

PHOTOGRAPHIC ANALYSIS OF THE 10X8" PRINT OF CALVINE UFO PHOTOGRAPH DONATED BY CRAIG LINDSEY AND CURRENTLY HELD IN SPECIAL COLLECTIONS AT SHEFFIELD HALLAM UNIVERSITY.

Andrew Robinson, Centre for Contemporary Legend, Sheffield Hallam University.

0.0 - INFORMATION

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Date of Review	22/08/22 (updated v4)
Reference	Calvine-UFO-04
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0.1 - SUMMARY

After detailed analysis of the image itself and the physical properties of the print it is my considered opinion that:

- The photograph is a colour print from a Black and White film printed on standard Kodak colour negative paper of the early late 1980s or early 1990s.
- The film is likely to be either Ilford XP-1 Chromogenic Black and White Film or a traditional standard Silver Halide B/W film with a film speed of 400 ISO such as Ilford HP5 or Kodak Tri-X.
- Grain analysis suggests that the film is too coarse grained to be XP-1 and is most probably HP5 or Tri-X
- It is likely that the image was taken on a SLR with either an 80mm or 110mm prime lens; or a mid-range zoom lens; OR on a compact 'point and shoot' camera with a 35-70mm or similar zoom lens.
- The image shows no evidence of negative or print based manipulation and all visible signs suggest this is a genuine photograph of a scene before the camera.
- The arrangement of the focus within the image suggests that the foreground is more out of focus than the background and that the point of focus in the image is beyond (not in front) of the fence. This would seem problematic for an explanation of the UFO as model/cut-out in the foreground which would be a possible explanation otherwise.
- Relative measurements of objects of known size within the photograph allow a calculation of an estimate of the approximate size of the unidentified object of between 30m and 40m with a height of between 8m and 12m.
- The overcast sky visible in the photograph is consistent with that recorded by the UK Met Office for the given location on the day the photograph is claimed to have been taken.
- It is not possible to identify the object in the centre of the frame however the evidence present would suggest that this object WAS in front of the camera in the position shown when the photograph was captured.
- It follows that this is either a genuine unidentified flying object in the sky OR that any construction or manipulation used to create this effect occurred IN FRONT of the camera and not in the subsequent processing and printing, compositing or collaging of the image.
- The results of this analysis are consistent with and support the claimed heritage of the print.

0.2 - INTRODUCTION

This analysis is based on a detailed review and analysis of original materials comprising:

- Original Photographic Print
- Card envelope used in which print has been stored.
- Photocopies of print contained within envelope.

In addition, a number of digital copies and enlargements of the original print have been produced by the reviewer to allow more detailed analysis. These include:

- Photographic copies of entire print and envelope (front and back)
- Detailed macro photographs of key areas of the print
- A high-resolution flatbed digital scan of the image and envelope

Digital images were produced on a Nikon D610 using a 110mm Micro-Nikkor resulting in NEF raw files at full frame resolution. Images were processed in Adobe Lightroom and exported as 16bit Tiffs with a file size of approximately 138.5 mb.

Digital scans were produced on a A3 Epson Flatbed Scanner using VueScan capture software resulting in 16bit Tiff Raw files. Images were processed in Adobe Lightroom and exported as 16bit Tiffs with a file size of 2.8 – 2.9 GB

Scans of Colour prints produced from XP-2 negatives dating from 2002 and HP5 black and white negative dating from 1988 were also made at an equivalent size and resolution in order to provide comparisons of the print emulsion and grain size.

1.0 - ANALYSIS

1.1 - Image Description



The image is taken looking slightly upwards with the majority of the frame filled with sky and only a small portion of landscape visible along the lower edge of the frame. Variations in the tonality of the sky allow clouds to be distinguished and the scene appears to be lit by diffused light from an overcast sky rather than by direct sunlight.

1.2 – Branches

Along the left-hand half of the top edge of the image two groups of branches partially frame the image. The left-hand group itself consists of three or four groupings of branches with an increasing density of leaves closer to the upper edge of the image compared with the lower ends of the branches.



The second distinctive group or branches are located to the right of the first just to the left of the central point along the top edge of the image. These branches are darker in tone and more heavily covered with leaves than those to its left. These branches also enter the image at a steeper incline and appear to be different in kind to the leaves to their left.

At the far left of the lower edge of the image there is a darker area which appears to be the branches and leaves of a tree, bush or some kind of plant. The leaves are long, thin and pointed and appear quite different to those seen above the along the upper left hand edge of the image.



1.3 – Fence

Along the lower edge of the image can be seen a fence supported by three (or possibly four posts): two thicker posts (possibly wood) and to the left-hand side a thinner fence support which appears to have a circular hole in the top through which the uppermost wire of the fence passes. This would appear to be a metal post or separator. A third post maintaining the regular post spacing may be hidden behind the 'bush' at the left-hand corner of the print but it is not possible to clearly identify this. Two wires pass from post to post to form the fence. The uppermost of the two fence wires visible appears smoother than the lower.



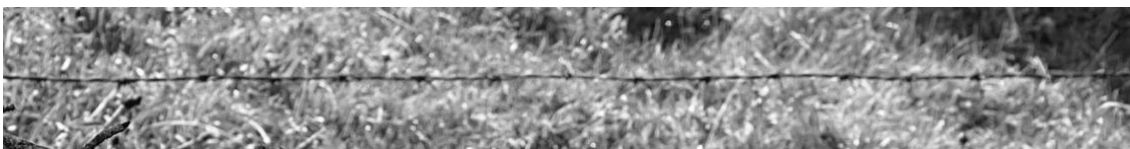
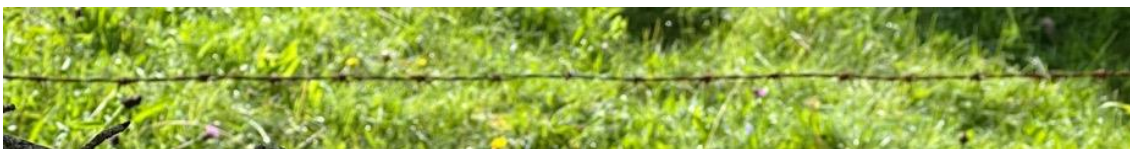
Two dark marks appear along this upper wire just to the left of both of the two thicker posts (see above). It is not possible to clearly determine what these marks are with any certainty however they are likely to be grass or animal fur, wool, or some similar material which has become attached to the fence wire. There appears to be some threads or some other material hanging from the two marks to the left of the left-hand wooden post.



The lower of the two fence wires has a regular marking along its length (see above) whereby the wire appears slightly thicker at regular intervals. It is possible that this wire forms the uppermost edge of gridded wire fencing with the marks indicating where slightly thinner vertical wires are attached which have not registered on the film however it is most likely that the wire is barbed. The barbed wire typically used in agriculture and forestry has a standard space of 10cm between the barbs (Ref 1 & 2) and in a recent photograph taken by the author of a barbed wire fence with 10cm spaced barbs on moorland in the Peak District the wire appears similar to that in the original photograph (see below).



Section of Original Photograph show wire (assumed to be barbed) with approximately 16 'barbs' visible

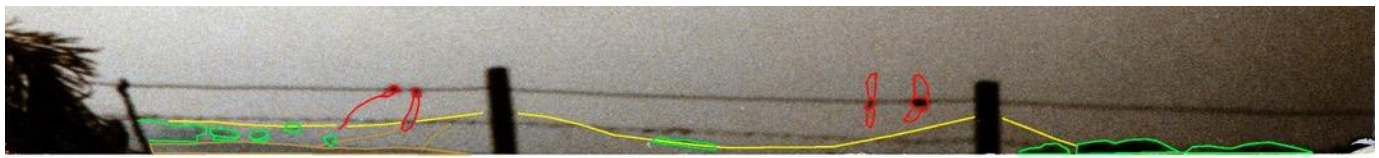


Authors recent photograph shot on 70mm lens focused on near foreground (5 feet distant) showing 16 barbs of a barbed wire fence at 15 feet distant appearing slightly out of focus. As the barbs fall out of focus their points disappear and they appear as a slightly thickening of the wire at regular intervals similar to that seen in the original photograph.

1.4 – Background

Behind the fence along the lower edge of the print, a number of features can be seen. These include what appears to be an faint undulating horizon, a slightly darker ridge with dark markings which are interpreted as groupings of trees. These features appear to be in sharper focus than the foreground fence and thus are interpreted as being in the background rather than being part of the fence.

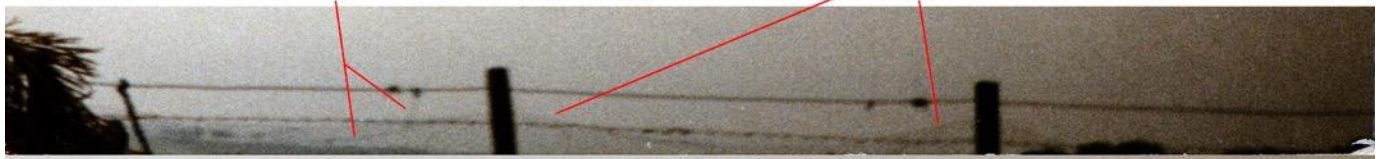
The horizon line appears as a tone boundary between a light area above (sky) and an even darker area below (land). This boundary is sharper than the fence wire and posts suggesting it is in the background rather than part of the fence. The tree lined ridge is also darker than the horizon landscape behind it – this is consistent with atmospheric haze which results in distant landscapes appearing lighter in tone than those nearer to the viewer. Where the 'wool/grass' attached to the fence hangs down below the fence wire it appears more blurred than either the 'field boundaries' (shown in brown) and the horizon line (yellow). The 'wool/grass' is thus interpreted as being attached to the fence while the ridge, trees, field boundaries and horizon line are interpreted as being in the background.



Groups of Trees on ridge Ridge and field boundaries Wool/Grass on Fence Far Horizon Behind Ridge Wool/Grass on Fence Groups of Trees on ridge

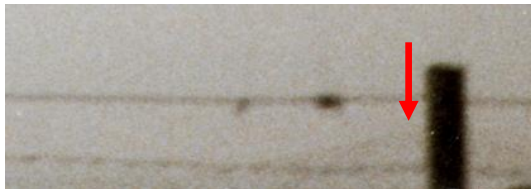
The wool/grass shows greater blur than the 'field' boundaries and the boundary of both the ridge and horizon below

This 'peak' is not a line - it clearly has an even darker tone on the lower side of the boundary along its length - as would an horizon

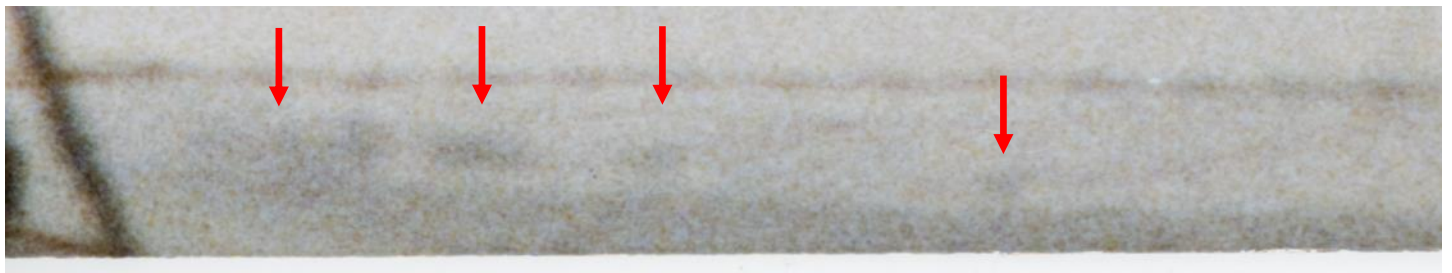


(NB - A simple darkening has been applied to the top two versions while the bottom strip is unaltered)

About two thirds of the way along the bottom of the photograph and behind the third fence post there is a distinctive angular peak on the horizon which is the highest point visible in the background (see below)



Just to the right of the left hand thinner fence post and in front of the range of hills on the horizon, there is a slightly lower darker hill or ridge (shown in brown on the large image) with what appears to be three groupings of trees (shown in green on the large image), a large grouping closest to the fence post followed by a small group of 3-4 trees and finally what appears to be a single tree or possibly a pair of trees (see below). A little further along the ridge, approximately midway between the first and second fence post there appears to be a further lone tree on this hill.

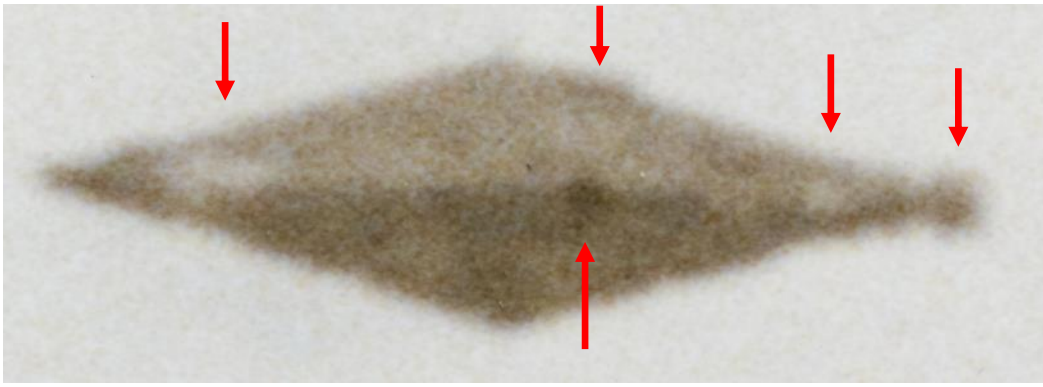


Some way closer to the camera, just visible to the right of the right-hand fence post and to the right of the distinctive hill on the horizon is an irregular dark area at the very lower edge of the print (see below). This would appear to be the tops of trees in a forest or wooded area in the middle distance (shown in green on the large image).



1.5 – Unidentified Object

In the Centre of the image appears an unidentifiable object with a squashed diamond shape. This object has some slight variation in its tonality along with length with a dividing line along its length with the upper surface lighter in tone than its lower surface. The lighting of this object is consistent with the diffused overcast lighting of the overall scene.



At either end of the object, approximately a fifth of the distance along its length, a lighter area of tone is present with the left-hand area being both larger and lighter than area visible at right hand end. Just to the right of the centre of the object a darker circular area of tone is present. Along the top right-hand slope close to the peak is a small darker raised area.

The far-right hand extremity of the object, where the upper and lower surfaces join, extends to circular 'nose' like form. In contrast, at the left-hand extremity of the object the upper and lower surfaces join at a point. No smoke or fumes are to be seen around the object.

It should be noted that the top half of the diamond is NOT a mirror image of the lower half.

1.6 – Plane/Harrier

The plane flying below and behind the unidentified object is traveling from right to left and, from its position in relation to the landscape behind, it appears to be flying at a relatively low height.

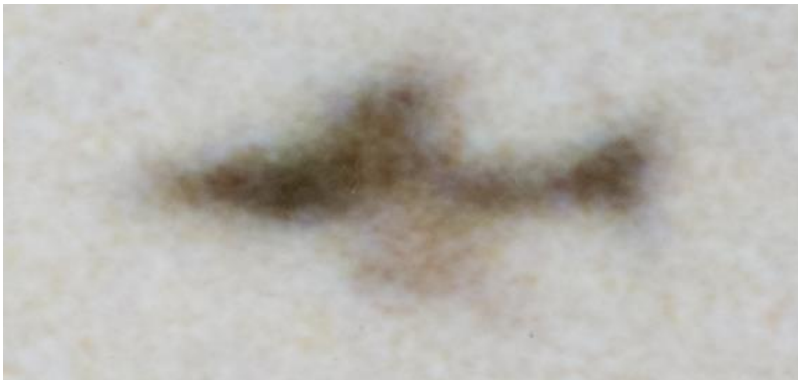
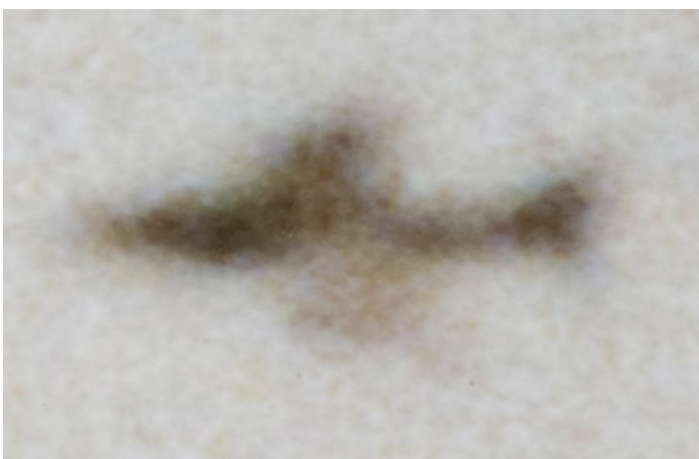


Image Source – Warbird News [HERE](#)

Although it is not possible to clearly identify the plane due to its distance from the camera; the slight blur in the image; and the film grain, the plane's silhouette is nevertheless consistent with that of a Harrier Jet.



The 'harrier' is blurred, whilst there may be a small amount of focus blur present lateral movement blur can be seen suggesting that the plane is moving at speed. The interpreting of this blur as movement related is supported by the fact that the Harrier, whilst appearing close to the sharper background, is the most blurred object in the image. There is a lighter blurred area on the lower wing which in part obscures the shape of the wing. It is not clear what might be causing this - it may be an effect of the film grain or a mark on the neg.

1.7 - Climatic Conditions

The image reveals an overcast sky with diffused light and no visible blue sky or direct sunlight. The date given for the creation of the photograph is Saturday 4 August 1990 at 2100 GMT approx. The weather recorded by the UK Met Office for that day includes the following summary of the weather in Scotland:

"Scotland and Northern Ireland had a rather cloudy day, but some eastern parts of Scotland were quite sunny. There was some rain in the north and west of Scotland with a few showers in Northern Ireland and southern Scotland by the evening. Temperatures were a little above average." (3)

Central Scotland had between 2 and 4 hours of sunshine from dawn to dusk with temperature of between 18 and 22 degrees centigrade (3). Sunset on the 4th August 1990 was at 09:20:53 PM (4) which would place the origin of the photograph around 20 mins before sunset.

Conclusion - The weather and sun data for the day in question are thus consistent with the claimed heritage of the photograph and the visual evidence contained within.

2.0 - IMAGE ORIENTATION

Several commentators have suggested that the correct orientation of the image might be 180 degrees to that which has been assumed and that image is actually that of a reflection in the surface of a pond, lake or loch.



When the print is inverted and considered as a reflection in a water surface the diamond shaped object could be interpreted as the reflection of a triangular rock or piece of wood which is slightly projecting above the water surface. Whilst this is a possible explanation, the top half of the diamond is NOT a mirror image of the lower which is problematic for such an interpretation.

It is unlikely that a single viewpoint could produce a reflection of the diamond shaped object, the foreground branches and the background fence in a single image as they are seen in the inverted image. An independent and separate adjustment of the perspective of both background fence and foreground branches produces a more realistic view (see below) however this is not what is seen in the original image.



Perspective applied to fence area.

Original Image

Perspective applied to branches.

The mirror stillness with not a single ripple and the lack of any surface debris (leaves, twigs, bubbles etc.), whilst not impossible, would be highly unlikely.

Unless the lake were on high ground with no land higher present behind the fence then we should see a reflection of the landscape beyond the fence rising above it. Were the lake in a valley bottom, as some people have suggested, then the valley side beyond the fence would be seen reflected in the top of the image.

Conclusion – although the possibility of the image being a reflection in the surface of a lake cannot be fully ruled out the above issues with this interpretation make this highly unlikely.

3.0 - PRINT AND PAPER ANALYSIS

3.1 - Lens and Camera.

Assuming the image has been printed full frame - aside from the small amount of image cropped of each side to allow the image to fit on the 10x8" print - the field of view suggests that lens used is likely to have been a standard or short telephoto lens, with an approximate focal length of between 50mm and 110mm.

The sharpest point in the image is the unidentified object in the sky with both foreground and background details appearing out of focus in comparison. Due to the sharpness of the central object, the blurring of other areas of the image except for the plane would seem to be a result of focus and the depth of field used rather than due to camera movement during the capturing of the image. Depth of field is the depth of the scene that is rendered in focus either side (in front or behind) of the point of focus and is a function of the aperture (F Stop) used along with the focal length of the lens. Wider apertures and longer focal length lenses result in a shallower depth of field. The depth of field visible in the image is fairly shallow suggesting either a wider aperture (e.g. F2.8 – F5.6) or a longer lens (e.g. 80mm or above) or possibly both.

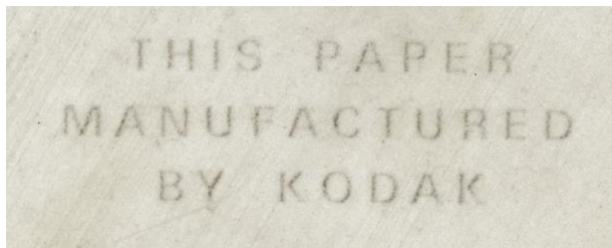
The above information would suggest the use of a traditional SLR (single lens reflex) camera fitted with either a fixed focal length lens (a prime lens) with a focal length of between 50mm and 110mm OR a zoom lens with a variable focal length of perhaps 35-110mm or 70-210mm. This would be fairly common equipment for an interested amateur photographer in the late 1980s and early 90s.

The second possibility is that the image was taken on a simpler and cheaper 'point and shoot' compact camera. Compact cameras of the late 1980s and early 1990s were fairly advanced with auto exposure and accurate auto focus available at a reasonable price. At this time point and shoot film cameras were the most popular camera for amateur family, travel and holiday photography. Many compact cameras had short range zoom lenses such as 35-70mm or 35-110mm and it is quite possible that such a camera might have been used to produce this photograph.

Disposable cameras, which became popular in the mid 1990s, were available if not commonly available in the UK in 1990. Kodak introduced the 35mm Fling single use camera in 1988 however didn't produce a B/W single use camera at this time and Ilford didn't introduce a single use camera using B/W HP5+ film until the early 2000s (the earliest data sheet is dated 2002) and a single use camera using XP-2 was not introduced until 2013.

3.2 - Paper Type

The backstamp identifies the paper as a Kodak paper.



Prior to 1961 Kodak paper was produced with a backstamp or water mark printed across its rear surface comprising of EKC encircled by a double-lined circle. This was replaced in 1961 by a single line of text reading: 'A KODAK® PAPER'. From 1972 up until the early 1990s this changed to the watermark shown on this print which comprised of three lines of text:

THIS PAPER
MANUFACTURED
BY KODAK

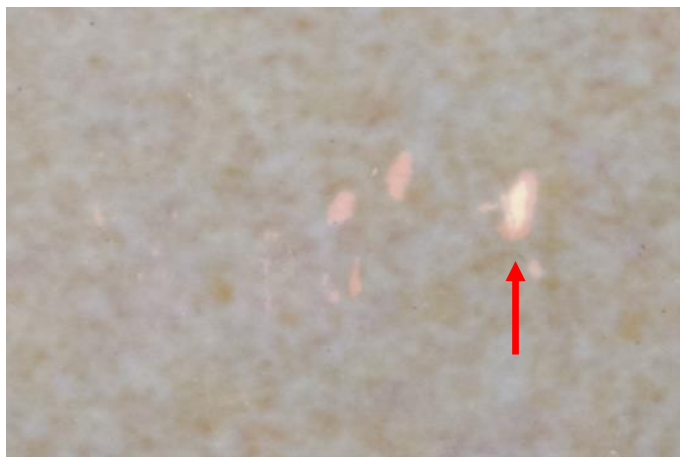
From 1989 onwards Kodak started to brand each of their individual product lines with a unique back print or watermark so this would suggest the paper was produced sometime between 1972 and the early 1990s.

The weight, texture, surface, finish and thickness of the paper identify it as a resin coated paper.

RC paper comprises of a thin layer of paper sealed between two layers of polyethylene (plastic) with the photographic emulsion and a top coating on the top surface. RC papers are thinner and lighter than fibre based (FB) paper at around 190gms compared to 250gms or more for FB paper. The introduction of RC speeded up processing times as the plastic coating prevents the absorption of processing chemicals which dramatically reduced the required washing and drying time. RC paper was produced with the following surfaces: F (glossy), N (matte), Y (silk), E (lustre) with glossy by far the most popular. The image quality of RC prints was less than Fibre Based paper due to the thinness of the emulsion present and the lower silver content which also resulted in a more limited response to toning in Black and White photography. RC paper was extensively used in the printing of colour negative photography where the speed of processing and drying was important.

Kodak Resin Coated (RC) supports, were introduced to their colour paper range in 1968. RC papers were most popular in situations where the speed of printing was important and were typically used in consumer high street printing, press and publicity photography, police, healthcare and other applied or commercial areas of practice. Fibre Based paper continued to be used for exhibition and archive prints within art photography and other areas where image quality and permanence were a priority although RC paper would typically be used for contacts and proof prints.

An small area of abrasion of the paper emulsion in the lower right section of the photograph (see image detail) reveals an orange/red layer beneath the image layer which is consistent with COLOUR paper.



Comparisons with abrasion marks on prints made from both XP-2 film and Colour negative film show similar results with a reddish result where the image layer is partially removed and a yellowish/white background where the image layer is fully removed. If greater abrasion is applied the entire emulsion layer is removed to reveal the white paper base:



Abrasion - 1993 XP-2 Print



Abrasion - Original Calvin Print



Abrasion - 1990's Colour Neg Print

All details reproduced at same scale and resolution from 10x8" prints

A small turquoise/green 'spot' in the upper left section of the print (see image detail) appears to be an small unprocessed area of the paper – unprocessed colour negative paper has a turquoise/green colour – possibly resulting from a small piece of dirt or adhesive being attached to the print surface during processing. This would again suggest that the paper type is colour rather than a toned Black and White print.



Conclusion – The image is print on Resin Coated Colour Photographic Paper manufactured by Kodak, produced between 1972 and the early 1990s. The paper type is consistent with the claimed heritage of the print.

3.3 - Chromatic Aberration

Peripheral areas of the print, especially the branches of the trees at the top left and the fence and bushes at the lower left and right seem to exhibit lateral chromatic aberration. Chromatic aberration, also known as colour fringing, is a colour distortion resulting from the camera or enlarger lens which creates an outline of colour along metallic surfaces or high contrast edges resulting in a blur of blue-yellow, red-green or magenta-purple fringing around the edge of objects in the photograph. Lateral chromatic aberration only occurs at the edge of images while longitudinal chromatic aberration occurs across the whole frame.



In the detail above green-red fringing can be seen around the fence post with a red/yellow fringe to the left and a weaker green/blue fringe to the right of the post. This is not seen on the fence post at the centre of the lower edge nor on the unidentified object at the centre of the image.

Given the image has been taken on black and white film which couldn't record the any chromatic aberration present in the cameras lens this must be chromatic aberration produced by the enlarging lens during the printing of the image.

If, as believed, the printed image was taken on B/W film (either traditional B/W film - Tri-X, HP5, Fuji Neopan etc or possibly Ilford XP1 chromogenic film) even if chromatic aberration was present in the camera lens these films would not record chromatic (colour) abortion as a colour fringe as we see in the print but rather as a very slight blurring of the image in the area where any aberration was present.

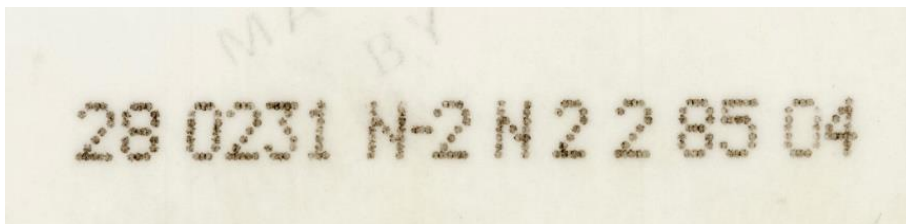
The colour aberration visible in the print must thus be a result of the enlarging lens used when the B/W negative was being printed onto colour paper.

3.4 – Printing and Processing

The Calvine image is a colour print from a Black and White negative. At the time the print was produced two likely means of producing a 10x8" colour print from a B/W or Colour negative exist. The print could have been hand printed in a colour darkroom on a colour enlarger and processed in a RA-4 dry to dry colour print processor OR it could have been produced on a dry-to-dry auto print machine (a 'mini lab') loaded with 10x8" RA4 colour negative paper. A third option, a colour hand print, tray processed (wet processed) in colour chemistry, is possible but highly unlikely, especially in a newspaper setting of the early 1990s.

The most likely printing method would be that the image was produced on a 'Min-Lab' machine that the newspaper used for quickly producing 10x8" 'press prints'. This would produce 10x8" borderless print like the one we have here - hand prints made in the darkroom would normally have a white boarder. It would also be consistent with the poor Chromatic Aberration visible in the print. Typically, a proper colour enlarger would have much less chromatic aberration than seen in the print – although this depends on the quality of the lens employed.

It is normal with mini lab machine prints for a print number to be present on the back of the print and such a code exists on the rear of the Calvine print.



These numbers are a record of the print settings. Different manufacturer's processing machines use different configurations and individual labs can configure their codes to meet their own needs however most use similar conventions (see ref 5 & 6).

- Codes usually start with a number to identify the machine the image was printed on so this appears to be printed on machine '28'. Alternatively, this is sometimes used to identify the roll and frame number.
- The next numbers usually identify the manufacturer and film speed –so possibly manufacturer '02' and film speed '31' however sometimes these might also be used for the film processing settings.
- The 'N' numbers represent the enlarger/printer settings for YELLOW, MAGENTA and CYAN (or sometimes Cyan, Magenta and Yellow).
- 'N' means no adjustment while '2' or (+2) represents an increase of two units of colour and -2 represent a reduction of two units of colour with 1 Unit = 5%.
- The colour adjustment settings are then usually followed by the density and contrast settings which might be + or – with units equal to 10% density.
- Thus, the print was probably made with a setting of:
- Normal Yellow / -2 Magenta / Normal Cyan / +2 units of exposure / +2 Units of Contrast.

- The last two numbers are likely to be batch numbers rather than date numbers.

Data codes are likely to have been set up by the lab concerned and without knowledge of their conventions and codes it's impossible to determine their meaning.

It would be useful to find out what equipment the Daily Record used to produce 10x8" press prints in the early 1990s (mini lab brand & manufacture). Someone who worked in the darkrooms at the Daily Record might also be able to shed light on the codes used here or if other photographs printed at roughly the same time were available more information might be derived from the code however it is unlikely that this would reveal anything other than film manufacturer, film iso which machine this was printed on and the batch number.

3.6 - Print Size - 10x8"

The Calvine image is a borderless 10x8" colour print made from a Black and White negative. The 10x8" (20.5 x 25.5cm) paper size was introduced alongside the introduction of 10x8" large format film in the early years of the C20th and progressively replaced the previous 'plate' sizes of film and paper. 10x8" paper allowed direct 'contact' printing of images made on 10x8" film (or four contact prints of 5x4" negatives) and became the most popular paper size within professional photography for much of the second half of the C20th being used for press and publicity prints, proof prints, police and health situations. Since the advent of digital photography paper sizes have largely moved to the 'A' series of paper sizes although photographic (analogue) paper is still produced in imperial sizes.

35mm film has a ratio of 3:2 while 10x8" paper has a ratio of 5:4 thus in order to print a 35mm image on a sheet of 10x8" photo paper without borders a proportion of the sides of the image would have to be cropped. It should be assumed that this image has been cropped in this manner when printed. The common paper sizes for typical consumer 'en-prints' 6x4" (ratio 3:2) and 7x5" (ratio 3.5x2.5) are a better fit for 35mm film requiring little or no cropping.

Conclusion – The print size is consistent with the claimed heritage of the print.

3.7 - Film Type

Areas of the image which would exhibit colour in a colour print (the sky, the trees in the near foreground and distance, the grass in the foreground) are all rendered in tones of sepia or 'toned' black and white and do not exhibit any 'true' colour tones. The image is however not pure monochrome/black and white having a slight sepia tone. Sepia tone can be achieved by toning a black and white print however given that it has been established above that the image is printed on colour paper this would suggest that image was printed from a black and white negative.

Two types of black and white films may have produced this print:

- a standard black and white photographic film processed using standard black and white processing chemicals (e.g. Ilford FP4 or HP5; Kodak Pan-X, Tri-X or T-max; Fuji Neopan 400)
- a chromogenic colour film designed to be processed using standard C41 colour negative processing chemistry to produce a monochromatic image when printed on colour paper (eg Ilford XP1 or XP2).

Whilst a standard Black and White negative could be used to produce a black and white image on colour negative paper this would require difficult colour adjustment during printing due to the fact that black and white film is missing the yellow and magenta colour masks which are used in controlling the colour reproduction of colour negative images and result in the orange colour typical of colour negatives.

Ilford XP-2 (launched in spring 1991) and the earlier XP-1 (introduced in 1980) is a high-speed, fine-grained chromogenic film available in 35mm and 120 sizes which was adapted from standard colour negative stock to produce black and white prints when processed using the standard colour processing (C41) and printed on colour negative paper. It has a particularly wide exposure latitude and delivers good results unpredictable lighting or where there can be wide-ranging subject brightness.

XP-1 and XP-2 would not be considered either a professional film nor a typical family photography film but rather a 'hobbyist' film. Amateurs would use the more popular and mass-produced colour negative films while professionals

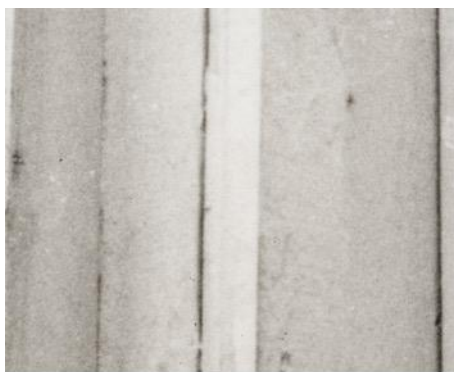
which for Black and White results would use Ilford, Kodak, Agfa or Fuji's traditional silver halide based negative film which they would either process themselves or take to a pro lab. In the UK Ilford's XP-1 and particularly XP-2 from 1991 onwards became popular amongst hobbyist photographers who wished to produce black and white images but wanted the convenience of high street (C41) processing and printing at a time when the processing of traditional B/W films was either becoming expensive or no longer provided by many high street labs and chemists. It should be noted however that few people would process the XP films at home due to the requirement for it to be processed using C41 colour chemistry which only few hobbyists would be equipped to do.

The use of either traditional B/W or XP-1 film would suggest that the photographer was both interested and knowledgeable about photography as at this time the use of B/W films was not common amongst popular and family photography, and loading a camera with such a film would be a proactive choice. During the late C20th black and white practice was closely linked to traditional documentary practice and was also a popular choice for landscape photography.

3.8 - Film Grain

The film grain within the image is noticeable however not extreme. Film grain is largely determined by the film stock however is also a result of the processing chemistry. Higher speed film has course and more noticeable grain while speed increasing, or edge sharpening developers may also produce coarser grain. Grain size is also determined by the amount of enlargement.

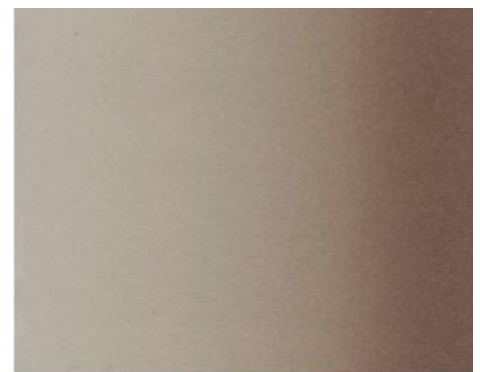
A full frame image printed to 10x8" will exhibit finer grain than a portion of the same image enlarged to 200% and printed on 10x8" paper. Assuming the print is full frame (with a slight crop to the edges due to proportions of the paper size) the grain size present in the appears to be reasonably fine grained and most consistent with a film with an ISO of 100 processed in a normal B/W developer. Finer grain results from a faster film could also result from using a specialist fine grain developer.



Print from Ilford FP4 100 ISO Negative 1988



Original Calvin Print



Print from XP-2 Negative c1992

All images from 10x8" prints scanned at same size and cropped to the same size

Comparisons of the grain of the original Calvin print with enlarged sections of roughly contemporary 10x8" prints produced from both XP-2 and FP4 negatives (see above) reveals that the grain on the Calvin print is coarser than that produced by XP-2 and similar to that visible on a print from a FP4 negative if perhaps a little coarser. This would suggest that the most likely film based on grain type would be a 100 ISO B/W film such as Ilford FP4 or Kodak Plus-X or perhaps a coarser grain 400 ISO film such as Ilford HP5 or Kodak Tri-X. Another possibility might be Kodak T-Max 100 however the grain structure of this 'T' grain film would have a different appearance.

Ilford's XP films were well known for their fine grain properties at different film ISOs and the grain visible in this print would seem to be coarser than that which would be produced by an XP-1 or XP-2 film processed normally through C41 chemistry so whilst the use for this film cannot be ruled out a traditional 100 or 400 ISO film would seem more likely.

Conclusion – It is my considered opinion that the film used was probably **Ilford HP5** or **Kodak Tri-X**. This is consistent with the claimed heritage of the print. The most popular films available at this time would be colour negative and the choice of a Black and White negative film by the photographer should also be considered as it suggests an interest in, and some knowledge of photography.

3.9 – Film Grain Around Unidentified Object



The grain in the area of the unidentified object in the centre of the image shows no break, distortion or unevenness and is continuous across the object. There is no evidence from the grain distribution around the object that the image has been collaged or constructed. The grain is continuous, in size, texture and density across the whole image suggesting that the image itself (both negative and print) has not been manipulated. The grain present in the photograph and around the unidentified object is consistent with this being a genuine recording of a scene in front of the camera.

A possible approach to disguising the collaging and construction of an image, either on the negative or print would be to rephotograph a manipulated image on a coarser grain film so that a convincing and genuine grain distribution might disguise joins and artefacts of the manipulation. Whilst it is impossible to fully rule this out this would be unlikely due to the fineness and consistency of the grain in this image.

Conclusion – The film grain distribution suggests that no negative or print based manipulation of the image has taken place and that the image is a genuine representation of a scene in front of the camera.

4.0 – SIZE CALCULATION

The relative sizes of objects in the photograph, as measured from a print, are dependent upon their actual size AND their distance from the camera. This relationship is an inverse linear relationship, i.e. size is $1 / \text{distance}$ - if you double the distance the size halves.

The length of a Harrier Jet is known and the length of a section of the barbed wire in the foreground can be calculated based on the standard spacing of barbs on the typical type of barbed wire in universal use across farming and forestry applications where the barbs are spaced in 10cm intervals (see ref 1 & 2). Thus, if we are able to determine at what point between the fence in the foreground and the jet in the background the UFO is flying, we are able to calculate an approximate value for the size for the unidentified object.

Background - Harrier Jet



Length of Harrier GR3/AV-8A = 14.4 m / Length on Print = 0.80 cm

Middle Distance - Unidentified Object



UFO - Length on print = 3.33 cm / Height on print = 0.97 cm

Foreground: Wire Fence



To Scale from Original Image

Length of Fence (18 barbs) = 170 cm / Length on Print = 6.11 cm

- **Harrier** - True Length = 1440 cm / Image Length = 0.80cm
- **UFO** – True Length = Unknown / Image Length = 3.33cm
- **Fence** - True Length = 170cm / Image Length = 6.11cm

Calculations of the approximate size of the Unidentified Object have been made based on three different placements of the object between the fence in the foreground and the harrier jet in the background:

Option 1 - Assuming UFO is 50% of distance between fence and jet - UFO Length = 30.43 m / UFO Height = 8.86 m

Option 2 - Assuming UFO is 33% of distance between fence and jet - UFO Length = 20.60 m / UFO Height = 6.00 m

Option 3 - Assuming UFO is 66% of distance between fence and jet - UFO Length = 40.27 m / UFO Height = 11.73 m

Conclusion - Assuming the position of the unidentified object is (as it appears to be) closer to the Jet in the background than the fence in the foreground, an approximate length of between 30 m and 40 m and a height of between 8 m and 12 metres can be calculated for the object. NB – It should be noted that the measurements calculated here are approximate and are based on the stated assumptions and will have a margin of error of approximately +/- 10%.

References:

- 1 - <https://www.jacksons-fencing.co.uk/fencing/agricultural-fencing/wire-fencing-barbed-wire>
- 2 - <https://www.crestalafencing.co.uk/product/barbed-wire/>
- 3 - https://digital.nmla.metoffice.gov.uk/SO_80a8b686-2482-478c-bba6-02828d9a5d10/
- 4 - https://sunrise.maplogs.com/blair_atholl_pitlochry_ph18_uk.105340.html?year=1990
- 5 - <https://www.photo.net/discuss/threads/processing-film-the-numbers-on-the-back-of-prints.164559/>
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Photographic analysis of the 10x8" print of Calvine UFO photograph donated by Craig Lindsey and currently held in special collections at Sheffield Hallam University [Version 4 - 2022]

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