flak was more intense both on route and in the target area, and probably accounted for twice as many aircraft. The night fighter effort was also increased on the second night, when conditions of a half moon appeared to assist the fighters without seriously hampering the searchlight-flak co-operation.

...../Minelaying



MINELAYING.

9 Stirlings of 3 Group laid 50 mines off the Prisons in conditions of good visibility with no cloud and a half moon. The mines were laid following D.R. runs for fixes, and landfall was not made. The aircraft were all below 2,000 feet, no enemy fighters were encountered, although one approach was reported. Light flares were fired from ships off Terschelling, and one aircraft sustained minor damage. All returned safely.

LEAFLETS.

7 aircraft of 93 Group dispersed leaflets in the Rouen area. Heavy flak was encountered from Le Havre and light flak from Rouen, but none of our aircraft sustained damage. Crews reported one approach and one following by enemy fighters, but no action developed. All returned safely.

APPENDIX (ESSEN)

Order of Attack

Pathfinder Force

7 Mosquitoes attacked at: 2115, 2120, 2130, 2134, 2145, 2146 and 2156.
15 back-up aircraft, at: 2120, 2123(2), 2124(3), 2125*, 2126, 2129, 2130(2), 2132, 2135, 2137 and 2140 = 22 aircraft

(* This aircraft was hit by flak over the target, its bombsight being rendered u/s; it therefore dropped H.E. only and brought its markers back).

Main Force

Section 1 (Halifaxes)

1 aircraft attacked 1' early
70 " within planned period (2119-2135)
2 " 1-11' late
73 aircraft

Section 2 (Stirlings and Wellingtons)

19 aircraft attacked 10-1' early
128 " within planned period 2130-2140
12 " 1-15' late
159 aircraft

Section 3 (Lancasters)

19 aircraft attacked 10-1' early
107 " within planned period (2135-2155)
2 " 2' late
128 aircraft

2 P.F.F. Mosquitoes attacked after the Main Force, at 2212 and 2215.

Leeds

Pathfinder Force

7 Mosquitoes carried T.I. only
15 back-up carried T.I. + H.E.
22 aircraft

Main Force

* 197 aircraft carried H.E. + 4 lb. + 30 lb. incendiaries
65 " H.E. + 4 lb. incendiaries
36 " H.E. only
35 " 4 lb. + 30 lb. incendiaries
28 " H.E. + 30 lb. incendiaries
1 " 30 lb. incendiaries only
362 aircraft

(* including the 2 late Mosquitoes)

P/FVD.
2632/4/ORS.
June, 1943.

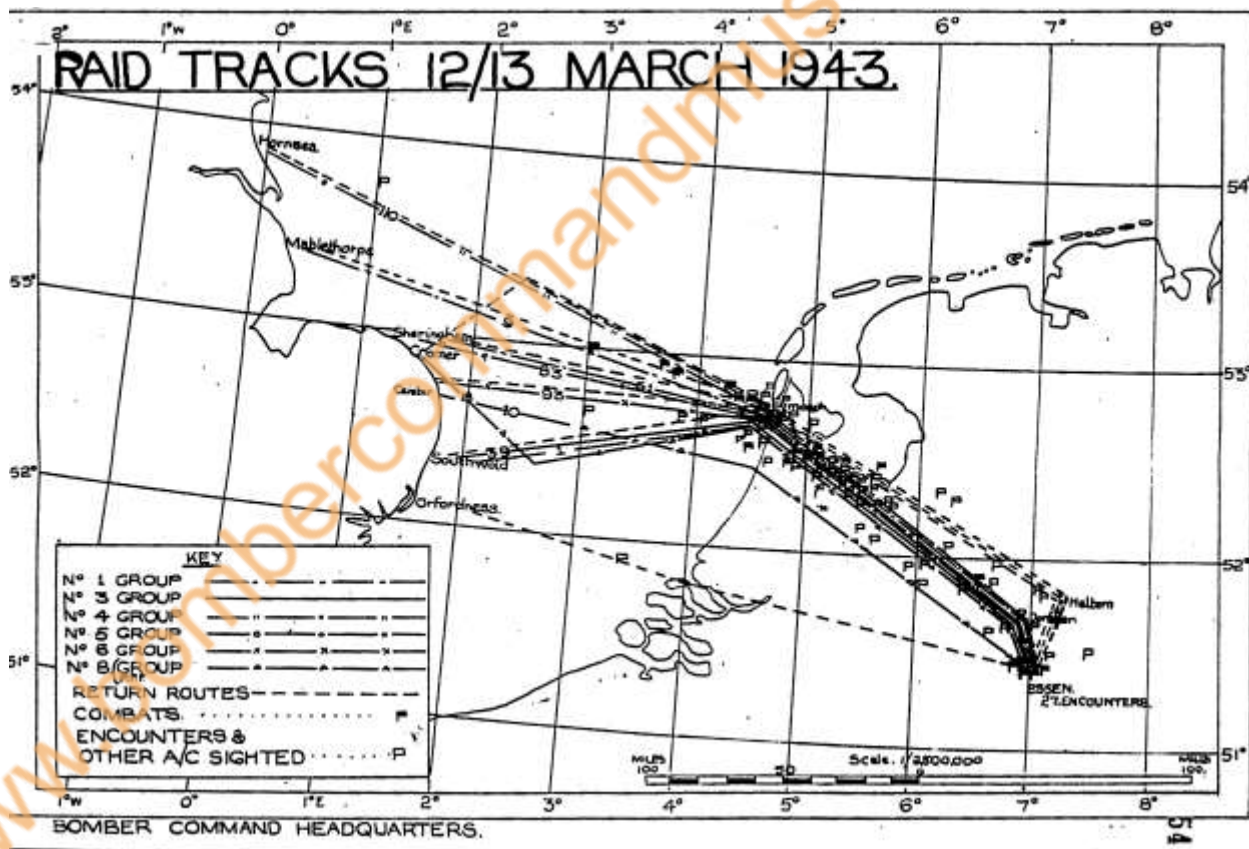


			prim. area	alt. area	over on territ.	not over on territ.		Loss	Flights	not E/A	attacked	not attacked	H-E	Inc.	
BOMBING	8	Moquito	10	9	-	-	1	-	-	-	-	-	-	(P) 496.3	524.0
		Hol. '2'	3	3	-	-	-	-	2	-	-	-	-	(A) 8+2	12.1
		Lano. I	13	12	-	-	-	1	2	-	-	-	2	(H) 28.5	40.8
	8	Stir. I	2	1	-	-	-	-	-	-	-	-	-	-	-
		Lano. I	3	3	-	-	-	-	-	-	-	-	-	-	-
		Lano. I	3	3	-	-	-	-	-	-	-	-	-	-	-
	1	Lano. I	34	32	-	-	1	1	3	-	-	1	-	4	-
		Lano. III	11	9	-	-	-	2	2x1	-	-	-	-	3	-
		Well. III	18	12	2	-	4	-	1	-	-	-	-	2	-
		Well. IV	12	11	-	-	1	-	1	-	-	-	-	3	-
	3	Well. I	9	6	-	-	1	2	-	-	-	-	-	-	-
		Stir. I	26	19	2	-	4	1	7	-	-	-	-	5	-
		Stir. III	14	14	-	-	-	-	3	1x1	-	1	-	2	-
	4	Well. III	4	2	-	-	-	1	2	-	-	1	-	1	-
		Hol. '2'	65	55	-	-	1	2	7	1x1+2	1	2x1	1	5	-
		Well. III	4	4	-	-	-	-	1	1x1	-	1B	-	2	-
	5	Well. I	41	34	-	-	1	6	-	1B+1x1	-	-	-	5	-
		Lano. I	51	42	1	-	5	3	3	1	-	2	-	4	-
Lano. III		44	42	1	-	-	1	1x1+2	-	-	1	-	2	-	
6	Hol. '2'	23	18	1	-	4	-	-	1B+1x1	-	-	-	2	-	
	Well. III	43	33	-	-	7	3	3	2x1+3	-	1x1	3	2	-	
	Well. X	27	22	-	-	5	-	2	2	-	-	-	2	-	
BOMBING TOTAL			457	364	7	2	41	23	2B+9x1	1x1	1B+	11	47	-	
MIDWAY															
MIDWAY IS.															
MIDWAY TOTAL														50 mines	
LE PLANS															
LE PLANS															
LE PLANS TOTAL															
TOTAL			473	400	7	2	41	23	2B+9x1	1x1	1B+	11	50		

+ (2) Mosquitoes attacked after the Main Force according to plan

x A/C type not known.

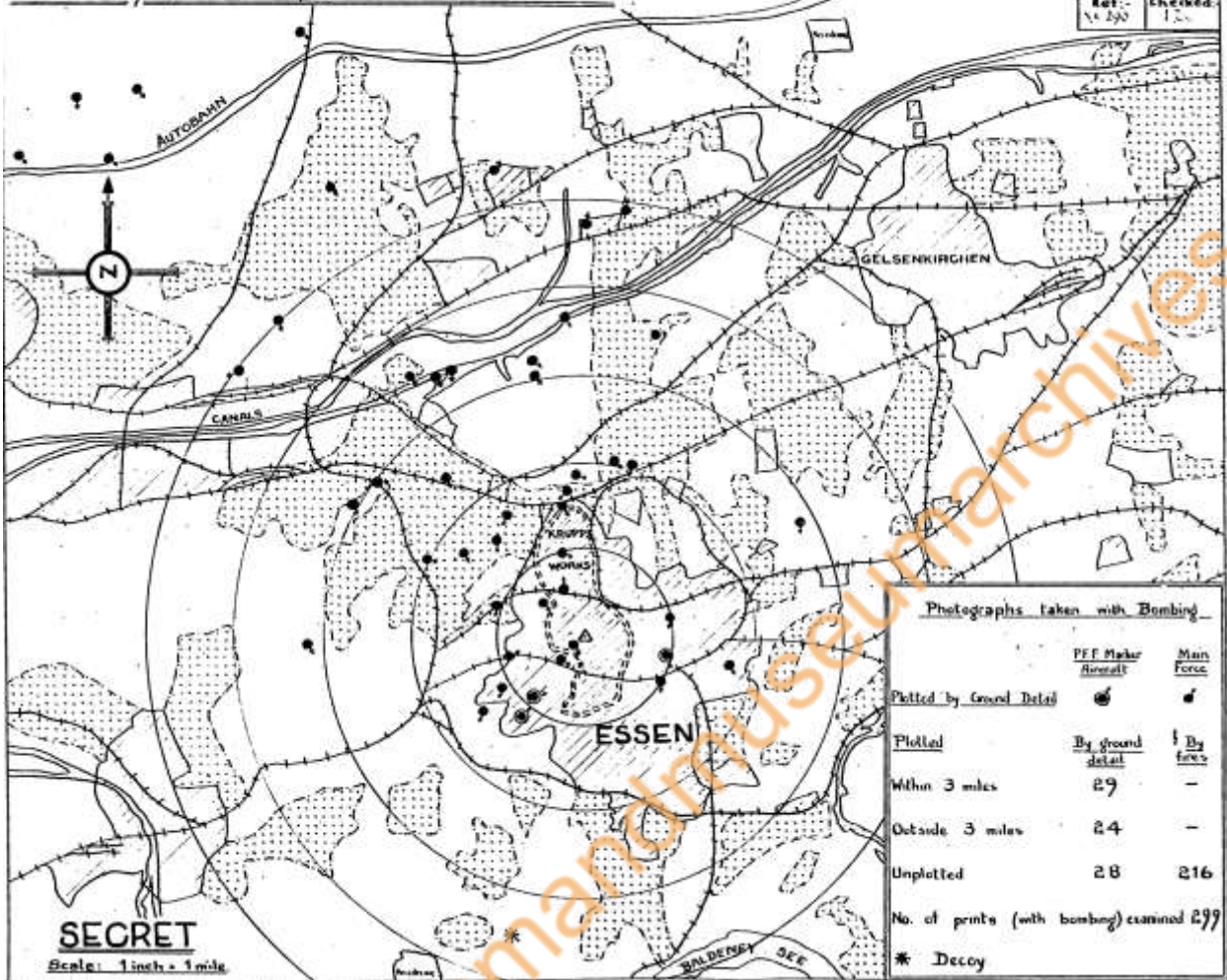
57
58



FINAL PLOT OF NIGHT PHOTOGRAPHS
 TAKEN 12/13th MARCH 1943 TARGET: ESSEN

53

O.R.S.	No.
B.C.	192 B
Date:	Tracer:
5-7-43	73
Ref:	Checked:
14 290	12



Photographs taken with Bombing

	PEF Marker Aircraft	Main Force
Plotted by Ground Detail	4	4
Plotted	By ground detail	By force
Within 3 miles	29	-
Outside 3 miles	24	-
Unplotted	28	216
No. of prints (with bombing) examined 299		
* Decoy		

SECRET

Scale: 1 inch = 1 mile

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BOMBER COMMAND REPORT ON NIGHT OPERATIONS, 13/14TH MARCH, 1943.MIDELANDS (Baltic - Frisians - W. France)

68 Lancasters and Wellingtons of 1, 4, 5 and 6 Groups were despatched to lay mines off the European coastline from St. Nazaire to Gdynia. 42 reached their targets, and 7 resorted to alternative areas. Altogether, 137 mines were laid. 3 aircraft (4, 4, 5) did not return.

Weather Forecast

Home Bases:- Small amounts of cloud. 1 and 6 Groups expect visibility to be reduced due to smoke, and may require diversion to 5 Group or further south after 0100. Other Operational Groups should remain fit all night. 91 and 93 Groups will have considerable smoke, with local fog later.

Germany, Low Countries:- Patches of cloud at medium levels. Industrial areas.

N. Italy:- Fine. Hazy.

W. France:- Variable layer cloud in north, broken medium cloud in south.

All mining areas:- Suitable, with cloud no lower than 1,500 feet. Visibility moderate to good.

Statistics

(a)	No. of aircraft despatched.....	68
(b)	" reporting mines laid in primary area.....	42
(c)	" " " " alternative area....	7
(d)	" abortive sorties (weather.....)	9
	(technical defect.....)	6
	(mines fell safe.....)	1
(e)	" aircraft missing.....	3 (4, 4, 5)
(f)	" mines laid.....	137

Weather Experienced

Home Bases:- No low cloud. Visibility moderate to good at first, decreasing slowly. Patches of mist and fog in 1 and 4 Group by 0500 hours.

W. France:- Broken cirrus. Hazy.

Frisians & Bight:- Fine. No cloud. Hazy.

Kattegat:- No cloud. Good visibility. Wind at 2,500 feet, 20 n.p.h. falling light in east.

Gdynia:- Broken cloud over S. Sweden, becoming 10/10ths., tops 500 feet, at 1600; lowering towards target to between surface level and 500 feet. Wind at 6,000 ft. 310/10 n.p.h.

Moon above the horizon and 52% of full.

Remarks

68 Lancasters and Wellingtons from 1, 4, 5 and 6 Groups left to lay mines off the European coastline from St. Nazaire to Gdynia. 42 reached their targets and laid 108 mines. 7 aircraft detailed for the eastern Baltic found 10/10ths visibility down to surface level in Danzig Bay, and laid 29 mines in the Kattegat.3 aircraft

3 aircraft did not return.

Enemy Defences

6. (a) Flak: Searchlights

Biscay Ports Nothing to report.

Frisians and Bight

There was considerable flak activity in this area, both heavy and light guns operating from Heligoland and the Frisian Islands.

Baltic

Light flak defences were active in North Denmark and across the south of Sweden. The Swedish guns appeared to fire in front of or behind the Lancasters, except at Karlsrona, where the flak was moderately active and definitely hostile.

(b) Fighters

Enemy wireless traffic revealed controlled fighter activity over Denmark and the Western Baltic. Two pursuits were attempted and in one instance the fighter made contact and attacked. The details of this attack agreed with the report of a crew of a Lancaster (57 G) which was severely damaged near Tyboron in north-west Denmark, following an attack by a Ju.88.

One other attack and two approaches were reported in the Frisians-Baltic area, but in each case the British aircraft evaded successfully and escaped damage.

Casualties

7.	No. of aircraft missing.....	3
	" damaged (a) flak.....	2
	(b) fighter.....	1
	(c) not enemy action.....	1

Observations indicate that an aircraft was possibly lost near Bornholm, where the missing Lancaster was briefed to lay its mines, but there is no evidence of the cause. A reference in overheard wireless traffic suggested the possible loss of a British aircraft over Denmark, but this could only have been the above-mentioned Lancaster.

There is no evidence to account for the loss of the other two aircraft.

MLM/VF.
BC/S. 26342/6/ORS.
20th May, 1943.

Target	Group	Type	Sorties	✓/C reporting attack on		Abortive sorties		[Blazing]	Damage			Interceptions		
				prim. area	alt. area	over en. territ.	not over en. territ.		Flak	fighter	not %	attacked	not attacked	
COBERT	1	Well. IV	6	3	-	-	3	-	-	-	-	-	-	6 mines
RISLEY IS.	2	Well. III	5	3	-	-	2	-	-	-	-	-	-	6 "
St. W. LAURE	1	Well. III	5	3	-	-	2	1	-	-	-	-	-	2 "
St. W. LAURE	1	Well. IV	3	1	-	-	2	-	-	-	-	-	-	8 "
RENGOLD NO	1	Well. III	4	4	-	-	-	-	-	-	-	-	-	2 "
HIGH		Well. X	2	1	-	-	1	-	-	-	-	-	-	2 "
St. W. LAURE	1	Well. III	1	1	-	-	-	-	-	-	-	-	-	-
St. W. LAURE		Well. X	2	-	-	-	2	-	-	-	-	-	-	-
ROSE	4	Well. X	5	5	-	-	-	-	-	-	-	-	-	10 "
PHILAD	3	Lano. I	3	2	1	-	-	-	-	1B	-	1	1	8-1 "
BRIDGE	5	Lano. I	2	-	2	-	-	-	-	-	-	-	-	0-8 "
BRIDGE		Lano. III	1	-	1	-	-	-	-	-	-	-	-	0-8 "
BRIDGE	5	Lano. I	2	-	2	-	-	-	-	-	-	-	-	0-8 "
BRIDGE		Lano. III	1	-	-	-	1	-	-	-	-	-	-	-
BRIDGE	5	Lano. III	2	-	1	-	-	1	-	-	-	-	-	0-5 "
BRIDGE	5	Lano. I	1	4	-	-	-	-	-	-	-	1	-	20 "
BRIDGE	5	Lano. III	2	2	-	-	-	-	-	-	-	-	-	12 "
BRIDGE		Lano. III	2	2	-	-	-	-	-	-	-	-	-	6 "
BRIDGE	6	Well. X	4	3	-	-	1	-	-	1B	-	-	-	20 "
BRIDGE		Well. III	14	10	-	-	5	1	-	-	-	1	-	20 "
IN RELAYING	TOTAL		68	42	7	-	16	1	-	1B	1B	2	2	(p) 108 mines (...) 29 mines

The alternative area in each case was the Kitzegat

www.bombercommandmuseumarchives.ca

BOOMER COMMAND REPORT ON NIGHT OPERATIONS, 14/15TH MARCH, 1943.

MINELAYING (Frisians)

SUMMARY

1. 13 Wellingtons of 4 Group laid 26 mines off the Frisians without incident. No losses or casualties were sustained.

Meteorological Forecast

2. Home Bases:- Most uncertain conditions. There is a risk of very low stratus (possibly fog) spreading from the North Sea, and covering all Operational Groups before dawn. A few stations in 4 and 9 Groups may hold visibility of 2,000 yards until 0800. Diversions to S. coast E. of Southampton, S.W. England, E and N.E. Scotland and Bradwell Bay.

Whole Continent:- Varying amounts of high and thin medium cloud, often small in amount and mainly above 18,000 feet. Industrial haze. Visibility moderate.

Frisians:- Small amounts of medium and high cloud. Light haze. Moderate visibility. Threat of 50 m.p.h. wind from 240° at 55°N.

Sorties

2.	(a)	No. of aircraft despatched.....	13
	(b)	" reporting mines laid in primary area.....	13
	(c)	" missing.....	0
	(d)	" mines laid.....	26

Weather Experienced

4. Home Bases:- Much fog in 1 and 5 Groups, south of 4 Group and locally in 2 Group by midnight, becoming general in all Operational Groups by 0200. S.W. England and E.Scotland fit all night.

Route and Target:- Cloudless, apart from a little cirrus. Good visibility. Moon above the horizon and 61% of full.

Results

6. 13 Wellingtons of 4 Group laid 26 mines off the Frisians. No aircraft was missing.

Enemy Defences

(a) Flak

Flak was fired from ships off Terschelling, but none of the bombers sustained damage.

...../Fighters

(b) Fighters

Enemy wireless traffic revealed two patrols which made two unsuccessful pursuits in the area of our minelaying operation. Two crews reported approaches by fighters, but both took successful evasive action and no combats resulted.

Casualties

7. None.

MLM/VF.
BC/S. 26342/6/ORS.
20th May, 1943.

Target	Gp.	Type	Sorties	A/C reporting attack on primary area	Abort- sorties	Miss- ing	Dan- ge	Inter- ceptions not att- acked	Re-
FRISIAN IS.	4	Well. III	2	2	-	-	-	-	4 mi
		Well. Y	11	11	-	-	-	2	22 mi
TOTAL			13	13	-	-	-	2	26 mi

BOMBER COMMAND REPORT ON NIGHT OPERATIONS, 16/17th MARCH, 1943.MINELAYING(Frisians)SUMMARY

1. 12 Wellingtons of 1 Group laid 24 mines (2 of which exploded on hitting the water) off the Frisians. No opposition was encountered, and all our aircraft returned safely.

Meteorological Forecast

2. Home Bases:- Midnight position of fronts: (1) occlusion from Sweden to Denmark to S. of Wash (feeble), thence weak warm to Brest (2) warm link S. of Mildenhall to Flamborough and S. of Shetland. (3) cold from S. of Shetland to N. of Tynemouth to Valencia. 6,5,4,1 and 93 Groups are seriously threatened by smoke pollution and local radiation fog, and only a few stations are expected to hold 1,500 yards up to 0400. Many will have 1,500 yards or less by 0200. 8 and 3 Group may hold 1,500 yards, with 7-10/10ths cloud at 1,000 feet, but if the cloud disperses there is a grave risk of fog before 0200. 2 Group should be safe till 0300. No reliable diversions.

Germany:- Small amounts of high cloud only, with industrial haze in N. and moderate visibility in S. Some broken medium cloud from the occlusion in the North Sea may penetrate the coastal strip.

W. France:- Small amounts of medium and high cloud, thick haze. Brest area: low cloud below 1,000 feet or above. Frisians - Bight:- Probably no low cloud, unless well broken at 1,500 feet or above. Haze, and fog patches. Well layered medium cloud.

Sorties

3.	(a)	No. of aircraft despatched.....	12
	(b)	" reporting mines laid in primary area.....	12
	(c)	" missing.....	0
	(d)	" mines laid.....	22

Weather Experienced

4. Home Bases:- Mist developed early in S.E. Anglia and 4 Group. By 2400, fog and mist had become widespread in 2,5, and 4 Groups, affecting localities in 3,3,1,6 and 92 Groups, but not 91 Group. By 0300, some stations in N. of 6 Group, E. of 5 Group, W. of 91 Group and N.E. of 92 Group were still fit, low stratus cleared from the S.W. by 0200 hours, but otherwise only isolated stations in Cheshire and N. of 6 Group held till dawn.

Target:- No cloud. Slight haze. Good visibility.

Moon above the horizon and 78% of full.

...../Results

Results

5. 12 Wellingtons of 1 Group laid 24^{*} mines off the Frisians. 2 mines exploded on touching the water. All our aircraft returned safely.

Enemy Defences

6. No reports were received of any activity by enemy ground or fighter defences.

Casualties

7. None.

MM/VF.
BC/S. 26342/3/ORS.
21st May, 1943.

Target	Gp.	Type	Sorties	A/C reporting attack on primary area	Miss-ing	Dan-age	Inter-ceptions	Result
FRISIAN IS.	1	Well. III	10	10	-	-	-	19 mines
		Well. X	2	2	-	-	-	3 "
TOTAL			12	12	-	-	-	22 "

* (2 additional mines laid exploded on hitting the water)

BOMBER COMMAND REPORT ON NIGHT OPERATIONS, 20/21st MARCH, 1943.MINELAYING (W. France)SUMMARY

1. 12 Wellingtons of 1 Group and 4 Lancasters of 3 Group set out to lay mines off the west coast of France. The Wellingtons were recalled, owing to fog at bases. All the Lancasters reached their target at La Pallice, where weather conditions were excellent, and laid 24 mines. One of our aircraft claimed an enemy fighter as probably destroyed. No losses or damage were sustained.

Meteorological Forecast

2. Home Bases:- Cloudy conditions at dusk, base generally 1,500-2,000 feet. Visibility moderate.

4 Group: 10/10ths at 1,500-2,000 feet (1,000 feet over coastal stations) with patches below. Visibility 1,500-2,000 yards until 0300, deteriorating seriously and rapidly if cloud disperses.

1 Group: visibility 1,000-1,500 yards by 0100, then less than 1,000 yards.

5 Group: visibility 2,000 yards till 2400, widespread fog by 0200.

8 Group: visibility 1,500 yards by 2400, general fog after 0100.

3 Group: local fog by 2400. Some stations clear till 0200.

Diversions: Boscombe and Gottenore till 0200, S. and S.W. rest of night.

Germany:- Variable amounts of cloud at all levels in central Germany. Small amounts of layer cloud in N.E.

N. Italy:- Little cloud. Moderate visibility.

W. France:- Small amounts of medium cloud between 12,000 and 18,000 feet. No low cloud. Fog patches developing later. Moderate to poor visibility.

Frisians:- Variable layer cloud. Moderate visibility.

Kattegat:- Small amounts of layer cloud.

Sorties

3.	(a)	No. of aircraft despatched.....	16
	(b)	" reporting mines laid in primary area.....	4
	(c)	" abortive sorties (recalled owing to fog at base...12)..	12
	(d)	" aircraft missing.....	0
	(e)	" mines laid.....	24

...../Weather Experienced

Weather Experienced

4. Home Bases:- Moderate to poor visibility at dusk, deteriorating gradually. By 2400, most of England, except the S.W., was affected by mist or fog.

Route:- Much layer cloud over Channel, breaking over France.

La Pallice:- Small amounts of medium cloud. No low cloud. Visibility excellent. Moon above the horizon and 99% of full.

Results

5. 12 Wellingtons of 1 Group and 4 Lancasters of 3 Group set out to lay mines off the west coast of France. All the Wellingtons were recalled, owing to fog at bases. The Lancasters reached their target at La Pallice, where the weather was excellent, and laid 24 mines.

Enemy Defences

6. The crews of the Lancasters reported moderate searchlight and light flak activity near La Rochelle.

Enemy wireless traffic did not reveal any controlled fighter activity in the area of operations. A Lancaster (115 W) was approached by an enemy fighter near Fougeres, which the gunners claim to have damaged or possibly destroyed.

Casualties

7. None.

MLM/VF.
BC/S. 26342/1/ORS.
21st May, 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 E/A	att-acked	not attacked	
ST. NAZAIRE	1	Well. IV	6	-	-	-	6	-	-	-	-	-	-	-
LORIENT	1	Well. III Well. IV	4 2	-	-	-	4 2	-	-	-	-	-	-	-
LA PALLICE	3	Lanc. II	4	4	-	-	-	-	-	-	-	-	1	24 mines
T O T A L			16	4	-	-	12	-	-	-	-	-	1	24 mines

BOMBER COMMAND REPORT ON NIGHT OPERATIONS 22/23rd MARCH, 1943.ST. NAZAIRE: MinelayingSUMMARY

St. Nazaire 357 aircraft set out to attack St. Nazaire. Aircraft of 3 Group were recalled, shortly before zero hour, owing to deteriorating weather at bases, but 289 aircraft followed up some exceptionally accurate groundmarking by the P.F.F. with an attack of great concentration. Severe damage was caused to naval industries. We lost only 1 aircraft.

Minelaying 6 aircraft laid 12 mines off IJmuiden without loss.

Metorological Forecast

St. Nazaire:- No low cloud. Only small amounts of medium and high cloud above 15,000 feet. Visibility moderate.

Home Bases:-

<u>0920 hours</u>	Probably widespread fog by 2400, later if gradient tightens from W.
<u>1300 hours</u>	Generally fit for take-off, average 2,000 yards by 2400, fog levels at most stations by 0200. Diversions to N. Cornwall, S. coast localities and 92 Group till 0100. Fog or low stratus in 91 and 93 Groups before 2400.
<u>1600 hours</u>	4 Group can handle their whole effort. 1 and 5 Groups can land for early return, but will need diversions later. 3 Group will require wholesale diversions. A few stations in 6 Group will remain fit. General troubles after 0100.
<u>2000 hours</u>	6 Group satisfied, with Acklington in reserve. 5 Group satisfied with late diversions. 4 and 1 Groups doubtful, but confident of diversions to Training Groups. 8 Group may not require diversions.
<u>2145 hours</u>	1 Group now require diversions for whole effort. 5 Group as at 1600 hours. 3 Group unreliable and do not trust Training Groups (cancelled and recalled). 4 stations in 4 Group (in lee of Yorkshire Wolds) expected to have 6-9/10ths strato-cumulus at 1,600-2,000 feet; confident of provisional diversions in N.W. 5 Group worried but O.K., with cloud at 1,000 feet and visibility 2-4,000 yards. 8 Group just fit. 2 Group unreliable. Diversions: 91 Group offer Edgehill, Moreton, Marshmore, Honeybourne, with 1,500-2,000 yards. Risk of patchy thin stratus after 2400, not becoming serious till 0200. 92 Group: Heyford, Chipping Warden, Westcott and Pinners with 1,500-2,000 yards till 0100, two of these may remain fit till 0200. Risk of stratus as in 91 Group. ETA (Douglas) think Deven and N. Cornwall .../reliable

reliable and are very hopeful of H. of 91 and 92 Groups holding till 0100. N.E. Doubtful.

ST. NAZAIR

Plan of Attack

3. Zero hour - 2130 Period of Attack - 2130-2215 hours.

The operation was planned as an Oboc groundmarking attack. The marking technique was to be initiated by 6 Oboc Mosquitoes which were to mark the submarine pens (aiming point 'C') with green T.I. 29 backers-up of the P.F.F. were to aim red T.I. at the green T.I., if visible, otherwise at the centre of the concentration of red already on the ground. The timing marker aircraft was to be as follows:-

<u>Oboc Aircraft (Green T.I.)</u>	<u>Backers Up (Red T.I.)</u>
1 Mosquito at 2130	2 at.....2131
-	7 at 1 min. intervals..2131-3
1 Mosquito at 2139	8 at 1 min. intervals..2140-3
-	-
1 Mosquito at 2148	3 at 2 min. intervals..2150-2
-	1 at.....2155
1 Mosquito at 2157	-
-	4 at 2 min. intervals..2158-2
1 Mosquito at 2206	-
-	4 at 2 min. intervals..2207-2
1 Mosquito at 2215	-

Aircraft of the main force were to be divided into sections as follows:-

(Aiming-point B.....2134-2145)
1 Group.....(Aiming-point C.....2134-2155)
5 Group.....2134-2215
4,6 and 3 Groups.....2145-2215

Half of the main force in each of the last 2 sections were to attack the Submarine Pens (aiming-point 'C') while the remaining half, manned by more experienced crews, were given Penhouet (aiming point 'B') as their objective.

All main force crews were to approach the aiming-points on a heading approximately 030^{OT}. The Gee hoing technique could be used for target location, but strict instructions were given that Gee was not to be used for blind bombing. Crews detailed for the submarine pens were to bomb on T.I. if visible, and those detailed for Penhouet were to make a timed run from the markers on the submarine pens. It was pointed out that the mean point of impact of the green T.I.'s dropped by Oboc aircraft would be within 100 yards of the aiming point.

Crews timed to be over the target after the markers had finished were to approach in the same way and to bomb visually if possible, but otherwise to attack whichever concentration of fires appeared to be near their aiming point.

In order to avoid the risk of scattered bombing, if the markers were late for any reason, main force crews were not to bomb anything but markers before 2145 hours. If no markers were seen on arrival, aircraft of the main force were to stand off and make a second run after 2145 hours.

..../Sorties

Statistics

(a)	No. of aircraft despatched.....	357
(b)	" " reporting attack on primary area.....	283(79.3%)
(c)	" abortive sorties (recalled.....60) (technical defect...13)	73(20.7%)
(d)	" aircraft missing.....	1(0.3%)

Weather Experienced

5. Home Bases:- Fog formed early in the night, becoming widespread by 0300 except in Scotland and S.W. England.

Route:- Patches of cloud over Channel, tops 6,000 feet. Little cloud over France, but some haze. Moderate visibility.

Target:- Little or no cloud. Slight haze. Moderate visibility.

Moon above the horizon and 100% of full.

Night Photographic Statistics

6.	No. of prints examined.....	180
	No. plotted by ground detail (within 3 miles.....51) (between 3 and 5 miles.....14) (outside 5 miles.....8)	73
	No. showing ground detail, but unplotted.....	19
	" fire-tracks only.....	88
	No. of aircraft reporting attack.....	283
	No. of aircraft estimated (from the evidence of photographs showing ground detail) to have bombed within 3 miles of the aiming-point.....	157

Narrative of Attack

7. A force of 643 aircraft had originally been planned to set out but, in view of deteriorating conditions at bases, only 357 were despatched. A general recall was issued to all aircraft of 3 Group shortly before zero hour, so that all but 5 of this Group's aircraft returned early. The remainder of the force achieved a degree of concentration such as is generally associated with raids on French U-boat bases. 6 marker aircraft obtained photographs showing aiming-point 'C' between 2134 and 2146, and 6 more markers were plotted within 2 miles. The main force, consisting of specially selected crews, timed their attack well, and most claimed to have red or green markers in their bombsights. Many confirmed their positions by visual identification of ground detail in the target area. The bombing tended to spread N. and E. as the raid progressed. The results were less spectacular than on previous occasions owing to the comparatively small weight of incendiaries dropped and to the small amount of inflammable material left in the target area, but reconnaissance showed the attack to have been thoroughly successful.

Area Reconnaissance

The greatest concentration of damage occurred to the north of the Bassin Parquet. The rivet shop and electrical welding shop of Chantiers de l'ouest, the turbine workshops, light sheet metal shop, machinery stores and timber warehouse of Chantiers et ateliers de la Loire, the electrical substation and the foundries of St. Nazaire were all seriously hit and partly destroyed. Bombs fell again on the railway sidings to the west of the dock. Very little fresh damage was apparent in the already devastated metropolitan area, and the open country to the north and north-west of the town was seen to be pitted with craters.

Navigation Aids (Gee)

9. The Southern Chain operated from 1730 to 2330 hrs; the Eastern Chain from 2330 hrs onwards. The Virginia frequency was used on both chains. 81 Gee aircraft fitted with Mk.I and 149 with Mk.II were despatched. 80% of the former and 60% of the latter reported reception to the target. 14% of those using the Mk.II set had set difficulties - twice the percentage reported by those using the Mk.I set. Interference was light and ineffectual and the results were the best yet obtained on this route.

Blind Bombing Aids (Oboc)

10. The first Mosquito was 2 minutes late, but thereafter the target was kept marked throughout the attack, despite the failure through technical trouble of the second Mosquito. The Pathfinders achieved one of their best concentrations to date. The long-burning green T.I's were very useful, and helped to illuminate the correct aiming-points during the early stages of the attack. Some of the later ones went out very quickly, probably because they fell in the water. One red T... was dropped well outside the target, but this misled nobody.

Enemy Defences

11. (a) Flak and Searchlights

The ground defences of St. Nazaire were unusually weak. Heavy flak was slight to moderate, and it is estimated that not more than 12 heavy guns fired. 25-30 light guns were in action, mainly in the dock area and northern suburbs. Their fire was only moderate and was mainly directed into searchlight cones.

About 15 searchlights operated intermittently, at times forming two cones. Co-operation fell off as the raid progressed and towards the close only one or two single beams were to be seen. An elaborate smoke screen was in operation. This was no doubt intended to complement the weak defences, but may have added to their difficulties.

Ground defences were also active in the Channel Islands and on the northern coast of France. Flak ships fired, and at Cap Frehel up to 30 searchlights co-operated with light flak.

14 aircraft were damaged by heavy flak, nearly all in the target area.

(b) Fighters

Overheard wireless traffic revealed patrols at Rennes and St. Brieuc. Two pursuits were attempted, and contact by the fighter's A.I. apparatus was probably obtained, but no attacks developed.

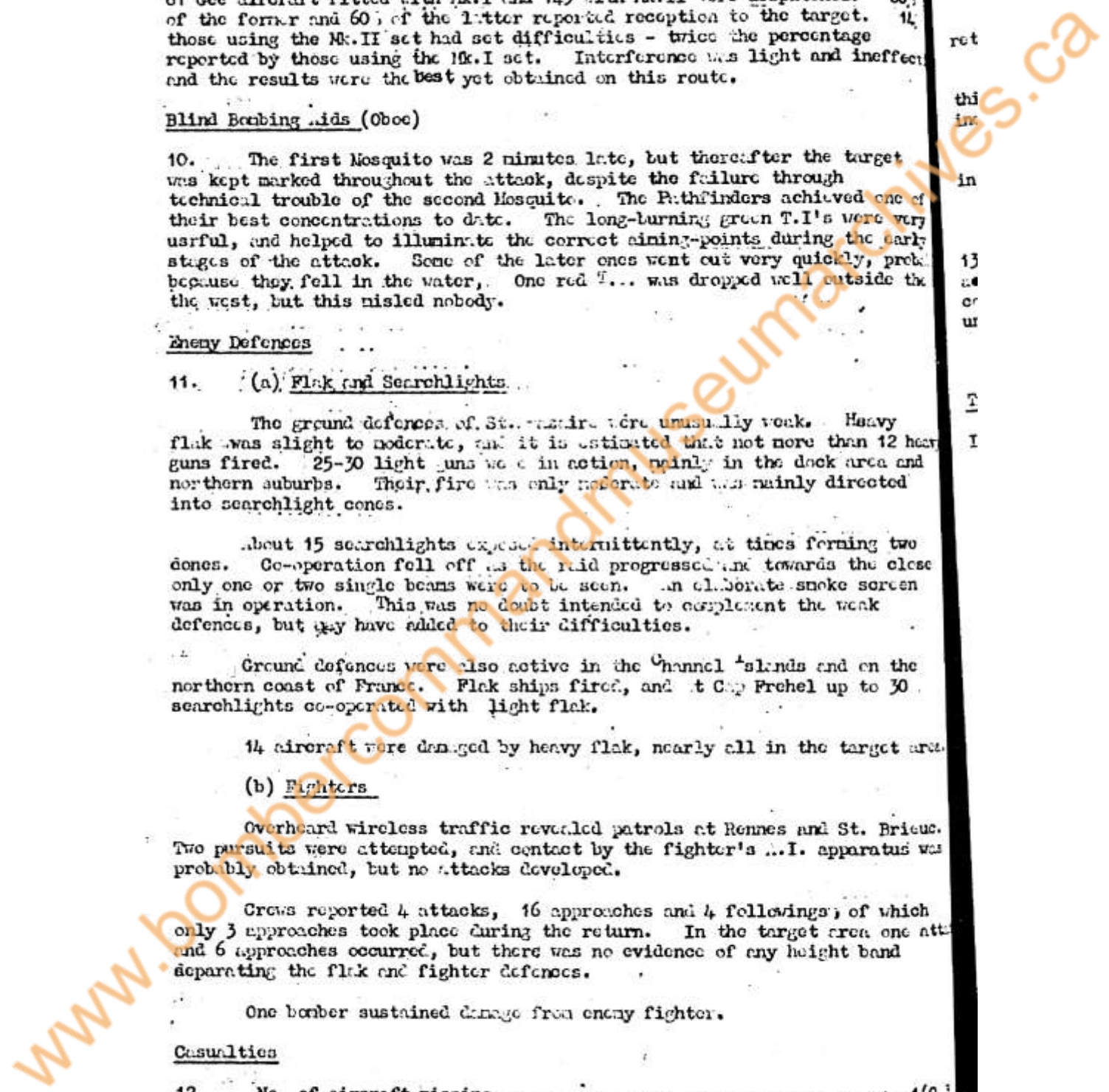
Crews reported 4 attacks, 16 approaches and 4 followings; of which only 3 approaches took place during the return. In the target area one attack and 6 approaches occurred, but there was no evidence of any height band separating the flak and fighter defences.

One bomber sustained damage from enemy fighter.

Casualties

12.	No. of aircraft missing.....	1(0.3)
	" damaged (a) flak.....	14
	(b) fighter.....	1
	(c) incendiary bomb.....	4
	(d) not enemy action.....	5

...../The crew



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The crew of a Lancaster reported seeing two parachutes descend in the target area, and this was confirmed from overhead eady wireless, but there is no evidence as to the cause of the loss.

A Stirling (15'H') returning early because of engine failure, crashed on return and became a total wreck, two members of the crew being injured.

A fairly high concentration of aircraft was obtained over the target on this night, and 4 aircraft at heights of 10-12,500 feet were damaged by falling incendiary bombs.

The loss rate (0.3) is low even for a raid on St. Nazaire, especially in view of the fighter activity.

RELEVANT

13. 6 Wellingtons of 4 Group were detailed to lay mines off Iquiden. All accomplished their mission, each aircraft laying 2 mines in clear weather conditions. No opposition was encountered, and all our aircraft returned undamaged.

APPENDIX

Timing of Attack

I. Pathfinder Force

5 Mosquitoes attacked at 2132, 2147, 2159, 2201 and 2209.
 27 backscrapers attacked at 2132, 2133, 2134(3), 2136(2), 2140(2), 2141,
 2142, 2143, 2146(2), 2147(2), 2149(2), 2150,
 2152, 2153, 2154, 2159, 2203, 2209, 2210 and 2212.
 = 32 aircraft

Main Force

Section 1. (1 Group)

2 aircraft attacked at 2130-2134
 33 " " at 2134-2155
 1 " " at 2157
 36 aircraft

Section 2. (5 Group)

1 aircraft attacked 4' early
 110 " " within planned period (2134-2215)
 3 " " 0-40' late
 114 aircraft

Section 3. (3, and 6 Groups)

5 aircraft attacked 10-0' early
 79 " " within planned period (2145-2215)
 84 aircraft

8 Group (with Main Force): 12 aircraft attacked, all between 2134 and 2215.

Bomb LoadsII. Pathfinder Force

5 aircraft (Mosquitoes) carried T.I. only
 27 " (backers-up) " T.I. + H.E.
 32 aircraft

Main Force

91 aircraft carried H.E. only
 84 " H.E. + 4 lb. + 30 lb. incendiaries
 38 " 4 lb. + 30 lb. incendiaries
 25 " 30 lb. incendiaries
 13 " 4 lb. incendiaries
 251

MLM/VF.
 EC/S. 26342/1/ORS.
 10th July, 1943.

Target	Group	Type	Hostiles	a/c reporting attack on		Hostile hostiles		Downing	Damage			Interceptions		Results		
				tin. area	alt. area	over en. territ.	not over en. territ.		flak	fighter	not E/A	attached	not attached	H.E.	Inc.	
ST. HELENE	P.F.F.	Mosquito	5	5	-	1	-	-	-	-	-	-	-	-	-	-
		Stir. I	1	1	-	-	-	-	-	-	-	-	-	-	-	-
		Lane. I	19	19	-	-	-	-	2	-	1	-	-	1	(P) 586.5 323.9	
	Main Force	Hol. '2'	7	7	-	-	-	-	-	-	-	-	-	2**	(M) 4.5	-
		Lane. I	6	6	-	-	-	-	-	-	-	-	-	-	(including 2x5000 lb.)	-
		Hol. '2'	3	3	-	-	-	-	1	-	-	-	-	-	-	-
	1	Lane. I	4	3	-	-	1	-	1	-	-	-	-	1	-	-
		Lane. III	28	27	-	-	-	-	1	2	1E	-	3	3	Primary	-
		Hol. '2'	9	9	-	-	-	-	-	-	-	-	-	-	Multising	-
	3	Lane. III	7	1	-	-	6a	-	-	-	-	-	-	-	-	-
		Stir. I	24	2	-	-	22x	-	-	-	-	-	-	-	1	-
	4	Stir. III	34	2	-	-	32x	-	-	-	-	1E	-	-	-	-
Hol. '2'		49	49	-	-	-	-	-	-	-	-	-	-	1	-	
5	Hol. '2'	2	2	-	-	-	-	-	-	-	-	-	-	-	-	
	Lane. I	69	64	-	-	5	-	2	-	1C	-	-	-	4	-	
6	Lane. III	51	50	-	-	1	-	4	-	2C+3	-	-	-	6	-	
	Hol. '2'	38	32	-	-	5	-	2	-	1a	-	1	1	-	-	
ST. HELENE TOTAL			357	283	-	1	72	1	14	1E	1E+3C 1a+4	4	20	-	-	
ST. HELENE LANDING	4	Well. III	6	6	-	-	-	-	-	-	-	-	-	-	12 mines	-
TOTAL			363	289	-	1	72	1	14	1E	1E+3C 1a+4	4	20	-	-	

* Aircraft recalled ** a/c type not known

Photographs taken with Bombing

() Aircraft plotted by ground detail

⊙ PFF Marker aircraft

--- Distance from A/P

No. of aircraft reporting attack-----263

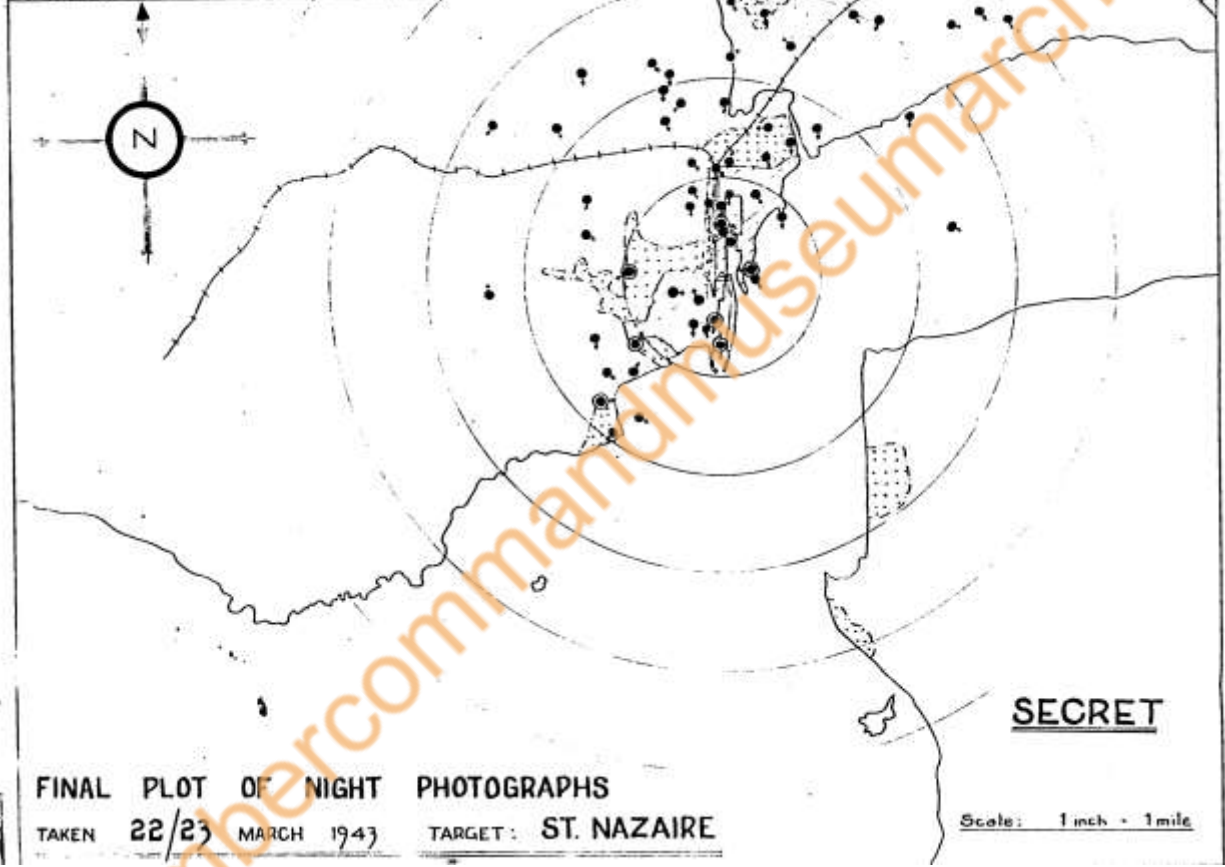
No. of photographs (with bombing)
that show ground detail-----92

Percentage plotted by ground detail
within 3 miles of the A/P-----55.4%

No. of unplotted photographs with
bombing that show ground detail-----13

OR 5	No-
BC	191B
Date	Tracer
2 43	97
Alt	Clouds
250	100

65



FINAL PLOT OF NIGHT PHOTOGRAPHS
 TAKEN 22/23 MARCH 1943 TARGET: ST. NAZAIRE

SECRET

Scale: 1 inch = 1 mile

BOMBER COMMAND REPORT ON NIGHT OPERATIONS, 23/24th MARCH, 1943.MINELAYING (Frisians - IJmuiden): LeafletsSUMMARY

Minelaying 45 aircraft set out to lay mines off the Frisians and the Dutch coast. 42 reached their targets, laying 122 mines. One aircraft did not return.

Leaflets 16 out of 21 aircraft dispersed leaflets over Orleans and Lille. One aircraft was lost.

Meteorological Forecast

Home Bases:- Serious threat of low stratus, and possibly fog, reaching all areas soon after dusk. 1, 2, 4 and 5 Groups will be affected by 2200-2300 hours, 4 Group somewhat earlier. 6 and 8 Groups and the west of 3 Group expect to hold visibility of 1-3 miles most of the night, although 6 Group may have low stratus spreading inland at 600-1,000 feet. The gradient should develop to 30 m.p.h. generally after midnight, after which time the stratus will become patchy and localised. By dawn fog will probably prevail at all high level stations, with cloud below 600 feet, except in the south. Visibility will everywhere be moderate after 0100-0200. Diversions: Training Groups until 2400, some bases till 0200; also N.W. England and Chivdhor.

Germany:- Central area; variable amounts of upper cloud, with good breaks. Hazy. Moderate visibility. E. Germany and Baltic: little cloud, visibility moderate to good.

N. France:- 7-9/10ths medium cloud early, with broken strato-cumulus at 1,500 feet and a chance of slight rain. Later, risk of 10/10ths at 1,000 feet or below, with rain and poor visibility. St. Nazaire: considerable medium cloud, probably no low cloud.

Frisians and Bight:- No low cloud. Patches of medium. Visibility moderate.

Sorties

(a)	No. of aircraft despatched.....	45
(b)	" " reporting mines laid in primary area.....	42
(c)	" abortive sorties (navigational error.....1)	2
	(mines laid safe.....1)	
(d)	" aircraft missing.....	1(2.2)
(e)	" mines laid.....	122

Weather Experienced

Home Bases:- A belt of rain moved northwards over S. England during the operational period. Patches of low stratus and mist in the north.

Route:- Decreasing amounts of medium cloud. Hazy.

Targets:- No cloud. Moderate visibility. No moon.
...../Enemy Defences

Enemy Defences.

5. (a) Flak and Searchlights.

A few searchlights exposed from Terschelling and Ameland, appear track-indicating. A moderate amount of flak was fired from various positions and one aircraft received minor damage.

(b) Fighters

Enemy wireless traffic did not reveal any controlled fighter activity in the Frisians, nor were any fighters sighted by our crews.

Casualties.

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

There is no evidence to suggest the cause or place of loss of the missing Wellington of 196 Squadron.

LEAFLETS

7. 21 aircraft of Training Groups were detailed to disperse leaflets over areas of Lille and Orleans. 16 completed their task; 3 returned early for technical reasons, and a fourth owing to a mistaken recall signal. One aircraft did not return.

Enemy Defences

8. (a) Orleans

The four Wellingtons sent to Orleans reported moderate searchlight and light flak activity near the target area. No enemy night fighters were encountered. One aircraft was missing, without evidence as to the cause or place of loss. The other three aircraft returned undamaged.

(b) Lille

Slight heavy flak was encountered from the Channel coast and to the south-west of Lille. Some searchlights exposed, but our aircraft successfully evaded these ground defences.

There were several sightings of enemy fighters, and one Wellington in combat with a single-engined fighter, without sustaining any damage.

Overheard wireless traffic revealed the presence of a patrol to the south-east of Lille. One unsuccessful pursuit was attempted.

From this area, all our aircraft returned safely.

ML/PVD.
BC/S.26342/4/ORS.
27th May, 1943.

Target	Group	Type	Sorties	A/C reporting attack on		abortive sorties		Missing	Damage			Intense/Calms		Remarks
				prim. area	alt. area	over en. territ.	not over en. territ.		flak	fighter	not F/A	att-acked	not attacked	
FRISIAN IS.	3	Lancaster II	2	2	-	-	-	-	-	-	-	-	-	12 Mines
		Stirling I	9	8	-	1	-	-	-	-	-	-	-	44 "
		Stirling III	1	1	-	-	-	-	-	-	-	-	-	4 "
	4	Well. X	9	7	-	1	1	-	-	-	-	-	-	14 "
		Well. DI	8	8	-	-	-	-	-	-	-	-	-	16 "
LUMPDEN	6	Well. X	10	10	-	-	-	1	-	1/C	-	-	-	20 "
		Well. X	6	6	-	-	-	-	-	-	-	-	-	12 "
KINELAYING TOTAL			45	42	-	2	1	1	-	1/C	-	-	-	122 Mines
LEAPLETS	93	Well. III	4	1	-	2	1	-	-	-	-	-	-	
GLENS		Whitley	4	3	-	1	-	-	-	-	-	-	-	
LILLE		Well. Ic	5	4	-	1	-	-	-	-	-	-	-	
		Well. III	7	7	-	-	-	-	-	-	-	-	-	1
		Well. X	1	1	-	-	-	-	-	-	-	-	-	
LEAPLET TOTAL			21	16	-	4	1	-	-	-	-	-	1	
TOTAL			66	58	-	6	2	1	-	1/C	-	-	1	

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BOMBER COMBINED REPORT ON NIGHT OPERATIONS, 26/27th MARCH, 1943.

DUISBURG: Leaflets

SUMMARY

Duisburg A sky-marking attack on Duisburg was planned for a force of 455 aircraft, but 5 of the 9 Mosquito markers returned early, the enemy set up decoy flares, and, in conditions of 10/10ths cloud, the attack achieved no concentration. Reconnaissance revealed little fresh damage in Duisburg, although two buildings of the Thyssen Works were destroyed. We lost 1 aircraft (1.34).

Leaflets 4 aircraft, of a force of 5, dispersed leaflets in the Duisburg area. All returned safely.

Metereological Forecast

Home Bases:- All Groups fit for take-off at dusk. Smoke troubles at 1 and 5 Groups by 2300-2400, but airfields will be available in 2,3,4,6,8,91, and 93 Groups till 0200; thence general fog. Diversions to S.Coast and East, except perhaps N.Cornwall.

Germany:- Occluded front at midnight from Helder to 59°N 05°E to 07½°E to Oslo to 54°N 13°E becoming warm to Vienna and cold to 11°E. to N.Italy. W.Germany: W. of frontal belt, broken convection and cumulus cloud, some isolated thunderstorms, belt of very low cloud or fog near coast over North Sea, but solid cloud should not extend above 10,000 feet. In frontal zone over Germany, much cloud at all levels, layered at low and high levels except in immediate vicinity of front. Ruhr: 8/10ths cloud in layers to 15,000 feet, half-covered medium, half debris convection at low levels, moderate visibility. Route: mostly frontal cloud in many layers, 10/10ths cloud occasionally to 20,000 feet, moderate icing from 6,000 to 15,000 feet, local thunderstorms on latter part of route.

(Parpa, 1645:- Solid cloud at Aachen from 12,000 to 27,000 feet. This is regarded as convective activity, supported by later reports of spheric activity over N.E.France, Belgium and Holland. This thunderstorm activity is expected to die out gradually at night, but the possibility of isolated storms with cloud to great heights cannot be dismissed. Most probably, the Ruhr will have layers of cloud at several levels, but solid, thundery cloud to great heights may be encountered even at the target).

DUISBURGof Attack

Zero hour - 2150

Period of attack - 2130 - 2225.

An Oboe sky-marking attack was planned, with 9 Mosquitoes releasing 3 flares (red steady) 7m. N.E. of Wesel, 5 minutes short of release and preliminary warning flares (green steady) 6m. N. of Duisburg, 2½ minutes short of release point flares (red with green stars and one white flare) over target. All flares were to be fused to ignite at 16000': the coloured flares would each burn for 2½ mins., and the white flare, which would burn for 1 minute, was to follow the release point flares.

.../Crews of the

Crews of the main force were instructed to aim their bombs at the release point flares on an exact heading of 190° H, with bombsight setting true height and true air speed and zero wind. The speed of attack was to be 160 n.p.h. I.S.S.

To guard against the risk of scattered bombing, owing to lateness of failure of skymarkers, main force crews were instructed not to bomb anything but markers before 2140 hrs when, if no markers were visible, they were to stand off and make another run.

Main force crews attacking after 2214 hrs. were to be warned that no skymarkers would then be visible, and that they would have to identify the aiming point themselves or bomb the greatest concentration of fires,

The timing of the attack was to be as follows:-

Skymarkers (red with green stars + 1 white flare)	Main Force
1 Mosquito at 2130 1 " 2133	Lancasters of 5 Group 2134 - 2140
1 Mosquito at 2140 1 " 2143	
1 Mosquito at 2150 1 " 2153	All aircraft of 6 Group + Wellingtons of 4 Group 2142 - 2200
1 Mosquito at 2200 1 " 2203	Halifaxes of 4 Group + Wellingtons of 1 Group 2155 - 2200
1 Mosquito at 2210	All aircraft of 3 Group + Lancasters of 1 Group 2205 - 2210

Sorties

(a) No. of aircraft despatched.....	455
(b) " reporting attack on primary area.....	386 (84%)
(c) " " alternative area.....	6 (1.3%)
(d) " abortive sorties (technical & manipulative defects.....	52
(d) " (weather.....	2
(d) " (sickness of crew.....	2
(d) " (off track.....	1
(e) " aircraft missing.....	6 (1.3%)

Weather Experienced

5. Home Bases:- Bit until midnight, apart from local fog and mist in 2-5 groups.

Route:- 10/10ths clear, tops 6-8,000 feet over North Sea, becoming 14-18,000 feet over Dutch coast and towering towards target. Similar on return but cloud broke about 30 miles from English coast.

Target:- 10/10ths cloud, occasionally breaking to 8/10ths., tops 10-14,000 feet. Probably not more than 2,000 feet thick. Good visibility above cloud.

No moon. Wind at 18,000 feet: probably $280^{\circ}/30-35$ n.p.h., but reports vary widely.

...../Night Photographs

Photographs

All photographs showed 10/10ths cloud. None were plotted.

Narrative of Attack

10/10ths cloud, extending to 10-14,000 feet, obscured all ground detail in the target area, so that there is no evidence of the positions of aircraft at being apart from that of the Oboe ground stations. From this, together with the raid reports of the Mosquitoes, it is clear that only 4 sky-markers laid base-point flares in the target area. These appear to have been dropped at 2141, 2148, 2202 and 2209 but unfortunately the first Mosquito crashed into the North Sea on return and was destroyed, so that precise details of its attack are not known. While it is clear that its red and green tracking flares were released at 2126-2129 respectively, there is ample evidence that its release-point flares were not laid until 2141 - 9 minutes late, when they were observed by at least 12 Main Force aircraft.

A fifth Mosquito tuned its receiver to the wrong signal and, in consequence, laid flares 20-30 miles N. of the aiming-point at 2148. These were seen by several crews who, however, realised the incorrectness of their position. The enemy undoubtedly fired a great number of decoy flares which did deceive many aircraft, for 100 of the 123 aircraft attacking between 2153 and 2158 reported bombing on flares, while it is known that none dropped by our Pathfinders have been visible during that period.

Owing to the lateness of the first Mosquito, most of the early arrivals attacked on E.T.A. from the green marker flares. Towards the end of the raid, aircraft bombed the concentrated fires which had been started in (presumably) the enemy's country as a result of the enemy's plausible decoys.

Reconnaissance

A D.A. sortie, flown on 5th April, covered the centre of Duisburg, including the docks; The S. and W. of Harbourn, with the August Thyssen Works; and Homberg and Rheinhausen on prints of excellent scale and quality.

2 buildings at the N.E. end of the Thyssen Works, measuring 300' x 90' and 230' x 40' were shown to have been destroyed by H.E. and fire. Otherwise only a few small fresh incidents could be seen.

Alternative Targets

6 aircraft attacked alternative targets. 5 bombed concentrations of flak and searchlights in the area of Essen, and the sixth a flakship off Haarlem.

Navigation Aids (Gee)

The Eastern Chain was in operation on the Virginia frequency. 128 aircraft with Gee Mk.II and 205 with Gee Mk.I were despatched. 21% of the former and 16% of the latter had set difficulties; the average ranges for the Mk.I and Mk.II sets were 235 and 220 respectively. T of 12 Sqn. obtained the maximum range of 275 miles. Interference was heavy and the B signal the strongest.

Wind Bombing Aids (Oboe)

9 Oboe aircraft were despatched. 4 attacked correctly, as described above; one of these was hit by flak, and ditched off the Norfolk coast. No trace could be found of the aircraft or of any survivors. Signals were reported to be of poor quality.

Interference at the aircraft's end was on 228 m/cs, resulting in a serious error on the part of one navigator who, being unable to receive his signal, tuned his receiver to the signals of another Mosquito on 220 m/cs, used these for tracking and release and dropped his flares 20-30 miles N. of the aiming-point.

...../The winds

The winds on this night were not as forecast, causing all aircraft to have a slow ground speed and to be blown to the north, and probably resulting in the abovementioned aircraft being hit.

2 of the abortive sorties were due to unserviceable equipment and to the aircraft being off track.

Defences

12. (a) Flak and Searchlights

Searchlights were unable to penetrate the cloud, but were used to illuminate the cloud base, possibly to assist night fighters. A number of crews reported stationary beams exposed on to the cloud base along the bombers' line of approach to the target. Heavy flak was moderate to intense and the 'unseen' predictor controlled fire was at times quite accurate probably because of the scattered nature of the attack, which must have facilitated the selection of individual targets. There were also indications of burst fire directed around and above the skymarker flares.

Considerable opposition was encountered from heavy flak en route to Holland and in the coastal region. Heavy and light flak was also fired from ships off the Dutch coast. 25 aircraft were hit by heavy flak and sustained minor damage - 4 of these over Holland.

(b) Fighters

Enemy wireless traffic revealed a very small amount of controlled fighter activity in the area of the raid on Duisburg. No details of air combats or successes were overheard.

Crews reported 4 attacks, 26 approaches and 3 followings, of which 2 attacks, 14 approaches and 2 followings occurred en route to the target, 6 approaches and 1 following near Duisburg, and the rest during the return. Fighter activity was considerably less on the return route than on the outward journey, probably because the former lay south of the Zuider Zee through an area of low cloud.

Over Holland the weather was bad for night fighters. In the Utrecht area, cloud base was down to 1-2,000 ft. and mist reduced visibility to 1-2,000 yards. It is probable that this weather seriously hampered enemy fighter effort, especially during the return route which lay through Utrecht.

Casualties

13. No. of aircraft missing.....
 " damaged (a) flak..... 25)
 (b) fighter..... Nil)
 (c) not enemy action..... 1)

The missing Mosquito sent an S.O.S. at 2230 when approximately 20 miles east of the North Foreland. Nothing further was heard from the crew, and search by A.S.R. revealed no trace of the aircraft.

A Wellington (426 'J') of 6 Group obtained a first class fix at 50 miles east of Withernsea, but nothing further was heard. A search by A.S.R. revealed a patch of oil, but no survivors. There is no evidence to account for the loss of this aircraft.

Two aircraft probably crashed in the target area, where a 4-engine aircraft was observed on fire, and several parachutes were seen descending. A further loss may have occurred on the return journey, near Noordwijk.
/There are

There are no observations to account for the other missing aircraft, nor is it possible to state the cause of any of the losses on this night.

The loss rate (1.3%) on this operation is extremely low for a target. It appears that bad weather over the controlled fighter area in Holland considerably restricted controlled fighter activity. Moreover bad weather over the target could not be penetrated by searchlights, and the lack of flak - searchlight co-operation was not therefore possible.

LEAFLETS

4 out of 5 Whitleys of 91 Group dispersed leaflets in the Orleans area; the fifth returned early for technical reasons. Flak and searchlights were in action on the Cherbourg peninsula and at Chartres, where one aircraft sustained minor damage from heavy flak. On the return near Chartres an enemy fighter approached, but turned away after a burst from the bomber's four guns.

APPENDIX

Timing of Attack

Pathfinder Force

4 Mosquitoes attacked, at 2141, 2148, 2202 and 2209 respectively.

(= This aircraft crashed into the sea on return, and was destroyed.)

Main Force

Section 1 (Lancasters of 5 Group)

1	aircraft	attacked	1' early
34	"		within planned period (2134-2148)
40	"		0-25' late
<u>75</u>	aircraft		

Section 2 (All aircraft of 5 Group + Wellingtons of 4 Group)

13	aircraft	attacked	20-0' early
117	"		within planned period (2142-2200)
6	"		0-20' late
<u>136</u>	aircraft		

Section 3 (Halifaxes of 4 Group + Wellingtons of 1 Group)

20	aircraft	attacked	10-0' early
79	"		within planned period (2155-2210)
12	"		0-15' late
<u>111</u>	aircraft		

Section 4 (All aircraft of 3 Group + Lancasters of 1 Group)

6	aircraft	attacked	25-0' early
45	"		within planned period (2205-2225)
3	"		0-10' late
<u>54</u>	aircraft		

7 Pathfinders w/t flew with the Main Force. 5 attacked between 2140 and 2200 and the remaining 2 between 2200 and 2231.

Loads

(of aircraft reporting attack on primary)

Pathfinder Force

3 aircraft carried flares only

Main Force

233	aircraft	carried	H.E. + 4 lb. + 30 lb. incendiaries
48	"		H.E. + 4 lb. incendiaries
37	"		H.E. only
34	"		4 lb. + 30 lb. incendiaries
31	"		H.E. + 30 lb. incendiaries
<u>383</u>	aircraft		

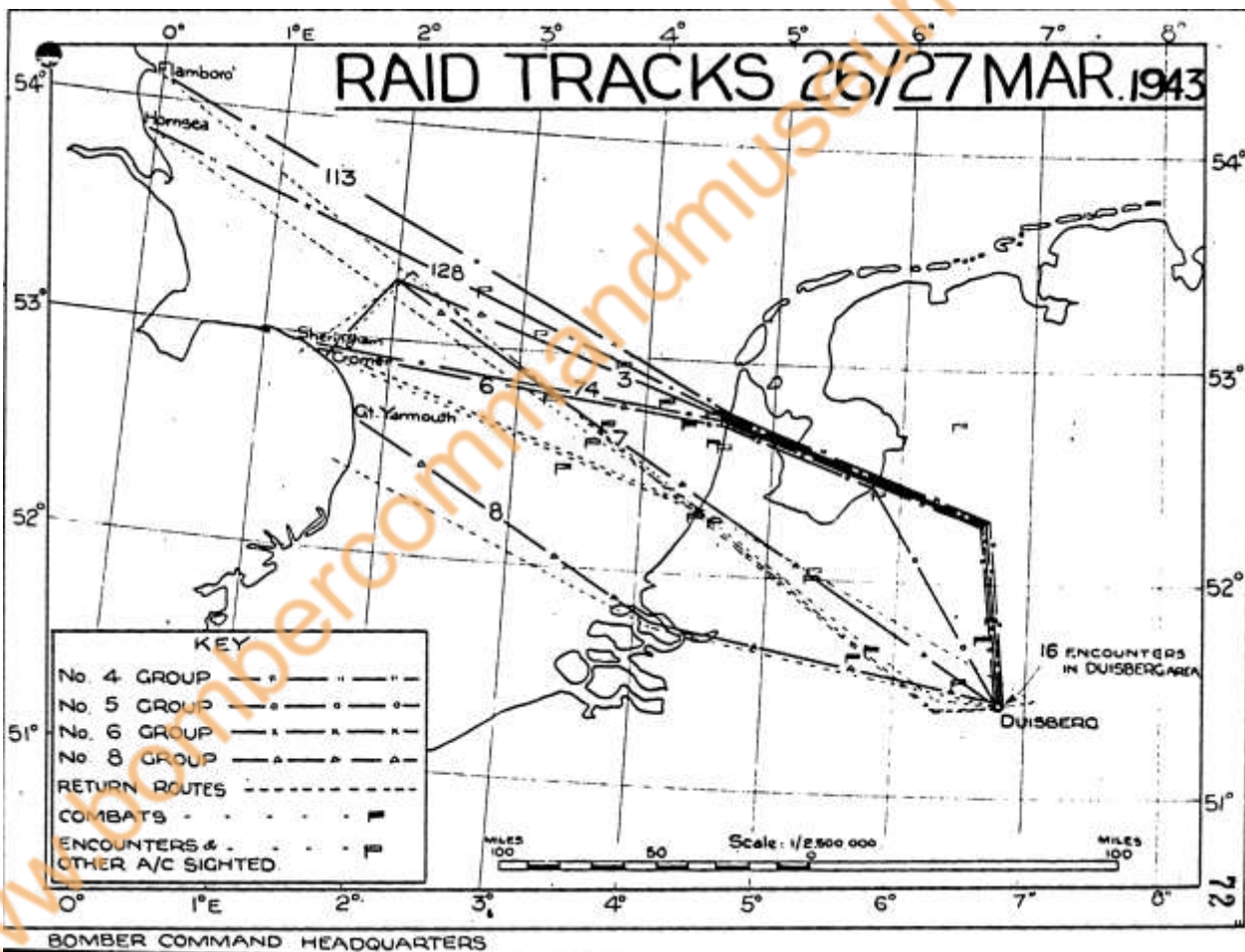
VP.

26342/2/ORS.

June, 1943.

Target	Group	Type	No. in	100% Reporting		100% Not Fitted		No. in	Damage			Interceptions		Results		
				prim. area	alt. area	over un. territ.	not over am. territ.		Floek	Fighter	not I/A	attacked	not attacked	H.E.	Ino.	
DUISBURG	8 P.F.F.	Hoeg. IV	9	3	-	3	-	1+	-	-	-	-	-	-	(P) 14.1* 100.9 (A) 12.5 6.4 (H) 3.8 5.0 x Includes 3 x 8000 lb 142 x 4000	
		Lano. I	4	3	-	-	1	-	-	-	-	-	1	-		
		Hal. '12'	2	2	-	-	-	-	-	-	-	-	-	-		-
	1	Stir. I	2	2	-	-	-	-	-	-	-	-	1	-		-
		Lano. I	39	35	-	-	3	1	-	-	-	-	-	2		-
		Lano. III	13	12	-	-	1	1	-	-	-	-	-	1		-
		Wall. III	25	21	1	-	3	-	-	-	-	-	-	-		-
	3	Wall. IV	8	5	-	-	3	-	-	1n	-	-	-	1		-
		Wall. X	10	8	-	-	2	-	-	1n	-	-	1	-		-
		Lano. I	7	7	-	-	-	-	-	-	-	-	-	-		1
	4	Hal. '2'	79	74	-	-	4	1	8n	-	-	-	-	-		7
		Hal. II	3	3	-	-	-	-	-	-	-	-	-	-		1
		Wall. III	3	2	-	-	1	-	-	1n	-	-	-	-		-
		Wall. X	43	38	-	-	2	2	-	2n	-	-	-	-		3
	5	Lano. I	52	41	4	-	7	-	3n	-	-	-	-	-		2
		Lano. III	42	34	1	-	7	-	-	-	-	-	-	-		2
	6	Hal. '2'	30	27	-	-	3	-	3n	-	-	-	-	-		2
		Wall. III	28	25	-	-	2	1	-	-	-	-	1	-		4
		Wall. X	56	50	-	-	1	5	-	1AC+3n	-	1AC	1	-		4
	T O T A L		455	386	6	-	9	48	6	1AC-2In	-	1AC	4	-		29
100% REPORTING ORLEANS	91	Whitley V	5a	4	-	1	-	-	1n	-	-	-	-	1		
T O T A L			460	390	6	-	10	48	6	1AC-25n	-	1AC	4	30		

x These A/C not fitted with Gou + This Pathfinder is known to have marked the target.



FINAL PLOT OF PHOTOS FOR RAID NOT AVAILABLE

BOMBER COMMAND REPORT ON NIGHT OPERATIONS, 27/28th MARCH, 1943.BERLIN: Minelaying: LeafletsSUMMARY

Berlin 396 heavy aircraft were detailed on a groundmarking attack against German capital, but the attack was mainly scattered in open country S.W. of city. There is no evidence that any bombs fell within 5 miles of the aiming-point, although some fell in the south west suburbs of the city. We lost 9 aircraft (2.3%). No reconnaissance was undertaken.

Minelaying 24 aircraft laid 81 mines off the Frisians and the Dutch coast without loss.

Leaflets 4 aircraft dispersed leaflets over France.

Metereological Forecast

Home Bases:- Little cloud, moderate visibility most of night, fog patches towards dawn. All Operational Groups fit for take-off at dusk, the majority remaining available, with little cloud and more than 2,000 yards visibility, till 0300; but there will be local troubles due to smoke, especially 1 and 5 Groups. A good proportion of bases should hold till dawn.

Germany:- Occluded front at midnight from Oslo to Bremen to Nantes. Behind the front, cloud will break and lift, but over the Heligoland area, behind the front, much layer and convection cloud will persist, not extending above 10,000 feet. E. of the front, medium cloud will break and become thin. The front will move eastwards at 20-25 m.p.h. Hamburg: 10/10ths layer cloud, possibly showers. Berlin: broken layer cloud at various levels, slight patch of 10/10ths thin strato-cumulus below; possibly cirrus above 20,000 feet. On route, the front will be overtaken over Holland. Cloud will be well cleared, extending to 20,000 feet or above, but flying conditions should not be impaired. 10/10ths cloud cover is likely to break 100 miles short of Berlin. A developed convection cloud, with high tops to 15,000 feet or above, may be encountered on return over the North Sea, but freezing level should not fall below 3,500 feet, and there should be no serious trouble.

N. Italy:- Probably cloudy.

Dutch Coast:- Broken cloud, not below 1,500 feet.

Kattegat:- Cloudy over Denmark, patches below 1,000 feet on W. coast, probably with rain, lifting to 1,500 feet further east.

Winds on route to Berlin at 15-20,000 feet: to 05°E., 300°/50 m.p.h.
beyond 05°E., 250°/45 m.p.h.

BERLIN

Time of Attack

Zero hour - 2245

Period of Attack - 2245 - 2320 hours

19 Y aircraft were planned to drop red groundmarkers on the aiming-point and up by 28 other aircraft of the P.F.F. dropping green ground-markers. However, cloud conditions proved such as to prevent groundmarkers being dropped. The Y aircraft were to release skymarkers (red with green stars) and the backscramblers were to become part of the main force,

...../En route

En route to the target, each Y aircraft was to drop land-marking green T.I.'s at Celle (52°37'N. 10°05'E): the backers-up were to maintain this marking by sowing green T.I.'s at those previously dropped. Yellow landmarks were to be dropped by each Y aircraft 16 miles short of the target on track (52°19'N. 13°15'E) as a preliminary warning. This marking also to be maintained by the backers-up with yellow T.I.'s. In addition, if sky-marking proved necessary, Y aircraft were to release preliminary warning flares (at steady) 3 minutes short of the target on track.

Groundmarking of the aiming-point was to be carried out by the release of red T.I.'s in salvo, on H2S by Y aircraft, and the backers-up were to sow green T.I.'s in salvo at the centre of the concentration of existing T.I.'s, irrespective of their colour. The main force were to aim their bombs at the estimated centre of T.I.'s, also irrespective of their colour. Y aircraft were to play the part of 'backers-up' if their H2S equipment became unserviceable.

Sky-marking was to be carried out, if it proved certain that T.I.'s would not be visible through cloud, by Y aircraft only. Release-point flares (red with green stars) were to be fused to ignite at 10,000'. Backers-up and main force were to aim their bombs at the flares on an exact heading of 035°.

On the return flight, each Y aircraft was to drop green T.I.'s at Wurstow (54°20'N. 12°24'E) as an aid to navigation. This marking was to be maintained by the backers-up, sowing green T.I.'s at those previously dropped.

Bomb Loads		T.I.			Green	Flares		H.E.
		Green	Yellow	Red		Red/Green	H.E.	
Y-type aircraft	11 Stir	4	1	4	(1 x 3)	2 x 3	4 x 40	
	8 Hal.							(1 x 4)	2 x 4	-
Backers-up	2 Stir	6	1	-	-	-	(1 x 2)	
	5 Hal.						(1 x 5)	
	21 Lanc						(2 x 1)	
							(1 x 4)	
							(2 x 2)	

Main Force: All main force aircraft, with the exception of 3 Lancasters each carrying 1 x 8000 H.C., were to carry mixed loads of H.E., 4 lb. and 30 incendiaries. One-third of all H.E. bombs were to be long delay.

Timing of Ground-marking Attack

Y aircraft	Backers-up	Main Force
6S + 4H at 224.5 hrs.	-	-
5S + 4H at 224.6 hrs.	-	-
	2.....at 224.7 hrs.	
	1.....at 224.8	
	2.....at 224.9	Stirlings-224.9-2.5
	18 at 1 min. intervals...2250-2306	Halifaxes-2255-2.5
	6 at 2 min. intervals....2307-2317	Lancasters- 2305-

Timing of Sky-marking by Y aircraft

4.....at 224.3 hrs.
8 at 2 min intervals..... 2250-2256 hrs.
6 at 3 min. intervals..... 2259-2305
1.....at 2308 hrs.

...../Sorties

Sorties

(a)	No. of aircraft despatched.....	396
(b)	" reporting attack on primary area.....	329(83.1%)
(c)	" " alternative area.....	16(4.0%)
(d)	" abortive sorties (technical or manipulative defect.....)	39
	(sickness of crew.....)	2
	(icing.....)	1
(e)	" aircraft missing.....	9(2.3%)

Weather Experienced

Home Bases: Fit all night, with little cloud and moderate visibility.

Route:- Little cloud to 02⁰⁰E., then belt of medium cloud, 30 miles wide, tops 10-15,000 feet: then breaking to 4-6/10ths, tops 6-8,000 ft: then increasing near Dutch coast to 10/10ths., tops 12-17,000 feet 10/10ths from Dutch coast to target area, tops 10-15,000 ft, breaking to small amounts 30 miles from Berlin.

Target:- 0-5/10ths layer cloud at 14,000 feet, with small amounts of low cloud beneath.
Slight haze. No moon. Visibility fair.
Wind at 15,000 feet: 260⁰/35 m.p.h.
Surface wind: light, S.W.-W.
Contrails at 16-20,000 feet.

Return route: 10/10ths cloud, tops as before, breaking just W. of Dutch coast; then small amounts apart from the belt of medium cloud, now situated about 04⁰⁰E.

Enemy aerodromes:- Much very low cloud and rain over W. coast and to about 07⁰⁰E, thence cloud base lifted gradually. Visibility moderate apart from rain. Fog patches on N. German plain.

Night Photographic Statistics

No. of photographs showing ground detail.	(plotted within 5 miles.....)	0
	(plotted outside 5 miles.....)	113
	(unplotted.....)	69
No. of photographs showing fire-tracks only	(plotted within 5 miles.....)	0
	(plotted outside 5 miles.....)	82
	(unplotted.....)	46

There is thus no evidence that any aircraft bombed within 5 miles of the aiming-point.

Nature of Attack

In view of the fact that only one of the 9 Y-aircraft reporting attack was plotted, it has not been possible to reconstruct the early stages of the raid in detail. 2 separate concentrations of T.I's appear to have been established, one to the S. and S.W. of the city, and most aircraft bombed from 7½ to 17 miles from the aiming point. There was no serious breakdown in the timing of the attack, but many crews reported active decoys. No positive explanation can be offered for the utter failure of this raid.

Reconnaissance

In view of the evident failure of this operation, no photographic reconnaissance of the target was undertaken.

...../Alternative Targets.

Alternative Targets

9. 15 aircraft attacked alternative targets, in the areas of Brandenburg, Hanover, Rethen, Braunschweig, Exten(2), the Ruhr, Delle(2), Osnabruck, Bremen, Nienburg and Luckenwalde, while a sixteenth bombed a flak ship off the Frisians.

Navigational Aids (Gee)

10. The Eastern Chain was operating on the Virginia frequency and the Northern Chain on the Utah frequency. 63% of the 277 Gee aircraft despatched were fitted with Mk.II sets. 21% of these and 8% of those fitted with the Mk.I had set difficulties. Both the Mk.I and Mk.II sets obtained an average range of 250 miles. P of 419 Squadron and D of 100 Squadron, using Mk.I and Mk.II respectively, obtained the maximum fixes of 335 miles. Interference was very heavy across North Holland, but was light on the return across the North Sea. No fixes could be taken on the Northern Chain, as no pulse was visible.

Blind Bombing Aids (H2S)

11. 18 Y-type aircraft were despatched (10 Stirlings and 8 Halifaxes). 4 Stirlings (aircraft defects) and 3 Halifaxes (H2S failure) were abortive, and 2 Halifaxes reverted for technical reasons for the role of backers-up. One aircraft released red T.I.'s despite H2S failure "on position of red T.I.'s seen from a distance marked by incendiaries." Only 9 aircraft, therefore, dropped red T.I.'s instead of the 19 planned. 6 of these were on time. There is no photographic evidence to show where the Pathfinders concentrated their markers.

Enemy Defences

12. (a) Flak and Searchlights

Some 300 searchlights exposed around Berlin in a belt 30 miles wide. Search cones were formed, but the prevailing haze made it difficult for the guns to concentrate their fire on visual targets. Heavy flak was slight to intense, largely in the form of predictor control "unseen", while light flak, although widespread, was not intense and was mainly directed up searchlight beams.

The main weight of the attack fell to the S.W. of Berlin, and it is possible either that the central defences deliberately remained quiet or that the bombers were not within range of a number of the guns. A group Flak Liaison Officer, who flew on this raid, considered that his aircraft was never engaged by more than 40-50 guns from 10 gun positions.

Each Group used a separate route out. These crossed the enemy coast at Texel about 25 miles apart, and converged to a turning-point 20 miles S.W. of Berlin. Ground defences were active near Texel and Leeuwarden, on the coast, and at inland towns such as Bremen, Osnabruck, Hanover and Magdeburg. The briefed return route led N.W. from Berlin to the Baltic, and thence over Denmark crossing the coast N. of Sylt. Again Groups had their own individual routes. In cloudy conditions, the force became considerably scattered. Ground defences were active at Rostock, Flensburg, the Danish islands in the Baltic, and at

54 bombers sustained flak damage, 17 before reaching the target, including 9 at Hanover and 4 at Bremen. The force must, therefore, have been spread over a front of about 40 miles. Approximately 30 bombers were hit over the target, all sustaining minor damage from heavy flak. On 4 of these occasions the bomber in question was illuminated by searchlights.

(b) Fighters

Enemy wireless traffic revealed little night fighter activity in the course of the operation against Berlin. Patrols, where pursuits were undertaken, operated near Lüneburg, Stendal, Parchim and Rostock. Details of 9 pursuits were overheard, resulting in one (possibly three) successes for the night fighters.

The route to the target passed through Holland and N.W. Germany, an area where fighter activity is usually very marked. On this night there was an area of low cloud and rain covering the coastal region and extending as far inland as 8°E. This unfavourable weather may have accounted for the lack of fighter opposition on this part of the route.

Crews reported 3 attacks, 15 approaches and 8 followings, of which 7 approaches and 6 followings took place before reaching the target. All but one of the encounters on the outward route, occurred east of 9°E., thereby confirming the absence of fighter activity over Holland.

A Halifax (51 'C'), returning early, was attacked by a twin-engined aircraft over the sea 90 miles off Texel. The rear gunner claimed to have destroyed the attacking aircraft, and stated that he believed that it was a Wellington.

2 bombers sustained fighter damage.

Casualties

13.	No. of aircraft missing.....	9(2.3)
	" damage (a) flak.....	5
	(b) fighter.....	2
	(c) not enemy action.....	1
		57

The missing Halifax of 408 Squadron crashed in Sweden as a result of petrol shortage, the tanks having been holed by flak. All the crew baled out safely.

3 aircraft were probably lost on the outward journey, one over Bremen to flak, another over Hannover to flak and a third near Hannover to night fighter.

Over the target area there were numerous observations of aircraft falling during a period of 20 minutes, but these may not refer to more than 2 aircraft. It is likely that one or both of these were P.F.F., as green and red T.I. markers were seen burning. Both these losses were probably due to heavy flak.

On the return journey, in conditions of cloud and low concentration, there were only a few observations of falling aircraft. But at least one and possibly three successes were claimed on overheard wireless traffic. At least 2 aircraft must have been lost to fighters during the return.

Of the 9 missing aircraft, therefore, 5 were probably lost to flak and at least 3 to fighters.

An investigation into the possibility of petrol shortage on this night was made by considering the engineers' logs for 226 aircraft. No aircraft had less than thirty minutes endurance, 4.4% had between thirty minutes and one hour, 40.5% had between one and two hours and the remaining 55.1% had over two hours endurance. This investigation is further considered for the raid on Berlin on 29/30 March (Raid Report No. 300).

The loss rate on this night (2.3%) was low for a raid on Berlin, chiefly because the bad weather over enemy airfields in Holland grounded many of the enemy fighters. In the target area, haze and cloud rendered conditions unfavourable for searchlight-flak co-operation, and the main weight of the attack fell to the S.E. of the target.

...../GENERALING

WELLINGTON

14. 7 Wellingtons of 1 Group were dispatched on a mining operation to IJmuiden and 17 Lancasters and Stirlings of 3 Group to the Frisians. All reached their targets in conditions of poor visibility, with haze and much cloud. The majority laid their mines on I.R. runs following Gee fixes and did not make landfall. One crew reported light flak from ships, but otherwise the operation was completed without incident.

81 mines were laid.

LEAFLETS

15. One Whitley of 91 Group and 3 Wellingtons of 92 Group set out to drop leaflets over France, the Whitley to Rouen and the Wellingtons to Orisens. In conditions of 10/10ths cloud the Whitley failed to identify its target, dropped its bundles in the area of Yvetot, 25 miles S.E. of Pecamp. The Wellingtons reached their objective and accomplished their mission.

Crews encountered searchlight and flak defences on crossing the French coast, but no damage was sustained. On the return route, 2 enemy fighters approached, but on each occasion the bombers took successful evasive action. All our aircraft returned safely.

APPENDIXTiming of AttackI. Pathfinder Force

9 Y-aircraft dropped red F.I.'s at: 2245(3), 2246(3), 2249, 2256 and 2300*

(* This aircraft released reds, despite H2S failure, "on position of red F.I.'s seen from a distance marked by inonediaries").

25 backers-up dropped green F.I.'s at: 2249*, 2250(2), 2252, 2253(2), 2257*, 2259(2), 2300(2), 2301(2), 2302, 2303, 2305(3), 2306, 2308, 2310, 2313, 2316(2), and 2318.

(* Y aircraft, acting as backers-up on account of H2S failure.)

Main ForceStirlings

2 aircraft	attacked	20-0' early
25	"	within planned period (2249-2300)
29	"	0-25' late
<u>56</u>	aircraft	

Halifaxes

5 aircraft	attacked	10-0' early
72	"	within planned period (2255-2310)
12	"	0-20' late
<u>89</u>	aircraft	

Lancasters

11 aircraft	attacked	5-0' early
126	"	within planned period (2305-2320)
13	"	0-20' late.
<u>150</u>	aircraft	

...../Bomb Loads

Boob LoadsII. Pathfinder Force

19 Lancasters carried T.I. + H.E.
 9 Halifaxes " T.I. + flares
 6 Stirlings " T.I. + flares + H.E.
34 aircraft

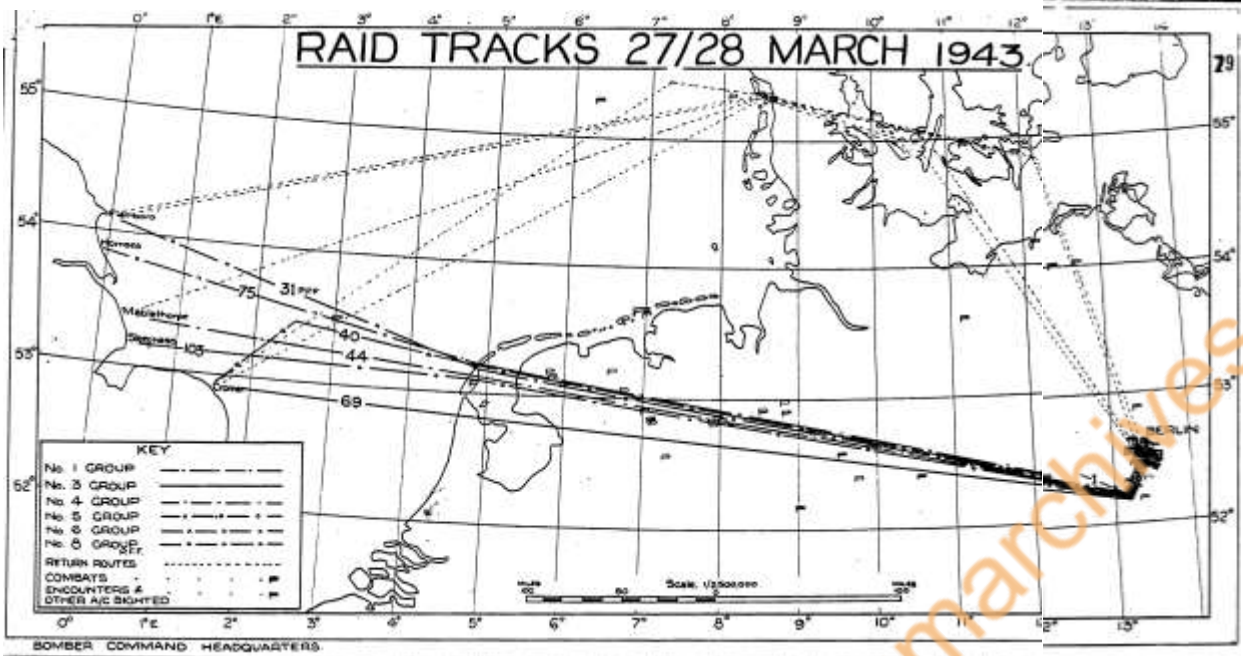
Main Force

154 aircraft carried H.E. + 4 lb. + 30 lb. incendiaries
 54 " carried H.E. + 4 lb. incendiaries
 47 " carried H.E. + 30 lb. incendiaries
 22 " carried 4 lb. + 30 lb. incendiaries
 18 " carried H.E. only
295 aircraft

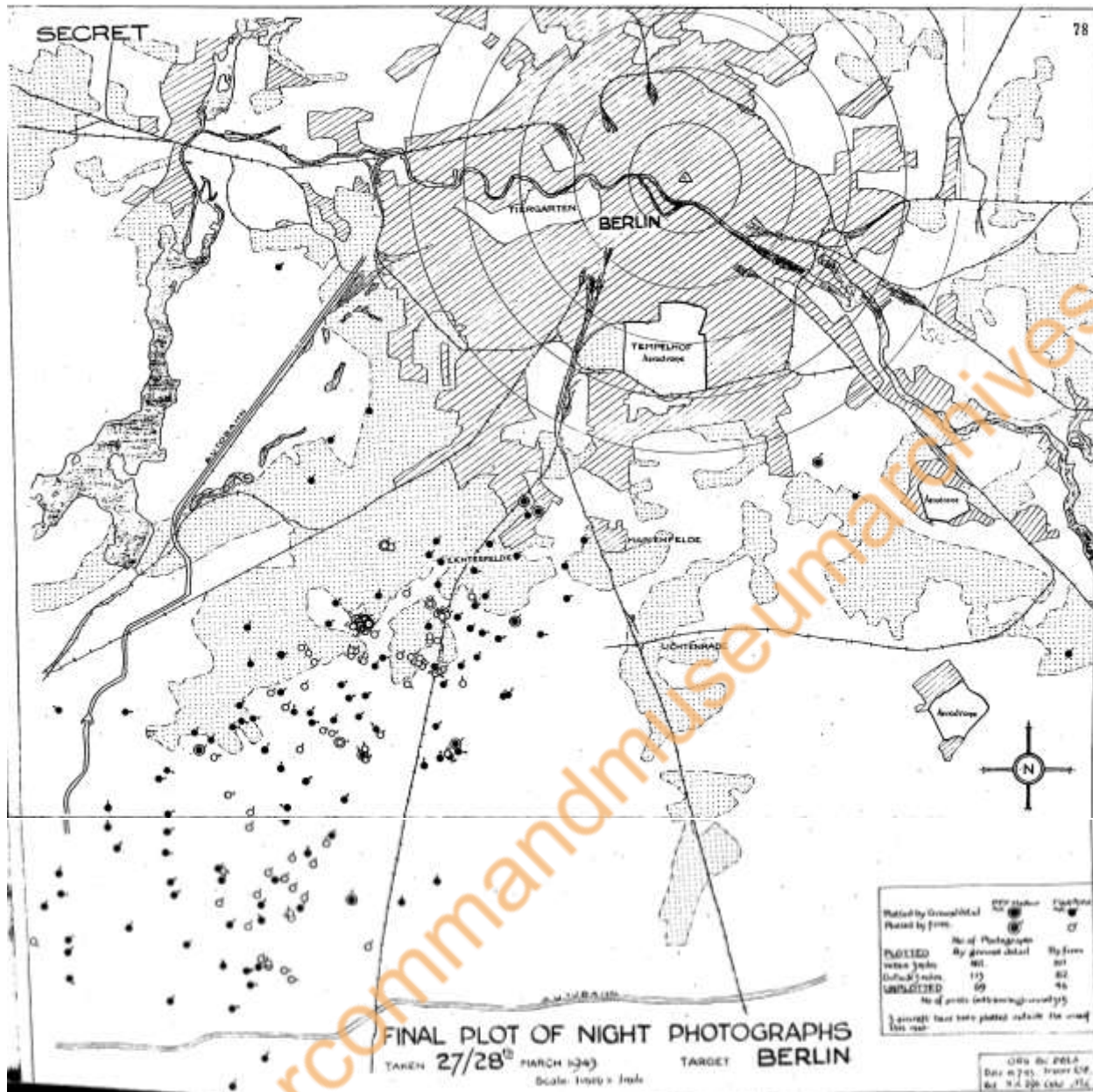
MLM/VF.
 BC/S. 26342/2/ORS.
10th July, 1943.

				Attack on				Missiles	Damage			Interceptions		Results	
				prim. area	alt. area	over target.	not over target.		Flak	Fighter	not E/A	attacked	not attacked	H.E.	Ino.
BREMEN	8	Lancaster I	21	15	-	-	1	1	-	-	-	-	-	P) 40.2 (2) 4	
	P.P.F.	Stirling I	12	6	1	1	3	1	1	-	1E	-	-	(A) 15.0 20.7	
		Halifax 'E'	13	9	-	1	3	-	3	-	-	-	1	(N) 8.9 10.9	
	Main Force	Lancaster I	2	2	-	-	-	-	1C	-	-	-	-	2	
		Halifax 'E'	3	2	-	-	1	-	1	-	-	-	-	--	
	1	Lancaster I	35	30	1	-	3	1	3	-	-	-	-	4	
		Lancaster III	16	14	-	-	2	-	1C+1	-	-	-	-	1	
	3	Lancaster II	6	4	1	-	1	-	-	-	-	-	-	2	
		Stirling I	33	25	3	-	4	1	1C+6	-	-	-	-	2	
	4	Halifax II	8	6	-	-	1	-	1	1C	-	-	1	3	
Halifax I		69	58	4	1	6	1	3C	-	-	1	-	2		
5	Lancaster I	56	40	1	-	8	1	5	-	-	-	-	3		
	Lancaster III	55	54	-	-	1	-	8	-	-	-	-	3		
6	Halifax 'E'	31	23	3	-	3	2	1C	1	-	-	1	2		
BREMEN TOTAL			396	329	16	3	39	9	1B 6C +47	1+1C	1E	3	23		
MINSTER	1	Dell. III	7	7	-	-	-	-	-	-	-	-	-	14 mines	
PRESTON	3	Lancaster II	1	1	-	-	-	-	-	-	-	-	-	4 mines	
		Stirling I	12	12	-	-	-	-	-	-	-	-	-	48 mines	
		Stirling III	4	4	-	-	-	-	-	-	-	-	-	15 mines	
PRESTON TOTAL			24	24	-	-	-	-	-	-	-	-	81 mines		
WELLS	91	Whitley	1	-	1	-	-	-	-	-	-	-	-		
ORLEANS	92	Dell. III	3	3	-	-	-	-	-	-	-	-	2		
TOTAL			424	356	17	3	39	9	1B 6C +47	1+1C	1E	3	25		

RAID TRACKS 27/28 MARCH 1943



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FINAL PLOT OF NIGHT PHOTOGRAPHS
 TAKEN 27/28th MARCH 1945 TARGET BERLIN
 Scale 1:500 x 1 mile

Plotted by	Count	Number
Plotted by General Staff	107	107
Plotted by 1st AF	1	1
TOTAL	108	108
PLOTTED	No. of Photographs	By frame
within 1/2 mile	81	81
Outside 1/2 mile	17	82
UNPLOTTED	59	56
No. of prints left in camera - 20/25		

1. enough have been plotted outside the area
 for use.

ORA 60 2614
 Box 4705, Fraser CFB,
 BC V4A 2P6 CANADA

BOMBER COMMAND REPORT ON NIGHT OPERATIONS, 20/29th MARCH, 1943.ST. NAZAIRE: MINELAYING: Leaflets.SUMMARY

St. Nazaire 292 aircraft (of 322 despatched) delivered another heavy blow against the U-boat base of St. Nazaire. Direct hits were secured on floating docks and naval installations, and the residential area of the town was devastated. Mosquitoes equipped with Oboc led the attack. We lost 2 aircraft (0.6%).

Minelaying 6 aircraft (of a force of 7) laid 12 mines off St. Nazaire during the main attack.

Leaflets 5 aircraft dispersed leaflets in the Paris area.

Metereological Forecast

Home Bases:- All fit for early take-off, with variable cumulus and strato-cumulus, base 2,000 feet, tops 6-9,000 feet. Visibility good, with local smoke during first half of the night, chance of more serious troubles towards dawn. Diversions to Training Groups till 0200.

Germany:- Position of front at midnight: Danzig-Berlin-N. Spain. Germany: considerable convection cloud, tops generally below 15,000 feet. Ruhr: broken convection cloud. Upper Rhine: little convection, good visibility.

N. France:- Very well broken layer and convection cloud. Good visibility. St. Nazaire: small amounts of strato-cumulus and less than 5/10ths medium cloud at 12-16,000 feet. Some broken high cloud. No low cloud. Similar conditions en route; for return, extensive strato-cumulus may have penetrated the Channel, and medium cloud spreading from the west will increase and thicken northwards.

ST. NAZAIREPlan of Attack

Zero hour - 2200 Period of Attack - 2200-2230

An Oboc ground marking technique was to be adopted for this attack; four Oboc Mosquitoes were to drop green T.I's in salvo at 9 minute intervals, backed by 15 heavies of the P.F.F. aiming red T.I's at green, if visible, but otherwise at the centre of the concentration of reds. A fifth Oboc Mosquito was to act as reserve to any of the four in case of failure. The main force were to drop their bombs at green T.I's if visible, but otherwise at the estimated centre of the concentration of reds.

After the end of the main attack two further Oboc Mosquitoes were each to release 3 x 500 M.C. bombs (at 2230 and 2245 hours).

Approach to the target was to be made from the north along the C lattice
target coordinates B 10.53, C. 35.57.

...../Timing

Timing

<u>Oboe Mosquitoes (Green T.I.)</u>	<u>Backers-up (Red T.I.)</u>	<u>Main Force</u>
1 at 2200	2 at 2201	-
-	6 at 1 min. intervals 2202-2207	Wellingtons 2202-2220
1 at 2209	5 at 1 min. intervals 2210-2214	-
-	1 at 2216	All heavies 2215-2230
1 at 2218	-	-
1 at 2227	1 at 2219	-
1 Oboe Mosquito at 2236 1 " " 2245	3 x 500 H.C.	-

Bomb Loads

<u>Markers</u>	5 Mosquito	4 T.I. green
	3 Stirling	4 T.I. red + 4 x 2000 H.C.
	6 Halifax	4 T.I. red + 7 x 1000 G.P.
	6 Lancaster	4 T.I. red + 1 x 4000 H.C. + 4 x 1000 G.P. + 2 x 500 G.P.
<u>Main Force</u>	Wellington 425	1 x 4000 H.C.
	1/6 Ret.	9 x 500 G.P. (1/3rd long delay) Incidaries
	"	4 Gp 3 x 500 + 12 500 IB
	"	6 Gp 2 x 500 + 6 500 IB
	Stirlings	Incidaries
	Lancasters	1 Gp 10 x 1000 G.P. (1/3 long delay) 5 Gp 1 x 4000 H.C. + (1080 x 4 or 96 x 30 lb. IB)

Sorties

4.	(a)	No. of aircraft despatched.....	322
	(b)	" reporting attack on primary area.....	292(90.7)
	(c)	" abortive sorties (technical & manipulative defect.....24)	28(8.7)
		(navigational error..... 2)	
		(reserve number not required..... 1)	
		(sickness of crew..... 1)	
	(d)	" aircraft missing.....	2(0.6)

Weather Experienced

5. Home Bases:- Fair to fine all night. Moderate visibility.

Route:- Very variable amounts of upper cloud. Variable strato-cumulus below. Wind at 12-18,000 ft: 300-310°/40-50 m.p.h. backing and slightly increasing for return.

Target:- 4-6/10ths medium cloud, tops about 18,000 ft. Some haze.

No moon. Visibility good.

Wind at 12-14,000 feet: 330°/35 m.p.h.

...../Night Photographic Station

Defences

10. (a) Flak and Searchlights

The ground defences of St. Nazaire were still weak, although by comparison with the previous raid on the 22/23 March (Raid Report No. 295) it appeared that the light guns had been reinforced. Estimates of the number of searchlights exposed varied from 10 to 16; and they operated with fair success in three small cones. Slight to moderate heavy flak was encountered, at times fairly accurate. The light guns were concentrated in the dock area, and were assisted by ships in the estuary. There is evidence that some searchlight phenomena were fired in the early stages of the raid.

Searchlights and co-operating light flak were active on the enemy coast at St. Malo and on the island of Guernsey.

Nine aircraft were damaged by heavy flak, nearly all over the target area.

(b) Fighters

Overheard wireless traffic revealed that controlled fighters were operating near Cherbourg and over the Breton Peninsula. Interference, however, was so intense that it was impossible to decipher any of the traffic. Much of this interference was 17/5.

Crews reported 5 attacks, 26 approaches and 9 followings of which 3 attacks, 9 approaches and 3 followings occurred in the target area. The remaining interceptions were evenly distributed between the out and home routes. It is surprising that this fairly considerable fighter opposition had so little success, for not one bomber sustained any fighter damage.

Casualties

11.	No. of aircraft missing.....	2
	" damaged (a) flak.....	9
	(b) fighter.....	NIL
	(c) not enemy action..	4
		13

From observations it appears probable that both aircraft were lost over the target area. On each occasion the bomber was seen, engaged by heavy and light flak, and fell to the ground in flames.

It is surprising that the large number of night fighters operating was unable to secure any success, but it appears possible that Tinsel operating in dark conditions with the moon down interfered considerably with the G.C.I. control system.

WELLINGTONS

12. 7 Wellingtons of 1 Group were det. filed to lay mines off St. Nazaire during the main attack. One returned for technical reasons; the other 6 reached the target, and laid 12 mines. Flak and searchlights were encountered at St. Malo, but at St. Nazaire the defences were concentrated against the main force of bombers. All our aircraft returned undamaged.

LELFLETS

13. 5 Wellingtons of 91 Group dropped leaflets in the Paris area. One aircraft was approached by a fighter near the capital, but no attack developed. No further incidents were reported and no damage or casualties were sustained.

APPENDIXTiming of AttackI. Pathfinder Force

3 Mosquitoes attacked at 2201, 2215 and 2232.

12 backers-up attacked at 2203, 2204(2), 2206(2), 2209, 2210(3),
2211, 2219 and 2228 = 15 aircraft

Main Force

146 aircraft attacked within planned period (2202-2220)

15 " " 0-20' late

161 aircraft

Heavies

14 aircraft attacked 10-0' early

95 " " within planned period (2215-2230)

5 " " 0-10' late

114 aircraft

Mosquitoes attacked after the Main Force at 2245 and 2303.

Bomb LoadsII. Pathfinder Force

3 Mosquitoes carried T.I. only

12 backers-up carried T.I. + H.I.

15 aircraft

Main Force (including nuisance raiders)

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

64 " " H.E. only

50 " " 4 lb. + 30 lb. incendiaries

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

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

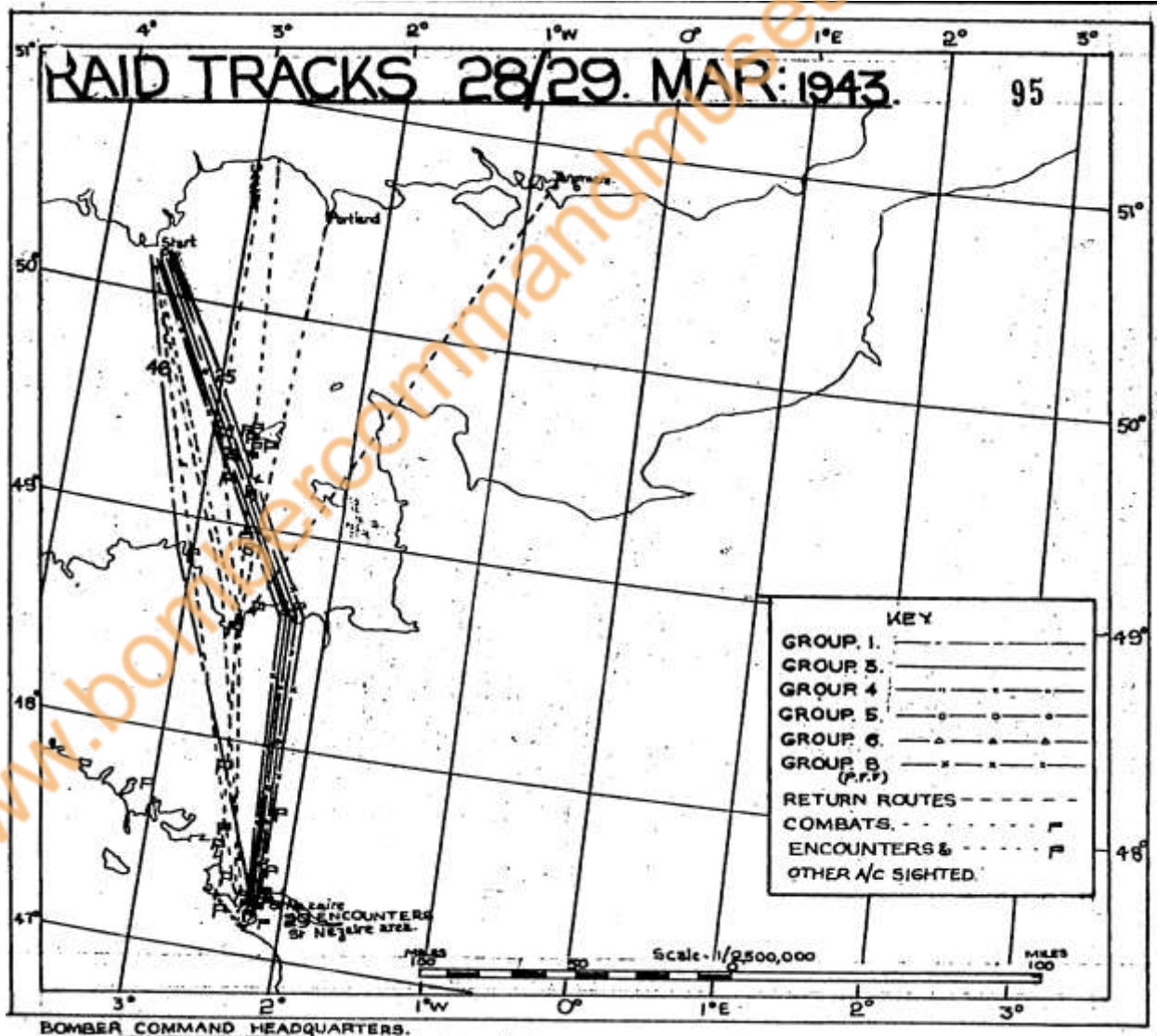
277 aircraft

D/VF.

S/S. 26342/3/ORS.

13th July, 1943.

Target	Group	Type	Sorties	A/C reporting attack on		A/C active over on		Missing	Range		Interceptions		Results	
				prim. area	alt. area	over on territ.	not over on. ter. it.		flak	fighter	not E/A	att-acked	not attacked	H.E.	Inc.
ST. MARGARET	8	Mosquito IV	5	3	-	2	-	-	-	-	-	-	-	(B) 34.3 327.8 (M) 2.7 3.4
		Halifax I	4	4	-	-	-	-	-	-	-	-	-	
		Londoner I	5	5	-	-	-	-	-	-	2/C	-	-	
		Stirling I	3	3	-	-	-	-	-	-	-	-	-	
	6	Stirling I	1	1	-	-	-	-	-	-	-	-	-	Primary Messing
		Mosquito	2x	2x	-	-	-	-	-	-	-	-	-	
		Halifax 2	1	1	-	-	-	-	-	-	-	-	-	
		Londoner I	4	4	-	-	-	-	-	-	-	-	1	
	1	Londoner I	8	8	-	-	-	-	-	-	-	-	-	2
		Lang. III	12	11	-	-	1	-	-	-	-	-	3	
		Well. III	20	19	-	-	1	-	1/C	-	-	-	5	
		Well. IV	3	-	-	-	3	-	-	-	1/C	1	1	
	3	Well. X	10	10	-	-	-	-	-	-	-	-	-	1
		Stirling I	20	15	-	-	1	1	-	-	-	-	-	
		Stir. III	11	11	-	-	-	-	-	-	-	-	-	
		Halifax II	6	5	-	-	1	-	1/C	-	-	-	-	
	4	Halifax 2	26	25	-	-	1	-	-	1	-	-	1	1
		Well. III	8	8	-	-	-	-	-	-	-	-	-	
		Well. X	4.6	4.3	-	-	3	-	2	-	-	1	5	
		Londoner I	14	11	-	-	2	1	1	-	-	-	-	
5	Lang. III	7	7	-	-	-	-	-	-	-	-	-	1	
	Halifax 2	15	12	-	-	2	1	1	-	1/C	-	1		
	Well. III	30	27	-	-	1	2	-	-	-	-	-		
	Well. X	61	54	-	-	2	5	-	-	-	2	5		
ON. MARGARET TOTAL			322	292	-	3	20	2	2/C +7	-	4/C	5	35	
MIDDLETON ST. MARGARET	1	Well. IV	7	6	-	-	1	-	-	-	-	-	12 mins	
MILANS	91	Well. III	5	5	-	-	-	-	-	-	-	-		
TOTAL			334	303	-	3	21	2	2/C +7	-	4/C	5	35	

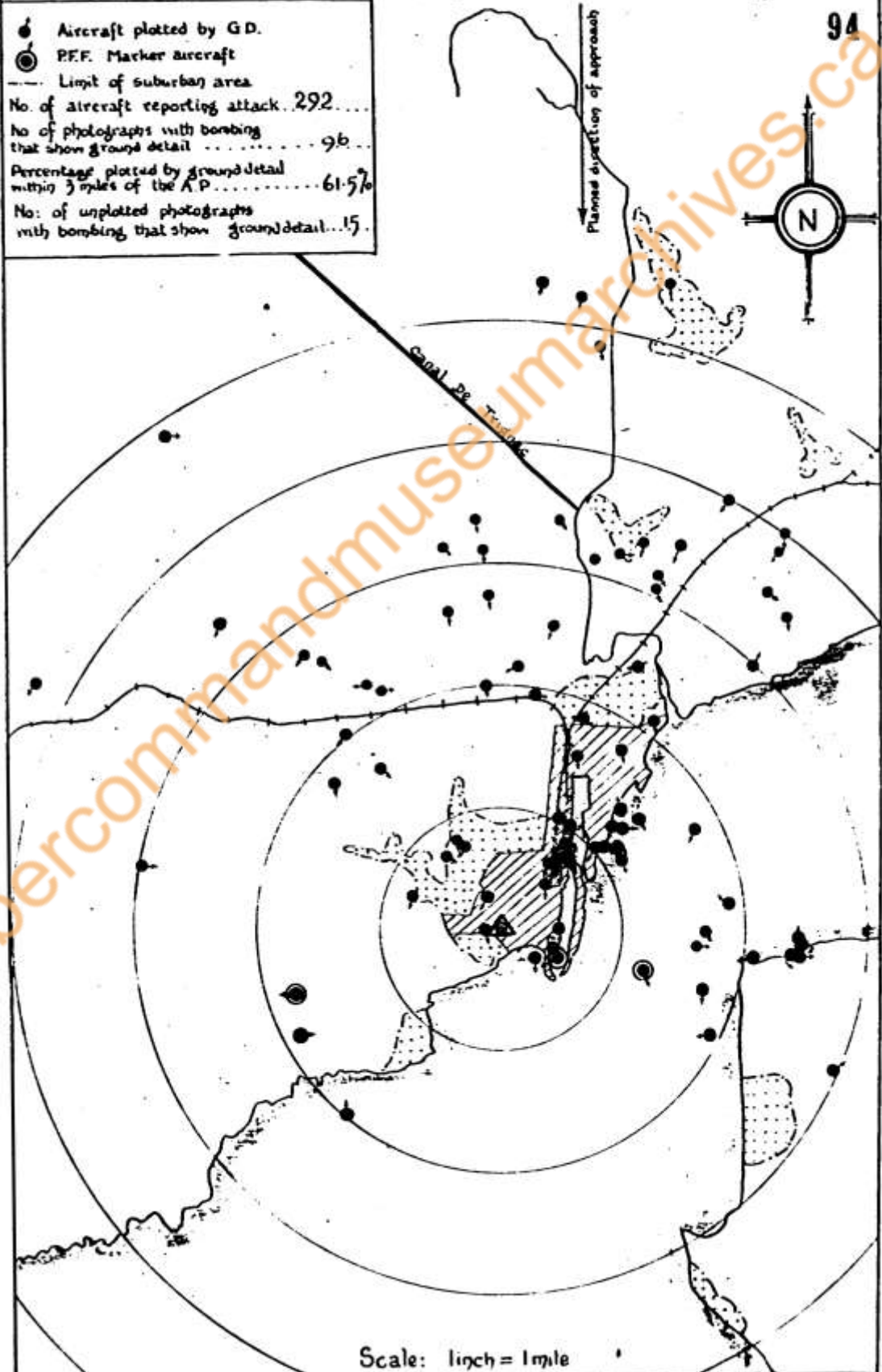


SECRET

ORS BC. 280A
Date 10 742 Tracer E58
Ref. A.R. 299 Chmd

FINAL PLOT OF NIGHT PHOTOGRAPHS
TAKEN 28/29th MARCH 1943. TARGET St. NAZAIRE

- Aircraft plotted by G.D.
- ⊙ P.F.F. Marker aircraft
- Limit of suburban area
- No. of aircraft reporting attack... 292
- No. of photographs with bombing that show ground detail... 96
- Percentage plotted by ground detail within 3 miles of the A.P. 61.5%
- No. of unplotted photographs with bombing that show ground detail... 15.



www.bombercommandmuseumarchives.ca

BOMBER COMMAND REPORT ON NIGHT OPERATIONS, 29/30th MARCH, 1943.BERLIN: BOCHUM: Ruhr: MinelayingSUMMARY

1. Berlin 329 heavy aircraft were despatched to Berlin.

10/10ths cloud was encountered en route. This cleared towards the capital which, however, was enveloped in a thick ground haze. Nevertheless, the Y aircraft of the P.F.F. achieved their best concentration to date on this target. Unfortunately the Main Force arrived so late that this accurate marking was wasted; a concentration of bombing developed in open country 6 miles S.E. of the aiming-point, and the attack gradually drifted even further from the target. No reconnaissance was undertaken.

213 aircraft reported attack, many others being forced to return early because of icing. 21 aircraft (6.4%) were lost, and 5 others were destroyed through non-enemy action.

Bochum 8 Mosquitoes and 149 Wellingtons set out on a sky-marking operation against Bochum. The Mosquitoes marked accurately, but their timing was poor and, in dark and cloudy conditions, less than a quarter of the 97 aircraft reporting attack bombed within 3 miles. Reconnaissance revealed only a few incidents in the suburbs. 13 aircraft (8.4%) were lost.

Ruhr. One Mosquito carried out an Obse nuisance raid against Duisburg.

Minelaying 5 aircraft, of a force of 7 despatched, laid 30 mines off the Frisians. None was missing, but one was destroyed through non-enemy action.

Metecorological Forecast

2. Home Bases:- Occluded front at midnight from 66°N. 04°E. to 55°N. 02½°E. to Wash to S. Wales to S. Ireland, giving rain and low cloud. S. of the front, there will be much cloud with moderate visibility; to the north, cloud will break and lift. All Groups should just be fit for take-off at dusk, with low cloud at 1,000 feet, patches below, intermittent rain and visibility 2-4 miles. For return after 2400, 6, 7, 4 and possibly 5 Groups will have considerable rain, with low cloud, base 1,000-1,500 feet, in lee of Pennines, falling further south to 600-1,000 feet; visibility 1-3 miles. 3 and 8 Groups (and perhaps 5 Group) will probably have similar cloud conditions but only slight rain, and visibility 2-4 miles. Gradient from Dutch coast to bases will be 250°/50 m.p.h. (60 m.p.h. in N.); there is a chance that winds at 20,000 feet on the homeward route from 05°E. may be of the order 80-100 m.p.h. Cloud tops in cold front will reach to 16-18,000 feet. Diversions to E. coast of Scotland, and S.E. England (not coastal stations).

Germany:- Occluded front (2) at midnight from 06°N. 11°E. to 55°N. 12°E. to 50°N. 06°E. to Tours. This front should not be a serious obstacle, because solid cloud is not expected to extend above 12,000 feet; higher cloud will probably be layered. S.E. of the front there will be much medium cloud for 100-200 miles, becoming well broken towards Berlin. Berlin: some medium cloud, risk of 8/10ths strato-cumulus at 1,000-2,000 feet, with an equal chance of little cloud. Normal haze. Route to Berlin: 10/10ths medium cloud in several layers to Danish coast, tops above 15,000 feet, freezing level 4,000 feet. Broken medium cloud from Danish coast to target. Ruhr: low cloud
...../as at

as at Berlin, 6-8/10ths medium cloud. 10/10ths layer cloud to 15,000 feet or above.

<u>Winds at 20,000 feet</u>	Wash - halfway to target:	250°/70 n.p.h.	} on home route - pe inc
	N. of 6 Group	: 250°/80 n.p.h.	
	Thames	: 250°/60 n.p.h.	
	Denmark	: 260°/55-60 n.p.h.	
	Berlin	: 270°/35 n.p.h.	

BERLIN

Plan of Attack

3. Zero hour 0045 Period of Attack 0045-0115 hours.

The target was to be marked by 17 Y aircraft backed up by 27 other aircraft of the P.F.P., with red T.I.'s released in salvos on the aiming point. An alternative method, using Y aircraft only to drop release point flares, was provided in case cloud conditions rendered ground marking impracticable.

En route to the target, each Y aircraft was to release one yellow T.I. at the enemy coast (54°08'N 11°44'E) as a landmark for the main force. The backers up were to maintain this marking by each aiming one yellow T.I. at these already burning.

As a preliminary warning all Y aircraft (at zero - 7 minutes) were to drop white flares at the Muggel See (52°26' 13°39'E). When the lake had been positively identified in the light of the white flares, coloured flares (green with red stars) were to be dropped to enable a timed run to be made from there to the aiming point. This procedure also was to be repeated by the backers up.

All Y aircraft and the first 7 backers up were to drop their red T.I.'s in a salvo, using a timed run exactly across the lake on course and basing their calculations on 75% of their true air speeds. The remaining 20 backers up were to aim their red T.I.'s in salvo at the centre of the concentration of T.I.'s, followed by the main force. To guard against the risk of scattered bombing, the main force were to bomb nothing but T.I.'s before 0100 hours.

If cloud conditions rendered ground marking impracticable, Y aircraft, on a revised time table, were to drop release point flares (red with green stars) fused to ignite at 11,500'. Backers up and main force were to aim their bombs at these release point flares on an exact heading of 305°M with bombsetting true height and air speed and zero wind: speed of attack 143 knots A.S.I.

As an aid to navigation on the return flight, each Y aircraft was to drop another yellow T.I. at 52°18'N 12°31'E and the backers up were again to maintain the marking by aiming their yellow T.I.'s at yellows.

If the H2S equipment in any Y aircraft became unserviceable after crossing the enemy coast, the aircraft concerned was to act as a backer up.

rtics

(a)	No. of aircraft despatched.....	329
(b)	" reporting attack on primary area.....	213 (64.7%)
(c)	" " alternative area.....	4 (1.1%)
(d)	abortive sorties (icing.....)	64
	(technical & manipulative defects.....)	20
	(sickness of crew.....)	4
	(late take-off.....)	1
	(hit by flak.....)	1
	(cause unknown (crashed on take-off).....)	1
(e)	" aircraft missing.....	21 (6.4%)

Weather Experienced

Home Bases:- Variable cloud N. of Wash, base above 1,500 feet.
 visibility. High cloud S. of Wash.

Route:- 10/10ths cloud over North Sea to Danish coast, mainly in
 layers but thickening at times. Lowest base 1-2,000 feet, top of highest
 layer 14-15,000 feet. Heavy icing at various levels. Some static.

Winds at 2-3,000 feet: 250°/55 n.p.h.
 at 12-15,000 feet: 240-260°/55-65 n.p.h.

Target:- No cloud. Considerable ground haze. Visibility moderate.
 moon.

Wind at 15-20,000 feet: 250-270°/35-45 n.p.h.

Photographic Statistics

No. of photographs showing ground detail (plotted within 3 miles.....3)
 (plotted between 3 & 5 miles....5)
 (plotted outside 5 miles.....30) ..71
 (unplotted.....33)

No. of photographs showing fire-tracks only (plotted within 3 miles....111)
 (plotted between 3 & 5 miles 8)
 (plotted outside 5 miles....56) .100
 (unplotted.....36)

Nature of Attack

During the first few minutes after zero hour, 4 Y-aircraft released red
 markers in the target area. This marking was well maintained by the Y-aircraft,
 some of which attacked by zero + 9. Unfortunately, the Main Force did not
 arrive in strength until zero + 14, when a concentration of bombing developed
 at 6 miles S.E. of the aiming-point, apparently started by a Y-aircraft
 flying blindly on an insensitive H2S set. The next batch of photographs is
 centered 4 miles N. of the above-mentioned diversion. After 0104, the bombing
 spread steadily to the east of the city.

Alternative Targets

4 aircraft attacked alternative targets, in the areas of Flensburg(2),
 and Sylt.

Reconnaissance

In view of the evident failure of this raid, no reconnaissance was
 taken.

.../Blind Bombing Aids(H2S)

Blind Bombing Aids (H2S)

10. The performance of Y-aircraft was as follows:

Dropped red T.I's blindly on H2S.....	4
" " " on timed run (H2S O.K.).....	4
" " " (H2S u/s).....	2
Abortive.....	5
	<u>15</u>

The target response was good, and the Pathfinders achieved their best concentration to date in H2S raids on this target.

Navigation Aids (Gee)

11. The Eastern Chain was operating on the Virginia frequency. 77% of the Gee aircraft despatched were fitted with the Mk.II set. These obtained an average range of 250 miles, as compared with 225 miles for the Mk.I sets. H of 97 Sqdn. using a Mk.II set, obtained the maximum range of 322 miles.

Enemy Defences

12. (a) Flak and Searchlights

Conditions at Berlin were much more favourable for the use of searchlights than during the raid two nights previously. About 300 searchlights exposed, forming cones of up to 40 beams and co-operating actively with flak. Heavy guns engaged aircraft in the cones with increasing vigour and accuracy after a quiet start, without any appearance of being saturated. Moderate to intense light flak was fired both into the searchlight cones and as a barrage.

Owing to bad weather en route, only just over 200 aircraft reached Berlin; and the main attack became rather scattered. It appears that the searchlights and flak defences, owing to the low concentration of bombers, were able to co-operate most effectively. 16 aircraft were damaged by flak over the target area, half of these while held in searchlight cones.

Flak was encountered during the outward journey, especially at Flensburg and Rostock, where up to 40 searchlights were active. On the return over N.W. Germany and Holland the force scattered, and flak and searchlight defences were reported at numerous places. Ground defences at Prandenburg, Hanover, Bremen, Essen, Magdeburg, and Den Helder were particularly active. 13 aircraft were damaged by flak en route, 11 of these during the return.

(b) Fighters

Enemy wireless traffic revealed widespread fighter activity. 14 patrols were located, making 18 pursuits, which resulted in one unsuccessful attack and one success. There were also 4 unlocated patrols, which engaged upon 5 unsuccessful pursuits.

Crews reported 8 attacks, 10 approaches and 3 followings, of which 5 attacks, 5 approaches and 2 followings occurred during the return. 4 of these attacks were made over Holland, suggesting that on this night enemy fighters were not unduly hampered by the weather conditions.

3 aircraft were damaged by fighters.

The gunners of a Halifax (51 "H") claimed to have destroyed a Ju. 88 which attacked S.E. of Kentock. An observation by another crew confirms this claim.

...../Casualties

Casualties

3.	No. of aircraft missing.....	21
	" damaged (a) flak.....	29
	(b) fighter.....	3
	(c) not enemy action.....	7
		39

At least 4 of the missing aircraft were probably lost before reaching Berlin - 2 near Flensburg to flak and fighter respectively, one to fighter near Rostock and another through unknown causes near Lubeck. In the target area and to the west there were several observations of aircraft falling. It appears likely that 6 bombers were shot down here, one by fighter and 5 by flak. Each of these successes by flak defences followed searchlight co-operation in which the bomber was centred. One of these aircraft emitted red flames, and was probably the missing Lancaster of P.F.

During the return there are observations which account for 5 more aircraft: 3 to fighters at Hanover, S.W. of Leeuwarden and at Zwolle, one to flak over Amsterdam, and one S.W. of Leeuwarden to causes unknown.

There is no evidence to account for the loss of the other 6 missing bombers, but in cloudy conditions in which a large number of aircraft returned early and the main force became scattered, several aircraft may have crashed out of sight of any other bomber.

A Halifax (102 'G') crashed immediately after take-off. There were no survivors, but it is believed that the aircraft stalled while evading a Döner bomber. Another Halifax (78 'O') fell in flames half an hour after take-off owing to engine failure. At a height of 8,000 feet oil pressure dropped, and the port inner engine raced and caught fire. The aircraft then lost height, becoming uncontrollable, and the crew baled out.

A Lancaster (97 'U') crashed on return and all the crew were killed. There is no evidence as to the cause.

Two Stirlings of 214 Squadron ('T' and 'N' - the former a minelayer) collided while circuiting the aerodrome at 1,500 feet on their return. 214 'T' had its port tail broken off, but the captain was able to crash-land, while 214 'N' became a complete wreck, the pilot being killed and two members of the crew injured.

Very bad weather conditions, with severe icing, were experienced over the North Sea en route to the target. 64 aircraft returned early due to icing and a further 17 complaints were received from crews who bombed the target. It appears that conditions were more severe during the journey out, and it is possible that on the return the weather improved sufficiently to admit large scale fighter activity over Holland and N.W. Germany.

In order to combat icing, pilots usually use more power and hence fuel consumption is increased. In view of the exceptionally bad weather an investigation was made into the amount of petrol remaining in the tanks of aircraft on their return, and a comparison was made with the Berlin raid of 27/28 March 1943 (aid Report No. 298). The results are summarised in the following table:

No. of aircraft examined	27/28th March		29/30 March	
	226		151	
less than ½ hour endurance	Nil	Nil	5	3.3%
between ½ hour-1 hour endurance	10	4.4%	15	9.9%
between 1 hour-2 hour endurance	92	40.5%	77	51.0%
over 2 hours	124	55.1%	54	35.8%

...../It is

It is clearly seen that on the night 29/30 March, 5 aircraft managed to return by the slenderest of margins and that in general the amount of petrol left in the tanks was significantly less than on the night 27/28 March. The above evidence appears to indicate that one or two of the losses on the night of 29/30 March may have been due to petrol shortage brought about by the bad weather conditions.

BOCHUM

Plan of Attack

14. Zero hour 2145 hours.

The attack on this target was planned to use the Oboe skymarking technique with 8 Mosquitoes dropping release point flares throughout the attack.

Tracking flares (red steady) were to be released on track 5 minutes before the release point flares and preliminary warning flares (green steady) 2½ mins. later.

The release point was to be marked with flares (red with green stars + one white flare per bundle). All flares were to be fused to ignite at 15,000 ft: coloured flares would burn for 2½ mins. and the white for 4 mins. All main force crews were instructed to aim their bombs at the release point flares on an exact heading of 192°H with bombsight setting true height and air speed and zero wind: speed of attack 160 m.p.h.

The Mosquitoes were timed to attack at: 2145 and 2148; 2155 and 2158; 2205 and 2208; 2215 and 2218 hours.

The main force were to attack between 2147 and 2207 hours.

Bomb Loads

Mosquitoes - Flares	1 x 3 red
	1 x 3 green
	2 x 2 red/green stars
	1 white
Wellington 423	1 x 4000 H.C.
1/3 " of 4 Gp.	9 x 500 G.P. (1/3 long delay)
Rem " of 4 Gp.	I.P. (50; 30 lb. and 50; 4 lb.)
" of 4 Gp.	3 x 500 (1/3 long delay) + 6 S.B.C.
" of 6 Gp.	2 x 500 + 7 S.B.C.

Sorties

15.	(a)	No. of aircraft despatched.....	157
	(b)	" reporting attack on primary area.....	97
	(c)	" " alternative area.....	11
	(d)	" abortive sorties (icing.....18)	
		(technical & manipulative	
		defects.....16).....	36
		(sickness of crew..... 2)	
	(e)	" aircraft missing.....	13

Weather Experienced

16. Route:- As for Berlin to 06°E. Cloud broke near the Ruhr.
Target:- 2-3/10ths medium; 2-3/10ths strato-cumulus, tops 12,000 feet.
Hazy. No moon. Wind at 15-18,000 feet. 260°/45-50 m.p.h.

...../Night Photographic Statistics

Night Photographic Statistics

17.	No. of photographs showing ground detail	{plotted within 3 miles.....10 plotted between 3 & 5 miles..11 plotted outside 5 miles..... 8}	.43
		{unplotted.....14}	
	fire-tracks only (unplotted).....		26
	aircraft reporting attack.....		97
	estimated, from the evidence of photographs showing ground detail, to have bombed within 3 miles of the aiming-point		23

Narrative of Attack

17. The first 2 Mosquitoes attacked well on time, at 2145 and 2147, but the next markers were not dropped till 2159, 12 minutes later. The remaining 4 Mosquitoes followed at intervals of approximately 5 minutes. The marking was generally accurate but a number of main force aircraft bombed blindly in the period during which the target was not illuminated. The timing of the main force was excellent.

Alternative Targets

19. 11 aircraft attacked alternative targets, in the area of the Ruhr(3), Dorsten(2), Essen(2), Borken, Emmerich, de Kooy and Amsterdam.

Day Reconnaissance

20. A reconnaissance sortie flown on 5th April 1943 revealed only a few scattered incidents of residential damage in the suburbs of Bochum.

Navigational Aids (Geo)

21. The Eastern Chain was in operation on the Virginia frequency. 84 Geo aircraft were fitted with the Mk. I set. 8% of these had no set difficulties and obtained an average range of 235 miles. S of 426 Sqdn. obtained the maximum range of 273 miles. Interference was heavy and propagation bad. 6 aircraft, flying between 25,000 and 30,000 feet; averaged 260 miles with a maximum of 318 miles.

Enemy Defences22. (a) Flak and Searchlights

Cloud was well broken over the Ruhr and approximately 200 searchlights covered the area from Hiltorn to Bochum on the line of approach of the bombers. Numerous cones were formed of up to 50 beams, and the gun defences co-operated whenever there were visual targets. Heavy flak was also fired in barrage and was reported as moderate to intense as the raid developed. Ground defences were also active in the coastal regions of Holland, but the flak here was generally reported as only moderate and rather inaccurate. 17 bombers sustained damage by heavy flak, almost entirely caused by the Ruhr defences.

(b) Fighters

A fair amount of fighter activity was apparent. During one of the patrols near Arnheim the R/T control was on V.H.F. This was the first time this frequency band had been used by the enemy at night, and was probably introduced as a method of avoiding the jamming effect of Tinsel. One reference to a burning British aircraft was overheard, which may have been the result of a success by fighters in the Arnheim area.

Crews reported 3 attacks, 5 approaches and 2 followings. 2 of these attacks took place in the target area and, in one of them the crew of a Wellington

...../(431 'G')

(431 'G') claimed to have destroyed the attacking fighter. There are a few observations of aircraft falling in the target area, but it is not possible to confirm or refute this claim.

Casualties

23. No. of aircraft missing.....13
 " " damaged (a) by flak.....17)
 (b) by fighter.....Nil)
 (c) not enemy action.....: 1)

Two Wellingtons (428 'U' and 429 'C') came down in the North Sea during the return, one 65 miles E. of Spurn Head and the other 100 miles N.E. of Whitby. The A.S.R. organised searches but in neither case was there any trace, and there is no evidence to account for these losses.

There are a few observations of aircraft falling in the target area and it appears probable that at least two aircraft were seen and shot down by the flak defences. The overheard wireless reference to a British aircraft burning may represent a success for night fighters in the Arnheim area. A further unconfirmed report stated that on the return over the North Sea two aircraft were seen to enter cloud close together followed by a big explosion.

As on the raid to Berlin, the bombers encountered cloudy weather conditions, and heavy icing was frequent. Twenty-five crews reported icing and 18 sorties were abortive for this reason.

Owing to the cloudy weather and the comparatively small force despatched to Bochum, there are not sufficient observations to account for all the missing aircraft. The weather was very bad and it is possible that a proportion of the losses were due to non-enemy action.

MUR

24. One Mosquito carried out an Obse nuisance raid on Duisburg about an hour after the attack on Bochum. This aircraft bombed from 30,000 feet, and returned undamaged.

MINELAYING

25. 7 Stirlings of 3 Group were despatched on a mining operation off the Frisians. 5 reached their objective, laying a total of 30 mines. One aircraft returned early for technical reasons and one collided over its base with another aircraft returning from Berlin, as described above. A little flak was encountered but no fighters were seen and all our aircraft returned safely.

APPENDIX (BERLIN)

Timing of Attack

I. Pathfinder Force

10 Y-aircraft attacked at: 0046, 0048, 0049, 0050, 0051, 0053, 0054, 0056, 0109½ and 0112½.

24 back-up aircraft attacked, at: 0053(2), 0054, 0055, 0056(2), 0057, 0058½, 0059(3), 0100, 0102(2), 0103(4), 0104, 0108, 0110, 0111, 0113 and 0116.

≡ (128 u/s) = 34 aircraft

...../Main Force

Main Force

161 aircraft attacked within planned period (0045-0115)
 18 " " from 0115-0135
 179 aircraft

Bomb Loads (of aircraft reporting attack)II. Pathfinder Force

21 aircraft carried T.I. + flares + H.E.
 13 " " T.I. + flares
 34 aircraft

Main Force

70 aircraft carried H.E. + 4 lb. + 30 lb. incendiaries
 41 " " H.E. + 4 lb. incendiaries
 39 " " H.E. + 30 lb. incendiaries
 15 " " 4 lb. + 30 lb. incendiaries
 14 " " H.E. only
 179 aircraft

Timing of AttackIII. Pathfinder Force

7 Mosquitoes attacked at: 2145, 2147, 2159, 2206, 2212, 2216 and 2224.

Main Force

8 aircraft attacked from 2140-2147
 81 " " within planned period (2147-2207)
 1 " " at 2215
 90 aircraft

Bomb Loads

IV. (of aircraft reporting attack)

Pathfinder Force

7 aircraft carried T.I. + flares

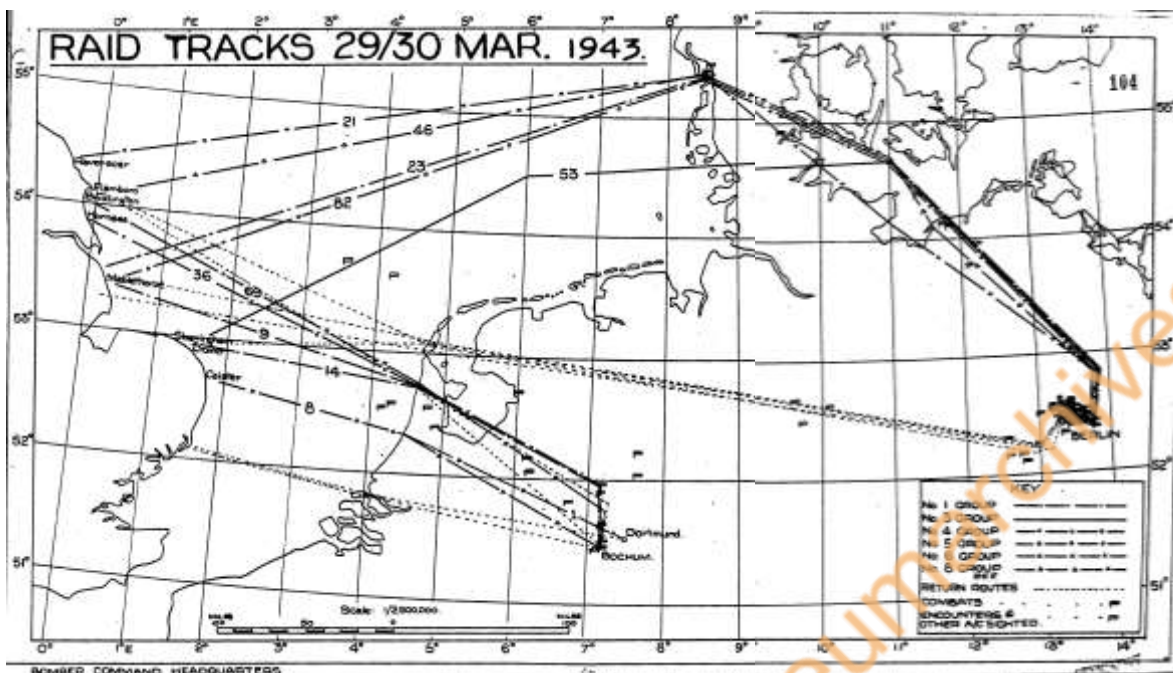
Main Force

54 aircraft carried H.E. + 4 lb. + 30 lb. incendiaries
 18 " " H.E. only
 18 " " 4 lb. + 30 lb. incendiaries
 90 aircraft

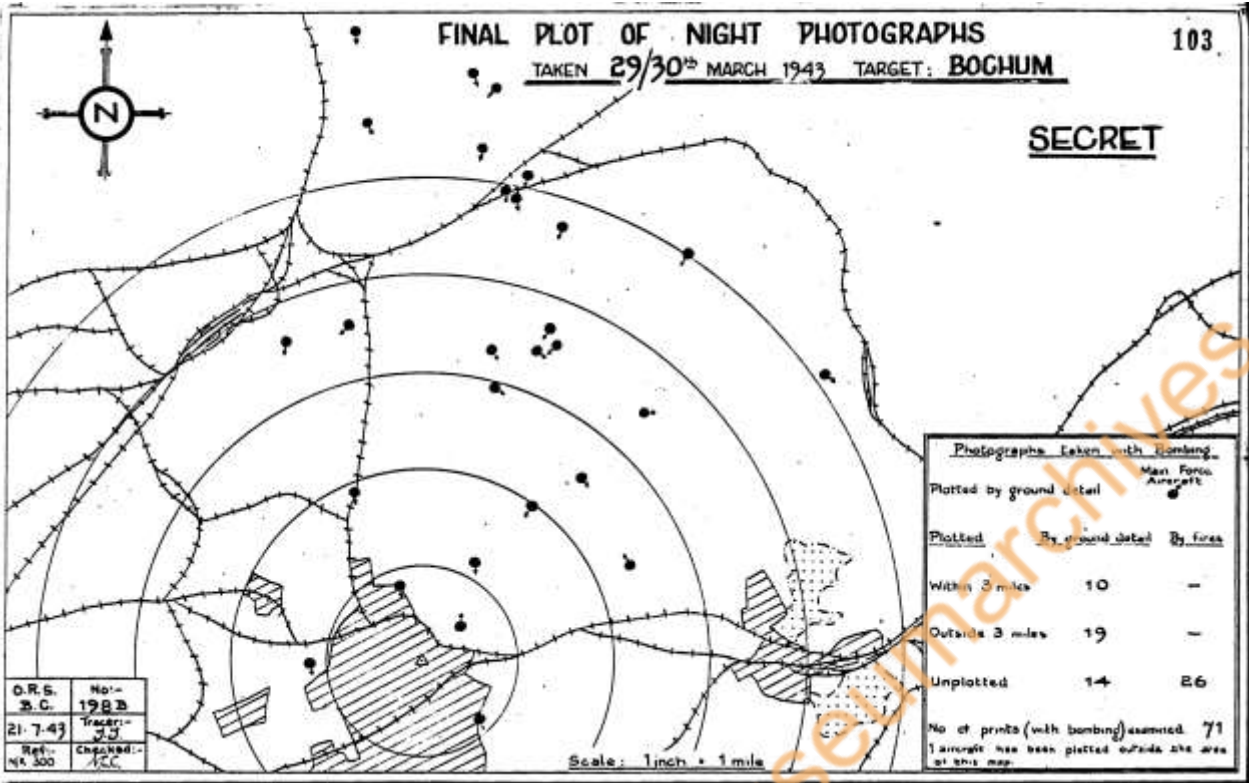
GM/VF.
 SC/S. 26342/4/ORS.
 15th July, 1943.

Target	Group	Type	Sorties	A/C reporting attack on		abortive sorties		Missing	Damage			Interceptions		Results	
				prim. area	alt. area	over on. territ.	not over on. territ.		flak	fighter	not F/A	attacked	not attacked	Tons of Bomb	R.Z.	Inc.
BERLIN	P.F.P.	Stirling I	10	7	-	-	3	-	3	-	-	-	1	(P) 278.3	262.6
		Halifax '2'	12	8	-	2	2	-	1,0+1	-	-	-	-	(A) 5.4	6.5
		LANCASTER I	19	19	-	-	-	-	-	-	-	-	1	(M) 26.8	28.4
	Main Force	Stirling I	1	-	-	1	-	-	-	-	-	-	-	-	-
		Halifax '2'	3	3	-	-	-	-	-	-	-	-	-	-	-
	1	LANCASTER I	20	12	-	-	5	3	1,0	-	-	-	-	-	-
		LANCASTER III	6	6	-	-	-	-	1	-	-	-	-	-	-
	3	LANCASTER III	8	5	-	-	2	1	1,0	-	-	-	-	-	-
		Stirling I	21	12	-	3	6	-	1	1,0	1E	1	-	-	-
	6	Stirling III	32	20	-	3	6	3	3	-	-	-	-	-	-
Halifax '2'		23	6	-	-	15	2	1	-	1E	1	-	-	-	
4	Halifax II	8	4	-	2	1	1	1,0	-	2E	1	-	-	-	
	Halifax '2'	57	27	2	1	23	4	6	2AC	-	2	4	-	-	
5	LANCASTER I	51	37	1	1	9	3	4	-	1E+1,0	-	4	-	-	
	LANCASTER III	55	45	1	-	6	3	3	-	1	1	3	-	-	
BERLIN TOTAL			329	213	4	13	78	21	4,0+25	3,0	5E+1,0+1	8	13		
BOGHIN	1	Hosquito	8	7	-	1	-	-	-	-	-	-	-	(P) 60.3	70.9
		Well. III	18	16	-	-	1	1	1,0	-	-	1	1	(A) 9.9	19.0
		Well. IV	11	3	2	-	6	-	-	-	-	-	-	(M) 8.9	9.4
	4	Well. X	9	6	-	-	2	1	1	-	-	-	-	-	-
		Well. III	5	1	-	-	2	2	-	-	-	-	1	1	-
	6	Well. X	31	21	2	1	4	3	3,0+6	-	1E	2	1	-	-
Well. III		26	16	1	-	6	3	2	-	-	-	2	-	-	
BOGHIN TOTAL			157	97	11	2	24	13	3,0+12	-	1E	3	7		
DORTMUND	8	Hosquito	1	1	-	-	-	-	-	-	-	-	-	(P) 0.7	-
ROBINSON TOTAL			157	97	15	15	112	24	3,0+37	3,0	6E+1,0+1	11	20		
MURK YARD	3	Stirling I	5	4	-	-	1	-	-	-	-	-	-	24 mines	-
PRASENS TOTAL			2	1	-	-	1	-	-	-	-	-	-	5 mines	-
MURK YARD TOTAL			7	5	-	-	2	-	-	-	-	-	-	30 mines	-
TOTAL			494	316	15	15	114	24	8,0+37	3,0	7E+1,0+1	11	20		

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