



The Spitfire prototype, K5054, then known as the F.37/34, as she looked immediately prior to her first flight on 5 March 1936. Note the unpainted natural metal finish, unfaired main undercarriage legs with solid mainwheel hubs and the initial design, 'angled' horn balance rudder (Vickers via Mike Jerram)

The Prototype Spitfire's colours

Paul Lucas describes the various colours applied to the prototype Spitfire, K5054

■ FOLLOWING LAST YEAR'S RELEASE OF THE CZECHMASTER Resin kit, (reviewed in Vol 10/11 November 2004 issue of our sister publication, 'Scale Aviation Modeller International'), the question as to the colour of K5054 has once again gained some currency. In his review, Paul Stockley mentions that there is a lot of controversy regarding the true colour(s) of K5054 and concludes that modellers should do their own research and make their own decisions.

Over the years several attempts have been made to name the colours used, with different colour names being mentioned. The three most widely used are 'light blue', 'French Grey' and 'Supermarine Seaplane Grey', none of which have really been identified from primary sources.

As it has now been some years since anything appeared in the modelling press on the subject, the editor suggested that an article which tries to take a fresh look at the subject might be of interest to many readers – in view of the Type's 70th anniversary. Time then for 'Model Aircraft Monthly' to join the, "This is our opinion, but we don't really know either" club!

Prototype colours, circa 1936

During the expansion phase of the Royal Air Force, which can be said to have begun in 1934, there does not seem to have been any regulations laid down concerning the colour of prototype aircraft, either those built to Air Ministry contracts or those built by the aircraft manufacturers as private ventures. For the most part however, in the days before the Temperate Land Scheme, of Dark Earth and Dark Green upper surfaces, was introduced, it would appear that it was a common practice to finish prototype aircraft in an overall Aluminium silver scheme. The Aluminium finish given to these aircraft appears to have been the usual V.84 Aluminium pigmented dope with either polished natural metal and/or painted Aluminium components commonly found on day flying RAF aircraft throughout the inter-war period.

For examples of this, one need look no further than the other prototype Fighters which were completed and began test flying at about the same time, such as the prototype Gladiator which was given an Aluminium finish with the registration 'G.37' applied to both sides of the fuselage in large black characters. Taken on charge by the Air Ministry on 3 April 1935, the prototype Gladiator retained its Aluminium finish when it acquired the usual RAF national markings of the period and the serial number K5200 in black.

The prototype Hurricane, which was built to an Air Ministry specification, was also given an Aluminium finish, although it carried RAF national markings and the

serial number K5083 in black from the start, making its first flight in November 1935, (see 'MAM' Vol 4/11 November 2005).

Another private venture Fighter of this period was the Vickers Venom which first flew in June 1936. This too had an Aluminium finish and carried the registration 'PVO-10' on the rear fuselage just in front of the tailplane in small black characters. A final example is that of another prototype built to an Air Ministry specification which had an Aluminium finish and the usual service markings, the Gloster F.5/34 prototype, K5604, which made its first flight December 1936.

K5054's initial colour scheme

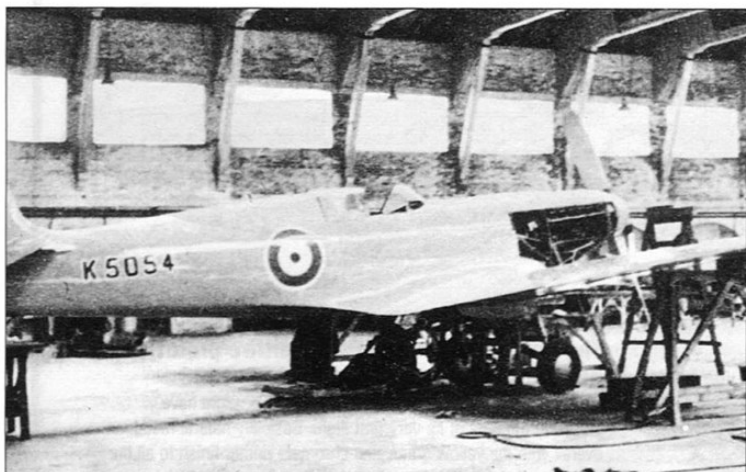
The prototype Spitfire, K5054, falls into the middle of these examples, making its first flight on 6 March 1936. K5054 was photographed at about the same time as its first flight in what Jeffrey Quill described as, "...its Works finish, that is to say it was unpainted except for its priming coats". The photographs which were taken at about this time suggest a natural metal finish over most of the airframe with the few fabric covered parts of the aircraft, such as the ailerons and rudder, appearing to be finished in an Aluminium pigmented dope presumably applied over the dull red oxide of iron pigmented finish of the Air Ministry specification fabric priming coat.

Jeffrey Quill's mention of 'priming coats' therefore may well be a reference to the metal engine cowlings and the panel over the fuel tank in the forward fuselage which have the appearance of having been painted. Exactly what colour this paint was is open to question.

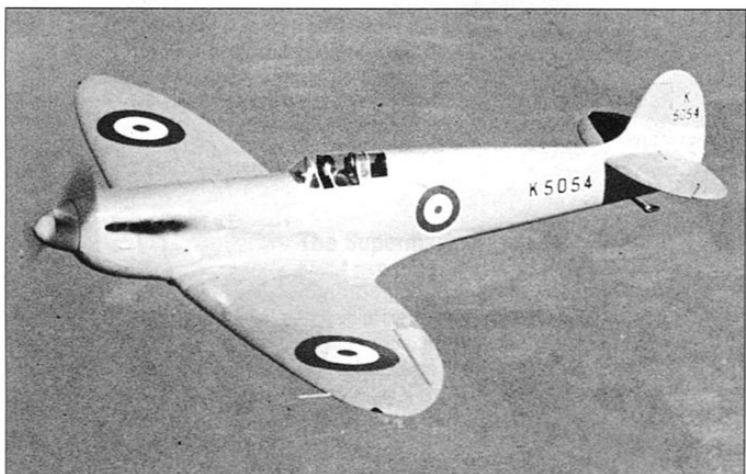
At this time, the Air Ministry Directorate of Technical Development (DTD) specifications for the new aircraft camouflage finishes and their primers, were only in the process of being drafted with various materials being tested. It is therefore thought that the primer actually used was likely to be a proprietary finish of some kind based on zinc chromate which usually bestowed upon any finish using it a sickly yellow appearance something like FS 33481.

This might be backed up by the fact that some years ago I saw a piece of wreckage from a Spitfire which had just such a colour upon it. On the other hand, there is some anecdotal evidence that Supermarine used a bright yellowish green primer over the metal areas of the first few production Spitfires. I can vouch for such a colour being applied to the cockpit interiors of some Spitfires as a 'bright green', somewhere near FS 34138, which was found on pieces of wreckage from Spitfire Mk I, X4422, which are held by the Shoreham Aircraft Museum, Kent.

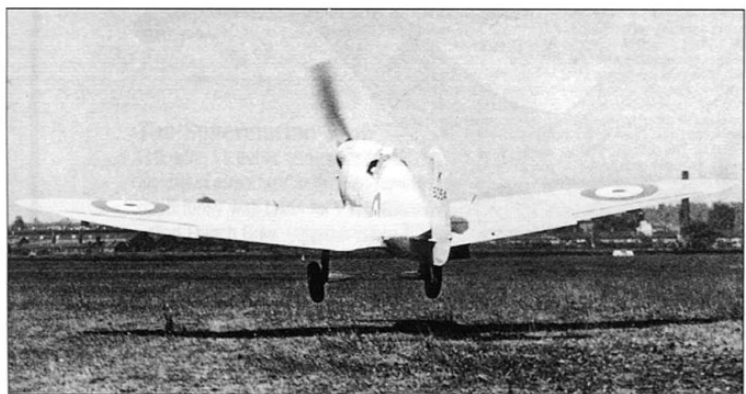
With regard to K5054's cowling however, it is my opinion that the most likely colour primer to have been used would have been a yellow zinc chromate finish as



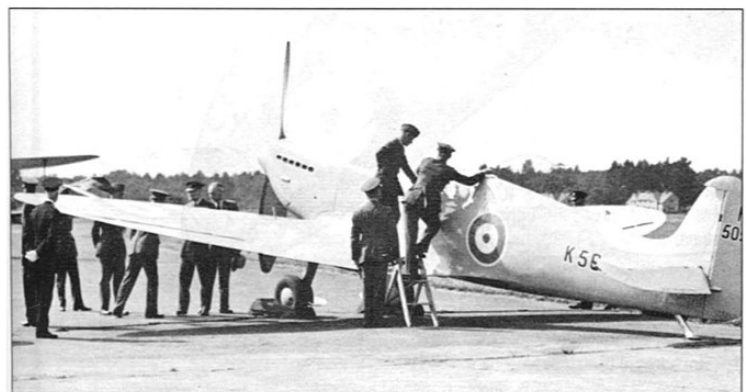
K5054 in the hangar at Eastleigh in early May 1936 just after the initial modifications, painted in the high gloss, light blue-green Rolls Royce applied automobile paint (Shenstone)



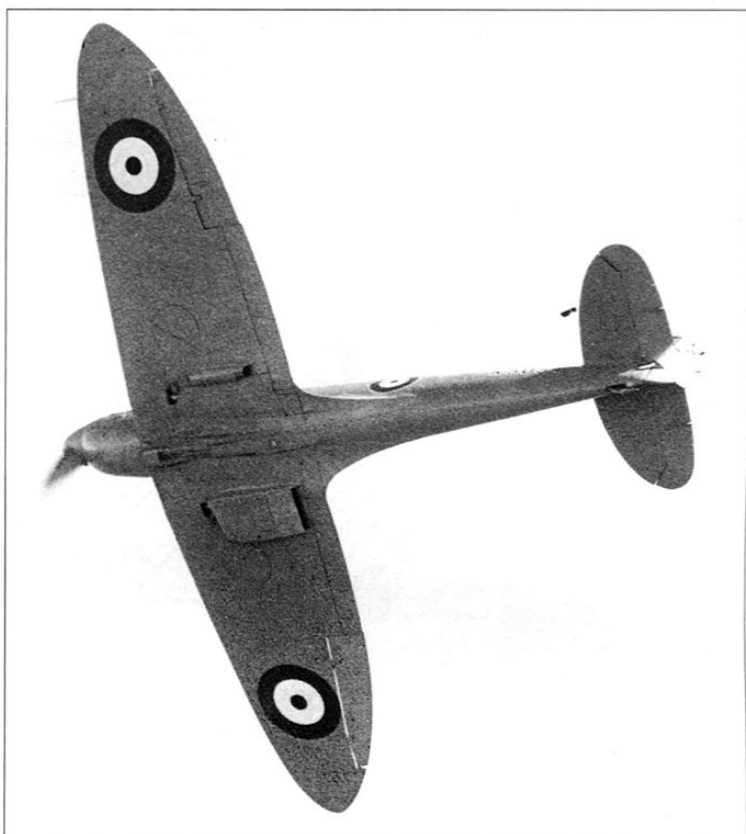
K5054 in flight in mid-May 1936, for the benefit of 'Flight' magazine's photographer, John Yoxall (Flight)



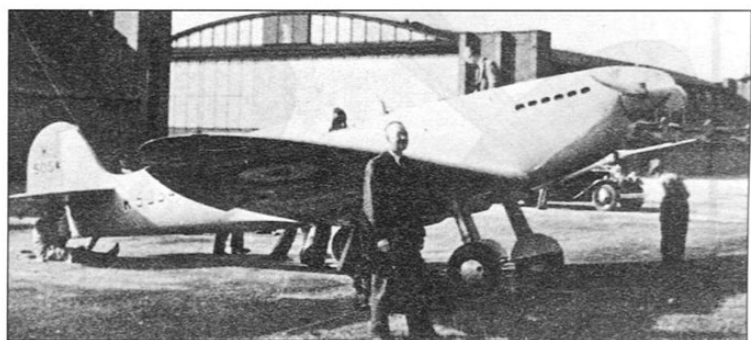
K5054 during the first demonstration flights for the Press on the Vickers Press Day, on 18 June 1936 (Flight)



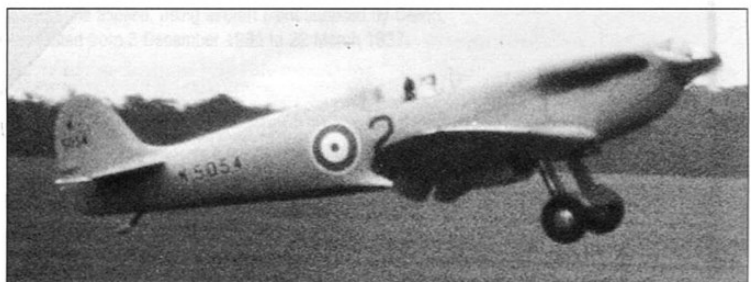
On 29 June 1936, K5054 was displayed at the SBAC show at Hatfield and then on 8 July, it was shown to HM King Edward VIII during his visit to Martlesham Heath (Charles Brown)



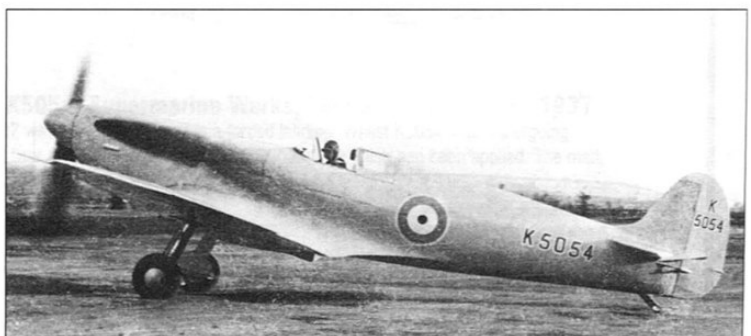
Underside view of K5054 in flight in mid-May 1936, note the shape of the underwing radiator (Flight)



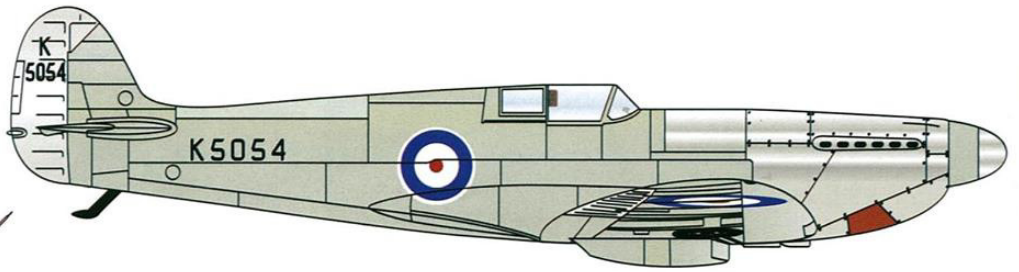
K5054 back at Eastleigh in June 1936 (Smith)



On 27 June 1936, K5054 was shown to the general public at the RAF Pageant at Hendon, in the New Types Park, for which it acquired a black numeral '2' (Flight)

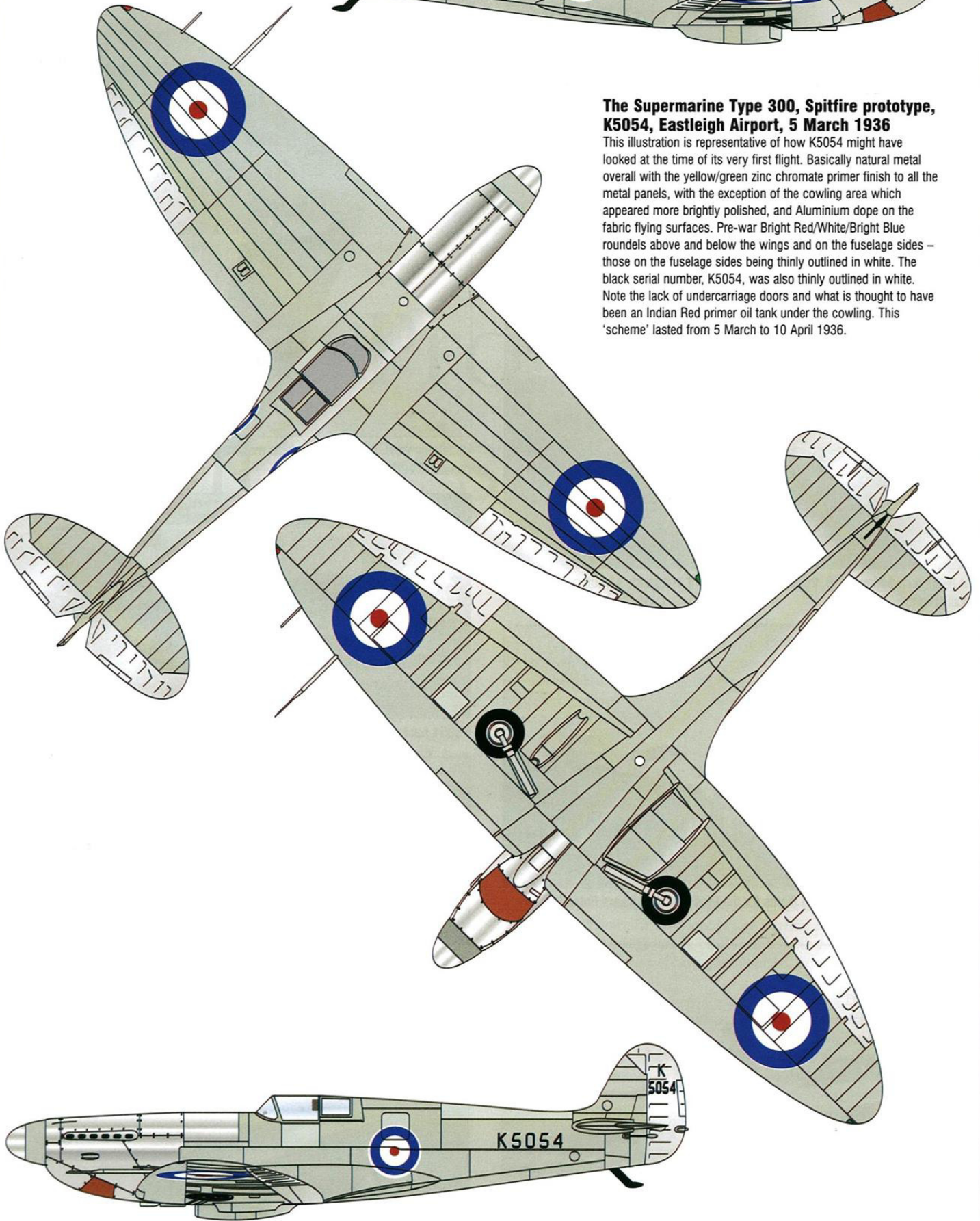


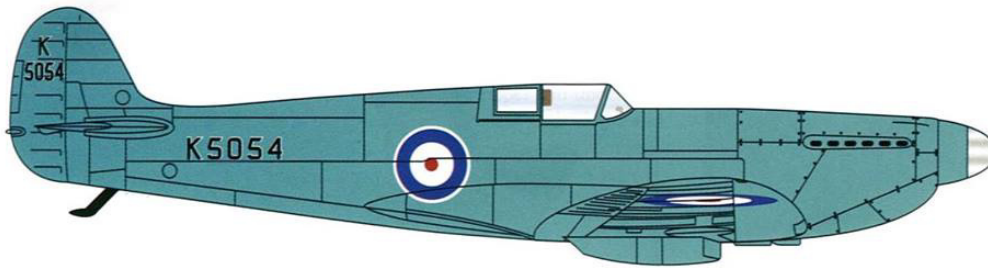
K5054 photographed during the continuing flying trials undertaken at Eastleigh during the summer of 1936. Note the heavy exhaust staining (Vickers)



The Supermarine Type 300, Spitfire prototype, K5054, Eastleigh Airport, 5 March 1936

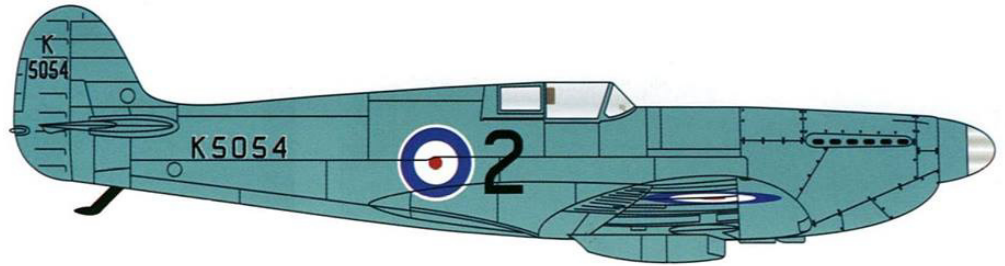
This illustration is representative of how K5054 might have looked at the time of its very first flight. Basically natural metal overall with the yellow/green zinc chromate primer finish to all the metal panels, with the exception of the cowling area which appeared more brightly polished, and Aluminium dope on the fabric flying surfaces. Pre-war Bright Red/White/Bright Blue roundels above and below the wings and on the fuselage sides – those on the fuselage sides being thinly outlined in white. The black serial number, K5054, was also thinly outlined in white. Note the lack of undercarriage doors and what is thought to have been an Indian Red primer oil tank under the cowling. This 'scheme' lasted from 5 March to 10 April 1936.





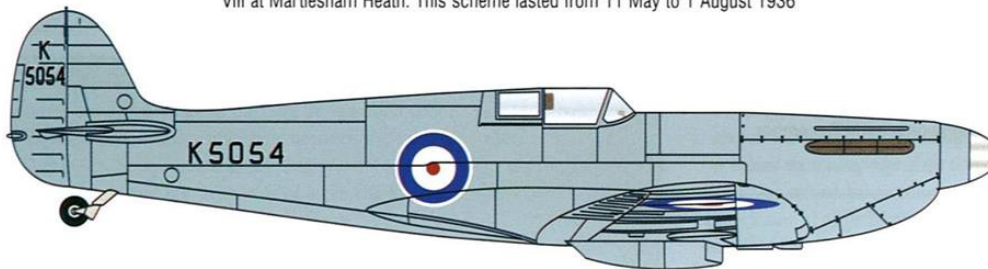
The Supermarine Type 300, Spitfire prototype, K5054, Supermarine Works, Eastleigh, May 1936

The initial natural metal finish was retained for the early flight trials until the aircraft was grounded on 10 April 1936, for modifications which included reducing the size of the rudder horn balance and squaring off the top of the fin. Whilst K5054 was grounded for these modifications, the aircraft was painted in a high gloss light blue-green finish, thought to be similar in colour to BS 381C 101 Sky Blue, (FS 34325), applied in Rolls Royce automobile paint.



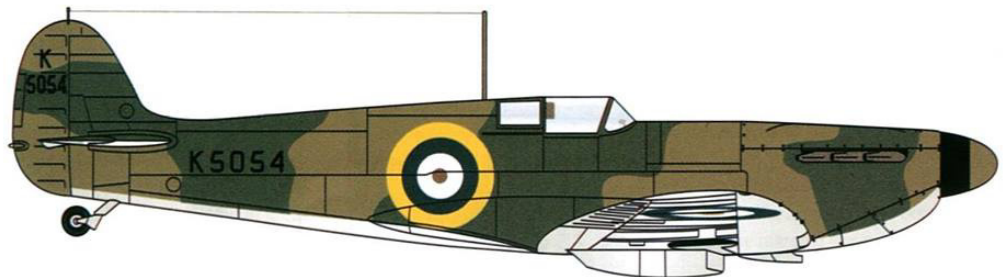
The Supermarine Type 300, Spitfire prototype, K5054, Hendon, RAF Pageant, June 1936

K5054 recommenced flying in its new paint finish on 11 May 1936, and was first demonstrated to the press during the Vickers Press Day on 18 June 1936 and to the general public at the RAF Pageant at Hendon on 27 June. It was for this show that K5054 acquired the number '2' in black forward of the fuselage roundel where it was displayed in the New Types Park between the prototype Hawker Hurricane, K5083 and the prototype Vickers Venom. Two days later on the 29th, K5054 was displayed at the SBAC display at Hatfield and on 8 July, it was displayed to King Edward VIII at Martlesham Heath. This scheme lasted from 11 May to 1 August 1936



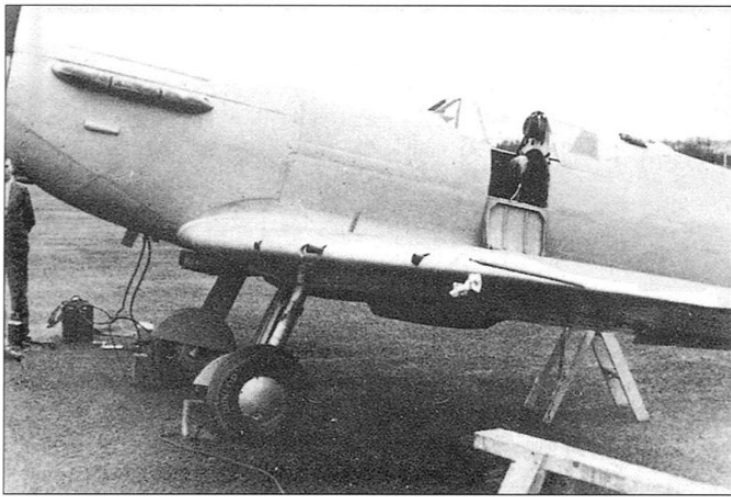
The Supermarine Type 300, Spitfire prototype, K5054, Supermarine Works, Eastleigh, December 1936

Following its public appearances K5054 was engaged in service trials. After their completion, K5054 was grounded in August to be fitted with the eight-gun armament as well as having other modifications carried out. The Rolls Royce car paint was found to be in poor condition and opportunity was taken for the airframe to be stripped and a new high gloss light blue-grey scheme applied, using aircraft paint supplied by Cellon, called French Grey, (approximately FS 35414 but a bit lighter and more grey). This scheme lasted from 3 December 1936 to 22 March 1937.

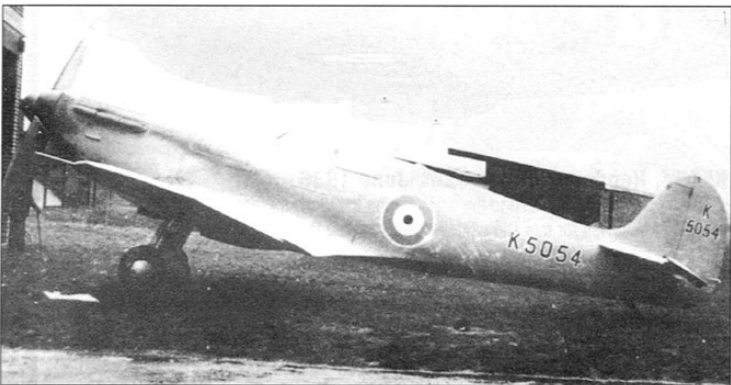
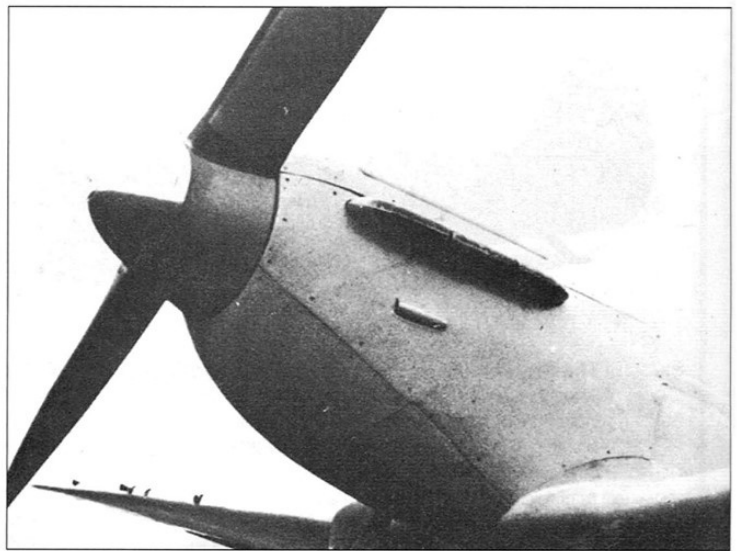


The Supermarine Type 300, Spitfire prototype, K5054, Supermarine Works, Eastleigh, September 1937

K5054 retained the high gloss 'French Grey' finish until March 1937 when it was damaged in a forced landing. Whilst K5054 was undergoing repairs, the high gloss finish was removed and by the time K5054 flew again in September 1937, a camouflage finish had been applied. The matt, Temperate Land Scheme of Dark Green and Dark Earth upper surfaces was applied in the A Scheme. Under surfaces were painted Aluminium. Red, White, Blue and Yellow roundels were carried on the wing upper surfaces and fuselage sides, with Red, White and Blue roundels under the wings. The serial number was on the rear fuselage and rudder as previously, and was added under the mainplanes between the roundels and the wheel wells, in Night. The propeller blades and were finished in Night, each propeller blade having a 4 inch wide Yellow tip, with a Dark Earth spinner cap. This colour scheme remained in place from 19 September 1937 to 4 September 1939, when K5054's flying career came to an end following a landing accident.



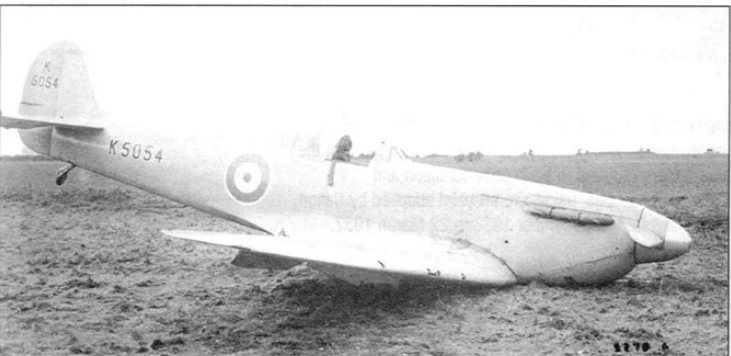
above and right: K5054 in early December 1936 after the installation of the eight 0.303 inch, wing-mounted machine guns. It was during this modification phase that the Rolls Royce automobile paint was removed and the light blue-grey aircraft paint, supplied by Cellon, applied. Note that the roundels and serial number have not yet been reapplied (Shenstone)



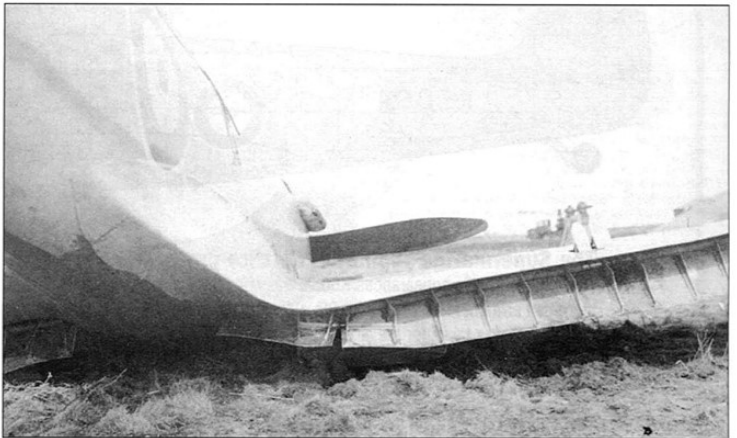
K5054 in the high gloss, light blue-grey, Cellon aircraft paint with roundels and serial number applied, thought to have been photographed at Tangmere in early December 1936 (Vickers)



K5054 photographed at Martlesham Heath in February 1937 at the start of the armament air firing trials (Vickers)



K5054 following the forced landing on 22 March 1937 (Vickers)



Another shot of K5054 following the forced landing on 22 March 1937. Note the twin flap indicator doors, peculiar to the prototype (Vickers)



Whilst undergoing repairs caused by the 22 March 1937 forced landing, the opportunity was taken to repaint K5054 in the new matt, Temperate Land Scheme camouflage of Dark Green and Dark Earth upper surfaces with Aluminium under surfaces in which it emerged from the Eastleigh workshops in September 1937. (Smith)



K5054 in early September 1938 at Eastleigh (R J Mitchell Museum)

the tone visible in the photographs is very light, suggesting a yellow rather than a green, and this is how K5054 has been illustrated here.

The Service markings of roundels were applied on the upper and under surfaces of the wings and on both sides of the fuselage using Bright Red, White and Bright Blue, with those on the fuselage sides having a thin white outline. The serial number was applied to both the sides of the rear fuselage and the rudder in black characters which also had a thin white outline. This finish was retained for the early flight trials until the aircraft was grounded on 10 April 1936, for initial modifications which included reducing the size of the rudder horn balance and squaring off the top of the fin.

The Rolls Royce finish

Whilst K5054 was grounded for these modifications, the aircraft was painted and this is where the controversy really starts. The work is said to have been carried out at Eastleigh over a period of three or four days by the same firm that applied the paint finish to Rolls Royce cars. During this time, joints were filled and rubbed down and a very high gloss finish was applied using what is said to have been a light grey car enamel to which some blue pigment was added. This unique colour was mixed on site and was not therefore a standard Supermarine or Rolls Royce colour. No record of this colour is known to have been kept, or a sample to have survived. The roundels and serial numbers were reapplied in the same places as previously.

K5054 recommenced flying in its smart new finish on 11 May 1936, when it was photographed by John Yoxall of 'Flight' magazine and was first demonstrated to the press in general during the Vickers Press Day on 18 June 1936 and to the general public at the RAF Pageant at Hendon on 27 June. It was for this show that K5054 acquired the number '2' in black forward of the fuselage roundel where it was displayed in the New Types Park between the prototype Hawker Hurricane, K5083, which bore the number '1' and the prototype Vickers Venom, which bore the number '3'. Two days later on the 29th, K5054 was displayed at the SBAC display at Hatfield and on 8 July, it was displayed to King Edward VIII at Martlesham Heath.

The only eyewitness description of the colour of K5054 at about this time to have been published, (at least as far as the author is currently aware), is a description by a member of the Observer Corps which was apparently written almost ten years after the event. In this account, Observer DJ Yates called the colour, "...duck-egg blue-green..." and several other reports apparently stated that the colour had a touch of a turquoise 'sea-green' tinge to the blue. It was not a definite pale blue, neither was it a true pale green. It was somewhere between the two... or was it?

Writing in 'Scale Aircraft Modelling' Vol 8/11, Ian Huntley explains how one of his relatives supplied him with part of a pre-war Cellon catalogue which featured a colour called 'French Grey' amongst a list of 'Special colours for aeroplanes' against which the relative had made the notation 'K5054'. Mr Huntley then goes on to say that according to a statement made by Cellon in 1936, K5054 was painted French Grey, the same colour as that in the Cellon catalogue and that the sample of this colour which he possessed fell somewhere between FS 25526 and FS 25414 (Methuen 23B3). These are all light blue-grey.

Here then is the first part of the conundrum. Was K5054 a light blue-green or a light blue-grey? One possible answer is that perhaps it was *both*, but at different times!

K5054 repainted

Between its public appearances and up to 31 July, K5054 was engaged in continuing its initial service trials, but after their completion, from 1 August 1936, K5054 was grounded to be fitted with the eight-gun armament as well as to have several other modifications carried out. Amongst the modifications thought to be necessary at this time was some alteration to the paint finish.

By the end of July 1936, the Rolls Royce car paint was found to be in poor condition with the finish having cracked along all the seams – with some patches having come right off. This had apparently been caused by the airframe flexing in flight and had been made worse by the high altitude trials which caused the filler used on the joints to shrink and crack from the cold. By the end of July, the finish was said to look like 'crazy paving' and to be in very poor condition.

This situation appears to have been a cause for concern to the Air Ministry as on 23 October 1936, a letter was sent from the Air Ministry to the RAE enquiring about the finish on the German Heinkel He 70 transport which had been purchased by the British Government for use as a flying test bed, and which was used as a criterion for aerodynamic smoothness with reference to K5054.

In their reply dated 5 November 1936, the RAE said the following: "In reply to your letter of 23rd ult, we have examined the Heinkel and find that the grey paint on the greater portion of the surface of the fuselage is deeply cracked and the finish is therefore not smooth. The black portion, (cowl design & lettering), are very smooth and approximate to a coach finish, although portions of this surface are cracked. Lineal cracks occur along the joints of metal sheets, rivet beads have presumably been filed down and are not visible. A few blisters on the cowl resemble rivet heads.



Close-up of the cockpit interior after the armament had been fitted circa early 1937 – note the gun firing lever in the centre of the spade grip control column (R J Mitchell Museum)

The finish on the mainplanes is smooth – rather smoother than on the mainplanes of the Falcon K5925 – but not as smooth as the top of the fuselage of that aircraft. There is extensive cracking about 6 inches behind the leading edge of the starboard mainplane and rather less on the port mainplane; this has been painted over. Similar extensive cracking occurs about 4 inches behind the leading edge of the tailplanes."

This served to demonstrate that K5054's problem was not unique, but what conclusion the Air Ministry came to is not known. What is certain is that this was a time of great technological progress in British aircraft design and the development of new paint finishes was struggling to keep up with the shift from fabric to metal covered aircraft. As has been mentioned, the specification for DTD 308 and DTD 314, (the materials used to paint the metal covered aircraft of World War Two), were only just being drawn up during the summer of 1936, so it would appear that suitable paints were not readily available when K5054 was originally painted.

A Cellon Finish?

Following the fitting of the armament, K5054 was apparently repainted, as photographs show K5054 with the armament fitted and in a pristine finish – but without any roundels or serial numbers, which would appear to indicate that the aircraft was freshly repainted at about this time. The roundels and serial numbers were reapplied however, and K5054 resumed flying on 3 December 1936.

With the presumably high quality Rolls Royce automobile paint obviously not being suitable for use on aircraft, the question arises of whether at this point a specialist aircraft paint manufacturer, such as Cellon, was called in to supply a more suitable material, perhaps to one of the latest Air Ministry Material Specifications? DTD 260 Pigmented Oil Varnish and Undercoating for metal had been introduced in May 1935 and the Specification stated that the material was to dry to a uniformly smooth, glossy, finish. Whilst the Specification also stated that the range of colours would match those of BS 381 in its latest issue, it is likely that any colour required by the customer could be manufactured to this specification.

If this is indeed what happened, is there any reason why the new material supplied by Cellon could not have been a different colour to the original blue-green, namely the light blue-grey which Cellon called 'French Grey' of which Mr Huntley was sent a sample by his relative? Following this repaint, K5054 seems to have retained this second finish until March 1937 when it was damaged in a forced landing.

Camouflage applied

By this time, Supermarine were busy drawing up the camouflage scheme for production Spitfires. Representatives of the Royal Aircraft Establishment at Farnborough had visited Supermarine to discuss the application of a camouflage scheme to the Spitfire in February 1937 and Supermarine submitted their first drawing



K5054 as she emerged from the Eastleigh workshops after being camouflaged in September 1937. Note the ejector exhaust manifolds now fitted (Vickers)

showing the camouflage scheme for the Spitfire to the Air Ministry on 13 May 1937. This evidently needed some alterations carrying out to it as a revised drawing was submitted on 5 June 1937 which is thought to have been found satisfactory. The outcome of this was that whilst K5054 was undergoing repairs, the previous high gloss finish was removed altogether and by the time K5054 flew again in September 1937, a camouflage finish had been applied.

The camouflage finish now applied to K5054 was the 'A' Scheme as specified in Air Diagram 1160 'Camouflage Scheme for Single Engined Monoplanes – Army Co-operation Aeroplanes and Fighters', which featured the Temperate Land Scheme camouflage of Dark Green and Dark Earth on the upper surfaces. Under surfaces were painted Aluminium with the line of demarcation between the upper and under surfaces following a line at a 60 degree tangent to the horizontal along the bottom of the fuselage. National markings consisted of Red, White, Blue and Yellow roundels in the proportions of 1-3-5-7 on the upper surfaces of the wings and sides of the fuselage with Red, White and Blue roundels in the proportion of 1-3-5 on the under surfaces of the wings. Although the serial numbers were reapplied in the locations on the rear fuselage and rudder as previously, they were now also carried under the mainplanes between the roundels and the wheel wells in Night. The propeller blades and spinner were now also finished in Night, with each propeller blade having a 4 inch wide Yellow band completely covering the tip. This colour scheme remained in place for the rest of K5054's flying career, which came to an end on 4 September 1939 following extensive damage in a fatal landing accident.

A number of confusing issues

At this stage it is probably necessary to deal with a number of confusing issues which have been mentioned in the past in connection with K5054's colour scheme(s).

The first of these is the colour called French Grey which has been included in various editions of BS 381 since it was first issued in 1930. Although I have speculated above that the finish applied by Cellon may have been to DTD 260 which specifically mentions the use of colours from BS 381, it is my personal opinion that there is no link whatsoever between BS 381 French Grey, No 63, (more recently No 360), and the Cellon colour of the same name. The BS 381 colour is a greenish grey, with no hint of blue about it at all being a very light slate grey.

The second is the term 'Supermarine Seaplane Grey'. Allegedly a standard Supermarine colour applied to the company's seaplanes, very little is apparently known about the exact hue of this colour and its uses. It might be possible to speculate that Supermarine chose Cellon's French Grey as a standard colour for use on their flying boats and seaplanes for which purpose it was known colloquially as 'Supermarine Seaplane Grey', but even though the name 'Supermarine Seaplane Grey' has been linked to K5054 in the past, there does not appear to be any hard evidence which either confirms or refutes the link.

The third issue is speculation that the blue grey colour applied to K5054 might be related in some way to Medium Sea Grey. Medium Sea Grey originated at the Royal Aircraft Establishment circa July 1936 as part of the trials to establish the best colour to use for identification markings on camouflaged aircraft. It can almost certainly be ruled out as being used on K5054 in the first instance as the decision to make the grey used in the markings trials a standard colour was not made until the first week of October 1936. At the same time it was decided that the material would

Colour scheme chronology summary

The four different finishes applied to K5054 during its flying career, in order of application:

- 1: The natural metal and Aluminium dope with yellow zinc chromate primer finish of 6 March to 10 April 1936.
- 2: The initial high gloss Rolls Royce applied scheme of 11 May to 1 August 1936, which might have been a light blue-green automobile paint, perhaps similar in colour to BS 381C 101 Sky Blue; FS 34325.
- 3: The second high gloss scheme of 3 December 1936 to 22 March 1937, which was a light blue-grey aircraft paint, possibly applied using materials supplied by Cellon, called French Grey; approximately FS 35414 but a bit lighter and more grey.
- 4: The matt, Temperate Land Scheme, camouflage with Aluminium under surfaces from 19 September 1937 to 4 September 1939.

be produced to DTD 314 and would be called 'Sea Grey, Medium'. The RAE forwarded 100 Standards of this new colour to the Air Ministry on 31 October 1936.

Thus, Medium Sea Grey was too late to have been the colour of the original finish which we know was mixed using an automobile paint in any case and as far as the second finish is concerned, it would appear that there was probably less than a month between the Air Ministry receiving the colour standards which it could then disseminate to the aircraft and paint manufacturers and K5054 being repainted. This would appear to leave very little time to manufacture and apply the paint. Also, there is Mr Huntley's colour sample which is *not* Medium Sea Grey in colour.

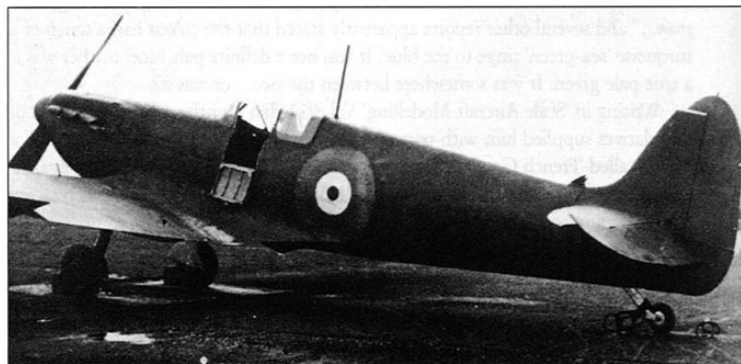
Colour conundrum

If this chronology is correct, then the second part of the conundrum concerns exactly what hue these blue-green and blue-grey colours were. The answer is of course that *we don't know!* Unfortunately, in the absence of either written records or a preserved colour sample, it would appear that the colour of the original Rolls Royce finish has been lost forever. When a Director of Sanderson and Holmes, the company in Derby who supplied the paint used by Rolls Royce, attempted to find out what colour paint was originally applied to K5054 some twenty or so years ago, he found that he was too late. The last former employee who might have known anything about it had died some ten years previously!

According to Ian Huntley, when he tried to research the Cellon colour in the 1960s, he too found that he was too late, Cellon having destroyed their records from that period. Fortunately he still had his colour sample from the Cellon catalogue, so in this case, all was not lost. By Mr Huntley's own admission, this sample is likely to have undergone some degree of fading over the years, but it is probably as close as we are likely to get to the colour of the second, Cellon applied scheme.

Model paints

Whilst no model paint manufacturer currently has any interpretation of 'French Grey' or 'Supermarine Seaplane Grey' in their ranges, this has not always been the case. When Compucolour produced their Supermarine Seaplane Grey model paint (CB 32) back in the 1980s, they appear to have used Mr Huntley's sample as a master. When brushed out, Compucolour CB 32 is somewhere near FS 35414, but a bit lighter and more grey.



One of the last photographs of K5054 taken whilst the aircraft was intact, in early September 1938 at Eastleigh, immediately prior to the fatal accident which terminated her flying career (R J Mitchell Museum)

Following the split of the original Compucolour firm which led to the emergence of the Compucolour 2 and DBI paint ranges, DBI produced their own version of Supermarine Seaplane Grey paint, which went for the light blue with a hint of green interpretation. A brushed out sample of this paint is a near match for BS 381C 101 Sky Blue; FS 34325. What evidence, if any, lay behind this choice of colour is unknown.

Whilst several model paint companies manufacture the necessary paints to apply a camouflage or zinc chromate and natural metal finish, unfortunately neither Compucolour 2 nor DBI remains in business today, so the modeller is unable to purchase either interpretation of K5054's high gloss colour scheme for use straight from the tin.

In the case of the blue green interpretation of the Rolls Royce finish, this is not too big a problem since the exact colour is unknown any event and any attempt made by the modeller to mix a colour similar to BS 381 Sky Blue or FS 34325, is as likely to be as accurate as anything else.

With regard to the Cellon finish, a near match for a brushed out sample of Compucolour 2 CB 32 Supermarine Seaplane Grey can be had by mixing 14 parts Humbrol 65 Matt Aircraft Blue with 1 part Humbrol 144 Matt Intermediate Blue.

To conclude, as ever, anyone who can confirm or refute any of this either from personal experience or Primary sources is invited to contact the editor at the editorial address. **AM**