



140 SQUADRON  
ROYAL AIR FORCE

MAY 1941 – MAY 1945



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EDITED BY J SHAW

## **FOREWORD**

This account of 140 Squadron was compiled by F J ('Jack') Seward and is largely based on the official Operations Record Book, supplemented by personal memories of those who served in the squadron and background information from standard works.

Jack served as a Corporal FIIA, with 140 Squadron and wanted to create a record in memory of the squadron. Perhaps he felt that the work of the PRU squadrons was not widely recognised by the public at large, lacking the apparent glamour of the fighter and bomber squadrons, as portrayed in film. Indeed even those with an interest in the air war seem ignorant of the work of the tactical air forces except, perhaps, the actions of the 'train-busters'. PRU squadrons such as 140 prepared the way for the invasion of mainland Europe by photographing suitable landing beaches and locating enemy forces and fortifications. The squadron followed the invading armies that it supported onto the mainland, moving from France to Belgium and then The Netherlands.

In 1999 Jack asked my father, Jim Shaw, who had served with him as Corporal FIIE, to look over his manuscript. Sadly, a year later, Jack died and his research notes were passed over to my father. I became involved in helping my father make minor amendments to the text but this led to me checking other entries against Jack's and other sources. This easily became an open-ended task. However, following the death of my father in 2003 the task was more or less put on hold until recently.

Essentially this work is in the form that Jack created and the style is his. I have extended the Roll of Honour and the list of those that failed to return. I have also added numerical summaries relating to the Mosquito missions for pilots, navigators and aircraft which, I hope, is in the spirit of Jack's aims.

Jim Shaw  
February 2007

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## No 140 SQUADRON

### BADGE

An eyed hawk moth

### MOTTO

'Foresight'

No. 140 Squadron was formed on 1 May 1918 at Biggin Hill and equipped with Bristol Fighters for Home Defence duties over London. However, before becoming operational it was disbanded on 4 July 1918 to provide reinforcement for other units. It reformed on 17 September 1941 at Benson by re-numbering No 1416 Flight and now flew in the photo-reconnaissance role equipped with Spitfires and Blenheims. At first all the sorties were flown by the Spitfires, the target area being northern France. The Blenheims became operational in November, flying night sorties with flares. The Squadron built up its operations until in April 1942 it was flying over 100 sorties a month, of which only four were on Blenheims. Most of the targets were still in northern France but some included the Belgian and Dutch coast. Later that year a detachment from St. Eval flew sorties over the French Atlantic coast. In 1943 the Squadron became part of 34 Wing, 2nd TAF; its commitment was now PR for the forthcoming invasion. In June No. 140 flew a few night operations with Venturas in place of Blenheims and also tried Mitchells but still the bulk of the work was flown by Spitfires until this was shared with Mosquitoes at the end of the year. The Squadron was now busily involved in mapping the area for the forthcoming invasion and revising its coverage to note changes in enemy displacements. The Mosquitoes were using *Gee* and later *Rebecca H* for their blind night photography. The pace increased and Mosquitoes gradually replaced the Spitfires so that by D-Day they had all gone; 177 sorties were flown by the Mosquitoes that month. In August this increased to 231 of which 67 were by night. In September the Squadron moved to France to keep close to the action and continued providing photo coverage through that winter.

In March 1945 the Squadron experimented with night sorties guided by a mobile radar control post but the range was limited.

In April 1945, with the war nearly over, the Squadron changed to visual reconnaissance of shipping off the North German and Danish coasts, leading to successful Coastal Command strikes.

On 7 May the Squadron had the privilege of flying 2nd TAF's last operational sortie when F/Lt Woan, flew a Skagerak shipping reconnaissance in NS578.

No 140 returned to the UK in July and disbanded at Fersfield on 10 November 1945.

## SIGNIFICANT DATES

March 1941	1416 Flight formed at Hendon: to watch, on behalf of GOC Home Forces, for any signs of a German invasion of England.
1 May 1941	First flight from Hendon by 1416 Flight.
22 June 1941	German attack of Russia: duty change to reconnaissance at low level over French coast.
5 September 1941	Unit moved to Benson.
14 September 1941	First operational sortie by Spitfire, coast SE of Cherbourg, oblique camera, at 3,000ft.
17 September 1941	Unit changed name from 1416 Flight to 140 Squadron.
15 November 1941	First operational sortie by Blenheim - Cherbourg Peninsula. Aircraft damaged by flak.
1 May 1942	New establishment of 23 officers and 261 other ranks. Aircraft increased to six Spitfires type G, two type F, two type 1A, six Blenheim IV and one Tiger Moth.
May 1942	To Mount Farm.
July 1942	Squadron to remain in Army Cooperation Command. Task to photograph all coastal defences from Calais to Cherbourg, and beach gradients
March 1943	To Hartford Bridge.
June 1943	Number 16 Squadron arrived at Hartford Bridge. Number 34 Wing formed, as part of 2nd Tactical Air Force (2 TAF) from Army C Command, and to be controlled by SHAEF (Supreme HQ Allied Expeditionary Force).
20 June 1943	First operational sortie by Ventura
July 1943	Mosquito aircraft arrived - trials of night photography.
September 1943	Trials in Ventura with Rebecca H. Test flights in Mosquito aircraft.
11 November 1943	Mosquito IX used for first time.
December 943	Six Mosquito XVI received.
January 1944	Spitfire XI now operational.
January 1944	Mosquito aircraft now being fitted with GEE and GH.

Tasks 1943/1944	Main tasks of 140 Squadron:- <ol style="list-style-type: none"> <li>1. Daily survey of 2,000 miles of French railways.</li> <li>2. Assess bomb damage of railway yards in France</li> <li>3. Watch the Luftwaffe.</li> <li>4. Find 91 possible sites in Normandy for Allied airfields (completed by April 1944).</li> </ol>
March 1944	Training for Rebecca and GEE in hand.
7 April 1944	140 Squadron moved from Hartford Bridge to Northolt.
10 April 1944	First night operational sortie by Mosquito.
26 August 1944	Main party of 140 Squadron left Northolt, en route for France. Airfield A12, Balleroy.
5 September 1944	At Balleroy, to 9 September 1944.
9 September 1944	To Amiens Glisy B48.
26 September 1944	To Melsbroek B58.
15 April 1945	To Eindhoven B78.
7 May 1945	Last operational sorties by 140 Squadron. Two daylight shipping reconnaissance flights.
12 July 1945	Ground crew arrived Acklington, Northumberland.
10 November 1945	Squadron disbanded Fersfield, Suffolk..

## SQUADRON RECORDS

The photocopy of the records of 1416 Flight and 140 Squadron comprises 700 pages. They start at May 1941, and run to May 1945 on a daily basis. There are a few entries from 7 May 1945 to 10 November 1945, which give details of the disbandment of the Squadron.

For the first five months – May 1941 to September 1941 inclusive - the records are sketchy. Names are given of pilots on each sortie. There is nothing given of type or number of aircraft. The Operations Record Book, RAF Form 540, refers to the Unit 1416 Flight, RAF Hendon. Each sortie lists "Place", and refers to the destination. There is also listed the date; the time is given as AM or PM. The "Summary of Events" uses a few words to explain the purpose of the sortie, e.g., "Photos of coast in the area". The "Place" lists towns or physical features all over England, for example, Southampton, Salisbury Plain, Hove, Cardigan Bay. The summary sometimes refers to visual reconnaissance.

In August 1941 there is mention of a Blenheim aeroplane, but no serial number is given.

From 1 September 1941, the "Summary of Events" gives details of air crew postings, inward or away. There are five observers listed as joining the Unit on 1 September 1941. Form 541 started in October 1941.

The first reference to Spitfires is given on 9 September 1941, when there was practice in local flying by Spitfires.

The records for October 1941 are hand written - rather badly. The monthly records are, for the first time, in two parts this month and from now onwards. Form 540 gives postings inwards and away of aircrew, and details of all flights, either practice or operational. Form 541 lists the operational sorties only: by date, aircraft type and serial number, duty (where in Europe, usually France) time up, time down, and a brief line for a report on the sortie. This often referred to the weather, the height over target, the route from England (e.g., crossed out at Beachy Head) and the scale of the photos.

From November 1941 all records are type written – much better.

On 30 November 1941 the "Summary of Events" describes one sortie in the lordly way by writing "F/O Lucas visited the French coast..." Failure to obtain photographs is always given, as also is the comforting phrase "returned safely to base". Sometimes this is varied by the description "no opposition was encountered".

Quite often the details are given of the sortie. This may (or may not) refer to type of camera, e.g. 12" or 20" - which refers to the focal length of the lens, the number of exposures. Encounters with enemy aircraft are always listed, together with any untoward incidents.

By early in 1942, the records give ever more detail of each sortie. The exit from England is regularly described, weather over the target, height and results. Practice flying and camera tests are logged. A safe return is sometimes described as "... after an uneventful trip".

By August 1942, a typical monthly report would comprise nineteen pages of Form 540 and sixteen pages of Form 541.

On 1 June 1943 a new Form 540 - Operations Record Book started, according to the entry at that date. It is obvious how it differed from the earlier Report Form. There were daily weather reports from then onwards in Form 540.

On 15 July 1943 Mosquito aircraft were expected to arrive for "A" flight and "C" flight. The aircrews were divided equally 50:50 at the prospect. Mitchell aircraft were expected for "C" flight, and the pilots were 100% in favour, WOPs not so keen.

The style of the monthly reports varied in the following years. By September 1944 there was meteorological information each day in some detail in Part 1, together with postings or promotions of aircrew. The individual sorties were also referred to.

Congratulatory messages from senior authorities are also listed: e.g., February 1945, from Senior Air Staff Officer, of 2nd Tactical Air Force, and from 1st Canadian Army Group.

The last operational sorties from Eindhoven were flown on 7 May 1945. Two daylight sorties over the Skagerak to find and report on enemy shipping were made.

The report for May 1945 includes the words, "it is understood that 140 Squadron carried out the last operational sorties of 2nd TAF in Europe, and it is also interesting to note that on the sounding of the cease-fire, two of our aircraft were airborne on operational duties."

The May report refers to aircrew training and goes on, "In addition .. all ground personnel of 140 Squadron, if sufficiently interested, were flown to the more devastated parts of Germany in order to demonstrate closely the efficiency and weight of the Allied Air Forces".

The last few pages of the report give some detail of the final movements of the Squadron and its disbandment in November 1945.

## **PHOTOGRAPHY FROM THE AIR**

Photographic Reconnaissance was the term used by the Royal Air Force in referring to photographs taken from aircraft. For the whole duration of the conflict there was a huge demand for accurate and up to date information of the enemy and his activities.

The works done by 140 Squadron covered only a fraction of PR as a whole. Bomber Command had good reason to learn the effects of every bombing raid; the Ministry of Economic Warfare wanted to know about factories and railway sidings.

The major part of the duties carried out by 140 Squadron revolved around the invasion of the coast of northern France, which took place on 6 June 1944 - also called D-Day. To this end, sorties were flown and photographs taken of towns in northern France together with details of the beaches between Dunkirk and Cherbourg.

A lot of effort was made in taking photographs for map making; these were called mosaics, on account of the pattern and overlap.

Attached at the end of these notes is a map showing a number (not all) of towns and places, which were visited and photographed between October 1941 and May 1942. It was a deliberate policy of spreading the targets in order to deceive the enemy.

As well as the photographs for strategic value, a great number were taken for the use of the invading armies. These requirements are given in some detail in the despatch dated January 1947 by Air Chief Marshall Sir Trafford Leigh-Mallory, KCB, DSO, Air Commander-in-Chief Allied Expeditionary Air Force. Paragraph 140 refers to obliques taken at wave-top height, three or four miles out from the coast, in order to provide the assault coxswain with a landing craft view of the particular area to be assaulted. Further obliques were also taken, at 1,500 yards from the shore, but at 2,000 ft, to provide views of the immediate hinterland.

For map-making, a 5" camera with special film was flown at low level. The overlap required was 60% on forward and 25% on lateral overlap. The approximate cover with various cameras was as follows, all with 7"x 7" film:-

5" camera, at 20,000 ft, covers 5 miles x 5 miles  
14" camera, at 20,000 ft, covers 10,000 x 10,000 ft - say 2 x 2 miles  
20" camera, at 20,000 ft, covers 7,000 x 7,000 ft - say 1½ x 1½ miles

Occasionally, the 36" camera was used. The dimensions refer to the focal length of the lens.

## TYPES OF AIRCRAFT USED

### Mustang

Built to British specification and order by North American Airplane Co.

Single-seat low-wing monoplane fighter.

Packard-built Merlin engine 1,490 hp, loaded weight 11,100 lbs.

Maximum speed 437 mph at 24,000 ft.

Armament: Six 0.50 inch machine guns in main planes

Span: 37' 0¼"

Length: 32' 3"

Height: 13' 8"

Wing Area: 240 sq ft

One of the most successful fighter aircraft used by the Allies. Especially valuable as a long-range fighter escort for the US daylight bombing raids over enemy territory. A few in Fighter Command later in the war. Number 19 Squadron was equipped with Mustang aircraft January 1944 to April 1945.

Number 140 Squadron flew Mustangs on local sorties in February 1943, but are not listed on any operational sortie. The Record Book for 5 February 1943, shows "Mustangs made six local practice sorties". On 7 February, five local sorties were flown by Mustangs. Further local sorties were flown on 8 February (three sorties). On 9 February one Mustang flew to Andover, returned on 12 February. Four local sorties were flown on 15 February, three on 16 February, three on 18 February, two on 19 February, six on 21 February. On 24 February two Mustangs were flown to Andover. No mention found after 24 February 1943.

### Lysander

Built by Westland Aircraft Ltd, Yeovil.  
High-wing two-seat monoplane.  
Bristol nine-cylinder 840 hp "Perseus XII" radial engine.  
Span; 50'  
Length: 30'6"  
Wing Area: 260 sq ft  
First flew 1936 - 230 mph.

Designed as Army Co-operation aircraft; for reconnaissance, artillery spotting, message dropping and sundry other uses. Used in 140 Squadron for drogue towing, in air firing exercises. The first Lysander to arrive was E9105 to Hendon 28 June 1941. There was air firing at Martlesham on 7, 14 and 20 July 1941, on 4, 11 and 18 August 1941.

Two more Lysanders were collected on 26 October 1941 from Snailworth and Bottisham for use during practice camp week. There was air firing at Weston Zoyland on 30 and 31 October 1941 and on 1, 2 and 3 November 1941. On 5 November 1941, two Lysanders were returned. The last transfer was of one Lysander from Benson to Snailworth on 22 January 1942.

The Lysander aircraft was highly manoeuvrable; it could fly very slowly - about 50 mph - by using its landing flaps, and slots at the leading edge of each main plane. The Lysander was popular among aircrews for its performance of low speed aerobatics.

### Blenheim

Built by Bristol Aeroplane Company, Filton.  
Mid-wing three-seat monoplane.  
Two Bristol nine-cylinder 840 hp "Mercury" radial engines.  
Span: 56' 4"  
Length: 42' 9"  
Wing Area: 470 sq ft  
First Flew - about 1934 - 260 mph.

The first operational sorties carried out by Blenheim aircraft were on 15 November 1941, when two sorties were made. There was a continuous struggle to perfect the flash bombs, used for taking photographs at night. The Blenheim was too slow for daylight visits over enemy held territory, the only possible use had to be at night. This technique gave a restricted number of photographs which could be taken, usually only one per flash, The number of flash bombs carried was (usually) only eight, so accurate navigation to the target area became the great need. Strenuous efforts were made to accomplish this. The overall results were not encouraging.

Operational sorties were made by Blenheims from November 1941 until August 1942. A total of 23 such sorties were flown, and the Blenheims were quietly disposed of after August 1942.

Blenheim: L9244, R3824, V6033, Z5805, Z5985

### Ventura

Built by Lockheed Vega USA.

Two Pratt and Whitney "Double Wasp" 1,850 hp radial engines.

Mid-wing three-seat monoplane.

Span: 65' 6"

Length: 52' 10"

Speed - about 275 mph.

This two-engined gem replaced the Blenheim aircraft, and after a lengthy delay in arranging the installation and fitting of cameras and navigation gadgets, the first operational sorties were made in June 1943. A total of nine sorties were flown in June, July and August of 1943. The Venturas were disposed of, and replaced (thank Heaven!) by Mosquito aeroplanes.

Ventura: AE682, AE714, AE750, AE779, AE806

### Spitfire

The finest aircraft ever built.

Built by Vickers Supermarine Ltd.

Designed by R J Mitchell.

Over 18,000 built plus 1,500 Seafires.

Low-wing single-seat monoplane.

Engine - Merlin XLV for Mark V airframe - various improvements.

Span: 36' 10"

Length: 29' 11"

Wing Area: 242 sq ft

First flew in 1936. K5054.- 84 gallon fuel capacity.

Mark IV - fuel tanks in wings - total fuel 133 gallons.

Mark XI - more powerful Merlin engine, 1,600 hp.

The Spitfire aeroplane was known in about 22 Marks, each one a little different and a little better than its predecessor.

The first aircraft to Number 1416 Flight were Mark Is, probably from Fighter Command, and had the undercarriage retracting gear operated by hand pump. The Mark V had engine driven hydraulic pump - a great improvement. The Spitfire was (and still is) widely known by its differing marks; the Operational Records give other descriptions.

On 29 July 1942, Air Marshall Barratt inspected Type G and Type Y aircraft at Mount Farm. A Type G Spitfire is reported as being collected on 15 July 1941. It was X4907.

Trials were made on 2 June 1943 with Spitfire XIIs, and these were declared to be much faster than Spitfire Vs, but not impressed!

On 4 September 1943, two Spitfire XIs arrived; replacements for two lost Mark IVs.

Operational sorties were carried out by Spitfire aircraft from September 1941 until April 1943. A total of 1927 sorties are recorded. The aircraft were then allocated to number 16 Squadron.

The first operational sortie was flown by F/Lt Webb on 14 September 1941, when photos of the coast SE of Cherbourg were taken with an oblique camera from 3,000 ft.

On 22 January 1944, Spitfire number EN387 (Mark V) was taken to Heston.

Spitfire R7116 flew 75 operational sorties, and the log of the sorties is appended herewith. The aircraft failed to return on its 76th sortie, to the Channel Islands.

Spitfire IA: L1000, K9969, R6910, R7028, R7139, P9328, X4492, X4784, X4907

Spitfire IV: P9505, X4499, X4502, AB130, AB426, AR258, BP919, BR648

Spitfire XI: EN681, MB941, MB942, MB944, MB947

### Mosquito

Built by de Havilland Aircraft Company Ltd, Hatfield.  
7,700 built.

Mid-wing two-seat monoplane. All wood fuselage and main planes.

Two Merlin XXI Rolls Royce engines, and variants; 1,400 hp.

Span: 54' 2"

Length: 40' 9"

Wing Area: 450 sq ft

Fuel, maximum 690 gallons. Speed - about 400 mph.

Mark IV - PR versions, with drop tanks.

Mark IX - PR version, with extra fuel tanks.

Mark XVI - PR version, over 400 mph at operational height.

This splendid aeroplane was designed and built in a very short time by de Havilland's, with no help or encouragement from the Air Ministry. That is - until it flew. After that time, production was never sufficient; and everyone wanted the latest model.

The prototype Mosquito, number W4050, first flew on 25 November 1940. The original design was that for an unarmed bomber: de Havilland asserting that defensive armament would be unnecessary in a bomber whose speed would ensure its safety from enemy fighter aircraft.

The wooden construction comprised a sandwich of two thin skins of birch plywood separated by balsa wood. The whole sandwich was stuck together with glue, highly unorthodox, but highly successful.

Over 30 different marks were built, and covered almost every known use for aircraft. The first aircraft used by 140 Squadron were the early bomber type. Later, the Squadron received Mark IX PR and Mark XVI PR aircraft.

The bomb bay was used for holding the cameras. On 31 July 1943, the Squadron was allotted a Mosquito for trials of night photographs. On the following day, 1 August, two more Mosquitoes were collected from Middle Wallop. On 12 August the aircraft were returned (from 140 Squadron) as being unsuitable.

The first Mark IXs were collected on 5 November 1943, three in all. A further two Mark IXs were collected on 11 November 1943, and on this date the first operational sortie in daylight was flown by a Mark IX Mosquito.

Further deliveries of Mark XVI were made in December 1943 and January 1944.

1943	18 December	First Mark XVI received.
	23 December	Two more Mark XVI. Number MM279 and MM280.
	31 December	Two more received.
1944	6 January	Two more. Number MM278 and MM281.
	15 January	Mark III. Number HJ877
	28 January	Two more. Number MM298 and MM302.

Operational sorties were flown from November 1943 to May 1945. Of these, 1,148 were in daylight, and 640 at night. The total number being 1,788 sorties. The last sorties were flown on 7 May 1945; being two daylight medium level shipping reconnaissance over the Skagerak. The following day, 8 May, was declared VE Day.

Nearly all the later marks of Mosquito carried additional fuel tanks for extra range: these were fitted one under each main plane.

Mark III	HJ877
Mark IX:	LR479, MM243, MM248, MM249, MM250, MM251
Mark XVI:	MM258, MM271, MM273, MM274, MM275, MM277, MM278, MM279, MM280, MM281, MM282, MM284, MM298, MM301, MM302, MM303, MM304, MM305, MM306, MM307, MM312, MM349, MM356, MM359, MM394, MM395, MM396, NS506, NS507, NS517, NS522, NS523, NS562, NS563, NS564, NS566, NS567, NS572, NS573, NS574, NS575, NS576, NS577, NS578, NS579, NS580, NS746, NS777, NS790, NS798, NS801, RF984, RF993, RF998

### **THE MERLIN ENGINE**

The Merlin aero engine was manufactured by Rolls-Royce Ltd at various places. The designer was E Hives, the driving force at Rolls-Royce. This wonderful engine was fitted to all Spitfire and Mosquito aircraft. It was reliable and tough.

Over 100,000 engines were built by Rolls-Royce at Derby, Crewe, Glasgow and Manchester and later at many dispersed factories. Also, about 60,000 were built by the Packard Motor Company in the USA, as a means of obtaining ever greater production.

The engine first appeared before 1939, and was particularly designed for the single-seat fighter aircraft of the day - Hurricane and Spitfire.

During the air battles of 1940, there were difficulties when negative G forces were applied. This resulted in fuel starvation and the engine cut out. At RAE Farnborough a remedy was perfected by one of the scientists there, a Miss Schilling. She devised a washer with restrictive orifice, which was placed in the fuel line. The problem was finally overcome with the Stromberg carburettor, which replaced the SU carburettor in the Merlin 60 series.

There was continuous development of the Merlin engine from early days.

The engine embodied a two-speed supercharger, which operated at low speed for altitudes up to 6,000 ft; above which the high speed automatically came into operation. By this means, power was maintained up to (about) 14,000 ft.

Later Marks of the engine had a two-stage supercharger.

Fighter Command aircraft in 1940 were fitted with Merlin XII of 1,050 hp. By 1941 and 1942, the Mark V Spitfire had Merlin 45 series of 1,300 hp.

The Spitfire IV of 140 Squadron had Merlin 45 or 46, of 1,210 hp. The later Spitfire XI had Merlin 61, 63 or 70 of 1,600 hp.

Mosquito IX used Merlin 72, rated at 12lbs boost for take off or 18lbs boost for emergency.

Mosquito XVI, which had pressure cabin, used Merlin 72, 73, 76 or 77.

### Leading Particulars

12 cylinders, vee-formation, two banks of 6 cylinders at 60° to each other.

Bore 5.4 inches.

Stroke 6 inches.

Capacity (swept volume) 1,649 cubic inches (about 27 litres).

Compression ratio 6 to 1.

Fuel 100 octane petrol.

Dry weight 1,355 pounds, includes accessories.

Crankshaft - 6 throw, in 7 main bearings.

Reduction gear for propeller - 0.477 times engine speed.

Each cylinder has 2 plugs, 2 inlet and 2 exhaust valves.

Ignition by two magnetos; each firing one of the two plugs in all 12 cylinders. Plugs either Lodge, or KLG.

Closed system engine cooling, using ethylene glycol, effective to 120°C.

Cruising speed 2,600 rpm. Maximum power at 3,000 rpm.

## ARMAMENT

The Spitfire aircraft as used in 1941 and 1942 were armed similarly to those of Fighter Command. Each aircraft carried eight machine guns, of 0.303 calibre, in the main planes. The guns were operated by pneumatic power, and fired from a press-button on the control column.

Air firing from Warmwell in May 1941 - four sorties.

Air firing practice was carried out from Martlesham in July and August 1941, from Weston Zoyland in October and November 1941. Practice with cine and gun was done on 11 February 1942, and air firing in August 1942.

On 5 January 1942, F/O Knowles was on his way to take photos of the Dutch coast when he intercepted and chased a Dornier 217, which jettisoned its bombs (or mines) during the pursuit. The enemy was lost in a hail storm.

On 14 February 1942, S/Ldr Le Mesurier was searching for an enemy W/T station on the Cherbourg Peninsula. At 200 ft he saw two railway locomotives coupled together and gave long bursts with his guns.

On 16 August 1942, F/O Harris St-John took photographs in daylight of the docks area of Dieppe, in preparation of the Combined Operations raid on that port which was mounted on 19 August. Having received a hostile reception from the local gunners, he turned inland and returned the fire on his way home.

The Blenheim aircraft were fitted with defensive armament by a power-operated upper turret amidships, fitted with twin Browning 0.303 machine guns. Some Blenheims also had one fixed Browning 0.303 machine gun in the port wing.

The Ventura aircraft were fitted with defensive armament by an electrically operated power turret mounted amidships, with twin Browning 0.303 machine guns. There was also a manually operated gun positioned beneath the lower rear fuselage, firing rearwards.

Mosquito aircraft of 140 squadron were unarmed.

Air firing of camera gun attack practices were continued up to and including December 1942.

Air firing	18/06/1941	The Wash
Air firing	07/07/1941	Martlesham
Air firing	14/07/1941	Martlesham
Air firing	04/08/1941	Martlesham
Air firing	11/08/1941	Martlesham
Air firing	18 and 19/08/1941	Martlesham
Air firing	30 and 31/10/1941	Weston Zoyland
Air firing	1, 2, 3, and 4/11/1941	Weston Zoyland
Camera gun attack	07/12/1941	Benson
Camera gun attack	14/12/1941	Benson
Camera gun practice	13/02/1942	Benson, on Lysander
Camera gun practice	10/11/1942	by four Spitfires
Air firing practice	31/12/1942	by Spitfires

## ORGANISATION

- 01/05/1942 The Unit received a new establishment: increased to include 23 officers and 261 other ranks. The aircraft were increased to include the two Spitfire IA training and the Tiger Moth making a total of six Spitfire type G, two Spitfire type F, two Spitfire IA, six Blenheim type IV and one Tiger Moth.
- 28/05/1942 F/Lt Mottram posted from 140 Squadron to HQ Army Cooperation Command for duty on Air Staff.
- 01/06/1943 The "Operations Record Book", RAF Form 540 writes as follows:-  
"In accordance with Army Cooperation Command Instructions, a new Form 540 is started today.... It is believed that the Squadron comes under Fighter Command today on the break up of Army Cooperation Command. No notification whatsoever has been received concerning this possible move".
- June 1943 Number 34 Wing formed, of 140 Squadron and two other squadrons, as part of 2nd Tactical Air Force (2TAF), from Army Cooperation Command, and to be controlled by SHAEF (Supreme HQ Allied Expeditionary Force).
- 29/06/1943 16 Squadron arrived at Hartford Bridge. Wg Com R Bowen is CO of 140 Squadron. The three squadrons; 16, 69 and 140 formed Number 34 Wing.

## TYPICAL REPORTS

These are copied from the "Operations Record Book"

- 10/04/1942 Spitfire X4492. High level photos, Channel Islands. Excellent large-scale photographs were obtained of Jersey and Guernsey in two runs.
- 22/04/1942 Spitfire X4492. High level photos, Cherbourg Peninsula. On the way home, the engine seized up. He glided towards the Isle of Wight, and crash-landed in a field. Aircraft damaged: pilot unhurt.
- 09/01/1943 Spitfire BR657. Photos Ostend-Ghent. All runs successfully completed from 25,000 ft. No opposition.
- 06/04/1943 Spitfire AB305. Photos Le Havre-Dieppe. Task completed from 25,000 ft. No opposition.
- 05/05/1943 Spitfire X4645. Photos Calais area. No photos due to 10/10 cloud. No opposition.
- 23/09/1943 Spitfire EN680. Photos Bayeux. Photos from 37,500 ft. No opposition.
- 30/11/1943 Spitfire over Belgium: on his return was a large number of unidentified aircraft at about 30,000 ft. He avoided them by climbing to 38,000 ft.
- 08/01/1944 Spitfire MB944. Duty Carentan. Pilot recalled due to bad weather (he was airborne for about 30 minutes).
- 29/01/1944 Mosquito IX MM250. Duty Caen area. Photos taken with 6" camera between 14,000 and 12,000 ft in conditions of good visibility. Returned to base at sea level.
- 20/03/1944 Mosquito XVI MM275. Duty Trouville-St Vaast. Photos from 27,000 ft as required. No incidents.
- 05/06/1944 Mosquito XVI MM281. Duty Chartres. Twelve flashes dropped, with only one failure. Successful photos over targets. Aircraft coned by searchlight and fired on - without being damaged.
- 30/07/1944 Mosquito XVI MM302. Duty St Quentin, Leon, Courtrai. All targets covered by cloud, except Leon, which was photographed. Port u/c leg collapsed on landing.
- 09/08/1944 Mosquito XVI MM349. Duty Bayeux-Caen. Land strips photographed as demanded. No incidents.
- 14/08/1944 Mosquito XVI MM306. Duty River Somme. Task completed without incident.
- 22/09/1944 Mosquito XVI MM312. Duty Flushing-Arhemmidjer. First target covered - explosion of premature flash on second target badly damaged plane. Flaps blew off, fuselage, bulkhead and engine nacelle damaged. R/T and bomb selectors gone. Landed safely at base with no casualties, but plane a write-off.

- 29/10/1944 Mosquito XVI NS517. (Over Holland) intercepted and chased out to sea
- 14/01/1945 Mosquito XVI NS777. Duty Frisian Isles. Task mainly completed, heavy flak from Borkum. Two ME109s sighted at Wasgenooge - scared off by Mustangs.
- 09/02/1945 Mosquito XVI NS798. Duty Frisian Islands. Task abandoned owing to 10/10 cloud over targets. ME109 gave chase, but was out-run.
- 25/04/1945 Mosquito XVI NS984. Duty Mouth of Elbe. Task completed, visual shipping recce
- 07/05/1945 Mosquito XVI NS578. Duty Skagerak. Task completed.

This was the last operational sortie flown by 140 Squadron in the European Theatre: the Mosquito was airborne at the sounding of the cease fire.

### UNUSUAL EVENTS

Aircrew were expected to be competent beyond their ability to fly aircraft. Army requirements are shown on occasion.

- 19/06/1941 Lecture on tank recognition at Dorking, attended by three aircrew.
- 26/06/1941 Lecture on tank recognition at Dorking, attended by three aircrew.
- 30/06/1941 Two officers attended a conference on tanks at Hullavington.
- 05/07/1942 S/Ldr Webb led a formation of four Spitfires and two Blenheims to Windsor Castle on the occasion of a march past by the ATC. The salute was taken by Air Marshal Sir S Barrett, KCB, CMG, MC.
- 13/07/1943 Junkers JU88 carried out night flying from this station together with a Halifax and a Mosquito (all from Farnborough) trials of some kind, very secret, think it was something to do with interception. (NB - The station was Hartford Bridge.)
- 20/07/1943 "A" Flight moved under canvas today.
- 21/07/1943 "A" Flight still under canvas. Feeding arrangements very good. Food is plain and wholesome, and very well cooked.
- 22/07/1943 "A" Flight have settled down in their tented area,
- 30/08/1943 "B" Flight aircrew employed digging ditches (why?).

- 15/09/1943 P/O Brearley flew the Proctor to Harrowbeer to pick up supplies for the mess  
-12 gin and 12 whisky.
- 15/02/1944 In order to carry out a medium level (14,000 ft) sortie, it was necessary to borrow a 16 Squadron Spitfire (neither a borrower nor a lender be).
- 24/03/1944 While on a sortie over the Channel Islands, Mosquito XVI MM274 suffered an explosion of starboard clear vision panel.
- 10/04/1944 Mosquito XVI on its way to take photos of rivers south of Paris watched Marauders bombing Octeville.
- 23/05/1944 Three day course on Moral Leadership at YMCA, London attended by two aircrew and two or three other ranks. (On a later course in June, a number of flying bombs - the V1 - were heard overhead. Fortunately there were no casualties.)
- 29/11/1944 Mosquito XVI over Holland was intercepted by enemy fighter; escaped by speed - plus 18 for seven minutes (this was maximum boost power from Merlin engines).
- 01/01/1945 Raid on airfield at Melsbroek by German Air Force. Many Mosquito and Spitfire aircraft damaged and burnt out. Losses of 140 Squadron not listed in "Operations Record Book". It has been written (by Asher Lee) that the Luftwaffe employed about 700 aircraft - fighters and fighter bombers - and destroyed over 150 Allied aircraft on the ground and about 40 in the air. The losses of 140 Squadron were made good by replacements the same day.

Losses: believed to be the following four Mosquito aircraft:-

MM284, MM349, NS567, NS746

Replacements, on duty in January 1945, but not before:-

NS579, NS580, NS790, NS798

## UNUSUAL SORTIES

The purpose in life for 140 Squadron (and its predecessor 1416 Flight) was to take aerial photographs as required of such parts of France or elsewhere without let or hindrance. In general, this usually happened. The Operations Record Book lists a great number of sorties which resulted in photographs being obtained as required, together with those sorties where cloud or other hazards intervened and when no photographs resulted. Sometimes the sortie was marred by interference by the enemy. A few samples are listed below.

- 09/05/1941      Formation flying was practiced from Hendon (Why?).
- 17/05/1941      Spitfire X4704 over Ramsgate at 20,000 ft. Attacked by three ME109s; port main plane damaged.
- 11/04/1942      P/O Blackwood, Spitfire X4492, was taking photos at 28,000 ft of Dutch Islands, was chased to England by E/A.
- 17/05/1942      Six sorties made today by Spitfires to Dieppe. All were of large scale, from high levels 22,000-27,000 ft. All aircraft returned safely. Further sorties to Dieppe were made on 16/08/1942 (unusual - all sorties to the same target).
- 31/05/1942      F/O Muspratt, Spitfire X4502, taking large-scale photos at 29,000 ft over Cherbourg. He was intercepted by FW190, and went into a steep turn which prevented the E/A getting on his tail at short range. FW pursued for 30 miles, 600 yards astern and fired two bursts. The Spitfire was not damaged.
- 16/06/1942      Sorties over Fecamp and Ouistraham. At 27,000 - 32,000 ft the temperature was recorded at 42°.
- 16/09/1942      P/O Harris St-John, Spitfire AB305, took photos of St Vaast at 31,000 ft. He was then chased by two FW190s, was hit by cannon shell and machine gun fire, he spun from 30,000 ft to 15,000 ft. He out-turned them four times: the FWs gave up the chase about 30 miles from Beachy Head.
- 14/01/1944      Mosquito LR479 lost escape hatch during a dive.
- 29/01/1944      Mosquito LR479 repeated the practice.
- 14/02/1944      Mosquito IX took photos at Abbeville, X Bow code
- 15/02/1944      Spitfire MB944, took photos for X Bow on two sorties (CROSS BOW was code for attacks on V1 launching sites).
- 08/05/1944      Day sortie by Mosquito IX MM251. Intercepted over Cap Gris Nez by two E/A, possibly ME109. These were left behind when throttles were opened

- 19/03/1945 Day sortie by Mosquito XVI NS507, photos of Autobahn Wildenbuich - Bechum, east from Ruhr. Fighter escort of Spitfires from 127 wing. Heavy flak at Coesfeld. Escort frightened off attack by three FW190s task completed.
- 25/04/1945 Dusk sortie to Berlin with Mr T Downs, War Correspondent on staff of "Evening News".
- April-May 1945 Visual reconnaissance of shipping off coast of Germany and Denmark: many sorties led to actions against shipping by Coastal Command.

## LANGUAGE

The "Operations Record Book", which catalogues the events day by day, is couched mainly in exact terms: these are usually quite formal. The text is such as be suitable for passing on to higher authority, who would be unable to fault the information.

There were occasional lapses from the straight and narrow path when additional information was included, with phrases which would not usually be used.

26/10/1941 F/O Peel. Spitfire X4734. Duty Basflem. "Coast diced at 1,000 ft (any hazardous situation was often called as "Dicing with death").

30/11/1941 F/O Lucas visited the French coast.

13/06/1942 "25,000 ft crossed out at Selsey Bill, whence the Cherbourg Peninsula was visible". (Interesting, but not much help to the war effort.)

19/07/1942 P/O L G Smith. Spitfire AB122, took photos at 29,000 ft Cartaret-Granville. "...pranged on landing".

27/11/1942 "Locally - circuits and bumps were done in seven Spitfires".

04/10/1943 "Weather was completely duff at base".

17/07/1943 F/Sgt Moffatt. Spitfire X4645 taking photos of Gravelines was intercepted by E/A, shook him off by turning and climbing into sun having lost the hostile, he again sighted two hostiles approaching from south to intercept, both making contrails. Pilot without further ado headed the aircraft for home, having had about enough, and landed without further incident. (Disapproval of the enemy to interfere with the work in hand is recorded quite mildly.) - e.g.;

18/10/1943 F/Sgt Smith. Spitfire MB943 - photos of Cherbourg at 27,500 ft. "... was greeted with appreciable quantities of flak."

20/01/1944 F/Lt Mason, DFC. Spitfire XI MB942, 26" camera, visited Cherbourg at 24,500 ft, obtained 200 exposures. (The verb "visited" implies a short call - which it was.)

The state of the weather is sometimes described in lyrical terms:-

16/02/1944 "Weather considered duff".

23/10/1944 "Weather conditions completely clamped and likely to remain; not even the mail plane arrived".

24/10/1944 "Weather the same as yesterday - even the birds are walking". (Safety is recognised.)

15/02/1944 F/O Anderson. Spitfire XI MB947. Near French coast oil pressure 35 lbs. Temperature 90°. Returned at once safely to base.

21/02/1944 F/O Gillette. Mosquito XVI MM302. Target Rennes. Returned at sea level over Guernsey. About 150 flak bursts seen here. Returned to base quickly.

March 1945 The final words were, sometimes, "Task completed, targets covered".

## **MILITARY EXERCISES**

The Unit was formed in March 1941 to act as the eyes of GOC Home Forces.

It is unremarkable that during the summer and autumn of 1941, there were many sorties flown when Army Exercises were taking place. Many of the Exercises were given code names, which are in keeping with the best military tradition.

The following are copied from "Operations Record Book"

03/05/1941 Forfar-Montrose. Photos of Division Exercise.

06/05/1941 Exercise "Repulse", Salisbury area. Photo and visual.

Also 07/05/1941 and 08/05/1941.

22/05/1941 Photos of troop movements Marros Sand (Carmarthen Bay).

24/05/1941 Army exercises, Mildenhall and Exmouth. Photos and visual. 8 Corps exercise Exeter.

28/05/1941 Photos of Canadian Corps exercise. Also 29/05/1941.

08/06/1941 Divisional exercise, York.

14/06/1941 Waterloo Division Exercise Sussex. 15 sorties. Also 15/06/1941.

22/06/1941 Exercise "Bulldog" Suffolk and Norfolk. Also 23/06/1941.

25/06/1941 Binge exercise - Kent.

02/07/1941 Moor divisional exercises, Yorkshire.

05/07/1941 Tank photography completed, Westbury and Hungerford.

12/07/1941 Photo of No 1 Armoured Division, Larkhill.

17/07/1941 Bandon Divisional Exercise - photo Norfolk.

20/07/1941 Ajax Divisional Exercise - photo Yorkshire. Also 22/07/1941.

24/07/1941 6th Armoured Divisions Exercise. Bury St Edmonds.

05/08/1941 "Morebinge" Division Exercise. Kent - seven sorties.

29/08/1941 Bumper exercise - 11 sorties on 29th.

30/08/1941 Bumper exercise - ten sorties on 30th.

13/10/1941 Photo of "Percy" exercise.

17/10/1941 Exercise "Pirate" - sortie made.

## VISITORS

Occasional visits were made to the Squadron by distinguished and senior officers. Some were Air Force Officers, some were from the Army.

- 08/05/1941 AOC visited and inspected 1416 Flight at Hendon. "Evidently was satisfied with work and conditions of organisation".
- 09/05/1941 AOC-in-C conducted an inspection of the flight at Hendon.
- 12/05/1941 Brigadier arrived from GHQ and conducted an inspection at Hendon. "Impression he received was satisfactory".
- 15/08/1941 Flight inspected by General Sir Alan Brook , C-in-C Home Forces, at Hendon
- 29/07/1942 Squadron visited at Mount Farm by General Sir B C T Paget KCB, DSO, C-in-C Home Forces, accompanied by Air Marshall Sir Arthur Barrett KCB, CMG, MC. They inspected representative types of aircraft, i.e. Blenheim IV, night flying, and G and Y type Spitfires. They witnessed the briefing and interrogating of pilots.
- 03/10/1942 Rt Hon Sir Archibald Sinclair Bt, KT, GMG, MP, Secretary of State for Air, accompanied by Sir Louis L Greig, KBE, CVO, Personal Air Secretary, and Lord Sherwood, visited the Squadron at Mount Farm and inspected representative types of aircraft, and the Photographic Section.
- 04/10/1942 A visit to Mount Farm was made by Lt Col E Roosevelt and other officers of the USAAF.
- 17/06/1943 Visit to Hartford Bridge by Brig Benfield, GHQ Home Forces.
- 07/09/1943 An inspection of the Squadron was made by Air Marshal Leigh-Mallory.

## **WARNINGS**

- 26/03/1944 (Over France) Warning received from "Elflike" to keep away to the west. Returned to base without incident.
- 27/05/1944 Warning "Elflike".
- 04/1943 Spits received many warning of hostile aircraft - usually not seen.

## **ENEMY REACTION AND CASUALTIES**

- 17/05/1941 F/O Webb attacked by three ME 109s over Ramsgate. A/C damaged: pilot unharmed.
- 15/11/1941 Blenheim over Cherbourg Peninsula attacked by three ME 109s. A/C damaged. First Blenheim operational sortie.
- 22/04/1944 P/O Blackford - engine trouble at 37,000 over Cherbourg Peninsula. Glided across the Channel. Crash landed in a field near Sandown on the Isle of Wight. Aircraft much damaged, pilot unhurt
- 17/03/1942 F/O Nicholson. Spitfire X4907 flew into a hill at Tangmere on returning and was killed.
- 06/07/1944 Mosquito LR479, on return from France, attacked by 12 FW 190s. After evasive action, E/A were lost in cloud. Mosquito damaged; made safe landing, crew unhurt.
- 07/08/1943 Death of F/O D M Croy in formation flying.
- 09/08/1943 P/O L J Gilbert crashed in a Mosquito - he survived.
- 14/02/1944 Monthly Summary states "Today it was apparent that the German Air Force were more nearly successful in trying to intercept (three sorties today reported hostile action by enemy aircraft)"
- August 1944 Monthly Summary states "German reaction to photographic reconnaissance aircraft: it appears that no attempt has been made to interfere with high level sorties over enemy territory during the month, but flak defences are brought into action whenever low level aircraft attempt to cover strategically and tactically important centres".
- December 1944 Monthly Summary "Flak was reported on one day sortie and one night sortie only". (During December, there were 51 day sorties and 47 night sorties).

March 1945	Monthly Summary "Two crews have reported interception by enemy fighters, but no shots were fired in these encounters". (For March, day sorties 17, night sorties 163).
04/07/1944	Aircraft was attacked by twelve FW 190s. Violent evasive action was taken, and eventually E/A were lost in cloud after 15 minutes. Aircraft sustained damage, safe landing, crew unhurt.
August 1944	Summary. "231 sorties flown, four aircraft damaged by flak. No serious casualties".
September 1944	Summary. "here were two daylight encounters with E/A in both cases our aircraft attacked by two of theirs. An excellent show of airmanship enabled the first aircraft to crash land safely, without casualties, after being badly damaged and collecting one Hun in the process. In the other case, cloud allowed our aircraft to escape after evading two attacks, without damage or casualties. One other plane was damaged by flak over the target".
November 1944	Summary. "Opposition has been a little more marked this month for the day flight, especially in aircraft. In eleven cases, enemy and "friendlies" were sighted".
April 1945	Monthly Summary includes: "On almost every sortie light flak was encountered, the most intense coming mainly from the Elbe and Cuxhaven area". (The sorties were at dusk and dawn, low level, visual and photographic shipping reconnaissance off the north coast of Germany and the west coast of Denmark).

### **CAMERAS. OPERATIONAL HEIGHTS**

Operational sorties were made with Spitfires from September 1941 to March 1944. Mosquito aircraft were delivered to the Squadron in July 1943, and the first operational sortie by Mosquito was in November 1943 in daylight hours. Night sorties began in July 1944. Day and night sorties were carried out until May 1945, and ceased on VE day.

The early records are not very detailed. For example:-

27/09/1941	Photographs from 30,000 ft.
10/10/1941	Photographs of 20 miles of Dutch coast, from 500 to 600 ft.
18/10/1941	Line overlap from Sangatte at 100 ft.
December 1941	Photographs from 27,000 ft.
02/01/1942	Photographs at 3,000 ft and 50 ft.

In April 1942, the records indicate whether photos were at low or high level, sometimes if large scale or sometimes small scale, operational height, and focal length of camera.

During 1942 a great number of operational sorties were carried out by Spitfire aircraft. High level photographs were taken at 26,000 ft and up to 37,000 ft. A variety of sizes of cameras are recorded. Low level was at 600 ft or less.

Sorties by Blenheim aircraft were sometimes plagued with problems with a faulty type 35 control box (which linked the camera with release of a flash bomb).

Oblique photographs were taken at 800 ft with 14" camera.

By 1943, night photographs were taken with Fairchild F19 cameras.

Mosquito aircraft took day photos from 2,500 ft and night photos from 24,000 ft. The Mosquito aircraft sometimes did a "dive sortie", which started at 24,000 ft and took photos at 13,000 ft.

There were irregular conferences to discuss equipment and techniques during 1943 and 1944. Trials of new cameras were frequently held, and it was not until late in 1944 that the Squadron had decided how best to go about its trade. In January 1943 a conference regarding night photography was held at HQ of 2nd TAF. In December 1943 a conference at Benson discussed the installation of night cameras and flashes in Mosquitoes. Later, the same month, it was decided to continue fitting K19 cameras in Mosquitoes. Also in December 1943, in further discussion re flashes and cameras, the American M46 camera was considered unsuitable.

In April 1944, trials were conducted with Rohmer moving film camera; and in May 1944 satisfactory results were obtained with the Rohmer camera and Mk II flashes. A night exercise with photos from 3,000 - 5,000 ft produced the best yet obtained.

A report of 12 April 1944 refers to a night sortie carried out without enemy interference...the best results yet seen. The camera used was K(19)b at 8,000 ft. On this occasion F/O Cartmell used Mk II flash with a fuse setting of 0.6 of the height under 10/10 cloud (medium) and the shutter speed of  $\frac{1}{50}$ <sup>th</sup> with a camera tilt of 6 degrees aft. Type 35 control panels now being used.

In June 1944 a Mosquito was fitted with a 36" oblique camera.

The summary of July 1944 in the Operations Record Book includes the sentence: split K19 cameras have been installed in some night flying aircraft, and as the remainder fall due for inspection, they will be modified to take split K19 cameras or a single vertical Rohmer and a vertical K19.

Mapping runs were carried out on single 6" camera.

In July 1944, there were successful trials with split K19 in night aircraft.

The Rohmer camera continued to be used in 1944 at various heights.

28/10/1944 Three sorties over Arnhem with K19 at 6,000 ft.

The cameras used were all metal, electric drive and electric control. The magazine was clipped on the top, and quickly removable for processing. Much of the photography was carried out at high altitudes, which caused many problems by reason of very low temperatures and freezing. These conditions distorted the mechanism, bearings became gummed, the film became brittle and sometimes cracked, and the lens became fogged through condensation. Electrical heating was tried, and found to be unsatisfactory. The remedy was found in using the heat from the radiator of the Merlin engine: a duct to the camera to carry hot air from the radiator.

The three camera types used were F8, F24 and F52. The F24 could use lenses of focal length 5", 8" or 14". Exposure  $\frac{1}{50}$  to  $\frac{1}{1000}$  of a second. The F52 replaced the early F8 - a range of seven lenses was available.

From early 1944 and onward, every sortie listed in the 'Operations Record Book' gave full details of the cameras used.

### **FLASH BOMBS**

Artificial light is required to take photographs at night (during the period 1939 - 1945) and this could only be done by a flare or flash bomb. The flash bomb could not be carried or operated from a Spitfire aircraft, and the first trials were made with the Blenheim, a three seat aircraft with a bomb bay where the flashes could be stored. On some aircraft, a photo-electric cell was fitted, which would activate the camera at the moment of explosion of the flash.

The flash bombs were troublesome from the start. There were conferences to decide what type of flash to use, how to ensure their effectiveness, and their safety. The bomb release gear was not always positive, and there was trouble (and casualties) with premature explosion. To this end, armoured containers were fitted latterly to protect the aircraft and crew.

Flash bombs were fitted to the Blenheim aircraft, and to the night flying Mosquitoes. By day the Mosquitoes used free light - daylight.

Here, following, are some relevant notes taken from the Operations Record Book.

- |            |  |
|------------|--|
| 07/11/1941 | Tests of night photography by Blenheim over Othmoor range  |
| 15/11/1941 | First operational sortie by Blenheim - Cherbourg. Aircraft damaged by flak. Three ME109s encountered and evaded. |
| 28/01/1942 | Blenheim L3825 over Sark. Eight flash bombs dropped - five exploded.   |
| 22/06/1942 | Various sorties by Blenheim - some flash bombs failed to release.  |
| 18/03/1943 | Blenheim over target: explosion; three crew killed, aircraft destroyed.  |

11/09/1943 Tests with flash bombs in Ventura.

02/12/1943 Three officers attended conference at Farnborough. There was discussion on armoured photo flash containers for Mosquitoes

13/12/1943 First Mosquito XVI received today. Further discussion on armoured flash containers for Mosquitoes.

31/12/1943 Conference at Benson with Officers of 140 Squadron and Officers of HQ 2nd TAF; discussion on problems of night photography with regard to various types of flashes available and their installation in the Mosquito. It was decided that it was impossible to consider the use of American M46 flash, and that experiments should continue with the 4.5 flash in the armoured containers now at Farnborough.

Jan - Feb 1944 Further conferences and discussions re. armoured containers. Decided that 140 Squadron would carry out trials with armoured containers.

March 1944 Conference at Hartford Bridge - same subject.

29/04/1944 Photos obtained with Mk II flash and K19 camera were the best yet obtained. The Mk III flashes, which had been promised for trials will not be available for a further week.

04/05/1944 Satisfactory photos with Mk II flash and Rohmer camera.

12/05/1944 Supply of twelve Mk III flashes arrived.

June 1944 (On an operational sortie) 12 flashes dropped: 11 exploded, one failed.

July 1944 Summary: Trials and three operational sorties have been carried out with the last batch of Mk III safe flashes, and the results are encouraging.

28/07/1944 Sortie by Mosquito: flashes failed to drop, so no photographs were obtained

September 1944 Summary: At night, one of our aircraft was badly damaged by the premature explosion of a flash bomb - managed to land safely after a few tense moments. Aircraft a write-off (MM312).

December 1944 Summary: Mk III flashes used, and generally satisfactory.

March 1945 Summary: Experiments have been carried out this month using external bomb racks mounted on the wings in addition to the normal load in the bomb bay. 2nd TAF have approved this modification.

(But, March 1945 also recorded "Flash trouble still occurring occasionally.)

## NAVIGATION

Navigation is the art, or science, of arriving at a pre-determined destination, and in the case of aircraft, returning to the desired base.

In a sortie carried out by Spitfire, the pilot was on his own. He had to fly the aircraft properly and safely, find his target, operate the camera or cameras, keep a sharp look out for enemy aircraft, and return to base. He was a busy man. A map (or maps) would be folded across his thighs as an aid to navigation. There were one or two standard sites to be used for leaving the south coast of England: Beachy Head was often used. This fixed point, with a compass bearing, should point the aircraft to the required target. Pilots soon became familiar with the north coast of France; but targets inland were progressively more difficult to find as the distance increased.

There were complaints from pilots of Spitfire about the inadequacy of the maps:-

13/10/1941 F/Lt Webb, Spitfire R7142, complained that maps were inadequate over target area; Caen, Le Havre.

01/03/1942 Sortie over Cherbourg Peninsula to find enemy RDF station at La Vicel: pilot complained about the inaccuracy of map carried.

The larger aircraft, Blenheim, Ventura and Mosquito carried a crew of two or three and the navigator in such aircraft could devote his whole time to navigation.

There was much practice and experiment in finding accurate means to arrive at a target.

In October 1941, Blenheims practiced numerous tests at Abingdon on ZZ, also with Lorenz. This was also practiced in December 1941, and approach practices on ZZ to Abingdon continued in January - March 1942.

25/07/1942 One aircraft was "homed in" by VHF.

16/01/1943 Trials of Ventura with long range fuel tanks in bomb bay.

April 1943 Tests with Spitfire for VHF.

14/07/1943 Ventura sent to Defford for fitting "Boozer".

08/08/1943 Mosquito trials on Rebecca H.

September 1943 Ventura trials on Rebecca H.

22/07/1943 New VHF radio tests, Spitfire over France. Result OK. This is the first occasion when RT was used on a daylight sortie by 140 Squadron.

10/01/1944 Information received from 2nd TAF that Rebecca H will be installed in night a/c; while day a/c will be fitted with G. GH will not be installed until a much later day - if at all.

23/01/1944	Conference at HQ. TAF re night photography. Applied for 12 aircraft with GEE, and six with Rebecca H. Trials continue with Rebecca H.
11/02/1944	Conference at Hatfield, to view installation of Rebecca H and "Boozer" in Mosquito a/c.
15/02/1944	Visit by officers to Hatfield, to see installation of Rebecca H in Mosquito.
16/03/1944	GEE training (Begun 18/01/1944) air training. Flight navigators were then capable of taking fixes and plotting their positions in good time with accuracy: they could also home to any fixed position.
20/03/1944	Conference at Hartford Bridge to discuss the carriage of photo flashes in Mosquito a/c.
10/04/1944	Trials have shown that Rebecca H does not give the range intended. Decided to test efficiency and accuracy of GEE in blind photography over France.
19/07/1944	Summary: Recent demands for night photographs have necessitated the adaptation of a new technique. This has involved flying to a G or Rebecca fix and carrying out a Rate 1 turn onto a predetermined course. When the aircraft assumes this heading, the flashes are dropped and in most cases excellent results have been obtained.
July 1944	Summary: Rebecca H has been used operationally on several night sorties and has proved to be successful. One aircraft has been modified to carry Rebecca H and G together.
November 1944	Summary: Rebecca is still the navigational aid at the moment, and is still very successful.

## **CAMOUFLAGE AND COLOUR**

### **Spitfire**

The standard colours of Fighter Command were used in 1941 and 1942. Upper surfaces of main planes, fuselage and tail plane were in shadow - shading; in grey and sand of various hues. The underside of main planes and tail plane were either silvery-grey or sometimes in duck egg blue. Some aircraft had the underside of one main plane black with the other main plane underside duck egg blue. Various changes were tried, in 1942 the following paint work was adapted for some (only) of the aircraft.

01/03/1942 Sea camouflage Spitfire on duty La Panne - Ostend.

08/03/1942 Blue Spitfire, photos at 25,000.

Also 11/02/1942.

Also blue on 9, 23 and 28 March 1942.

07/03/1942 Pink Spitfire.

05/04/1942 White Spitfire.

Also white 24 and 26 April 1942.

The recognition marks were standard. Red, white and blue roundels were painted on the upper side of each main plane and on each side of the fuselage. The squadron letters (two) were painted in white on each side of the fuselage, together with a third letter to indicate which aircraft (of the squadron) it was. The fin carried, on both sides, a vertical flash of red, white and blue. The serial number of the aircraft (e.g., R7142) was painted in black, also on both sides, at the rear of the fuselage.

### Squadron Letters

All Spitfire aircraft, and the early Mosquito aircraft, carried the Squadron letters ZW. This was painted on both sides of the fuselage.

The dull blue Mosquito aircraft had no Squadron letters.



Spitfire PR Mk I Type G R7116 and another Spitfire were at Benson in the autumn of 1941; ready for operational sorties. Both show the Squadron letters ZW.

## Mosquito

The first Mosquito aircraft to arrive were either fighter or bomber types, and were used for aircrew training. They were painted in the usual standard colours.

The operational aircraft were painted all over dull sky blue. No squadron letters. The roundels were red and blue only - one on each wing and one on each side of the fuselage. The serial number was painted small size, in black, at the rear of the fuselage - on both sides.

**OPERATIONAL SORTIES**  
**140 SQUADRON**

		Spitfire	Ventura	Blenheim	Mosquito Day	Mosquito Night	Month
1941	September	33					33
	October	25					25
	November	19		2			21
	December	22					22
1942	January	20		1			21
	February	38		1			39
	March	48					48
	April	110		4			114
	May	77		4			81
	June	111		6			117
	July	113		2			115
	August	195		3			198
	September	136					136
	October	83					83
	November	47					47
	December	43					43
1943	January	58					58
	February	35					35
	March	34					34
	April	138					138
	May	123					123
	June	104	6				110
	July	99	2				101
	August	55	1				56
	September	48					48
	October	43					43
	November	16				9	25
	December	22				13	35

		Spitfire	Ventura	Blenheim	Mosquito Day	Mosquito Night	Month
1944	January	28			17		45
	February	34			61		95
	March	37			80		117
	April	3			105		108
	May				100		100
	June				177		177
	July				113	88	201
	August				164	67	231
	September				68	6	74
	October				50	50	100
	November				41	41	82
	December				51	47	98
1945	January				19	33	52
	February				32	86	118
	March				17	163	180
	April				18	69	87
	May				13		13
					1148	650	
					650		
		1997	9	23	1798		3827

## LOG OF SPITFIRE R7116

1941	14/09	First operational sortie carried out, F/Lt Webb for 1416 flight. Aircraft number not known				
	Oct.	No mention of R7116				
	20/11	F/O Lucas	Dieppe area	1500	1610	No photographs
	Dec.	NIL				
1942	Jan.	NIL				
	11/02	F/O Knowles	Cherbourg	1400	1520	No photographs
	14/02	F/O Muspratt	Cherbourg	1200	1330	No photographs
	20/02	F/O Knowles	St Brieve	0950	1300	Good photos from 25,000 ft
	08/03	F/Lt Carriere	Dutch Islands	1500	1630	No photographs
	05/04	F/O Muspratt	Boulogne	1105	1230	Excellent photos taken
	12/04	P/O Blackwood	Le Havre	0950	1135	Good photos from 25,000 ft
	14/04	F/O Muspratt	Pas de Calais	0840	1006	Large scale photos in two runs
	14/04	P/O Brown	Cherbourg Pen	1425	1600	Large scale photos in two runs
	16/04	P/O Harris St John	Le Havre	0905	1010	Large scale photos on three runs
	30/05	F/O Parkes	Abbeville	0720	0905	No photos
	30/05	F/O Parkes	Le Crotoy	1605	1740	Small scale photos from 27,000 ft
	31/05	F/O Knowles	Carteret	1215	1355	Large scale photos from 28,500 ft
	02/06	F/O Muspratt	Bethune Dunkirk	1540	1715	Photos obtained 30/31,000 ft
	03/06	P/O Smallpage	Bruges Dunkirk	1400	1530	Photos obtained
	04/06	P/O Harris St John	Baie de La Somme	0845	1035	Photos obtained
	06/06	P/O Smallpage	Le Touquet	1705	1850	Photos obtained
	09/06	S/Ld Webb	Grandcamp	0945	1120	No photos
	09/06	P/O Treseder	Cap Gris Nez	1700	1850	Limited photos
	10/06	F/O Morris	Cap Gris Nez	1310	1410	No photos
	13/06	P/O Brown	Isigny	1445	1630	Four runs made, no opposition
	14/06	F/O Morris	Gris Nez	1215	1345	Photos obtained

15/06	F/Lt Carriere	Le Havre	0645	0805	One run at 22,000 ft
15/06	S/Ld Webb	Isigny	1045	1210	No photos
17/06	P/O Hall	Dieppe	1405	1540	Photos from 33,000 ft. No opposition
17/06	P/O Brown	St Vaast	0650	0820	Photos from 30,000 ft
21/06	S/Ld Webb	Le Touquet	0815	0925	Photos of ship convey
23/06	F/O Knowles	Le Treport	1520	1650	Two poor runs made. Engine ropey
29/06	P/O Grey	Le Touquet	0710	0845	Run made Le Touquet Gris Nez
29/06	F/Lt Muspratt	St Valery	1915	2045	Photos obtained of beach new Berck
30/06	P/O Smallpage	St Valery	1315	1445	Photos obtained
01/07	F/Lt Muspratt	Le Treport	0845	1015	Photos obtained
01/07	F/O E H Brown	Dieppe	1200	1415	Two runs over Le Havre
02/07	F/O Pearson	Dieppe	1030	1130	No photos
05/07	P/O Smallpage	Le Havre	1515	1645	No photos
06/07	P/O Jones	Le Havre	0830	1025	Good photo, from 29,000 ft
06/07	P/O Lucarotti	Cap de la Hague	1440	1450	No photos
08/07	P/O Lucarotti	Fecamp	0715	0905	Photos of Le Havre, and beach
08/07	P/O Dooley	Boulogne	1155	1330	Photos of beach N of Boulogne
11/07	P/O Knowles	Honfleur	1135	1245	Photos obtained
12/07	P/O Grey	Honfleur	1455	1625	Some photos obtained
13/07	P/O Smallpage	Honfleur	1730	1900	No photos
14/07	P/O Brown	Etretat	1830	1945	No photos
14/07	F/Lt Carriere	Honfleur	1415	1530	No photos
15/07	P/O Lucarotti	Cartaret	1515	1700	No photos
28/07	P/O Dooley	Alderney	0810	0930	Photos obtained at 30,000 ft
28/07	P/O Cussons	Cayeux	1530	1650	Photos obtained at 31,000 ft
30/07	P/O Smallpage	Calais Zeebrugge	1500	1645	Photos obtained
31/07	P/O Davidson	Dunkirk Calais	0940	1115	Photos obtained
04/08	P/O Smith	Dieppe	0905	1055	No photos
04/08	P/O Forwell	Dieppe	1830	2000	No photos

05/08	F/Lt Muspratt	Dieppe	1220	1355	Large scale photos from 30,000 ft
06/08	F/Lt Muspratt	Dieppe	1430	1605	Large scale photos from 30,000 ft
06/08	P/O Forwell	Cayeux	1715	1845	Two runs made
12/08	F/O Pearson	Amiens Dieppe	0630	0820	Large scale photos taken
17/08	P/O Smith	Dieppe	1100	1220	Six runs made for large scale photos
17/08	S/Ld Webb	Amiens	1540	1745	Four runs, large scale
18/08	P/O Mason	St Valery	0850	1015	Two runs made, from 30,000 ft
20/08	P/O Forwell	Honfleur- Bayeux	1000	1115	No photos
22/08	P/O Hall	Etretat	1225	1345	No photos
27/08	Sgt Cowley	Dieppe- Chartres	1520	1730	Large scale photos, from 30,000 ft
28/08	P/O Smallpage	Sangatte	0805	0935	Photos taken, from 28,500 ft
28/08	P/O Mason	Gris Nez Calais	1300	1445	Photos obtained
06/09	F/Lt Carriere	St Valery	1120	1245	Large scale photos obtained
06/09	Sgt Cowley	Dieppe	1410	1540	Large scale photos of beach W of Dieppe
10/09	P/O Smith	Carentan	0715	1210	No photos
10/09	Sgt Cowley	Barfleur	1530	1735	Photos obtained from 30,000 ft
12/09	Sgt Cowley	Granville	1420	1540	No photos
13/09	Sgt Cowley	Cherbourg	0935	1050	No photos
25/10	P/O Grey	Fecamp - St Valery	0830	1000	Photos from 22,500 ft
27/10	P/O Mitchell	Cherbourg	0950	1140	Photos from 25,500 ft
31/10	F/O Brown	Evreux	1005	1220	No photos
02/11	Sgt Etherington	Sark	0950	1125	Photos from 25-26,000 ft
06/11	F/O Pearson	Guernsey - Jersey	1030	1200	No photos
07/11	P/O Mitchell	Guernsey- Jersey	1345	1525	Photos from 24,500 ft
08/11	P/O Amos	Channel Isles	0925		Aircraft did not return

### 140 SQUADRON ROLL OF HONOUR

07/04/1942	F/O G D Green	DFC
26/06/1942	A/S/L G F H Webb	DFC
18/09/1942	F/Lt R V Muspratt	DFC
18/09/1942	P/O C D Harris-St John	DFC
06/11/1942	F/Lt J C Carriere	DFC
06/11/1942	F/Lt C E Knowles	DFC
28/02/1943	A/F/Lt R W Pearson	DFC (and later, DSO)
11/05/1943	A/F/Lt C D Harris-St John	Bar to DFC
03/09/1943	A/F/Lt A F Lucarotti	DFC
01/10/1943	A/F/Lt A Mitchell	DFC
01/10/1943	F/O E W Fowell	DFC
28/10/1943	A/F/Lt R L M Davidson	DFC
28/10/1943	A/F/Lt C Mason	DFC
28/10/1943	F/O G S Cowley	DFC
28/10/1943	F/O L G Smith	DFC
28/04/1944	Sgt L W Preston	George Medal
19/05/1944	A/S/L R McE Mottram	Bar to DFC
10/08/1944	F/O P G Brearley	DFC
10/08/1944	F/O W Moffatt	DFC
10/08/1944	F/O D R Thompson	DFC
29/08/1944	W/Cdr R I M Bowen	DFC
29/08/1944	F/Lt E G E Parry	DFC
29/08/1944	F/Lt W E Randall	DFC
29/08/1944	F/Lt J V Riley	DFC
29/08/1944	F/Lt W Shearman	DFC
29/08/1944	A/F/Lt Bishop	DFC
02/10/1944	F/Lt P H G Wintle	Bar to DFC
02/10/1944	F/Sgt S C Bateman	DFM
02/10/1944	F/Sgt W R Millier	DFM
02/10/1944	F/O A N Gillette	DFC
28/10/1944	F/Lt C T Butt	DFC
28/10/1944	F/Sgt F R J Richardson	DFM

29/12/1944	F/Lt R McKimm	Bar to DFC
29/12/1944	A/S L C D N Longley	DFC
29/12/1944	F/Lt C G Chadwick	DFC
29/12/1944	F/Lt P G Hart	DFC
29/12/1944	F/O M G Crotty	DFC
29/12/1944	F/O W Le May	DFC
29/12/1944	F/O A D Lemon	DFC
29/12/1944	F/Lt R Batenburg	DFC
29/12/1944	F/Lt E L Gray	DFC
16/01/1945	F/Lt L W Maddocks	DFC
27/02/1945	F/Sgt G E Newton	DFM
27/02/1945	F/Lt I J Ewing	DFC
10/04/1945	F/O R S Flight	DFC
10/04/1945	F/O B D Mackins	DFC
08/05/1945	A/S/L H M H Tudor	DFC
08/05/1945	F/O R D Walder	DFC
31/05/1945	F/Lt AT Kirk	DFC
31/05/1945	F/Lt R D Walton	DFC
31/05/1945	F/Lt A G Humphries	DFC
25/09/1945	F/Lt J H Cartmell	DFC
19/10/1945	F/Lt J H Cartmell	CdeG

**FAILED TO RETURN**  
**140 SQUADRON**

24/11/1941	F/O N R Peel	Spitfire	R6610	Duty: low level oblique Port en Bessin to Grandchamp
16/12/1941	F/O C A P Christie	Spitfire	R7142	Fatal crash near Corfe Castle
17/03/1942	F/O T Nicholson	Spitfire	X4907	Crashed on returning, near Trundle Hill Tangmere Duty St Valery-Le Touquet
24/04/1942	P/O C B Barber	Spitfire	X4784	Duty Pas de Calais
02/06/1942	P/O F J Blackwood	Spitfire	X4502	Duty Cherbourg. Intercepted German R/T claimed to have shot down British fighter
02/06/1942	P/O C K Parkes	Spitfire	AR234	Duty St Valery. Ditched near Beachy Head on his return
08/11/1942	P/O N N Amos	Spitfire	R7116	Duty Channel Islands. PoW Stalag III
18/03/1943	F/O R L Jones (plus two others)	Blenheim		Flash bombs exploded in aircraft
05/08/1943	F/O D M Croy	Spitfire		Formation flying accident
05/06/1944	F/O J B Reynolds F/S F E Baker	Mosquito IX	MM243	Duty Nogent, Le Mans
06/06/1944	F/O F G Rudduck F/S H C Dent	Mosquito XVI	MM279	Duty Cambrai, Montdidier
15/07/1944	P/O J W Hall F/S H H Ashby	Mosquito XVI	MM249	Duty? Fatal crash on return, Windsor Great Park
14/09/1944	P/O G H Ardley F/S S G McLaren	Mosquito XVI	MM306	Duty Hamburg
29/09/1944	W/C C F M Chapman	Anson		Passenger to UK
02/10/1944	S/L C D N Longley F/S J T Taylor	Mosquito XVI	NS523	Shot down by P47 fighter of IX USAAF, over Louvain
06/10/1944	F/L A E Palmer F/S D Gardner	Mosquito XVI	NS522	Duty Frisian islands
06/11/1944	F/O D Copperwaite	Mosquito XVI	NS563	Navigator killed by enemy fire
23/01/1945	F/O J W Lowrie	Wellington	NC607	On detachment to 69 Squadron
19/03/1945	F/L S Thompson F/S A Ashton	Mosquito XVI	MM298	Crashed on take off



## MAP SHOWING SOME OF THE EARLIEST OPERATIONAL TARGETS



The towns and cities shown were photographed, (together with many other places), between October 1941 and May 1942.

**SPITFIRE PHOTOGRAPHIC RECONNAISSANCE AIRCRAFT**



Access for camera



Access for ground crews

## GROUP PHOTOGRAPHS



Spitfire aircraft and ground crew, RAF Benson, probably end of 1941



'A' Flight, 140 Squadron, Amiens, September 1944

(Must have been taken between 18 and 29<sup>th</sup> September as W/Cdr Bowen is seated 5<sup>th</sup> from left and W/Cdr Chapman is seated 6<sup>th</sup> from left. W/Cdr Bowen returned from leave on the 18<sup>th</sup> and W/Cdr Chapman was killed on the 29<sup>th</sup>)

## OPERATION BODENPLATTE



Melsbroek, Belgium, 1<sup>st</sup> January 1945, after visit by Luftwaffe.



Melsbroek, Belgium, 1<sup>st</sup> January 1945, Mosquito aircraft after visit by Luftwaffe

"Ian and I had breakfast in the Mess and were just getting into a jeep to travel to the airfield, which was on the other side of the road from the Officer's Mess, when Ian, who was a pipe smoker, said he'd forgotten his pipe. He went back for it, which delayed us for about ten to fifteen minutes. While he was getting it, a crowd of the squadron boys were standing around. It was a lovely clear morning, and one of the boys said, 'Christ! Look at those three Hurricanes.' These were aircraft, low flying, coming across the airfield, and I yelled, 'Hurricanes be buggered-- they're 109s.'

"When the strafing started, the 109s were attacking the airfield, going back up in climbing turns, then diving down back on the airfield. Smoke started to build up from the airfield as aircraft were shot-up, then the Germans disappeared.

"As far as myself was concerned, Ian Ewing and I went across to the airfield when the attack ended. A number of our aircraft had been shot-up. My own aircraft, in which my helmet was hanging over the control column, and the parachute in the seat, had been riddled. The Mosquito was a write-off (NS567). The helmet had two bullet holes through it, the parachute pack shredded. There was no doubt in my mind that had Ian not forgotten his pipe, if we hadn't been in the aeroplane we'd have been pretty close to getting in it, and of course, our dispersal was in the middle of the airfield, with tents for our crew room, etc. It was really a lucky escape for us both."

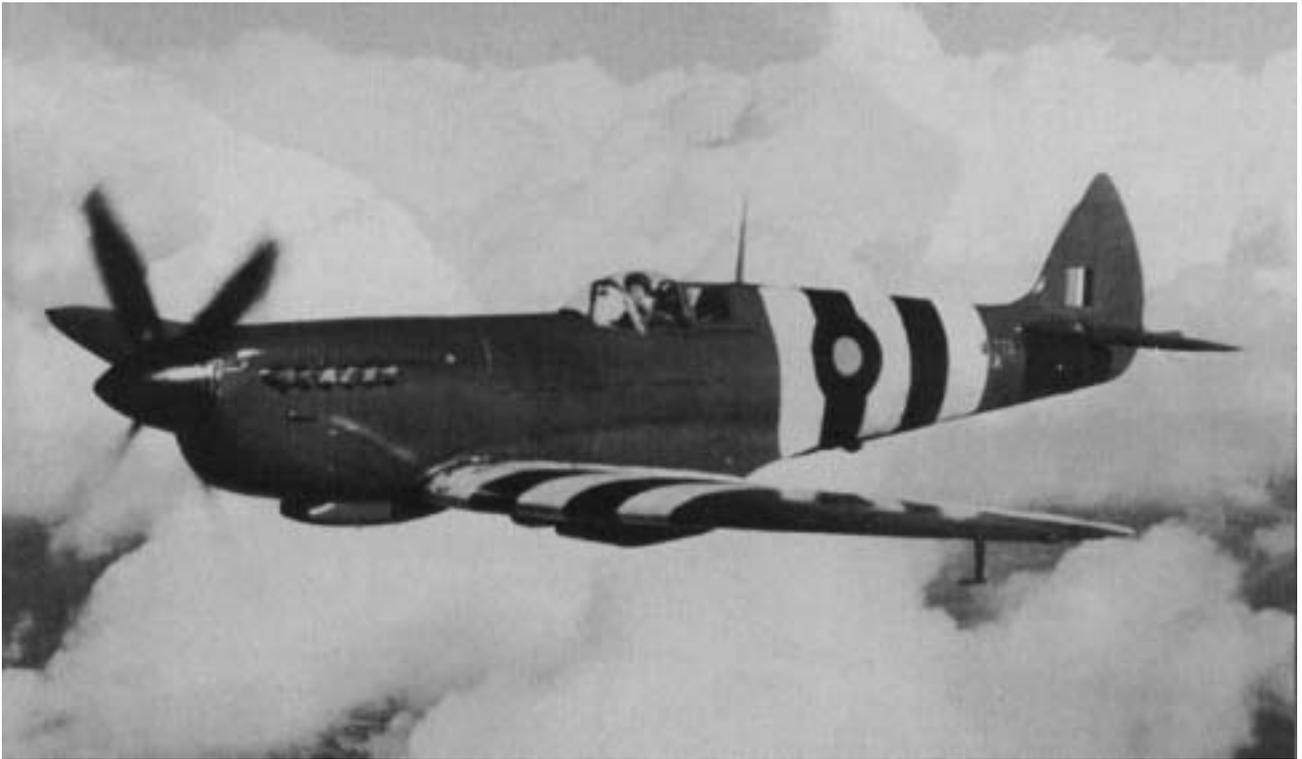
*Flight Lieutenant H.M.H. Tudor, 140 Squadron*

"At the time, I was working in one of the photographic enlargement trucks. I well remember the exact subject of the enlargement in process when the German attack began. It was of Walcheren Island off the Schelde estuary. With a colleague, we had just rolled the exposed 1 metre square bromide out into the big development bath when a line of around twelve bullet and one cannon shell holes ran diagonally across a side wall, each admitting a bright thin light beam across the darkened room. Nothing had been heard beforehand, mainly because the vehicle's air conditioning plant was running at the time".

"The single cannon shell sheared one of the steel ribbons supporting the huge enlarging apparatus table which crashed to the ground making a terrible noise. Including other photographers working on contact print light boxes, there were eight men in the big mobile darkroom. Miraculously, no one was seriously injured and the eight of us went speedily out through the double doors, jumping into the adjacent slit trench dug for us many months earlier by the RAF Regiment bods. The speed of departure must have been a measured one because every man had performed his daily reflex action of grabbing his overcoat on exit. (That winter it stayed below freezing the whole season)".

*LAC Basil Jackson, 140 Squadron*

PRU AIRCRAFT PHOTOGRAPHS



Spitfire PR Mk XI



Mosquito PR Mk IX



Typical Mosquito markings with black and white hoops. from June 1944.



*(RAF Museum, Charles Brown Collection, Photo. P100157).*

PR XVI NS777 of 140 Squadron at Melsbroek, December 1944

### MOSQUITO MISSIONS FLOWN (PILOTS)

Anderson, L.A.	32	Longley, C.D.W.	49
Ardley, G.H.	35	Mason, C.	4
Astin, J.K.	2	McKimm, R.	56
Barker, R.	30	Moffatt, W.	19
Batenburg, R.	36	Mottram, R.Mc.E.	11
Bishop, J.G.	24	Ogilvie, P.B.B.	1
Bone, C.E.	42	Palmer, A.E.	39
Bowen, R.I.M.	53	Parry, E.G.E.	19
Bowes, J.	5	Pearson, R.W.	25
Brearley, P.G.	7	Petrie, P.D.	7
Butt, C.T.	43	Piggott, A.F.G.	1
Cartmell, J.H.	50	Pollitt, A.M.	29
Crotty, M.G.	53	Randall, W.E.	18
Dobell, F.O.S.	19	Redman, W.	54
Douglas, T.M.	51	Renier, J.G.F.	19
Dutfield, A.E.	12	Reynolds, J.B.	16
Eason, M.B.	1	Richmond, G.	48
Ewing, I.J.	32	Rosson, W.D.	18
Flight, R.S.	30	Rudduck, F.G.	8
Frostick, D.R.M.	20	Scovill, T.T.	4
Gairns, J.	27	Sharp, C.E.	39
Garnade, H.A.	33	Shearman, W.	15
Gatchell, D.H.	22	Sheehan, W.J.L.	12
Gillette, A.B.	44	Stutchbury, D.W.	18
Gray, E.L.	45	Thompson, D.R.	18
Hall, J.W.	15	Thompson, S.	4
Hardiman, R.H.	5	Tudor, H.M.H.	53
Harper, W.	1	Wade, B.R.M.	27
Hart, P.I.	38	Walton, R.D.	58
Hughes, C.E.	2	Watt, W.A.F.	45
Jones, M.	42	Webb, G.F.H.	4
Joseph, H.K.	34	Winskill, G.E.	32
Kenning, G.	21	Wintle, P.H.G.	48
Kirk, A.T.	41	Woan, K.E.	21

### MOSQUITO MISSIONS FLOWN (NAVIGATORS)

Allinson, W.A.	29	Houghton, J.C.W.	2
Ardley, G.H.	2	Hubert, M.J.	23
Ashby, H.H.	21	Humphryes, A.G.	43
Ashton, A.	4	Just, J.R.	25
Baker, C.	2	Kirkland, J.	28
Baker, F.E.	28	LeMay, W.	39
Bateman, S.C.	51	Lemon, A.T.	48
Bird, J.	12	Lewis, F.G.G.	43
Butt, C.T.	1	Lousada, C.R.	2
Chadwick, C.G.	50	Lowrie, J.W.	4
Clarke, P.W.	23	Mackins, B.D.	30
Cole, J.C.	1	Mason, C.	1
Copperwaite, D.	40	McLaren, S.G.	33
Crotty, M.G.	1	Millier, W.R.	50
Cunningham, M.R.	34	Newton, G.E.	44
Curson, R.	27	Officer, G.L.	27
Dalrymple, I.	5	Parrish, D.	7
Davies, E.W.	14	Pedder, M.C.	47
Dent, H.C.	8	Piggott, A.F.G.	29
Dickinson, E.M.	37	Preston, L.W.	7
Downs, T.	1	Richards, A.	53
Drury, S.T.	12	Richardson, F.R.J.	48
Dubock, R.M.	44	Riley, J.V.	57
Duckworth, G.T.	54	Sephton, P.	35
Eason, M.B.	45	Sharp, C.E.	3
Edwards, T.	5	Slater, T.	13
Emmett, G.	26	Spencer	1
Ewing, I.J.	1	Sullivan, R.T.	6
Gardner, D.	39	Taylor, J.T.	37
Garnade, H.A.	1	Versey, S.G.	59
Gilliam, C.E.	13	Walder, B.D.	54
Gomer, J.L.	21	Warren, F.	64
Grieb, L.C.	7	Webster, K.H.	6
Hall, J.W.	1	Weekes, L.R.	32
Harper, W.	46	Welch, G.E.E.	19
Harris, G.W.	56	Wells	5

**MOSQUITO MISSIONS FLOWN (AIRCRAFT)**

LR479	42	NS506	33
MM243	56	NS507	34
MM248	3	NS517	46
MM249	49	NS519	1
MM250	51	NS522	11
MM251	106	NS523	24
MM258	22	NS529	1
MM271	1	NS562	45
MM274	37	NS563	38
MM275	28	NS564	7
MM278	57	NS566	1
MM279	47	NS567	17
MM280	68	NS572	28
MM281	51	NS573	7
MM282	56	NS574	12
MM284	61	NS575	30
MM298	26	NS576	26
MM301	72	NS577	2
MM302	61	NS578	28
MM304	67	NS579	27
MM305	74	NS580	33
MM306	42	NS595	1
MM307	1	NS746	8
MM312	31	NS777	26
MM349	41	NS790	12
MM356	16	NS798	7
MM359	4	NS801	17
MM394	41	RF984	1
MM395	50	RF993	1