

## **Primary Source Books and Other Print Sources**

**Blood, Katherine. *Negro Women War Workers*. Washington, Women's Bureau, U.S. Dept. Of Labor, 1945.**

This is a primary source book talking about African-American women who were employed in World War II. It was written in 1945, in the early years of my topic. In addition to discussing computers, it also discusses factory and warfront employment. A lot of this book is unrelated to my topic as it says very little about NASA. I still find it useful because it states things about the nonwhite women workforce, which obviously connects to my topic.

**Loyd, O.B. to Halpern, Linda. *NASA'S Early Stand On Women Astronauts*, 1963**

This is a primary source letter written in 1963 from the U.S. government to a young girl. She is interested in pursuing a career in space, but the government wanted to bar women from being astronauts. Although it says little about my topic specifically, it is a useful and credible source. It shows public interest from youth in space as well as sexism regarding space.

**Library of Congress, and New York: Banks & Brothers Law Publishing. "Supreme Court of the United States, Plessy Vs Ferguson," *Primary Documents of American History*, 1896.**

This primary source image was taken of the original document of the Plessy vs Ferguson case. This case legalized segregation in the United States on the grounds that separation is not inherently unequal. This image will be important to embed on my website because it is a big example of a law that affected the human computers in my topic.

**NACA/NASA. *Miss NACA*. Vol. 3, no. 52, 1943. *Air Scoop*.**

This is a primary source article from Air Scoop, an old newspaper run by NACA, the predecessor to NASA. It is written by the white men running NACA in World War II, so it shows some sexism. The men who wrote it (not listed) called the female workers "Miss NACA", reminiscent of beauty magazines. It downplays their contributions. I guess times were different then, and it does mention the different races that worked at NACA by 1943. Nonetheless, it was publicity, and did show a certain degree of respect.

**National Advisory Committee for Aeronautics. *NACA-LMAL and YOU*. LMAL, 1944.**

This is a primary source booklet produced by NACA for its employees to become acquainted with the company. Many computers held this booklet and it convinced them to leave their former lives in favor of seeking money and glory. This source is useful because it is written by NASA and explains what the computers' day-to-day lives would entail. It shows NASA official's perspective. It also contains maps of Langley and the numbers of employees over the years from 1900 to 1944.

**Special Cable of New York. "U.S. Women on the Job for Victory." *The Australian Women's Weekly*, Mar. 1943.**

**This is a primary source news story on American women who worked in WWII. Although it is published in Australia, it is still primary as it is on American women. The source is useful for research and my topic because it gives a female perspective and an international perspective. Even people in other countries were aware of the United States' prowess in equal rights. It also shows that they are breaking barriers because if a foreign nation writes about it, it shows publicity.**

## **Primary Source Interviews**

**Champine, Gloria. *NASA Interview With Gloria Champine*. 2008.**

**This is a primary source interview with a former NASA computer. Interviews always hold a certain credibility as it shows the perspective of a real person. Although not the entire interview was related, it still held some gems. It gives a real person's outlook on the topic, making it a valuable thing to have. The forty five tedious pages were full of descriptions of her husband.**

**Darden, Christine. *Interview With Christine Darden*. 2011.**

**This source is a different yet wildly useful source. It is an interview with a former human computer from NASA. She also won a Medal of Freedom for her work in NASA, a proof of her credentials. As it shows an actual person's perspective, it is an incredibly valuable source. She talks about a lot of aspects of her job, such as the social and scientific aspects of it, which is useful for my writing.**

**Johnson, Katherine. "Katherine Johnson Interview, Sept. 2017." *YouTube*, 22 Sept. 2017, [www.youtube.com/watch?v=FgW2kpNQ7BY](http://www.youtube.com/watch?v=FgW2kpNQ7BY).**

**This video is a primary source interview by Katherine Johnson. She talks about a building being named after her and her views on work. This is a good video to put on my website. It shows this prominent computer's views so it is a useful source. In addition to discussing her work (which it does, a lot), it also talks about NASA naming a video after her.**

**NASA Langley CRGIS. "Women Computers." *YouTube*, 25 Feb. 2013, [www.youtube.com/watch?v=o-MN3Cp2Cpc](http://www.youtube.com/watch?v=o-MN3Cp2Cpc). Accessed 17 May 2020.**

**This is a primary source video, filmed in 1990 and published in 2013, depicting a panel of former human computers. This video is over an hour long, so it definitely holds a lot of valid information. Some of the many topics it discusses are racial barriers, employment, how computing began, and how the wider world perceives them. This video is probably my most useful video because not only does it show more voices, it also talks about a wider range of topics, all of which are valuable.**

## **Primary Source Images**

**(NASA didn't keep many records on computers. Most primary sources are unavoidably in image form. )**

**Boney, Lillian. “Bell Computer Group,” *Langley Research*, 1950.**

**This is a primary source photo taken in 1950. It shows a group of computers who worked on a project together. It will make a good picture for my website. This picture shows that the computers did hard work and also that they only remembered by themselves. This picture was only kept by one of the people in this group.**

**Corbis, and Bettman. “School Segregation Protest,” *Civil Rights Movement in Pictures*, 1954.**

**This is a primary source picture taken at a civil rights protest. It shows an event that impacted the computers at NASA. Though not a direct relation, it shows what events triggered changes within NASA and NACA at the time of the West Computers.**

**Dassel, H. “Maria Mitchell,” *Sweeper In The Sky*, 1852.**

**This is a primary source painting from 1852. It does not show the computers themselves but rather a female astronomer who came before them. It shows some historical context of the people who came before them. How would you know if the computers are different if you don’t know what came before?**

**Gemignani, Aubrey, and NASA. “Hidden Figures at Award Ceremony,” *Modern Figures Image Gallery*, 2016.**

**This is a primary source image. It shows former computers winning a film award for *Hidden Figures*. This shows the legacy of the computers, and that they get recognition. It will be useful to embed into my website and show the people themselves as it will enhance my website.**

**Golemba, Beverly. *Various Human Computers*, 1950s.**

**This is a primary source image. It is a picture of Dorothy Vaughan, Lessie Hunter, Vivian Alder, Margaret Ridenhour and Charlotte Craidon. The year it was taken was not listed. As it is a primary source image, it is a good source to have and show.**

**Johnson, Katherine. “Katherine Johnson and Coworkers,” *Reaching For The Stars: Katherine Johnson Exclusive Interview*, circa. 1950.**

**This is a primary source group photograph taken in approximately 1950, showing Katherine Johnson and her coworkers. The exact year isn’t shown and neither are the names of any of the other computers. I can tell that these are both East and West Area Computers, so this not only shows employment, it also shows cooperation.**

**Macalester College and NASA. “West Area Map,”**

***<https://Omeka.Macalester.Edu/Humancomputerproject/Map>*, 1944.**

**This is a map of the West Area, which operated from 1943 to 1958. This shows where the West computers worked and spent their time. What makes it a valuable source is that it also shows the segregated facilities of NACA. It shows the oppression the computers endured for not being white.**

**Malone, Betty. "Excerpt of Betty Malone Handwritten Code," *Interesting Engineering*, circa. 1950.**

**This is a primary image of an excerpt of handwritten calculations by Betty Malone, a former computer. This image, while also looking aesthetically pleasing for the website, shows some of the actual math they had to solve and figure out for NASA. It's informative and an enhancing visual.**

**NASA. "Full Scale Tunnel Staff," *CRGIS.NASA*, 1955.**

**This is a primary source image. I am planning to embed it on my website. It shows computers, male and female, in front of their work. As it shows what they did as well as who they are, it is a good source and primary image. The caption also says what they were working on: the Full Scale Tunnel.**

**NASA. "John Glenn Climbs Into Friendship 7 Capsule," *Glenn Orbits The Earth*, 1962.**

**This is a primary source image of John Glenn climbing into the Friendship 7 capsule. It shows an event that the West Area computers played a major role in. This is important to show because it is a major event in history and relates to my topic. It will help show what the computers did in my website.**

**NASA. "Langley Administration Building," *Human Computers*, 1930.**

**This is a primary source image. It depicts the Langley administration building. This is important because it shows where their new lives started. In Langley, the workplace of the computers. It is embedded into a NASA website, so it is a credible image.**

**NASA. "Portrait Of Katherine Johnson," *Human Computers*, 1954.**

**This is a primary source image. It shows Katherine Johnson, one computer that I will write about. It will be a good image to embed into my website. It is important because an image enhances the website, and they get to see the person who is talked so much about in her prime.**

**NASA. "Portrait of Mary Jackson," *Nasa Image and Video Library*, 1979.**

**This is a primary source image of Mary Jackson. Like other pictures, I am planning to embed it into my website. It will accompany my writing about her so the viewers can see her. It is an official NASA portrait, so it is credible.**

**NASA. "Two Unknown Woman Workers," *NASA.CRGIS*.**

**This is also a primary source image. I am also planning to embed it into my website. It is from the same collection as some of my other sources, and shows a lot of the same information. You can see the workers and what they were doing.**

NASA. "Women Workers WWII," *Human Computers*, 1943.

Once again, this is a primary image of unknown women. I am including this because it shows how some women are unknown even though they did important work. It is for my page on opposition, which is fitting. It was a major problem that NASA didn't respect them until much later.

Norfolk Journal And Guide. *Paving The Way For Women Engineers*, 1943.

This is a primary source image of a newspaper. It shows the original West Area computers who were hired in 1943. This image is important to show because it demonstrates the attitude of the time. They had some support and media coverage, although not much. It will be a good image to put on my website.

Palmolive. "1920s Palmolive Advertisement," *Business Insider*, 1922.

This is an ad for Palmolive moisturizer from the 1920s. It shows sexism in popular culture pre- World War Two. In my website, I am using it for contrast against a feminist ad. It shows how much times changed in the war.

Phillips, Thomas. *Mary Fairfax, Mrs. William Somersville*, 1834.

This is a primary source image of Mary Somersville. It shows her in a place of honor. This image shows the historical context of a previous female scientist. Although she, too, faced oppression, she endured. So did the computers of NASA.

Texas Bullock Museum. "Sharecropping Family," *The Story Of Texas*, 1870.

This is a primary picture of a black family on a cotton farm. They are from Texas, and because of their clothes and stereotypes of the time, they look like they have less money. I am using this image on my Historical Context page to show contrast to more modern times.

Vaughan Family. "Young Dorothy Vaughan," *Human Computers*, 1940s .

This is a primary source image. It shows Dorothy Vaughan, a computer that I will discuss. I am planning to put it on my website to enhance a section of it. It is important because you can see the person. It makes it more real if you can see the person being talked about.

War Production Co-ordinating Committee. *Rosie the Riveter*, 1943.

This is a primary source image of a Rosie the Riveter poster. These posters recruited women to do work at home and in business for World War II efforts. It became a symbol for feminism and women in industry, even today. It will show the viewers of my website historical context and that more women helped the war effort than is believed.

## Secondary Books and Other Print Sources

**Baldwin, Melinda. "Hidden Computers." *Physics Today*, 2017.**

I got this article from the University of Connecticut when I went on a research trip. It states more about the history of computing. It also explains more about the bias of that time period. It shows why my topic isn't necessarily good. Thus, it is a useful source to have as it holds information most don't. It is written by a respected magazine and author so it is credible.

**Benderly, Beryl Lieff. "How African-Americans at NASA Helped Remake the Segregated South." *Sciencemag*, 2015.**

This is a secondary source magazine article that talks about NASA and segregation. A judge recommended me to look into NASA's role in segregation and was pleasantly surprised by the amount of diversity in NASA (for the time period). It was a trailblazer in terms of desegregation. One comment was that it didn't talk about the West Area computers, though I still gained a lot of information.

***Congressional Gold Medal to Hidden Figures*. Nov. 2019.**

This is a secondary source legal bill awarding four former computers the Congressional Medal of Honor. Mary Jackson and Dorothy Vaughan got the medals posthumously, while Christine Darden and Katherine Johnson were both still living at the time of the medals. (Katherine Johnson died in February, RIP) This shows how now, in modern times, the computers finally get the visibility they should have had since the beginning. I couldn't find who the sponsor was.

**Dietrich, Tamara. "Newport News Woman Recalls Career as NASA Langley 'Computer.'" *Chicago Tribune*, 2012.**

I got this source from the University of Connecticut when I went on a research trip. It is a secondary article published by a respected newspaper. It talks about Katherine Johnson, a prominent computer. The more information, the better, so this source is good. Also, it gives quotes by her relatives that I could embed into my website.

**Merry, Stephanie. "The Nearly Forgotten Story of the Black Women Who Helped Land a Man on the Moon." *Washington Post*, 2016.**

I got this source from the University of Connecticut when I went on a research trip. It is also a secondary news article. It tells the story on why there are almost no primary sources on my topic. It talks about two people trying to uncover the story. It is a vital source because it explains why there is so little information on my topic.

**Nikivincze, Irina. "Dana Ulery: Pioneer of Statistical Computing and Architect of Large, Complex Systems." *IEEE Annals of the History of Computing*, by IEEE Computer Society, 2017.**

I got this secondary source print article from the University of Connecticut when I went on a research trip. It explains in-depth about one of the first computers, though it doesn't directly relate to my topic as

she is not from Langley. It is reliable as it is from a respected science magazine. It also holds some primary source quotes, which raises its value.

NASA. "Women Of Color: Pioneers and Innovators." 2016.

This is a secondary source infographic launched by NASA in 2016. It shows an image of women of color throughout the years at NASA, and writes about them. This shows improvement over the years as there are more WOC at NASA now than there was in decades past. I embedded this in my website to reflect change and the legacy of the West Area computers.

Ode, Kim. "Macalester Prof. Writes About Grandmother, Other Black Female NASA Engineers Featured in Movie." *TCA Regional News, Chicago*, 2017.

I got this newspaper article from the University of Connecticut when I went on a research trip. Although this is technically a secondary source, it has primary quotes in it. It is an interview with the granddaughter of a former human computer. Thus, it shows a real person's outlook. It is a good source to have because it shows modern opinions and primary opinions.

Shetterly, Margot Lee. *Hidden Figures : The American Dream And The Untold Story Of The Black Women Mathematicians Who Helped Win The Space Race*. New York, Ny, William Morrow, An Imprint Of Harpercollins Publishers, 2016.

This secondary source book is arguably the most important source because it is the predecessor to every single one of my secondary sources. My topic would get no coverage if not for this book. It explains in-depth about individual computers, historical context, and so much more. Very good book and source, written by a historian who is personally acquainted with many computers. This source has taught me so much.

Zielinski, Sarah. "Ten Historic Female Scientists You Should Know." *Smithsonian Magazine*, 2011.

This is a secondary source magazine article that I am using for historical context. It tells more about female scientists that people generally don't know much about. It proves a point that women have contributed to science for a long time without much publicity. It will also be good for information for my *Historical Context* section.

## Secondary Source Websites and Online Sources

Clemons, Antony. "Racial Relations - NasaCRgis." *Nasa.Gov*, 2011, [crgis.ndc.nasa.gov/historic/Racial\\_Relations](http://crgis.ndc.nasa.gov/historic/Racial_Relations).

This source is a secondary source website written by NASA officials about how they treated people of different races. It is written by NASA, and although that makes it credible, it also means it is open to some propaganda and bias towards NASA. This source will inform me more about how segregation and racism worked inside the government facilities. It helps me get more informed.

Holland, Brynn. "Human Computers: The Women of NASA." *History.com*, A&E Television Networks, 13 Dec. 2016, <https://www.history.com/news/human-computers-women-at-nasa>.

This source is another secondary source website. It holds similarities to some other sources, but with more about labs other than Langley. Such as JPL, in California, showing how it was in other places. It also contains primary images. It's more of a beginner source because it is purely secondary informational, but still useful.

Howat, Kenna. "The Women of NASA." *National Women's History Museum*, 2 Oct. 2017, [www.womenshistory.org/exhibits/women-nasa](http://www.womenshistory.org/exhibits/women-nasa). Accessed 22 Nov. 2019.

This is a secondary source slideshow. It was launched by a national women's history site. It says stuff about the wider history of NASA as opposed to just this topic. The women were very important to NASA, and this was the first source I found that reflected that. I found it good, although the URL no longer works so I can't go back to it.

"Jim Crow to Civil Rights in Virginia." *Virginia Museum of History & Culture*, Virginia Museum of History & Culture, 17 Apr. 2013, [www.virginiahistory.org/collections-and-resources/virginia-history-explorerer/jim-crow-civil-rights-virginia](http://www.virginiahistory.org/collections-and-resources/virginia-history-explorerer/jim-crow-civil-rights-virginia). Accessed 9 Feb. 2020.

This secondary source website talks about the segregation laws specifically of Virginia. This is important to learn about as it gives historical context and shows the laws that opposed the computers. It helps me understand what life was like back then. One downside to this source is that it sounds like it is written with bias as modern-day Virginians don't want to seem racist. I will be wary with this source.

Julie Schwietert Collazo. "NASA's Hidden Figures: Women You Need to Know." *Biography*, 4 Jan. 2017, [www.biography.com/news/hidden-figures-movie-real-women](http://www.biography.com/news/hidden-figures-movie-real-women).

This secondary website explains about some women in particular. This will tell me more about particular women who I may not find many other sources about. It talks pretty in-depth and contains primary images. This is a useful, though secondary, source because it contains so much information about specific computers.

"Mathematician and Astronomer Benjamin Banneker Was Born." *Americaslibrary.Gov*, 2020, [www.americaslibrary.gov/jb/colonial/jb\\_colonial\\_banneker\\_2.html](http://www.americaslibrary.gov/jb/colonial/jb_colonial_banneker_2.html).

This secondary source website is about African-American astronomer and mathematician Benjamin Banneker. It is mainly for historical context as it shows a previous African-American scientist. It is



good to learn the previous experiences of people who came before the computers. It shows how they break the barriers.

McLellan, Sarah. "Human Computers - NasaCRgis." *NASA*, NASA, 2012,  
[crgis.ndc.nasa.gov/historic/Human\\_Computers](https://crgis.ndc.nasa.gov/historic/Human_Computers).  
[https://crgis.ndc.nasa.gov/historic/Human\\_Computers](https://crgis.ndc.nasa.gov/historic/Human_Computers)

This website, titled Human Computers, is an article from NASA. Although it is a secondary source, it contains primary images that I will probably use. I found it useful because it is from a reliable source. This will probably prove useful when I start crafting my website.

Ferguson, David. "Rosie the Riveter Inspired Women to Serve in World War II." *U.S. DEPARTMENT OF DEFENSE*, 2019,  
[www.defense.gov/Explore/Features/story/Article/1791664/rosie-the-riveter-inspired-women-to-serve-in-world-war-ii/](http://www.defense.gov/Explore/Features/story/Article/1791664/rosie-the-riveter-inspired-women-to-serve-in-world-war-ii/).

This source is a secondary website that talks about Rosie the Riveter and female workers in World War II. It tells about how they aren't recognized much, but were important for the war. It is a credible source as it is from the U.S. government. And, it contains primary images that will be useful.

NASA Content Administrator. "Glenn Orbits the Earth." *NASA*, 2000,  
[www.nasa.gov/centers/glenn/about/bios/mercury\\_mission.html](http://www.nasa.gov/centers/glenn/about/bios/mercury_mission.html).

This source is a secondary source website made by NASA about John Glenn's mission around the Earth. This is a mission that the computers did work on, particularly Katherine Johnson. It will help me write more about it. It also contains primary images that I plan to embed into my website, giving the viewers context.

"NASA Mathematician, Recipient of Nations Highest Civilian Honor." *YouTube*, 24 Nov. 2015,  
[www.youtube.com/watch?v=bLgzHutK1wo](http://www.youtube.com/watch?v=bLgzHutK1wo).

This is a secondary source video. It shows information about Katherine Johnson. It also said some context about racism in the time period. This source will be good for supplying information about the above, as well as showing NASA's present head for credibility.

"Women Computers at the Langley Memorial Aeronautical Laboratory." *Roger Launius's Blog*, 16 Jan. 2017,  
<https://launiusr.wordpress.com/2017/01/16/women-computers-at-the-langley-memorial-aeronautical-laboratory/>.

This source, which happens to be my third source, is a secondary website. This source differs from my other secondary websites because it states more about how they break barriers. It showed that they were important figures of their time by being remarkably progressive. It, like the others, also contains primary images.

## Secondary Source Images

**Bowman, David. "Margot Lee Shetterly at NASA," *Hidden Figures- Margot Lee Shetterly*, 2017.**

This image shows Margot Lee Shetterly, the author of *Hidden Figures*. She is giving a conference at NASA, presumably about her book. This shows how the West Area computer got visibility.

**Ingalls, Bill, and NASA. "Katherine Johnson Receives Medal Of Freedom," *Obama White House Archives*, 2015.**

This is a secondary image showing Katherine Johnson receiving a Medal of Honor. It shows how much she achieved, and provides a link to modern times.

**Shetterly, Margot Lee. "Hidden Figures Cover," *Hidden Figures*, 2016.**

This is a secondary source image showing the cover of *Hidden Figures*. I'm including this in my website because it is a good modern connection. This book gave the computers visibility.

**NASA. "Christine Darden with High Schoolers," *"Hidden Figures" Honored at U.S. Capitol*, 2019.**

This is another secondary source image of Christine Darden talking to teenagers. This is at a convention where she's nationally honored. This shows her interest in education, and her in modern day.

**NASA/JPL/Caltech. "Space Images." *Nasa.Gov*, 2019, [www.jpl.nasa.gov/spaceimages/](http://www.jpl.nasa.gov/spaceimages/). Accessed 18 Nov. 2019.**

This is a secondary source database of NASA official space images. It contains over one million images taken by NASA. I am going to use some of these images as backgrounds for my website. This is a very useful source as it provides scholarly images and backgrounds for me to use. All the images are also public domain.

**WMFE.org. "NASA and ROSCOSMOS," *NASA, Russia Ink Deep Space Exploration Partnership*, 2017.**

This is a secondary source image showing the symbols of the US and Russian space organizations. This image is meant to give clarity to the viewers and show them our symbol and what the US fought against.