

ROCKET WOMAN

*Her story was untold for a generation, but now, **MARY GOLDA ROSS**, the first female Native American aerospace engineer and a **SPACE AGE PIONEER**, is emerging as a hero for Indigenous women in science.*

BY GRAHAM LEE BREWER | PORTRAIT BY ARIGON STARR

IN THE LATE 1980s, Evelyn Ross McMillan bought a tape recorder so she could start recording the conversations she had with her Aunt Gold. The pair's birthdays were nine days apart in July, and every summer, Evelyn made the trip from the family's home state of Oklahoma to celebrate with her aunt in Los Altos, California, where she lived near Stanford University. The two would drive down the sunny streets in Gold's roomy red sedan—which she always insisted on driving herself—and talk. Evelyn wanted to record everything her aunt said. Gold was getting older, true, but it was more than that. Evelyn knew what she had in Mary Golda Ross, even if the rest of the world didn't.

But that tape recorder, thanks in part to the humbling arc of history and to Ross' quiet nature, would turn out to be insufficient.

That's because in the 1940s, Ross became the only female engineer working for Lockheed Martin, eventually helping to found its Skunk Works, a top secret group of engineers who developed aircraft during World War II and spacecraft during the Space Race. She would be the only Native American in the room for decades to come.

Kickapoo, Creek, Cherokee, and Seneca artist and McCloud native Arigon Starr created this portrait of Cherokee scientist Mary Golda Ross for *Oklahoma Today*.

MARY GOLDA ROSS was a Cherokee, a matriarchal tribe with a tradition of wise, empowered women. But she held another trait long admired by her people: persistence. Those who knew her knew this great-great-granddaughter of Chief John Ross wasn't motivated by the satisfaction of proving anyone wrong but by love of her work. And there was a lot of work to do. With a world war, Cold War, and then a race to the moon all happening during her career, the stakes were high. For her, a humble focus on the work was the only logical path forward.

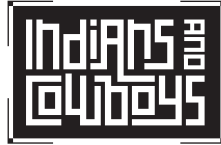
"She was six feet tall but very quiet and unassuming," says Evelyn. "She did not demand anything. She just went in and did it in her very quiet way."

Evelyn eventually did buy a microphone, hoping she could coax her aunt to open up about those secret days at Lockheed. Evelyn wanted to save and document the many talks they shared. But despite her niece's best efforts, Ross and her quiet humility won the day, and her work still is largely shrouded in mystery.

"My family knew she was an engineer, but that's all we knew," Evelyn says. "My dad died before anyone knew what she did."

That silence both belies and personifies Ross' influential work at Lockheed Martin.

"She underestimated how important she was," says Norbert Hill, former executive director of the American Indian Science and Engineering Society.



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ROSS' FATHER WANTED his children to get an education, and she learned to read at a very young age sitting on his lap as he gave lessons to her older sister. She skipped a grade in elementary school and began high school early, graduating at sixteen. Ross lived with her grandparents in Tahlequah as a teenager so she could attend high school, and she walked four miles to class every day. At sixteen, she enrolled in the mathematics program at Northeastern State Teachers College—now Northeastern Oklahoma State University—and graduated at twenty before going on to teach at small Oklahoma schools for nearly a decade. When she learned she could double her salary working for the government, she took the civil service exam. After a stint as a statistician for the Bureau of Indian Affairs, Ross moved to Santa Fe to work as a house mother for a Native art school. She took summer courses at the University of Northern Colorado, where she eventually earned her master's degree, taking every astronomy course she could in the process.

After World War II broke out, her father suggested she use her talents to help the war effort. Soon after, while visiting a former student in southern California in 1942, Ross borrowed a car and interviewed for a job at Lockheed.

Ross worked with fighter planes at Lockheed, but as the war ended and the Cold War and the Space Race began, she changed focus and went to work on projects such as the Apollo program, the *Polaris* re-entry vehicle, and interplanetary space probes. Just as her great-great-grandfather Chief John Ross would lead his people into the darkness as they were forced on the

Trail of Tears, she helped lead the United States into the great darkness beyond the sky.

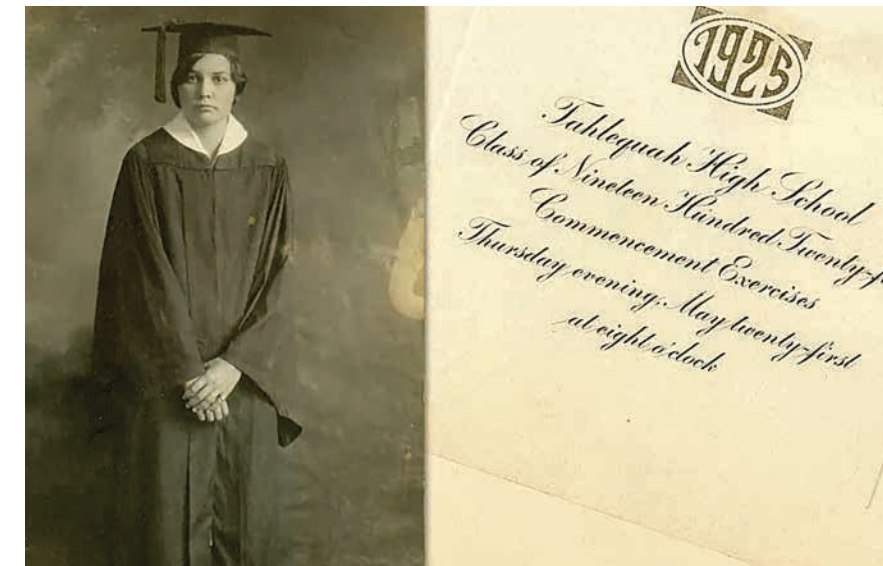
IT WAS A remarkable career, especially given the fact that Ross was hired fewer than twenty years after Native Americans were given the vote and more than thirty years before the U.S. government recognized the right of Native Americans to practice their religious beliefs. She was instrumental in creating early design concepts for interplanetary vehicles, manned and unmanned Earth-orbiting flights, and early satellites. She also was one of the authors of the *NASA Space Flight Handbooks, Volume III: Planetary Flight Handbook*, which detailed plans for travel to Mars and Venus.

“Often at night, there were four of us working until 11 p.m.,” she told the *San Jose Mercury News* in a 1994 interview. “I was the pencil pusher, doing a lot of research. My state-of-the-art tools were a slide rule and a Friden computer.”

But the top-secret nature of Ross' work kept her from being a role model for other aspiring Indigenous engineers until much later in her life. She retired from Lockheed in 1973.

“Mary was the Indian hidden figure; she could never win any recognition,” Hill says, referring to the 2016 movie about a previously little-known group of black female mathematicians who were pivotal in the early

From math student in Tahlequah to Lockheed engineer, Mary Golda Ross' rise in the male-dominated world of engineering has made her an aspirational figure to women in science.



COURTESY OF THE CHEROKEE NATION



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Recognition didn’t seem to matter to Ross, but she served as an example for others. Hill, a member of the Oneida Nation of Wisconsin, saw in her story a way to get Indigenous kids excited about science.

“The education on the reservations was so bad, they couldn’t find anyone who was even able to spell *calculus*,” Hill says.

He had little luck finding Indigenous professionals to draw encouragement from, and the ones he did often told him Native kids needed to abandon their traditional ways and assimilate to white culture.

“We’ve had Indigenous engineers since time immemorial,” Hill says. “We were able to build things and make things, and we got amnesia about who we are as a people, building tipis and canoes, the snowshoe, and irrigations systems in Arizona. There are certainly a lot of contributions that the Cherokees have made. We’ve lost that in the narrative, the ability to say, ‘You’re a modern-day engineer—just like your ancestors.’”

BUT ROSS NEVER forgot where she came from, Hill says. She never turned down a chance to give back to her community or foster a love of science and engineering for the next generation of Native American women.

Mary Golda Ross presented a Society of Women Engineers certificate to Akiko Inoue in 1993. Not surprisingly, Ross was an avid supporter of women in math and science.

“It’s not like you have to go back, like salmon, to where you were born to do anything,” says Hill. “You can serve as a resource to Indian people wherever you are. She was giving back by being a role model on a national level.”

Ross donated more than \$400,000 to the Smithsonian’s National Museum of the American Indian in Washington, D.C., which opened in 2004. The ninety-six-year-old wore a fine green Cherokee dress to the opening.

Cara Cowan Watts got to know Ross when she was an Oklahoma State University engineering student in the 1990s. Cowan Watts, also Cherokee, met Ross at an event hosted by the American Indian Science and Engineering Society. The two became friends. Cowan Watts was like any Indigenous woman in a male-dominated field, and like her, Ross knew one of their greatest assets was being underestimated.

“Mary was a Cherokee woman from Oklahoma, so you know she was made of boot leather and wrapped in a pretty bow,” Cowan Watts says. “Too often, we still infer being a Cherokee and a woman are barriers to greatness. Mary always assumed Cherokee women could only be great.”

GET THERE

THE AMERICAN INDIAN SCIENCE AND ENGINEERING SOCIETY

There are chapters at universities across the state. For more information, visit aises.org.

CHEROKEE HERITAGE CENTER

21192 South Keeler Drive in Park Hill
 (918) 456-6007 or cherokeeheritage.org.