

# Pixel v POTUS

Of all the unusual and contentious artifacts in the online document published by the White House, claimed to be an image of the President Obama's birth certificate<sup>1</sup>, perhaps the simplest proof of tampering can be found in two of the images that can barely be seen. The goal of this article is to first prove, even to those without significant experience with image-manipulation software, that the White House has published a document which is definitively NOT a scan of a single paper original, and second to instruct those with interest in examining these claims how to review and investigate the document for themselves, so that they can see it with their own eyes.

The electronic document is presented in "Portable Document Format" format, as a "pdf" file. This widely-accepted format for preparation of text and visual information is used to convey documents of many types and uses, and has become the de facto standard for portable documents – even for use on cell phones. Part of the widespread acceptance of the format comes from its versatility: it can incorporate images and text, with great flexibility. And it is that flexibility that has provided a platform for the White House to present a document far too complicated to be genuine.

Without examining signatures, or even addressing the textual content of the document, there are artifacts which cannot exist as the result of the scan of a paper document into a computer. Indeed, those defending the document as genuine would have every citizen believe that the computer software responsible for scanning a simple piece of paper and converting it into a "pdf" file could not only see what was on the surface of that piece of paper, but could also see colors and detail underneath that paper surface, and that is an unashamed deception. To begin understanding this, let's try a thought experiment.

Imagine a window envelope, of the type used by banks for statements, where the address of the client shows through a clear plastic window. There are two layers of paper visible to the observer: the envelope, and the portion of the contents visible through the transparent "hole" in the envelope. Now imagine taking a picture of that envelope, and printing the picture: what was previously the composite of two pieces of paper is now just one piece of paper. With the envelope in hand, the contents could be removed and the bank statement read. With only the picture of the envelope in hand, no part of the statement is visible, or retrievable, except the address.

Now take just one more step in the experiment: place a small opaque adhesive sticker on the transparent envelope window, so that it covers just one letter in the address on the bank statement inside, take another picture of the envelope, and print it. On the envelope, you can remove the sticker, and again you can see the complete address. You can still open the envelope, and read the entire statement. On this new picture, however, you can erase the image of the sticker, or perhaps cut it out, but you will not be able to see the letter covered by it -- the camera cannot capture what it cannot see – and you still cannot get access to the statement.

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<sup>1</sup> [http://www.whitehouse.gov/sites/default/files/rss\\_viewer/birth-certificat-long-form.pdf](http://www.whitehouse.gov/sites/default/files/rss_viewer/birth-certificat-long-form.pdf)

Result: if you take a picture of any subject, you cannot retrieve from that picture – ever – what the lens could not see when the picture was taken.

Now, to the document provided by the White House. The images and information presented below can be reproduced by anyone, by obtaining a free trial copy of Adobe Illustrator<sup>2</sup> and loading a copy of the purported birth certificate into it. Instructions to do exactly that follow this examination. All of what you are about to view was accomplished by loading the White House document into Adobe Illustrator CS3. The document images have been left as delivered, and two separate layers have been added for description and clarity. The first added layer is placed “behind” the White House document components, and consists simply of a blue background field, so that any “holes” – transparent spots – in the document become visible. The second added layer is placed in front of the White House document components, and contains all the boxes and numbers used to identify the various areas of interest on the White House document. Neither of these layers impedes the view of, or alters, the original content, and you can verify all those claims for yourself.

The White House file does not consist of just one image, but 9 distinct images merged together, with the first 8 positioned “in front of” – that is, so you see them first – the large background image (image 9), consisting of the green “safety paper” and outlines, as well as some text. Figure 1 shows the file, with the first 8 images, marked with numbered red boxes, displayed over the 9<sup>th</sup> (the safety paper background).

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<sup>2</sup> <http://www.adobe.com/cfusion/tdrc/index.cfm?product=illustrator>

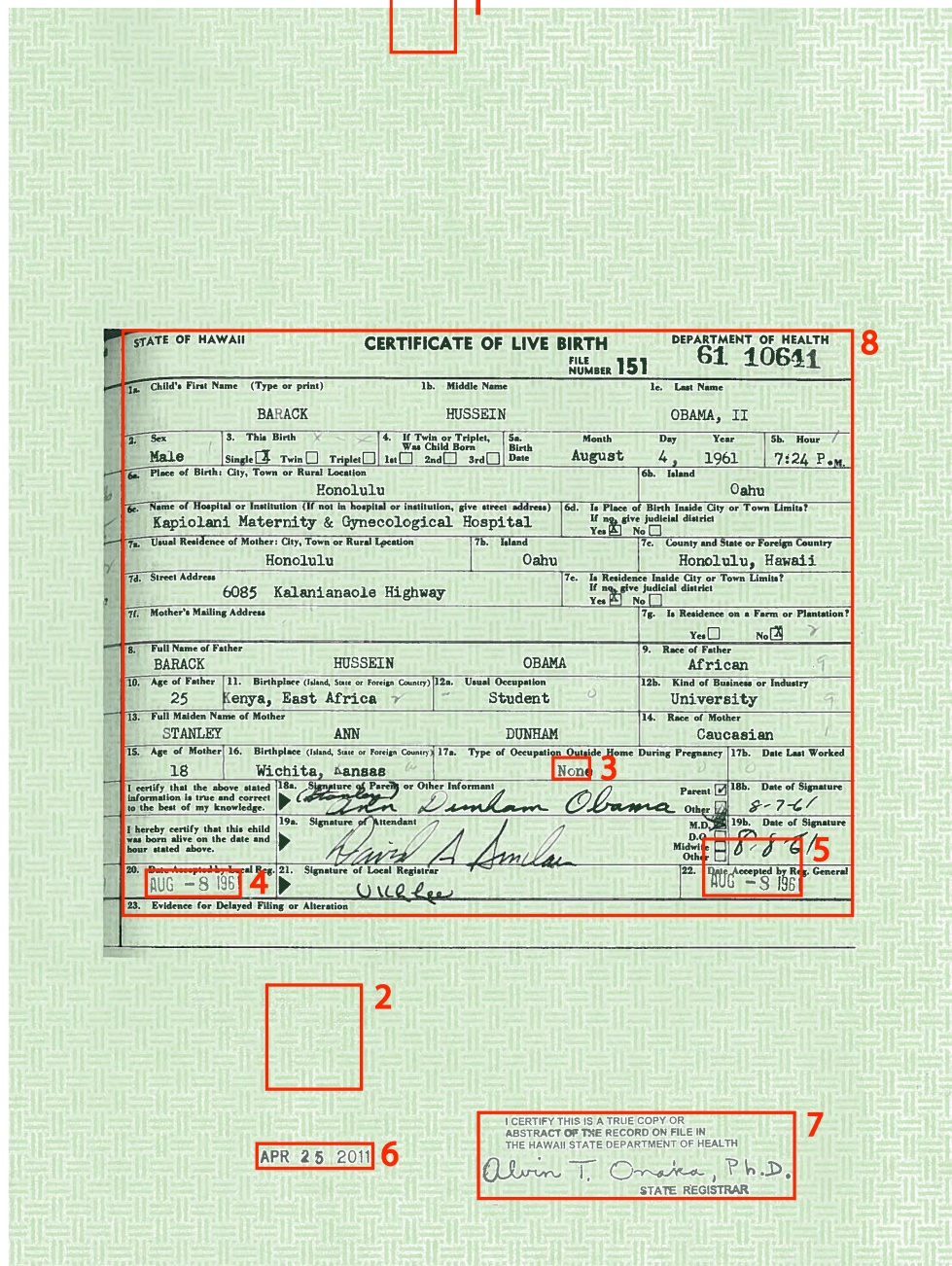


Figure 1 -- The first 8 images, boxed and numbered, displayed on the safety paper (image 9)

Now, those first 8 images are designed so that there are areas which are transparent – like the window on the envelope – and areas that are opaque. This is important, because without that construction the images could not be added to the document without obvious background and border mismatches. With Adobe Illustrator, it is possible to toggle each image on or off, in any combination, with a simple mouse click, and the instructions for doing just that yourself are included below. Using Illustrator, here is the same set of 8 images, but with the background safety paper (image 9) “turned off”, all over the added blue background. Now you can see how each image is constructed to be opaque only

where the information being added is placed: those are the areas where the blue background is not visible; where the blue background is visible, the corresponding image is transparent, thus letting the background blue show through it.

**STATE OF HAWAII** **CERTIFICATE OF LIVE BIRTH** **DEPARTMENT OF HEALTH**

FILE NUMBER **151** **61 1064**

1. Child's First Name (Type or print) **BARACK** 1b. Middle Name **HUSSEIN** 1c. Last Name **OBAMA, II**

2. Sex **Male** 3. This Birth **1st** 4. If Twin or Triplet, Was Child Born **1st** 5a. Birth Date **August 4 1961** 5b. Hour **7:24 P.**

Place of Birth: City, Town or Rural Location **Honolulu** 6b. Island **Oahu**

7. Name of Hospital or Institution (not in hospital or institution, give street address) **Kapiolani Maternity & Gynecological Hospital** 6d. Is Place of Birth Inside City or Town Limits? **Yes**

8. Usual Residence of Mother: City, Town or Rural Location **Honolulu** 7b. Island **Oahu** 7c. County and State or Foreign Country **Honolulu, Hawaii**

7d. Street Address **6085 Kalanianaʻole Highway** 7e. Is Residence Inside City or Town Limits? **Yes**

7f. Mother's Mailing Address **6085 Kalanianaʻole Highway** 7g. Is Residence on a Farm or Plantation? **No**

9. Full Name of Father **BARACK HUSSEIN OBAMA** 9. Race of Father **African**

10. Age of Father **25** 11. Birthplace (Island, State or Foreign Country) **Kenya, East Africa** 12a. Usual Occupation **Student** 12b. Kind of Business or Industry **University**

13. Full Maiden Name of Mother **TANLEY ANN DUNHAM** 14. Race of Mother **Caucasian**

15. Age of Mother **18** 16. Birthplace (Island, State or Foreign Country) **Wichita Kansas** 17a. Type of Occupation Outside Home During Pregnancy **None** 17b. Date Last Worked **None**

I certify that the above stated information is true and correct to the best of my knowledge. 18a. Signature of Parent or Other Informant **Barack Obama** 18b. Date of Signature **8-7-61**

I hereby certify that this child was born alive on the date and hour stated above. 19a. Signature of Attendant **Alvin T. Onaka** 19b. Date of Signature **8-8-61**

20. Date Accepted by Local Reg. **AUG - 8 1961** 21. Signature of Local Registrar **Alvin T. Onaka** 22. Date Accepted by Reg. General **AUG - 8 1961**

23. Evidence for Delayed Filing or Alteration

**APR 25 2011**

I CERTIFY THIS IS A TRUE COPY OR ABSTRACT OF THE RECORD ON FILE IN THE HAWAII STATE DEPARTMENT OF HEALTH  
**Alvin T. Onaka, Ph.D.**  
STATE REGISTRAR

Figure 2 -- The first 8 images, boxed and numbered, over a simple blue background.

Notice particularly images 1 and 2: they consist only of white dots, and practically disappear from view when displayed over the green safety paper of image 9. Indeed, that's probably why they are still in the document: they were forgotten. Those dots are

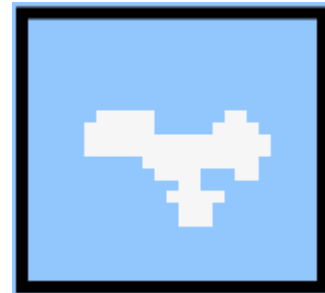
the first clue, on simple technical grounds, that the document is indeed an assembled creation rather than a scan of a paper original.

Here are three close-up views of just one set of dots in image 1, from the upper-right portion of that image, with a black box added to the document to frame the area.



**Figure 3:** shows the area with Image 1 dots visible, over Image 9 safety paper, with both over the blue background added for examination. Notice that only a small strip of the added examination blue background is visible.

**Figure 4:** shows the same area, with the background safety paper (image 9) turned “off”: the white dots are now visible over the added blue background. Notice that the dots are opaque white, obscuring the background blue.



**Figure 5:** shows the same area again, but now with the background safety paper (image 9) turned “on”, and dots of image 1 turned off. Notice that the safety paper, up to its top edge, is also opaque using varying shades of green, and also completely obscures the background blue.

Recall the adhesive dot on the window envelope in the thought experiment: the picture of the window envelope did not have the information under the dot, even if the dot was cut out of the picture, or somehow “erased”. Now again look at figures 3, 4 and 5: both the white dots and the green “safety paper” obscure the added blue layer beneath them both. Just as the paper of the envelope, and the adhesive dot added to the window on the envelope, both obscured the statement kept inside, both of the images (dots and background safety paper) obscure the blue background because both the white dots and the green safety paper are made up of opaque color.

Now ask this question: How does a paper document, scanned by the White House to show to the world, have 2 opaque colors on the same spot, when the camera – the scanner -- cannot see any more than one color for each pixel? Look again: in the released document, the white dots are displayed – visible. If they are visible, they would have to have been visible on a paper document being scanned. But if they are scanned, how then could the scanner have also seen the green area “behind” those white dots, in order to “paint” that area of image 9 with shades of green?

The answer is, simply, it can't, and it didn't. A scanner does not have x-ray vision anymore than a camera does. Any spot on a document that is simply a scan of paper can have only one color associated with it. If there are two, then the document must have been created from multiple images layered together instead of a piece of paper.

If this is still not clear, try this: have someone take a picture of you with a football hidden behind your back, not visible to the camera. Will you ever be able to extract the football from that picture? Of course not. However, if you take a picture of a football, and a separate picture of yourself, you can “hide” the picture of the football behind yourself, using Illustrator or similar products, simply by placing the picture of yourself “in front of” the picture of the football in the document. When done, the football would not be visible to a casual viewer, but could still be retrieved – made visible – using the software that composed the multiple-image document, by turning “off” the image placed in front of the football.

There are lots of examples elsewhere on the document where this multiple color phenomenon occurs.

**Figure 6:** In image 4, observe the month “AUG”.



**Figure 7:** “Underneath” the letters, on the background image, there are several shades of greens and grey.



**Figure 8:** Observe the “AUG” in image 5, attached to the letters “Date A”.



**Figure 9:** Underneath the opaque pixels of image 5, there are more grey and green pixels.

**Figure 10:** Observe the “OF” in image 7.



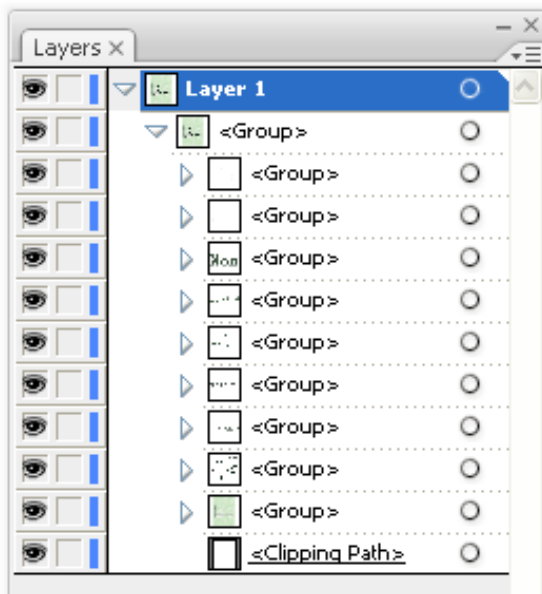
**Figure 11:** Note the grey pixels underneath the “F”.

Finally, look back at those examples, and notice that the background safety paper image – image 9 – is entirely opaque. Specifically, even the white spots on that image are opaque, because none of the underlying added blue background shows through, anywhere. That means even the white areas underneath lettering from other images represent an additional – and impossible – color, which the scanner could not see if it were scanning a piece of paper, as claimed by the White House.

Two colors on one pixel, represented in those overlaid image layers, means the additional images were not somehow extracted from one, single, original scanned image, because the image extractor can't "see" that additional color in the scan process, or in any manipulation after that. Two colors on even ONE pixel in this document means at least two separate image layers, from different sources, were deliberately placed together. In this case it means that multiple images were assembled to create a document that did not exist as a genuine whole.

## To Examine the Document Yourself

To examine the document yourself, you will need to download and install a trial copy of Adobe Illustrator, and download a copy of the White House "birth certificate".



Open Adobe Illustrator.

Click "File", "Open...", and select the certificate copy you saved from the White House. You will see the document appear.

Click "Window", "Layers". This will open a small control window titled "Layers". On the first line, to the left of the text "Layer 1" note the small triangle, pointing to the right. Click it, and a second line will appear, with the text "<Group>". Click the small triangle on that line, and 9 more "<Group>" lines will appear (expand the Layers window, by click/dragging the lower-right corner

of the window, if it is too small to show them all). These 9 groups each contain a single image.

The last element <Clipping Path><sup>3</sup>, does not have an impact on this tampering issue. Feel free to play with them, if you like. As I said, this is very powerful drawing software.

The Layers window also provides a way to select any image, simply by clicking on the small circle at the right side of each line. To click and select multiple images at once, click the first select circle, then hold the Shift key and click the additional select circles.

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<sup>3</sup> The element <Clipping Path> is a definition of boundaries for the whole display set. In Illustrator CS5, the clipping paths appear at the start of a group. In CS3, the version used for this article, the clipping paths appear last in the Layers window.



The Layers window also controls which images you see displayed. To make an image disappear, click the “eye” icon on the left side of any line. To cause it to reappear, click that spot again.

To zoom in on the image, observe the vertical toolbar titled “AI”, click on the magnifying glass, and notice that the mouse cursor is now a small magnifying glass, indicating the zoom function. Place the magnifying glass over the center of the location you want to see larger, note that there is a “+” inside the magnifier, and click. To zoom out, hold down the “Alt” key -- note the “+” becomes a “-“ -- and click. To move to different parts of the image, drag the sliders on the bottom and right of the image area.

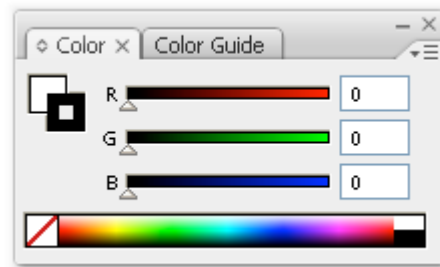


To locate a specific image on the page, click the circle to the right of a group listed in the Layers window. That image area will highlight with a blue box and center reference dot. Zoom in on the object to a size you prefer. To see the result without that image group, click the “eye” icon on the far left of the same group line in the Layers window. Try turning on or off all the various images, and notice the pieces of the document they contain.



If you want to do as I did, and place a blue background behind the image, it gets a little more complicated. Select the rectangle tool from the “AI” toolbar. Place the mouse cursor – now a crosshair – outside of the safety paper area at the upper-left of the document, then click and drag beyond the lower-right corner of the document, watching a rectangle grow as you do this. Release the mouse, and don’t panic. The rectangle you just created automatically floats over the top of the other images, and it’s probably opaque white, hiding everything. We’ll fix that in a moment.

Click “Window”, and be sure “Color” is checked. If not, hold down the shift key while clicking “Color”. Find that color window, and notice the two overlapping squares on the left. The solid square is the “fill” color, and the “box” is the border color. Select the “fill” color by clicking on the solid square, and then choosing a color by either sliding the color sliders, typing numbers from 0 to 255 in each of the color number boxes, or simply clicking on a color in the palette at the bottom.



With the color selected, it’s time to make that rectangle go to the back of the document, instead of hiding the document from view. To do that, be sure the image is still selected: you can see the corner dots on the rectangle itself, or note the blue marker on a new line titled “<Path>” that appeared in the layers window. If it isn’t, click the circle on the “<Path>” line. Then click “Object”, “Arrange”, “Send to Back”: Now the document is visible with the new color layer behind it all.

Study the document for yourself, and be convinced.