ANNUAL 2024

NATIONAL SECURITY
THEN & NOW

THE VAULT

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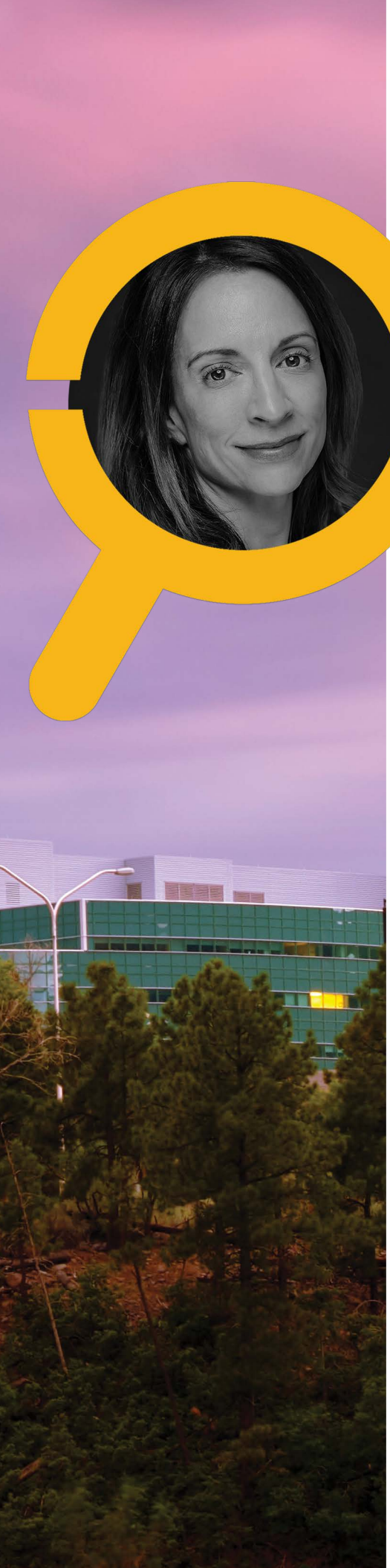
"Our Story to Tell"

LOS ALAMOS
NATIONAL LABORATORY
National Security
Research Center



LETTER FROM THE NSRC DIRECTOR

What does the National Security Research Center do?

I'm often asked this question. The answer is actually quite complex, but my initial response is simple: information.

The more in-depth explanation begins at "preservation" and ends with "accessibility" and "dissemination." Linking these efforts together explains why we do what we do, and it's this part of the answer that's truly noble. Let me explain.

The NSRC—Los Alamos National Laboratory's classified library—houses tens of millions of documents, films, photos, microfiche, and other media related to the creation and testing of nuclear weapons that date back to World War II and the Lab's inception. These collections are accessed daily by today's researchers in support of their national security work. Additionally, the NSRC curates vast unclassified collections of historic value that are of great interest to Lab staff and to the public at large. We share the information through published writing, presentations, tours, documentaries, and more.

In making this information discoverable, NSRC staff (there are about 60 of us) must ensure its preservation, accessibility, and dissemination. This happens through the interconnected work of seven teams: the collections management team, historian team, librarian team, knowledge management team, publications team, and two digitization teams.

Their efforts allow what may be, in the most extreme cases, 80-year-old, one-of-a-kind deteriorating media to be curated, restored, and shared with weapons researchers or interested general audiences. One such example on the technical side is bomb books, which are one-stop-shop packages of information for new generations of weapons researchers. Examples on the non-technical side include fulfilling Freedom of Information Act requests about UFOs (and many other subjects), digitizing the contents of highly flammable historic film before it deteriorates into powder, and rediscovering and then sharing long-forgotten photos of first Lab Director J. Robert Oppenheimer or rare footage from the Trinity test. You can read about all these examples of preservation in this issue of *The Vault*. You can also read about an example of what hasn't been preserved ("The Lavender Scare" on page 26) and how we recognize the archival omissions and biases of the past as important lessons for the future.

Pondering our work prompts questions of who makes history and what gets to be remembered—that is, preserved, curated, and eventually disseminated.

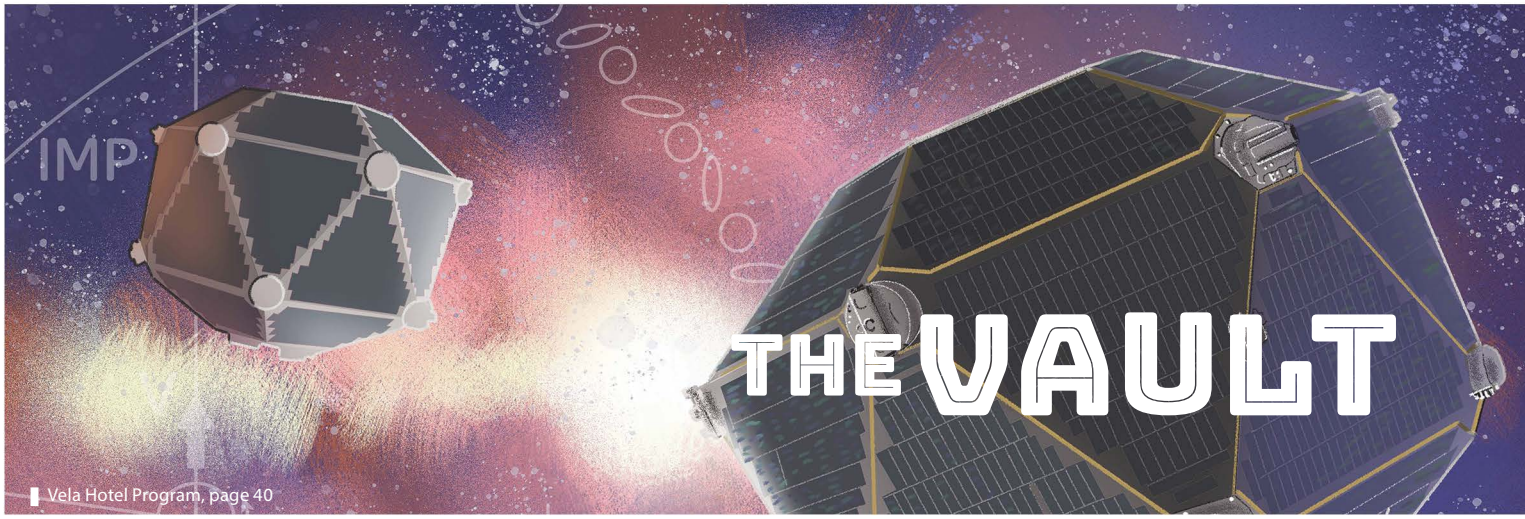
At the NSRC, and organizations like ours, we are preservationists and also disseminators of information. We do one so we are able to do the other. That's our duty and it's an important one; knowledge empowers people in many ways, be it through advancing personal and professional achievement, fostering transparency and truth by combating false information, or facilitating education and learning.

Sometimes, the who and the what that are remembered is simply a matter of whatever is left behind, and then whether it is preserved and shared. We understand this, and we also understand that, as you'll read in "The Lavender Scare," an incomplete history is an inaccurate history. We continue to work on fulfilling our commitment to preserve information as well as share it. This is why we publish *The Vault* magazine.

I hope you enjoy this year's issue and learn something, too.

Brye Ann Steeves

Brye Ann Steeves
Director, National Security Research Center



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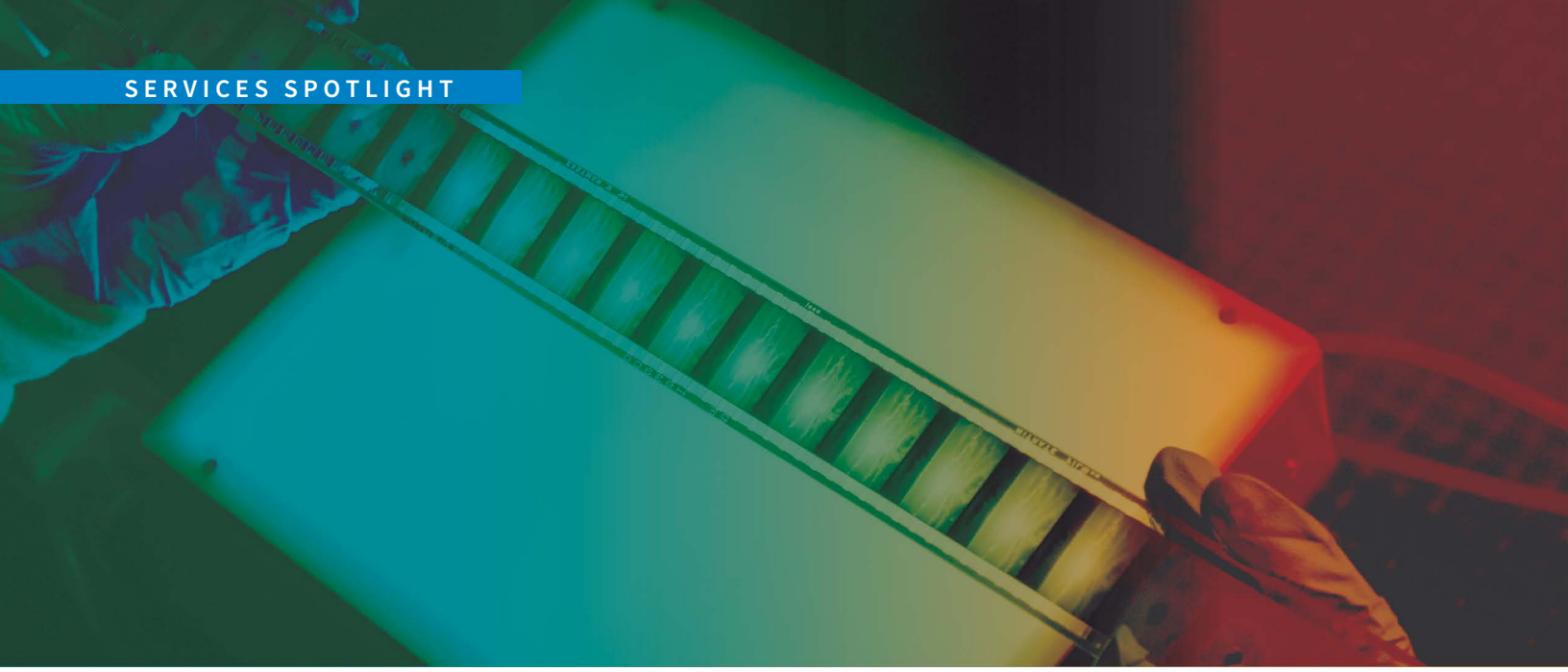
About the NSRC

The National Security Research Center is the classified library at Los Alamos National Laboratory.

The NSRC traces its lineage to the Manhattan Project's technical library formed by J. Robert Oppenheimer in 1943. Today, the NSRC is one of the largest scientific/technical libraries in the federal government with collections that number in the tens of millions. We also house unclassified collections related to the people, events, and scientific achievements that make up our nation's nuclear history.

The NSRC is staffed by an expert team of librarians, archivists, historians, and publications specialists, all of whom support Los Alamos and other National Nuclear Security Administration sites, as well as partners in the Department of Defense.

Our mission is to serve as a core competency of the Laboratory by providing these researchers with vital knowledge for today's national security mission and tomorrow's discoveries.



NEWLY DIGITIZED NITRATE REELS SHOW EARLIEST DAYS OF NUCLEAR TESTING

National Security Research Center staff

A still image from nitrate film footage of Operation Sandstone, which took place in 1948 on Enewetak Atoll in the Marshall Islands, newly preserved and digitized by the Multimedia Digitization Services team.

Several years ago, before the National Security Research Center opened its doors in 2019, staff in the Lab's Records Management group worked with colleagues at Lawrence Livermore National Laboratory to inspect thousands of reels of film among the Lab's records, looking for any that contained the volatile material nitrocellulose, more commonly called nitrate. This highly flammable type of film—which was discontinued for use in the early 1950s—was used to record footage of some of the earliest nuclear tests. Because nitrate film stock remains a fire hazard and becomes toxic as it deteriorates, the 68 reels identified were transferred to a special freezer, awaiting safe handling solutions.

Now, NSRC archivists and experts in media handling and preservation have utilized the necessary equipment, resources, and expertise to make these unique films accessible. After careful planning and collaboration

between the NSRC and the Lab's fire safety and industrial hygiene teams, 65 of the reels—which include footage from Operations Sandstone and Ivy and the Trinity test site—have been painstakingly digitized and are available to today's researchers for the first time.

A VOLATILE MEDIUM AND A RACE AGAINST TIME

First commercially produced by George Eastman (of the Eastman Kodak Company) in 1889, nitrate film is lauded by film buffs for the luminosity and high quality of its images. It was used for motion pictures through the 1940s. Many of the iconic films from Hollywood's Golden Age, like *Casablanca* and *Citizen Kane*, were produced on nitrate film.

However, nitrate film is highly combustible and becomes even more unstable over time as it decomposes. When new, nitrate film can be ignited by the heat of a single cigarette. When partially decomposed, it can spontaneously ignite at temperatures as low as 120 degrees Fahrenheit. Once ignited, the film burns rapidly and is almost impossible to extinguish because it produces its own oxygen, along with toxic gases. These volatile properties caused several tragic movie theater and film vault fires, leading to the end of nitrate film production in the early 1950s.

According to NSRC motion picture film archivist Megan Kilidjian, the unstable nature of nitrate film makes it difficult to store in an archive. If not kept at a cool temperature in low humidity and with proper ventilation, the film becomes sticky, hardens, and eventually disintegrates into a brown powder. It also produces toxic gases as it deteriorates, which can attack nearby acetate- and polyester-based films.

LESSONS FROM LOST FOOTAGE

Due to the instability of the medium, three of the nitrate film reels rediscovered in the NSRC collections were too deteriorated to preserve or digitize and had to be destroyed. Sadly, the information they contained—original footage from the 1945 and 1946 Trinity and Crossroads tests—was lost forever.

"We took them out to the high explosives range and blew them up . . . after doing all of the necessary paperwork with the Waste Management division, of course," said Lab senior historian Alan Carr.

The loss motivated action. "Faced with the potential of losing more invaluable footage from the early history of nuclear testing, Kilidjian and the NSRC team rose to the challenge of safely and effectively preserving and digitizing the remaining 65 reels of nitrate film in their collections," said Nanette Mayfield, leader of the NSRC Digital Collections group.

NSRC motion picture film archivist Megan Kilidjian—masked, gloved, and wearing a fire-resistant shirt and apron—inspects a nitrate film reel from Operation Sandstone, a series of nuclear tests conducted in 1948.

THE RIGHT TOOLS FOR THE TASK

To repair and scan the films, Kilidjian followed modern motion picture film preservation standards—a complex process with which she is experienced—and Lab safety policies.

"Once identified, we had to store [the reels] in a special freezer that met National Fire Protection Association 40 standards developed specifically for the handling and storage of nitrate film, until we could develop a plan that met all necessary health and safety requirements," Kilidjian said.

"To store the films after digitization, we purchased two new safes with built-in air circulation systems that complied with General Services Administration requirements and the Lab's health and safety policies.

NSRC motion picture film archivist Megan Kilidjian fine-tunes a digitized nitrate film reel by adjusting light levels, focus, and framing.

We also acquired a new film scanner and a fire-resistant table for film prep. I had to wear a fire-resistant long-sleeve shirt and apron, a face mask, and gloves whenever I handled the film."

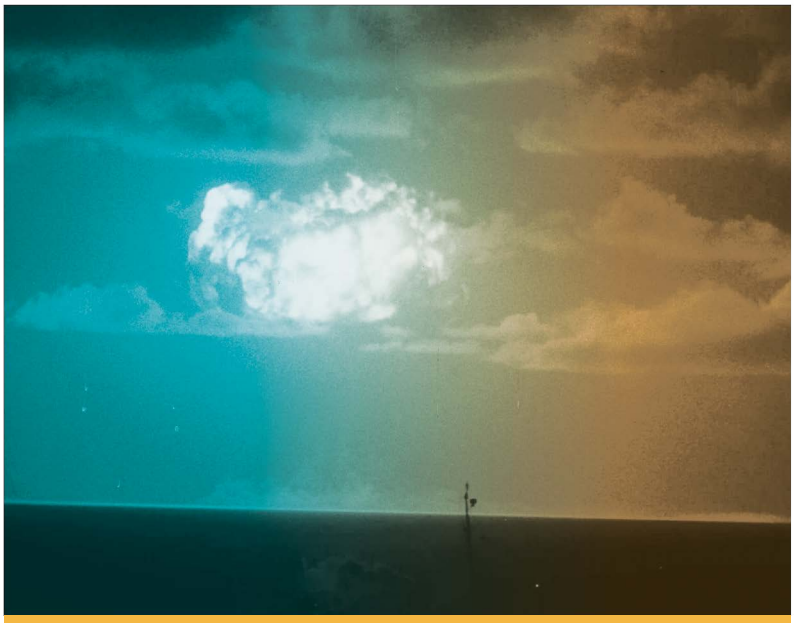
Aside from the three that were unsalvageable, most of the reels were in remarkably good condition, although some required intensive cleaning to remove built-up rust, a result of many years of storage in unventilated film cans. A few also contained deteriorated sections of film that had to be removed.

The preservation and digitization project was originally scheduled to begin in late 2022, but shipping delays with the safes pushed the date to the following summer. The project was completed by August 2023 over nine weeks.

WHY ARE THESE FILMS SO IMPORTANT?

The 65 newly digitized films are a critical resource for today's researchers, providing irreplaceable data from atmospheric nuclear weapons tests, which have not been conducted since the signing of the Partial Test Ban Treaty in 1963. True to its reputation, the nitrate film provides images of fireballs and blast waves with exceptional clarity and detail.

"Since many of these nitrate films are originals, we're able to pull even more detail from those early test shots than we could from acetate copies. Not to mention, there's immense historical value in retaining original nitrate films from those tests," Kilidjian said.



Watch a brief, unclassified compilation of 1948 footage from Operation Sandstone, which took place on Enewetak Atoll in the Marshall Islands.

NATIONAL SECURITY RESEARCH CENTER

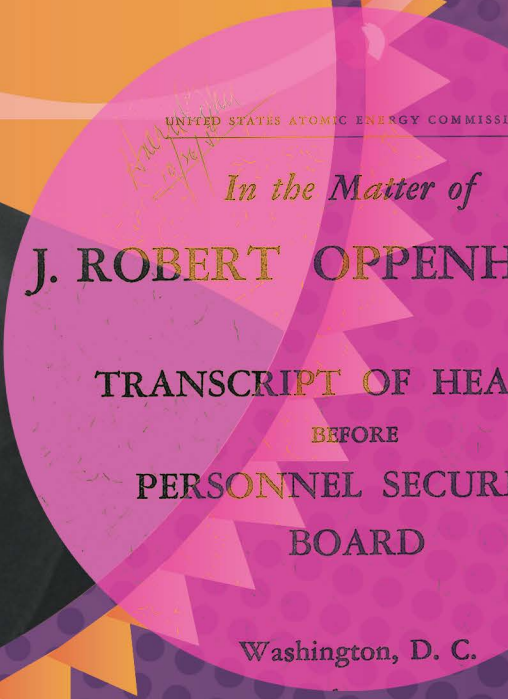
Our Expertise

The National Security Research Center has a highly-trained, expert staff of librarians, archivists, historians, digitizers, and more who offer personalized services and research assistance.

LOS ALAMOS NATIONAL LABORATORY
National Security Research Center

The NSRC's summer of

OPPENHEIMER



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The summer of 2023 was full of events at the Lab and in the Los Alamos community commemorating the Lab's first director, J. Robert Oppenheimer, and celebrating the release of the National Security Research Center's documentary *Oppenheimer: Science, Mission, Legacy*.

From traveling exhibits and community screenings to panel discussions and special guests, each event was testimony to the NSRC's special role as the custodian of the Lab's living history and Oppenheimer's lasting legacy. Renewed public interest in Oppenheimer's life, spurred by Christopher Nolan's Oscar-winning biopic *Oppenheimer* (released in July 2023), ensured that the events of the NSRC's "summer of Oppenheimer" found a wide and captivated audience.

The documentary

Oppenheimer: Science, Mission, Legacy connects J. Robert Oppenheimer and the Manhattan Project to the Lab's mission today. "As those who live and work within the legacy J. Robert Oppenheimer left behind, we are best able to tell his story from when he first took the reins of the Laboratory to today," said filmmaker Dave Tietmeyer, who led the yearlong creation of the documentary. "His legacy continues and this documentary connects his achievements to the Lab's continued success."

Created by the NSRC and the Lab's Multimedia Production group, the three-episode film includes interviews with experts and features Oppenheimer-related material from the NSRC's unclassified collections, much of which has never been shared publicly.

"The renewed interest in Oppenheimer has been an incredible opportunity for us to share information through the creation of this documentary," said Brye Steeves, NSRC director. "And the enduring nature of film ensures his story—and the Lab's—will live on well into the future."

Alan Carr, the Lab's senior historian, provides narration throughout the film, and audiences will recognize many of the interviewees, including Lab Director Thom Mason; former Deputy Lab Director for Science, Technology, and Engineering John Sarrao; Associate Lab Director for Weapons Physics Charlie Nakhleh; and Deputy Lab Director for Weapons Bob Webster. Also interviewed are Oppenheimer biographer Kai Bird, coauthor of *American Prometheus*; Lab historians Ellen McGehee and Roger Meade; and James Kunetka, author of *The General and the Genius*.

After the original premiere in July, an August visit from Department of Energy Secretary Jennifer Granholm for a shortened screening and lively panel discussion led to a revised version of the documentary, featuring comments from the secretary and an interview with panelist Charles Oppenheimer, grandson of J. Robert Oppenheimer. The summer of Oppenheimer was capped off by the release of the final version of *Oppenheimer: Science, Mission, Legacy* in September.

Read more about the making of the documentary on page 42 of this issue.

Panel discussion

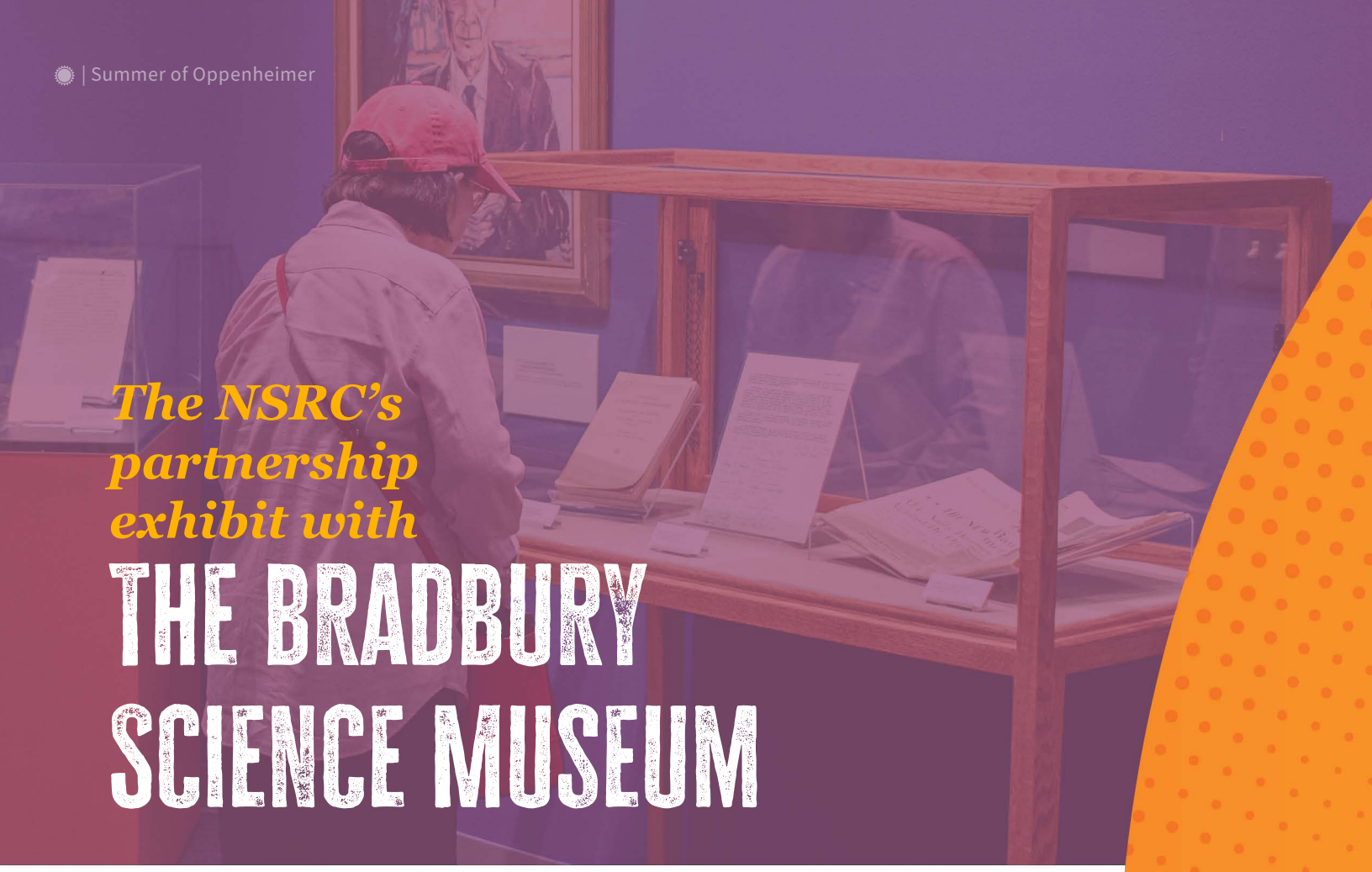
OPPENHEIMER'S LEGACY AT LOS ALAMOS

June 2023 featured an unclassified panel discussion for Lab personnel on Oppenheimer's legacy at Los Alamos, with Laboratory Director Thom Mason, Oppenheimer biographer and Pulitzer Prize winner Kai Bird, Lab physicist and vice chair of the J. Robert Oppenheimer Memorial Committee Anna Llobet, and former Senate staff member Tim Rieser, who was instrumental in the December 2022 vacating of the Atomic Energy Commission's 1954 decision to revoke Oppenheimer's security clearance.

The conversation among the four panelists and the subsequent Q&A with audience members provide a unique, collective reflection on Oppenheimer's life and continued relevance. As Llobet remarked, the Lab's first director guides its mission even today: "After Oppenheimer went through the treadmill of the Manhattan Project, he was very adamant that we need to make science . . . more available."

"Oppenheimer was a complicated man whose work and life had a lasting impact," added Lab senior historian Alan Carr, who moderated the panel. "This panel was a singular opportunity to engage with new assessments of his role in history and his continued relevance to us and our world."

Bird left the audience with an important message about what Oppenheimer's personal story and history represent: "His life tells a really important story of us, Americans, at the beginning of the Atomic Age."



The NSRC's partnership exhibit with

THE BRADBURY SCIENCE MUSEUM

Throughout the summer of 2023, Lab personnel, members of their families, and the Los Alamos community enjoyed a special exhibit of unique artifacts related to first Lab director J. Robert Oppenheimer. The exhibit, which showcased items from both the National Security Research Center's collections and the Bradbury Science Museum, also highlighted the NSRC's and Bradbury's shared commitment to preservation and historical outreach.

The NSRC contributed rare, original documents from World War II, including memos, letters, and other materials relating to the wartime Lab's organizational structure and its technical work.

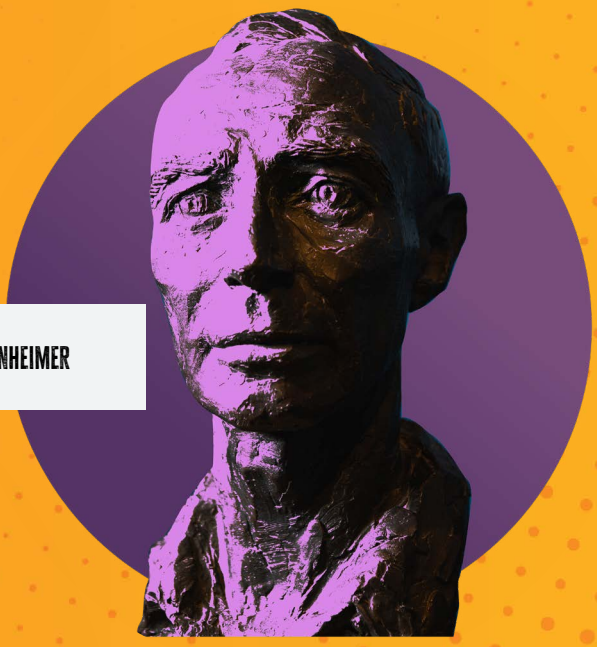
Also on display were Oppenheimer's handwritten planning notes for the laboratory, patents, and more from the NSRC collections, plus Oppenheimer's office chair—one of two of the director's personal items still at the Lab. The other, belonging to the Bradbury, is his copy of the Hindu religious text *The Bhagavad-Gita*. A calling card belonging to Oppenheimer's wife, Kitty, was found tucked inside the pages with a lucky four-leaf clover taped to it.

From April to June 2023, the exhibit was showcased in the lobby of the Lab's National Security Sciences Building, accessible to cleared Lab personnel. From July to October 2023, the exhibit was on display at the Bradbury, which is open to the public and features many additional artifacts to browse, including a portrait and bust of Oppenheimer that were added to the display.

"By bringing together our collections, the NSRC-Bradbury partnership really took this exhibit to a much higher level of value and interest," said Bradbury Museum Collections Specialist Wendy Strohmeyer. "We were excited to welcome the exhibit to our galleries, where it became accessible to the wider community the Bradbury serves."

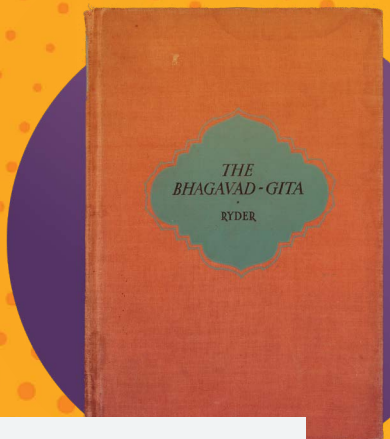
POSITIONING HOOK FOR TRINITY TEST GADGET AND FAT MAN ATOMIC WEAPON

KITTY OPPENHEIMER'S CALLING CARD, WITH TAPED-ON FOUR-LEAF CLOVER



BUST OF OPPENHEIMER

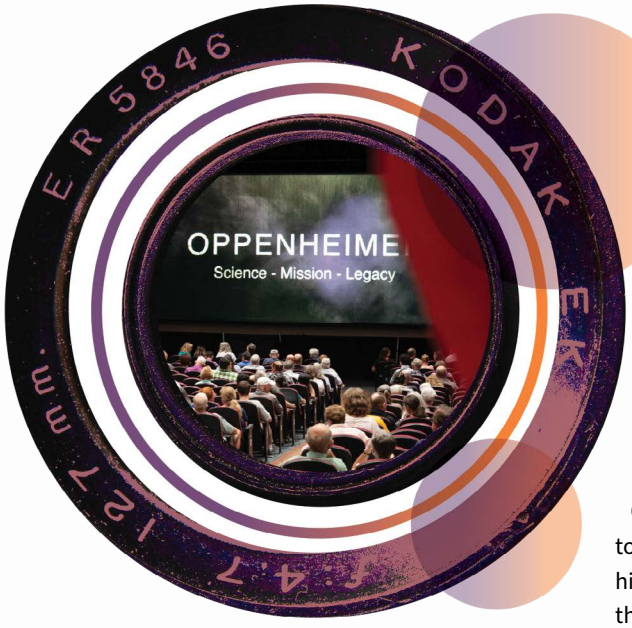
OPPENHEIMER'S CHAIR



OPPENHEIMER'S COPY OF *THE BHAGAVAD-GITA*

DOCUMENTARY SCREENING

with the Los Alamos Historical Society



In July 2023, the NSRC and the Los Alamos Historical Society partnered to host the public premiere of the NSRC's three-part documentary *Oppenheimer: Science, Mission, Legacy* in the Duane Smith Auditorium at Los Alamos High School. Speakers at the premiere were (pictured above, from left to right) Lab historian Ellen McGehee, NSRC Director Brye Steeves, Lab filmmaker and primary producer Dave Tietmeyer, and Los Alamos Historical Society Board President Cherie Trottier (not pictured).

The documentary features photographs, documents, and footage from the NSRC's unclassified legacy collections, along with interviews with today's Lab staff and Oppenheimer experts. "We wanted to give viewers a new perspective that connects Oppenheimer's Manhattan Project mission to LANL's mission today," said Tietmeyer. "As a historian," added McGehee, "I fully appreciate the importance of the NSRC's collections to the telling of the complex history of the Laboratory's role during the Manhattan Project."

Working with the Los Alamos Historical Society, whose mission is to preserve for a wide audience the history and stories of Los Alamos and its people, underscores the important relationship between the Laboratory and its surrounding community, Steeves said.

First visit from U.S. Secretary of Energy

JENNIFER GRANHOLM

In August 2023, Department of Energy Secretary Jennifer Granholm made her first in-person visit to Los Alamos to watch an abbreviated version of the NSRC's documentary *Oppenheimer: Science, Mission, Legacy* and participate in the summer's second Oppenheimer panel discussion. Participants were Lab Director Thom Mason, National Nuclear Security Administration Administrator Jill Hruby, and Oppenheimer's grandson Charles Oppenheimer. Lab senior historian Alan Carr served as the moderator.

Granholm's discussion centered in part on the injustice of the Atomic Energy Commission's 1954 decision to revoke Oppenheimer's security clearance. "The due process component of this hearing . . . it was such a railroad," she said. Her December 2022 decision to vacate the AEC ruling overturned a purposeful misinterpretation. "It was clearly a decision that was made . . . to find the outcome they wanted as opposed to having it be the truth." And "truth prevails" was the striking message Granholm delivered to the roughly 600 Los Alamos employees who filled the National Security Sciences Building auditorium for the screening and panel: "We want scientists to know we want them to openly question and openly speak up and that we have their backs."

Audience members and panelists were naturally curious to know what Charles Oppenheimer thought about Granholm's decision regarding his grandfather's clearance. When asked, he didn't mince words. "It's simple—I felt happy," he said. "My dad [Peter Oppenheimer, Oppenheimer's son] this morning said he felt grateful for your decision, Secretary Granholm, and the courage it took. Robert Oppenheimer didn't complain, and it wasn't something that we in the family demanded an apology for. But being given one—to forgive—is divine."

CHARLES OPPENHEIMER

Visits the lab his grandfather built

Charles Oppenheimer poses with a statue of his grandfather, J. Robert Oppenheimer, at the Laboratory's Bradbury Science Museum.

In August 2023, Charles Oppenheimer visited the Lab to participate in a number of activities honoring his late grandfather, from a panel discussion with Secretary of Energy Jennifer Granholm to an exhibit displaying Oppenheimer artifacts at the Lab's Bradbury Science Museum.

Charles also paid a visit to his grandfather's Los Alamos residence, where his father, Peter Oppenheimer, spent a few years of his childhood. He sat down in J. Robert Oppenheimer's study for an interview—included in the full-length version of *Oppenheimer: Science, Mission, Legacy*—with NSRC Director Brye Steeves. Charles described being a child growing up near Santa Fe when he learned about his famous scientist grandfather. "The first thing I heard about my grandfather was that 'there was a really big war, an important war, and your grandfather was very much interested in helping win that war.'"

Today, Charles, who lives in San Francisco with his wife and two daughters, works on behalf of the Oppenheimer Project, an organization he co-founded that is centered on international cooperation regarding scientific and technological growth. Although J. Robert Oppenheimer died in 1967, before Charles was born, his values help inform his grandson's work.

"Realizing how important my grandfather was in the world, I've come to terms with [the fact that] if Oppenheimer's name can help improve the world amid the threat of nuclear war, then you should participate," he said during the interview. "If there's a way to promote his values in improving the world, I think he would approve of that."

"IF THERE'S A WAY TO PROMOTE HIS VALUES IN IMPROVING THE WORLD, I THINK HE WOULD APPROVE..."

Charles Oppenheimer participated in a panel discussion at the Lab for an audience of nearly 600 staff. From left: panel moderator and senior Lab historian Alan Carr, U.S. Secretary of Energy Jennifer Granholm, Lab Director Thom Mason, NNSA Administrator Jill Hruby, and Charles Oppenheimer.

Charles Oppenheimer and family in front of the house in Los Alamos where his grandfather lived during the Manhattan Project.

Growing up Oppenheimer

During his interview, Charles Oppenheimer shared what it was like to grow up in the Oppenheimer family and the impact of his grandfather's legacy on his life.

Listen by scanning the QR code above.

Indeed, Charles often speaks on behalf of the Oppenheimer family, offering a perspective that many authors, filmmakers, and interviewers don't think to ask for. "The thing that stands out most is the family culture of being supportive of Robert Oppenheimer. It's something I experienced as family culture . . . he had these really wide interests and was able to pursue them to his heart's content," Charles said.

Before the interview, Charles, his wife, and two daughters visited the Bradbury Science Museum. Lab historian Nic Lewis showed the family the joint display created by the NSRC and the Bradbury that features collections related to Charles's grandfather.

While outside the Oppenheimer House on Bathtub Row, Charles was approached by Beckett Potter, a 12-year-old visiting Los Alamos from Dallas, Texas, with his family. Beckett told Charles about his love for science and asked Charles for his autograph (pictured below).

"We were touring the Bradbury Science Museum and then visited the Fuller Lodge and Bathtub Row when Beckett ran into the Oppenheimer family," said Beckett's father, Scott Potter. "He is knowledgeable about Robert Oppenheimer and the work on the Manhattan Project. He has an interest in nuclear energy and its opportunities, including nuclear fission and nuclear fusion."

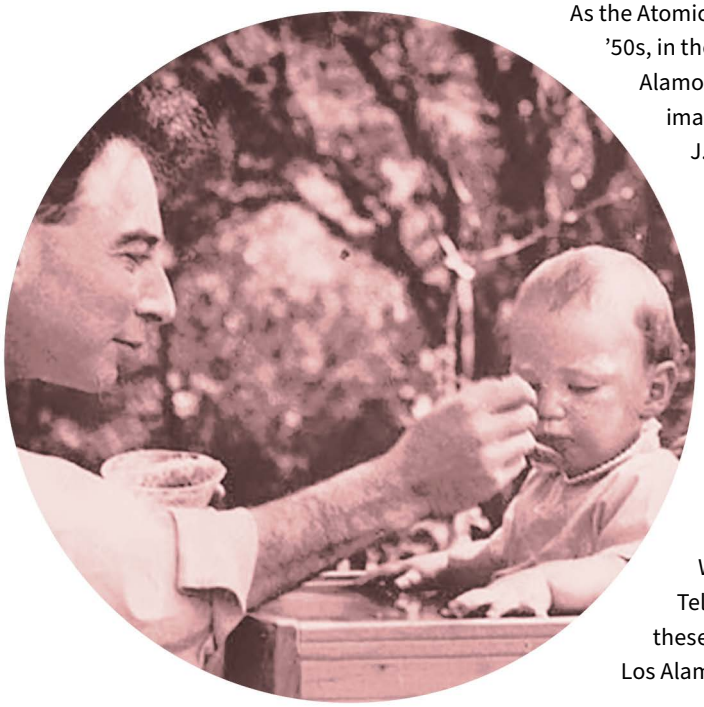
This serendipitous meeting seemed to echo what Charles said in his interview regarding science, cooperation, and hope. "The world is in a situation today where we have existential risks that everybody in the world is participating in. . . . What Robert Oppenheimer's message was, was that we need to work together on those problems. . . . That's the most hopeful part of it." Beckett and his generation's interest in science reflect that hopeful future.

ROBERT OPPENHEIMER'S MESSAGE WAS THAT WE NEED TO WORK TOGETHER.

FAMILY MATTERS AT PROJECT Y

THE WORLD KNEW OPPENHEIMER AND TELLER AS GROUND-BREAKING PHYSICISTS. THEIR CHILDREN KNEW THEM AS "DAD."

Emily Seyl, communications specialist, National Security Research Center

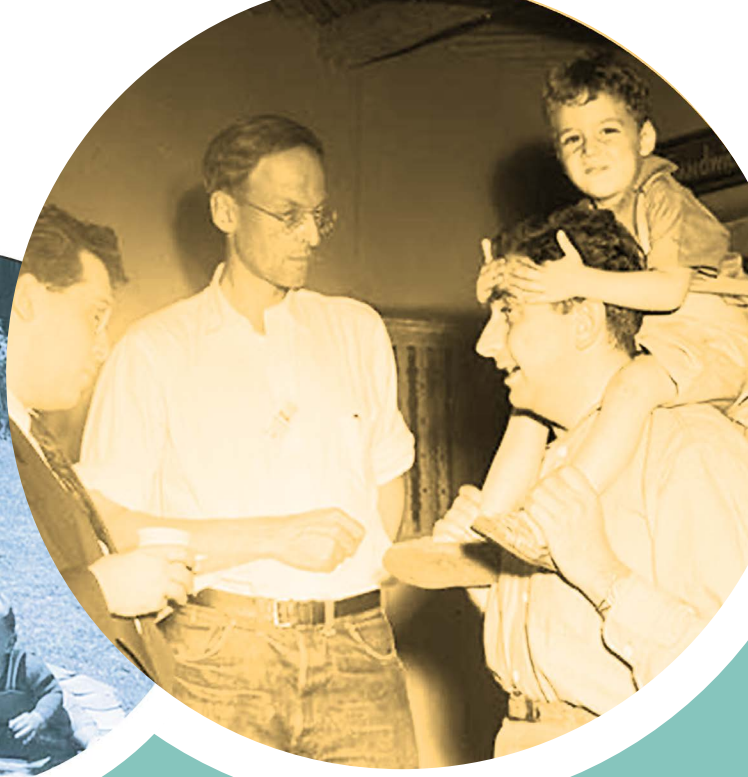


As the Atomic Age was taking hold in the late 1940s and early '50s, in the aftermath of the Manhattan Project, two Los Alamos scientists became larger than life in the popular imagination. The American public dubbed first Lab director J. Robert Oppenheimer and physicist Edward Teller the "fathers" of the atomic and hydrogen bombs, respectively, putting into simpler terms each man's complicated role in nuclear history.

Of course, there was more to each of these men than the scientific contributions for which they are widely remembered. As Teller once said in an interview, "For heaven's sakes, I am not [the father of the hydrogen bomb]! I am the father of two children. Will you please avoid this father thing?"

Well, the nicknames have certainly stuck. But to take Teller's point is to pause and acknowledge that even as these brilliant physicists were busy making their names, Los Alamos' two most famous dads also made room for family.

First Laboratory director J. Robert Oppenheimer with his son, Peter, at their home in Berkeley shortly before the family moved to Los Alamos. (Image courtesy of the J. Robert Oppenheimer Memorial Committee.)



Edward Teller holding his son, Paul, on his shoulders while talking to theoretical physicists Julian Schwinger and David Inglis.

J. Robert Oppenheimer with son Peter. (Image courtesy of the J. Robert Oppenheimer Memorial Committee.)

Like Teller, Oppenheimer was a father to two children. When he assumed his role as the Lab's first director in 1943, his wife Kitty and their son Peter moved with him to Los Alamos, then codenamed Project Y. The Oppenheimers' second child, Katherine ("Toni"), was one of many babies born in the secret city as life went on for hundreds of young families—much to the chagrin of Manhattan Project leader Gen. Leslie Groves, who was concerned that there was not enough room on the mesa or in the budget for the growing population.

Spouses and children were essential personnel, however, and services like schooling and day care were arranged for scientists' families as a makeshift community formed around the laboratory.

Teller was likewise accompanied to Los Alamos by his wife, Mici. Their first child, Paul, arrived in the summer of 1943, one of about 80 babies born on-site during the Lab's first year of operation. A daughter, Wendy, followed in 1946, not long after the Tellers had left Los Alamos for Chicago after the success of the Manhattan Project.

During his years at the laboratory, though Teller made important contributions to the development of the Fat Man bomb, he was famously preoccupied with a different type of nuclear weapon, called a hydrogen—or "H"— bomb, which he was instrumental in developing through the turn of the next decade.

As Teller explains in a poem written for his son and later printed in *Life* magazine:

> A stands for atom; it is so small
> No one has ever seen it at all.
> B stands for bomb; the bombs are much bigger,
> So, brother, do not be too fast on the trigger.
> H has become a most ominous letter.
> It means something bigger if not something better.

Like no place else, the secret laboratory and community of Los Alamos blended personal and professional worlds. Navigating partnerships and parenthood, Teller and Oppenheimer found a new kind of work-life balance while cementing their legacies in nuclear history.

THE FAMILY LEGACY CONTINUES

Charles Oppenheimer, grandson of J. Robert Oppenheimer, and Eric "Astro" Teller, grandson of Edward Teller, visited the Lab on separate occasions in August 2023.

Through their work, both continue the legacy of their grandfathers. Charles Oppenheimer helps lead the Oppenheimer Project, a global nonprofit organization dedicated to international cooperation for a safer future in the face of today's rapidly changing technology. His visit to the Lab (see page 14) included a tour of the home in Los Alamos where his grandparents and father lived.

Astro Teller leads Google-affiliated X Development, a moonshot laboratory that pursues radical technological solutions to global challenges. He visited Los Alamos on August 24 as an invited speaker for the Lab's unclassified Director's Colloquium series. The visit was co-hosted by Earth and Environmental Sciences Acting Deputy Division Leader Matthew Heavner, who called Teller's presentation inspiring. "His visit and the continuing discussions it sparked across teams is testimony to his grandfather's continuing legacy of how we foster innovation and risk."

NSRC DIGITAL COLLECTIONS: PRESERVING DECADES OF DATA FOR THE RESEARCHERS OF TODAY

Jennifer Snead, communications specialist, National Security Research Center

When a building automation system failed last Thanksgiving, causing HVAC transfer coils to freeze and burst, the Lab's Nuclear and Radiochemistry group narrowly avoided losing historic materials vital to their work—a potentially catastrophic reminder of the importance of the National Security Research Center's ongoing work to digitize these and other valuable holdings across the Lab.

THE NSRC DIGITAL COLLECTIONS GROUP

The Digital Collections group within the NSRC—the Lab's classified library—has the herculean task of converting an ever-growing trove of past and present scientific materials into digital format. Armed with training, expertise, and state-of-the-art equipment, they are more than up to the challenge.

"Our group is made up of two teams of highly skilled professionals trained in best practices," said Group Leader Nanette Mayfield. The teams digitize various types of classified media—ranging from technical reports to film reels to microfiche—to provide high-quality products to the NSRC's customers.

Digitizing an image or document not only preserves the item in its present state and safeguards it from damage but also enables researchers to access it more readily. After going through rigorous quality control procedures, newly digitized materials are uploaded to the Online Vault, a classified repository accessible to weapons researchers throughout the Lab.

The National Technical Nuclear Forensics team uses the NSRC daily, says former team member Julianna Fessenden, now division leader of Earth and Environmental Sciences. "In forensics, this team inverse calculates device properties after an explosion. They require documents from the archives to benchmark their

forward models. This team exists to ensure our national security, and the NSRC is an invaluable partner to help them do this."

WHAT MATERIALS ARE BEING DIGITIZED AND WHY ARE THEY IMPORTANT?

The work of the NSRC's Digital Collections group is critical to the Lab's national security mission. Much of the material held by the NSRC does not exist elsewhere in the nuclear enterprise, and the information is necessary for today's weapons-related work. The media include the following:

- Original motion picture film reels from historic nuclear tests
- Tapes, videocassettes, and CDs of lectures, trainings, and procedures
- Negatives, photographs, and radiographs; microfiche and microfilm
- Technical notebooks and reports

These materials—which number in the millions—document the work of the past and provide key knowledge informing the Lab's present and future mission and capabilities.

Among the NSRC's holdings is a large collection from the Rocky Flats Plant, a U.S. weapons manufacturing complex no longer in operation. The Rocky Flats Collection contains data critical to modern-day pit production and actinide science; without these data, much prior work would have to be repeated.

"The Rocky Flats records help Weapons Production avoid millions in costs and save months on the production schedule," said Robert Putnam, senior director of the Technical Applications Office. "The NSRC's innovative processes to provide historical information digitally enable Weapons Production to meet key delivery milestones and improve pit acceptance rates and production capacity."

The Rocky Flats Collection contains the analytical chemistry information on hundreds of items still held at Los Alamos, according to scientists Victoria Longmire, who is retired from the Lab and now works as a contractor, and David Prochnow. "This is the most accurate assay data, and redoing such assays could cost over $100,000 per item," added Prochnow.

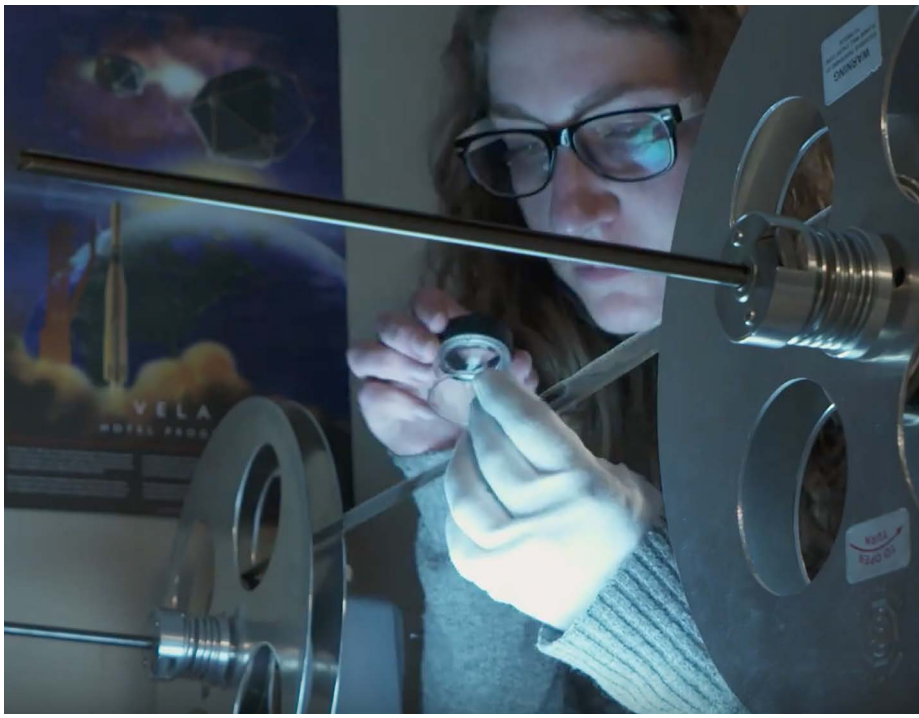
CROSS-TEAM COLLABORATION SAVES VALUABLE DATA

In addition to digitizing materials already held by the NSRC, the Digital Collections group works with others across the Lab to digitize their respective holdings.

"The digitization program is critical to the Nuclear and Radiochemical group's current and future operations," said Assessment team leader Hugh Selby, after the Thanksgiving near miss.

"Our holdings include one-of-a-kind historic materials that underpin key diagnostics for the entire weapons testing program," Selby explained. "These materials are not only invaluable from a historical perspective, they are also our main reference working documents today. While some digitization has been done in the past, it has been largely home-grown and is far from complete, nor is it up to the standard of the NSRC work. Loss of this material to flooding would represent an incalculable loss to many major programs."

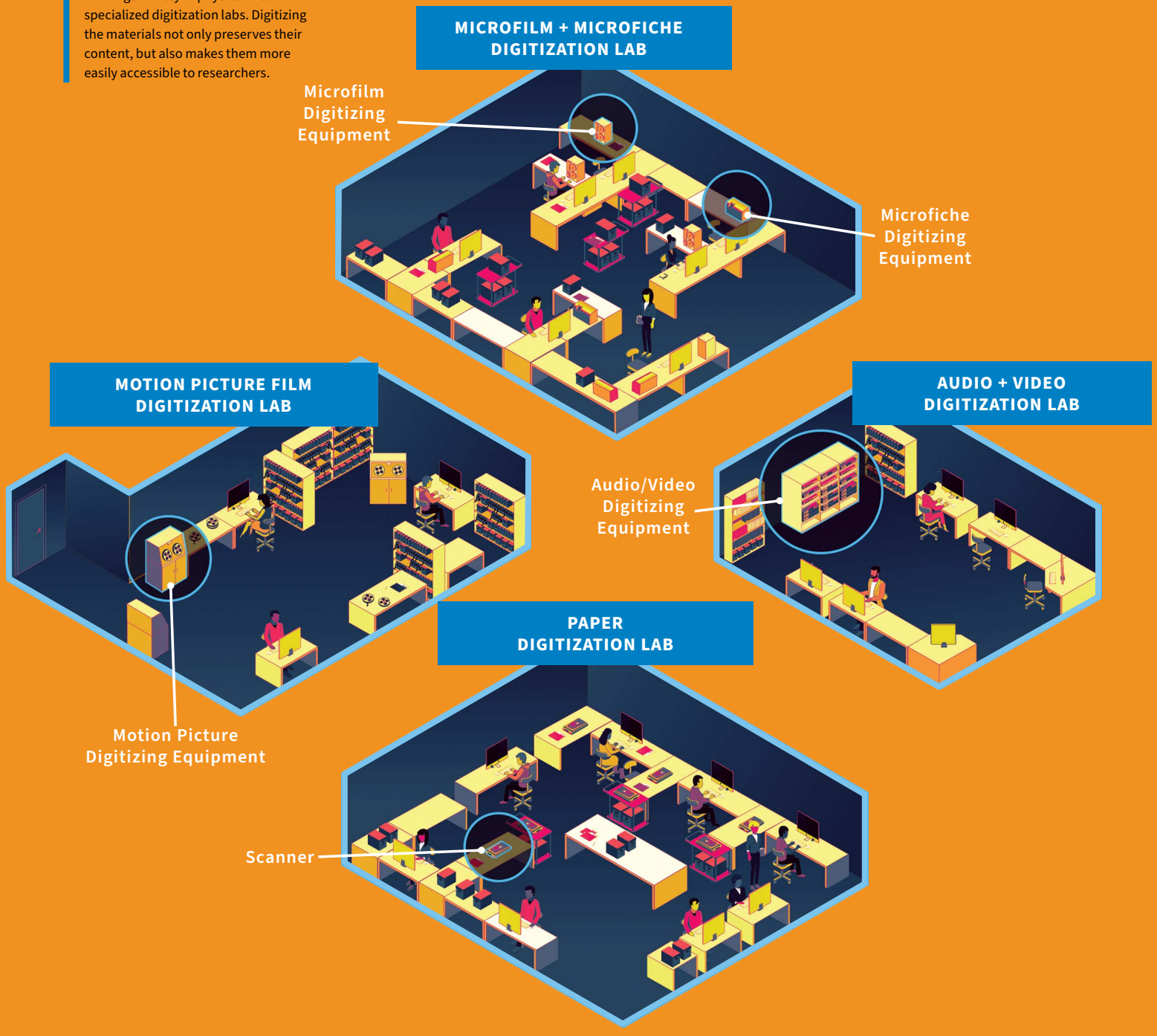
When the W76 Systems Engineering group needed to achieve a long-standing objective of more effectively



NSRC motion picture film archivist Megan Kilidjian inspects a film reel to identify repairs needed prior to digitizing it. The Motion Picture Film Digitization Lab houses scanners that can digitize 8-, 16-, and 35-millimeter films as well as optical and magnetic soundtracks. A 1,000-foot reel of 16-millimeter color film takes around six hours to scan.

STATE-OF-THE-ART DIGITIZING FACILITIES

Advanced equipment and highly trained staff at the National Security Research Center preserve materials dating back to the Manhattan Project. The preservation is achieved through the digitization of a large variety of physical media in specialized digitization labs. Digitizing the materials not only preserves their content, but also makes them more easily accessible to researchers.



managing thousands of documents from the United Kingdom, Digital Collections worked closely with that team over several years to digitize the materials and ensure their searchability by adding metadata to PDF coversheets.

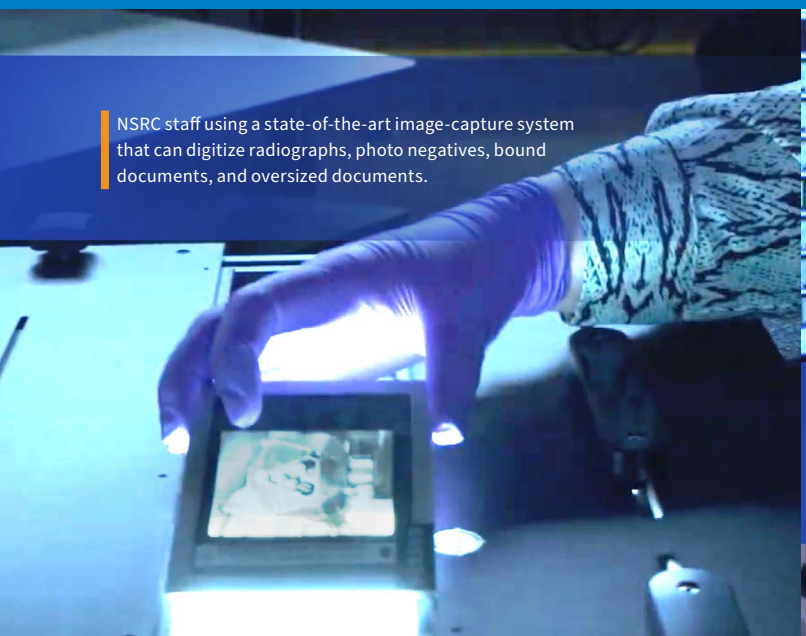
"The original digitized image files weren't reliably, electronically searchable," said System Engineer Joshua Minyard. "Years of efforts by the Digital Collections teams have resulted in our group being able to decrease search times for any given document from a matter of weeks to hours, and will soon pave the way to enable full inventories of these documents for the first time."

The NSRC's Digital Collections group is continually adding new and legacy content to the classified Online Vault repository, ensuring that researchers have secure and reliable digital access to the Lab's ever-growing collection of mission-critical materials.

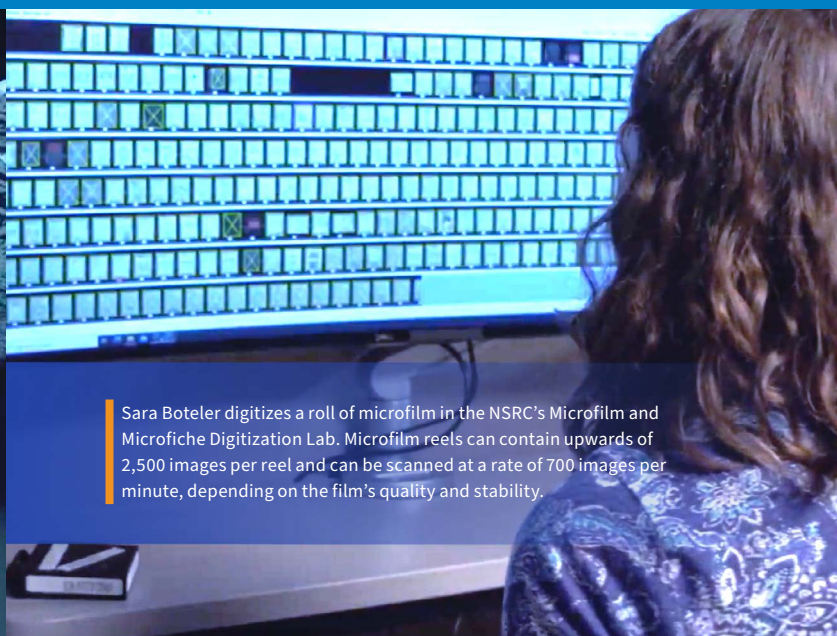
The NSRC has over 10,000 audio and video recordings in its collections. Mark Offtermatt in the Audio and Video Digitization Lab uses high-end equipment, paired with many now-obsolete media players, to digitize recordings that were made and stored in various formats over the decades.

THE NATIONAL SECURITY RESEARCH CENTER
DIGITAL COLLECTIONS TEAMS AT WORK

A new five-minute video gives a behind-the-scenes glimpse of the NSRC Digital Collections teams at work.



NSRC staff using a state-of-the-art image-capture system that can digitize radiographs, photo negatives, bound documents, and oversized documents.



Sara Boteler digitizes a roll of microfilm in the NSRC's Microfilm and Microfiche Digitization Lab. Microfilm reels can contain upwards of 2,500 images per reel and can be scanned at a rate of 700 images per minute, depending on the film's quality and stability.


CHEMISTRY RADIOCHEMISTRY
WEAPONS ENGINEERING STOCK
R PROPULSION EARTH
HISTORY ENGINEERI
METEOROLOGY GEOLO

THE VALUE OF DATA

Scan the QR code for a short video featuring Lab leadership on the value of data.

The National Security Research Center (NSRC) is part of the Weapons Research Services division, which stewards the Laboratory's vast and growing repository of weapons data assets. NSRC staff use cutting-edge software and best practices in information science to ensure that data, information, and knowledge are made accessible to LANL researchers, providing a shared foundation for the Laboratory's current and future mission work.

LOS ALAMOS
NATIONAL LABORATORY
National Security Research Center

BLANK PAGES FROM LAB HISTORY

THE LAVENDER SCARE

Sydney Manginell, student, and Jennifer Snead, communications specialist, National Security Research Center

In the wake of the Soviet Union's development of atomic weaponry and revelations about Soviet espionage during and immediately after World War II (1939–1945), the United States was caught up in a wave of anti-Communist hysteria—the "Red Scare"—that defined the early years of the Cold War. Between 1950 and 1954, the House of Representatives Un-American Activities Committee, often associated with Senator Joseph McCarthy, launched thousands of "loyalty investigations" targeting individuals across government agencies, academia, and the Hollywood film industry (famous targets included Charlie Chaplin and Lucille Ball). Any behavior outside of societal norms was viewed as a potential sign of closet communism. Careers—and lives—were ruined as a result.

This political climate was especially damaging for members of what is known today as the lesbian, gay, bisexual, transgender, queer or questioning plus (LGBTQ+) community who served in the federal workforce—including those who worked at Los Alamos—during and after World War II.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Untold Stories

"UNFOUNDED FEARS

that LGBTQ+ individuals posed a threat to national security..."

WHAT WAS THE LAVENDER SCARE?

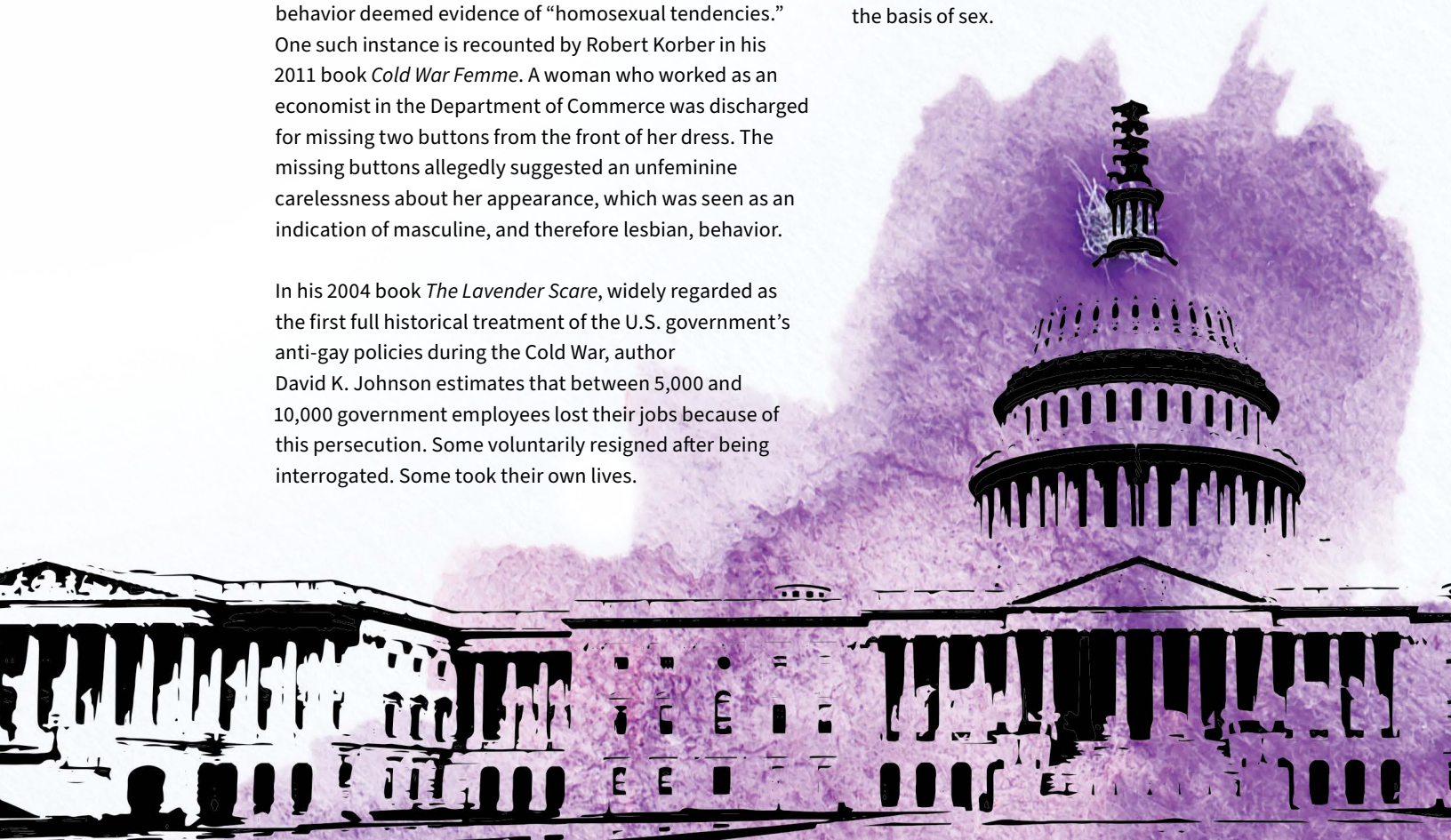
While the Red Scare and McCarthyism are widely studied chapters in U.S. history, much less is known or recognized about a simultaneous wave of anti-Communist persecution based on sexual orientation. In what has since become known as the Lavender Scare, thousands of government employees were forced out of their jobs based on unfounded fears that LGBTQ+ individuals posed a threat to national security because of weak moral character and susceptibility to blackmail.

The Lavender Scare was enshrined into official code in 1953 through President Dwight Eisenhower's Executive Order 10450, which formally defined "sexual perversion" as a national security risk. The order effectively banned anyone suspected of being LGBTQ+ from working for any agency of the federal government. Fellow employees were incentivized to report each other for any behavior deemed evidence of "homosexual tendencies." One such instance is recounted by Robert Korber in his 2011 book *Cold War Femme*. A woman who worked as an economist in the Department of Commerce was discharged for missing two buttons from the front of her dress. The missing buttons allegedly suggested an unfeminine carelessness about her appearance, which was seen as an indication of masculine, and therefore lesbian, behavior.

In his 2004 book *The Lavender Scare*, widely regarded as the first full historical treatment of the U.S. government's anti-gay policies during the Cold War, author David K. Johnson estimates that between 5,000 and 10,000 government employees lost their jobs because of this persecution. Some voluntarily resigned after being interrogated. Some took their own lives.

It took over 50 years to fully dismantle Executive Order 10450 and comprehensively address LGBTQ+ discrimination against government employees. While resistance to the order and activism on behalf of those it targeted began in the 1950s and 1960s with figures like Frank Kameny, the U.S. Civil Service Commission did not officially end the ban on gays and lesbians in civil service until 1975.

President Bill Clinton issued his own order in 1998 banning anti-gay discrimination against federal civilian employees, and in 2017, President Barack Obama explicitly repealed Executive Order 10450 in its entirety. Most recently, a 2021 executive order by President Joe Biden requires that government agencies proactively redraft their policies, as needed, to reflect that gender identity and sexual orientation are protected by extension under any laws that prohibit discrimination on the basis of sex.



THE LAVENDER SCARE AND THE LAB

Although we do not know exactly how many members of the Lab community were affected by Executive Order 10450, acknowledging their untold stories and the discrimination they faced is critical to a full understanding of this period in Lab and U.S. history. We do know that Los Alamos Scientific Laboratory (as the Lab was known from 1947–1981) was one of the government organizations required by the order to investigate the conduct and terminate the employment of all alleged "subversives," including individuals demonstrating "criminal, infamous, dishonest, immoral, or notoriously disgraceful conduct, habitual use of intoxicants to excess, drug addiction, [and] sexual perversion." Records and archival materials related to carrying out this requirement, however, are scarce.

The Society of American Archivists defines "archival silence" as the unintentional or purposeful omission or distortion of documentation of enduring value, resulting in gaps and the inability to represent the past accurately. In the case of the Lavender Scare, according to National Security Research Center librarian Laura McGuiness, "Our lack of archival documentation here at the Lab is likely a result of the secrecy of the investigations and of fear of discrimination and persecution."

For NSRC Collections Manager Patty Templeton, "An incomplete history is an inaccurate history. Archival silences represent opportunity cost: This is about brilliant people, the research they didn't get to do, and the advancements that weren't made due to the Lavender Scare. Acknowledging archival omissions and biases of the past will help us avoid them in the future."

FILLING IN THE MISSING PIECES

Recent histories have begun to unearth some of the untold stories of the Lab and the Lavender Scare. In his 2019 book *Men without Maps*, John Ibson writes about Claude Schwob, a master sergeant and radiochemist who worked under Enrico Fermi's division in the Experimental Nuclear Physics group at Los Alamos during the war. Schwob was among the witnesses to the July 16, 1945, Trinity test, which confirmed the viability of the Los Alamos–developed atomic bomb. He was

commended by Oppenheimer for his significant contributions to the success of that test. After the war, Schwob worked at the U.S. Naval Radiological Defense Laboratory in San Francisco, where he spent the remainder of his professional life as a radiation expert focusing on safe ways to detect, prevent, and respond to radiation exposure.

While Schwob was able to maintain his identity as a gay man and work as a government scientist at the highest levels, others who served on the Manhattan Project found themselves under investigation and surveillance.

Jordan Biro Walters's 2023 book *Wide-Open Desert* draws upon recently declassified FBI records and Atomic Energy Commission memos to recount what little is known of the "Manhattan Eight": a group of women identified in the documents only by letters. Three of the women began their careers at the Hanford, Washington, site—home to the nuclear reactors that produced the plutonium used in the Trinity test and in the atomic bomb dropped on Nagasaki, Japan, at the end of the war—and five of the women were at Los Alamos. All had security clearances, and all were tracked by the FBI for over a decade due to concerns about their sexual orientation. The available records show that half lost their clearances or voluntarily resigned from their positions in 1953, soon after Eisenhower signed Executive Order 10450. The fate of the others is not known.

While currently unverifiable, there were almost certainly more people who served at the Lab during World War II and the Cold War who felt the impact of the Lavender Scare and resulting anti-gay government policies.

NSRC historian Madeline Whitacre adds: “We know so little about the impact of the Lavender Scare at the Lab that it’s difficult to identify experts on this particular history. This gap in the Lab archives is an invitation to researchers to explore alternate methods, like oral histories, to document LGBTQ+ history here, from our beginnings to the present day.”

TODAY

Members of Prism, the Lab’s LGBTQ+ Employee Resource Group, are committed to fostering a supportive work environment at Los Alamos National Laboratory where all individuals are able to thrive and contribute to the Lab’s mission at their maximum potential.

Part of Prism’s mission involves acknowledging history, including past mistakes of discrimination and persecution like the Lavender Scare, and recognizing the contributions of the unrecorded individuals who suffered because of those mistakes.

“Fully understanding what happened then only goes to show us how far we have come in the process of welcoming LGBTQ+ people into the Lab and the greater scientific community,” adds Prism co-chair Sara Mason, “and the importance of continuing to create a safe space here for LGBTQ+ employees.”

Laboratory Director Thom Mason joins Prism members Leonard Moore, Sarah Hayes, Britt Edquist, Grant Meadors, Oakley Hearne, and Joe Crane outside of the National Security Sciences Building to raise the Progress Pride flag. Dave Teter, Associate Laboratory Director for Infrastructure and Capital Projects (not pictured), is Prism’s leadership champion.

HONORING THE LIFE OF JOHN L. TUCKER

FOUNDING FATHER OF DETONATOR SCIENCE AND MANHATTAN PROJECT–ERA LEGEND DIES AT 105

Jennifer Snead, communications specialist, National Security Research Center

Ensign John L. Tucker in front of a Quonset hut on Tinian Island during his service in Project Alberta, which ensured an atomic bomb could be successfully dropped by aircraft, 1945. (Image courtesy of John L. Tucker's family.)

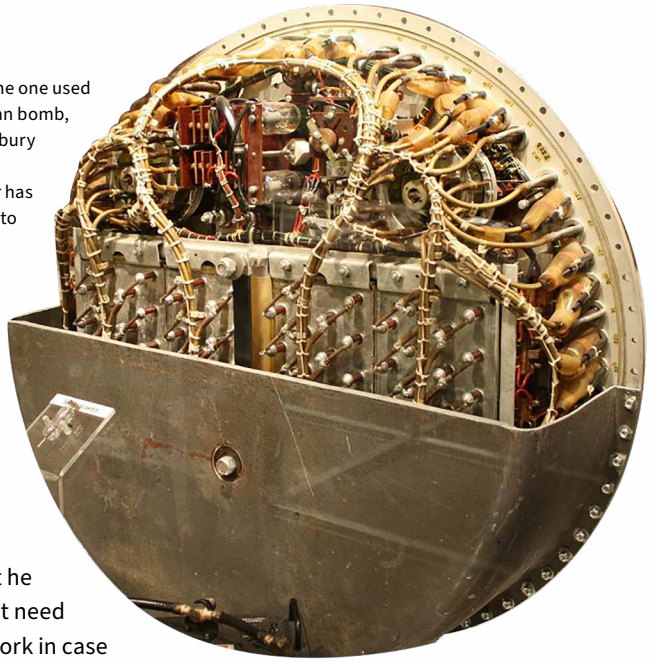
John L. Tucker spent more than four decades serving the national defense mission, ensuring the quality, reliability, and safety of explosives and detonators at the Laboratory. He died on September 20, 2023, in Santa Fe, New Mexico. He was 105.

"John joined the Manhattan Project and made valuable contributions. Then he played a huge role in the Cold War detonator program. And make no mistake: detonators are of fundamental importance in a nuclear weapon, and they can be extremely challenging to perfect," said Lab senior historian Alan Carr. "John was at the heart of it all. And on top of that, he was a wonderful person."

Both before and after his retirement in 1982, Tucker served as a teacher and a mentor to subsequent generations of Lab scientists and technicians.

MANHATTAN PROJECT YEARS, TINIAN ISLAND

In 1942, fresh from the master's in physics program at Louisiana State University, 24-year-old Tucker accepted a position as general foreman in a Charlotte, North Carolina, munitions plant supplying shells for U.S. Navy shipboard anti-aircraft guns.



A fireset identical to the one used to detonate the Fat Man bomb, on display at the Bradbury Science Museum in Los Alamos. The cover has been cross-sectioned to show the interior.

"The munitions we were furnishing the military at that point in time were really sad . . . a lot of them didn't work," he recalled during a February 2014 interview.

Tucker was determined to change that. "Since I was in charge of quality and reliability of the 40-millimeter ammunition that we were making, I became kind of critical of a lot of things explosive," he said.

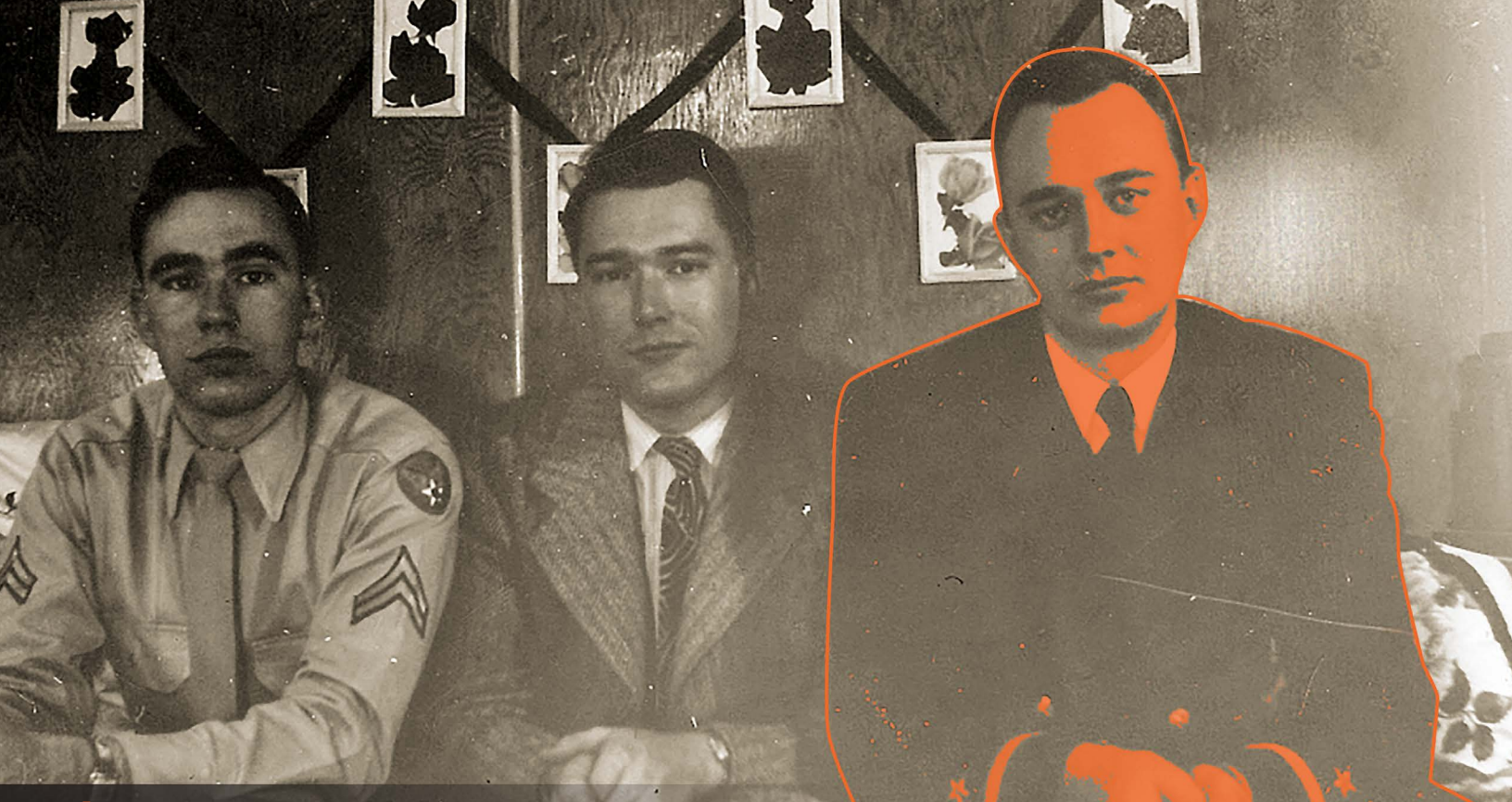
In 1945, as a commissioned officer in the Navy, Tucker joined the Manhattan Project—the top-secret, World War II government program in which the United States rushed to develop the world's first atomic weapons before Nazi Germany did. He transferred to Los Alamos in March 1945, bringing his critical mind and commitment to quality to the race to build an atomic bomb.

During the Manhattan Project, Tucker designed, built, and tested detonators and bomb-handling equipment and wrote check sheets for detonator disassembly, inspection, testing, and reassembly.

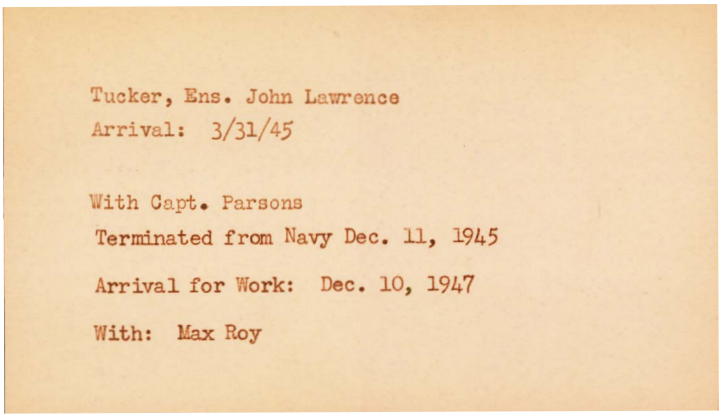
In July 1945 he was sent to the Pacific island of Tinian to work on Project Alberta, which ensured an atomic bomb could be successfully dropped by aircraft. He personally tested and selected the fireset that armed Fat Man, the implosion bomb released over Nagasaki, Japan.

Tucker's skill and experience were critical to Project Alberta in other ways as well. Prior to leaving Los Alamos for Tinian, he received permission to assemble a basic toolbox of implements that he thought he might need to perform his work in case the tools that had been shipped by boat never arrived. He arranged to have the backup supplies airlifted to Tinian by the "Green Hornet Line," the nickname given to the squadron of planes providing essential air logistics support to the entire atomic mission. As he recalled in his interview decades later, "They were the only tools that we had to work with on

The housing for a detonator like the ones John Tucker worked with (right) next to a present-day detonator (left).



Ensign John L. Tucker (right) with brothers Paul (middle) and David (left) at the Clinton Engineer Works (codenamed Site X during the Manhattan Project), now Oak Ridge National Laboratory, 1945. Paul and John both served at Site X in Oak Ridge, Tennessee, for a time, but neither knew that the other was there. The two brothers "discovered" each other one day while walking the muddy lanes of the facility. (Image courtesy of John L. Tucker's family.)



Tucker, Ens. John Lawrence
Arrival: 3/31/45

With Capt. Parsons
Terminated from Navy Dec. 11, 1945
Arrival for Work: Dec. 10, 1947
With: Max Roy

Ensign John L. Tucker's Project Y McKibbin card, now part of the National Security Research Center collections. McKibbin cards were used between 1943 and 1953 to document employees' information. They were named after Dorothy McKibbin, who ran the Project Y office in Santa Fe and was often the first point of contact for new arrivals.

Tinian. The tools that were originally sent were found and showed up after V-J Day."

"For many at Los Alamos during the Manhattan Project, the successful Trinity test was the culmination of their work," said Lab historian Ellen McGehee. "However, we should not forget the contributions of Lab personnel like John Tucker, who went to Tinian under wartime conditions to assist with the final assembly of Fat Man and Little Boy."

On August 12, 1945, Tucker was commended for his exceptional service on Project Alberta.

FOUNDING FATHER OF DETONATOR SCIENCE

Tucker's contributions to the Lab did not end on Tinian Island. Returning to Los Alamos after the war, he led the development of the Lab's Detonator Firing Site (now TA-40) and authored two major detonator science references, *The Los Alamos Detonator Catalog* and *Los Alamos Detonator History*, both still in use today.

He also taught three-day seminars (known as "Tucker Tech") to new engineers. He remained active as a consultant for another decade after his official retirement in 1982.

Tucker's wife, Syrena Morris Tucker, also worked at the Lab, performing weapons diagnostics work from 1961 to the late 1970s as a nuclear plate technician in the Physics division under particle physicist Louis Rosen, one of the original Manhattan Project scientists.

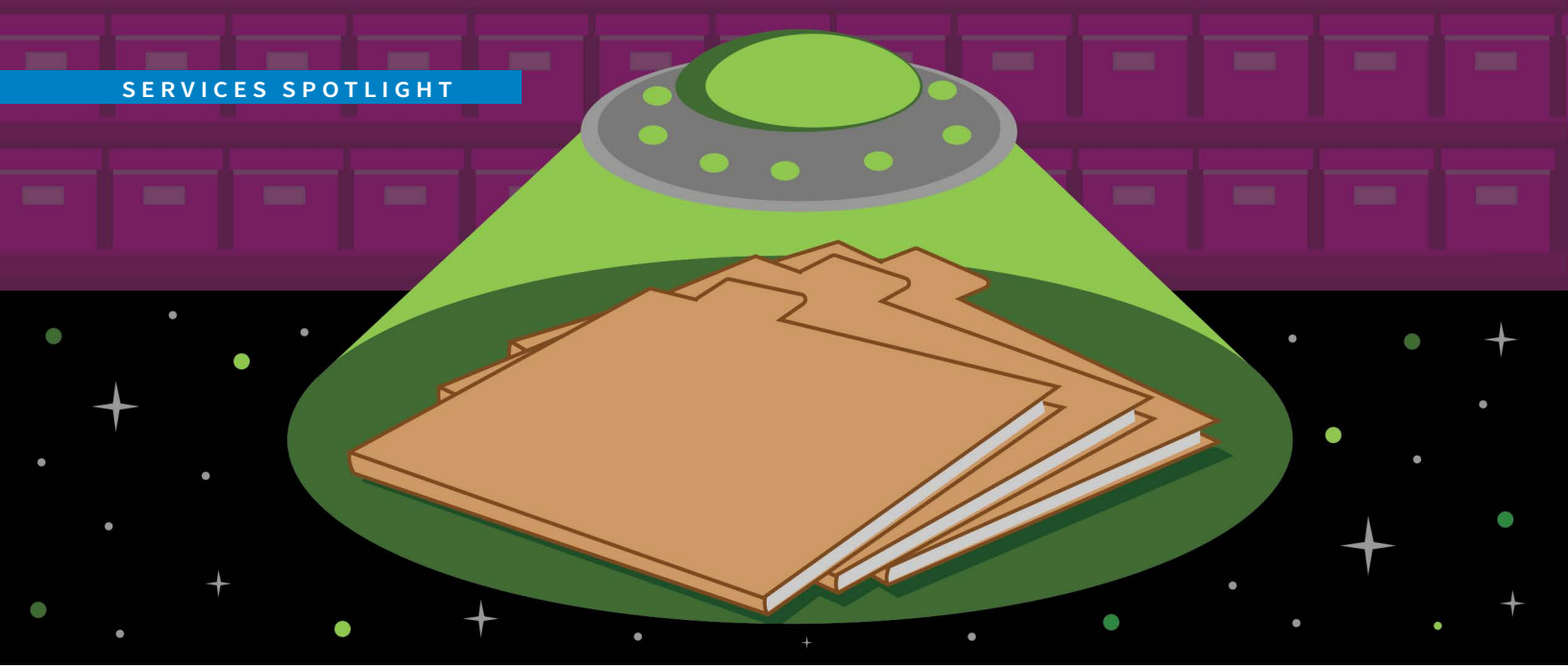
Tucker's last visit to the Lab was May 8, 2018—his 100th birthday—during the Lab's 75th anniversary commemorations. He and members of his family attended the dedication ceremony for the John L. Tucker Conference Room in TA-22, home of Los Alamos Detonator Production.

"Tucker's lifetime as a weaponeer in the service of the highest ideals is a legacy of inspiration to those of us who've come after him," said Lab detonator researcher Daniel Preston. "His dedication to the craft and deep wells of commitment echo in the halls where we work. Since the Manhattan days and into the future, John's legacy continues to have an impact on the U.S. nuclear weapons stockpile."

Former explosives researcher Cary Skidmore called Tucker "a hero for the 'ordinary man.' He was not a Ph.D. scientist . . . [he] was a master's degreed engineer . . . [who] cared about safe operations for his co-workers and safe nuclear weapons designs . . . [and] was involved in training the generations that followed him. He cared about leaving a legacy, footprints for others to follow."

On the Lab's annual High Explosives Safety Day, technical and support staff across the nuclear complex are invited to pause and reflect on explosives operations hazards and lessons learned to help maintain impeccable safety records. The 2024 event was dedicated to John Tucker and featured talks on his innovations and legacy.

John L. Tucker (center) at the Lab in 2018 for his 100th birthday celebration and dedication of the John L. Tucker Conference Room, with detonator researcher and Group Leader Daniel Preston.



FOIA REQUESTS AT THE NATIONAL SECURITY RESEARCH CENTER

QUERIES FROM THE PUBLIC CAN SOMETIMES BE OTHERWORLDLY

Laura McGuiness, librarian, National Security Research Center

NSRC senior archivist Daniel Alcazar (center), archivist John Moore (left), and historian Madeline Whitacre (right) often assist with fulfilling information requests.

Did you know that a conference was organized at the Lab in 1949 to discuss green fireballs reportedly observed above Los Alamos? Were it not for the Freedom of Information Act, the Lab's scientific probes into these mysterious sightings might have been lost to time.

Signed into law in 1967, FOIA gives any person the right to access records kept by federal agencies so they can better understand the U.S. government's operations and activities. Agencies are required to disclose information requested under FOIA, unless that information falls under one or more of nine exemptions protecting interests such as personal privacy, national

Flying Green Lights Alert Constabulary

Shades of flying saucers? Los Alamos now has flying green lights. These will-o'-the-wisps, seen generally about 2 a.m., have the town buzzing. All official inquiries bring the same answer: "Quien sabe?". Carroll Tyler, project manager, said simply that all he knew about the lights was rumor—the same rumor that everyone is hearing. A call to Kirtland Air Base brought a response from a captain who asked that his name not be used—"because he didn't know anything". He was eager to learn, though. There was even speculation—could these be visitors from Mars? Have you seen a green light lately?

A tongue-in-cheek "announcement" from the February 1969 issue of *The Atom* (a research newsletter once published by the Lab) commemorating 20 years since the green fireball sightings of December 1948.

security, and law enforcement. Often described as the law that keeps citizens in the know about the government, FOIA is a vital part of U.S. democracy. The Laboratory's FOIA program fields over 100 requests for records each year. As the Lab's classified research and technical library, dedicated to information stewardship and education, the National Security Research Center regularly assists with these requests—close to half of the yearly volume.

"Fulfilling FOIA requests is an important part of what we do here," said NSRC senior archivist Daniel Alcazar. "It's critical to our mission to ensure the public has access to information it has the right to see."

Public queries cover a spectrum of topics, but most involve requests for Manhattan Project–era technical reports and memoranda, Los Alamos–produced historical and scientific films, or documents pertaining to former employees.

While less common, Alcazar estimates that he also receives a few FOIA requests every year related to unidentified flying objects and other unexplained aerial phenomena.

PROJECT TWINKLE: A MYSTERIOUS HYPOTHESIS

Over the years, general FOIA requests about UFO studies at the Lab have led to some fascinating finds. One such example is the rediscovery of archived materials related to the evening of December 5, 1948, when witnesses reported green fireballs moving across the sky over Los Alamos. The fireballs appeared several times over the next three months, flying noiselessly and just within eyesight of residents on the mesa.

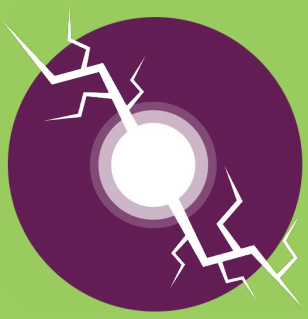
Similar phenomena were reported near the Hanford site (a now-decommissioned plutonium production complex in Washington state) and within 400 miles of Oak Ridge National Laboratory in Tennessee, another site of nuclear fuel production during the Manhattan Project.

The number of sightings of these phenomena and their proximity to sensitive facilities were of concern to the U.S. government. Could the fireballs be a threat to national security?

In response, a conference was organized at Los Alamos Scientific Laboratory (the Lab's postwar name) on February 16, 1949, to discuss the strange phenomena.

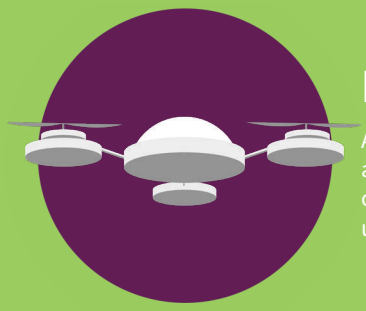
The conference was attended by scientists such as then–Laboratory Director Norris Bradbury and physicists Frederick Reines and Edward Teller as well as members of the FBI, the Atomic Energy Commission (the precursor to today's Department of Energy), and

COMMON SOURCES OF UFO SIGHTINGS



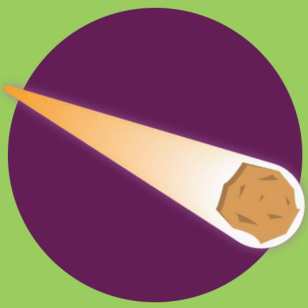
Ball Lightning

An uncommon form of lightning shaped like a glowing red ball, usually associated with thunderstorms and thought to consist of ionized gas.



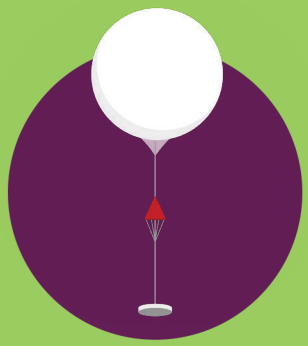
Drone

A remotely controlled or autonomous aircraft without a human pilot, crew, or passengers on board. Also called an unmanned aerial vehicle.



Meteorite

A mass of stony or metallic matter fallen to Earth from outer space.



Weather Balloon

An airborne balloon carrying instruments that gather meteorological data.

the U.S. military. Also in attendance was Lincoln LaPaz, head of the University of New Mexico's Institute of Meteoritics and a firsthand observer of the green fireballs. The NSRC collections contain the conference minutes.

While the minutes attest that attendees were skeptical of attributing unexplained aerial phenomena to extraterrestrial activity, participants from the Army confirmed that the fireballs had been classed alongside flying discs within Project Grudge (1948–49), one of three consecutive U.S. Air Force studies of reported UFO sightings. (The others were Project Sign (1947–48) and, later, Project Blue Book (1952–69).)

After further discussion, the notion that the green fireballs were a significant national security threat was ultimately dismissed, as were hypotheses involving meteorites, aurora borealis, and weather balloons.

However, the 1949 Los Alamos conference was the beginning of a study called Project Twinkle that aimed to capture further data on the fireball sightings through a network of observation posts and photographic units. Project Twinkle was never fully implemented and was discontinued after two years, with the official conclusion that the green fireballs were likely natural in origin.

EVIDENCE OF UFOS IN THE NSRC?

The NSRC does not appear to have materials on Project Twinkle, although not all the millions of items housed in its collections are easily searchable yet. Forgotten pieces of history are being rediscovered all the time in the ongoing processes of digitization and cataloging.

Whether a FOIA request unearths one of these treasures often depends on how effectively the submitted keywords direct the archivists' search. If terms provided by a requestor are overly specific, even relevant materials could remain undiscovered. In cases where a query is too broad in scope or does not indicate a specific date range, the Lab's FOIA team may suggest that the National Nuclear Security Administration, which funnels information requests to the Lab, ask the sender to narrow the topic or timeframe. Once more specific parameters are established, the search for responsive materials can begin.

Keyword searches can also be hindered by the natural evolution of language. The term "UFO," for instance, has not been used consistently over time. During the 1940s and 1950s, civilians often referred to UFOs as "flying saucers" or "flying discs." Very few materials in the NSRC collections, in

fact, can be found by searching for the keyword "UFO." The term "UAP"—unexplained aerial phenomenon—is more current, but also less specific.

Information about UAPs or UFOs is more often included within other fields of scientific inquiry. For instance, natural phenomena such as ball lightning and the aurora borealis have been historically misidentified as UFOs. Drones are more recent sources of aerial mystery and misidentification. Each of these terms is a potential keyword that might turn up surprising information, Alcazar said, adding that conducting FOIA searches is always an interesting part of his work.

FULFILLING FOIA REQUESTS

By law, the NNSA has 20 days to respond to a FOIA request, which can be a labor-intensive process. Depending on the nature of the request, NSRC staff can spend a significant amount of the allowable time scouring the collections for relevant documents. As one way to help expedite searches, Alcazar keeps a running record of requests and his responses to them, noting the keywords used and applicable search pathways through indices and databases for future reference. Timely responses to FOIA requests often depend on a librarian or archivist's deep knowledge of a body of records, and yet, in a collection as vast as the NSRC's, there are almost always new pathways to explore and connections to be made.

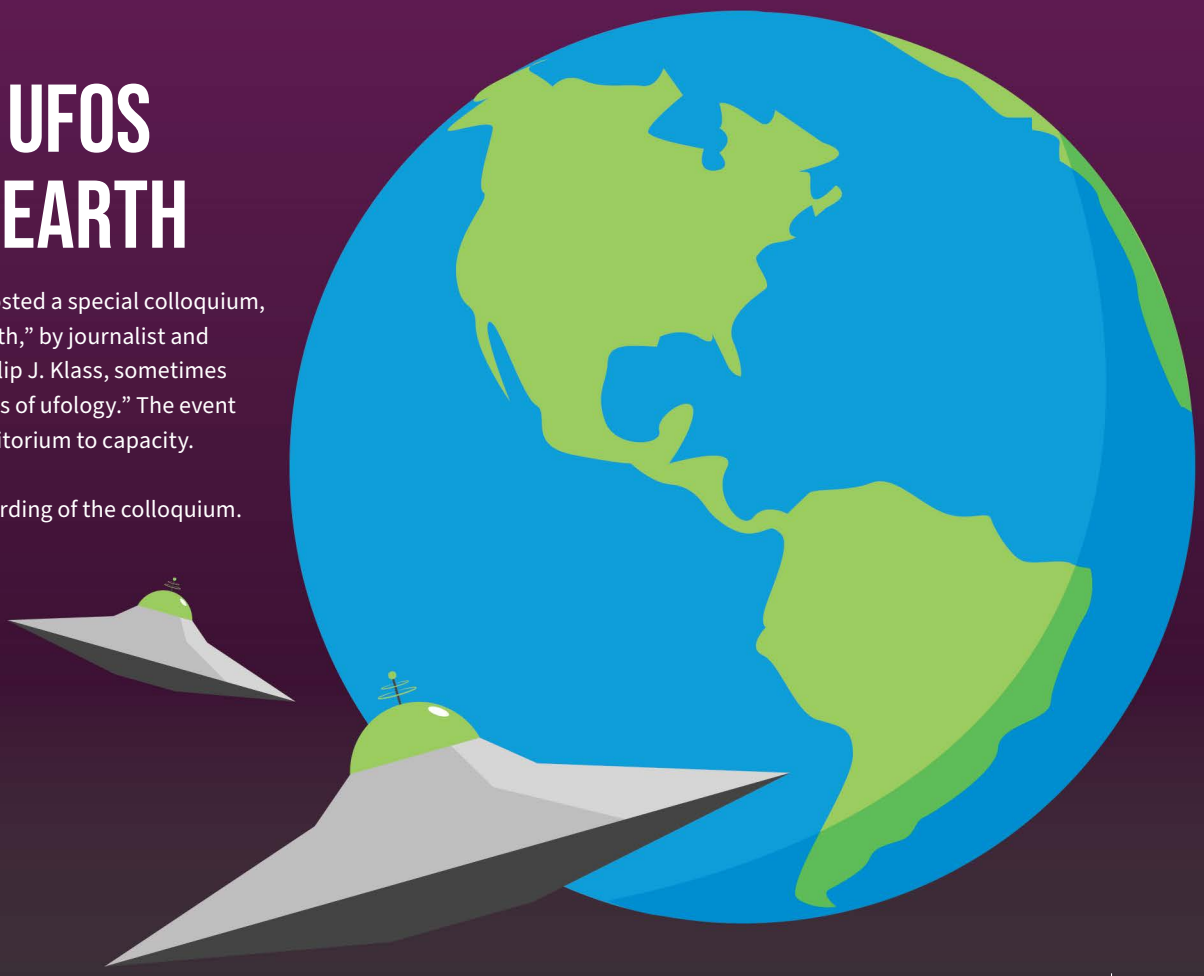
"In general, due diligence is so important when it comes to fulfilling any FOIA request," Alcazar said. "Oftentimes, searches will take you in unexpected directions as you navigate all your leads. That's the beauty of the collections."

Editor's note: Laura McGuiness wrote her master's thesis at San Jose State University on cataloging UFO materials in libraries.

BRINGING UFOS DOWN TO EARTH

On March 11, 1991, LANL hosted a special colloquium, "Bringing UFOs Down to Earth," by journalist and UFO researcher/skeptic Philip J. Klass, sometimes called "the Sherlock Holmes of ufology." The event filled the Lab's Physics Auditorium to capacity.

Scan the QR code for a recording of the colloquium.

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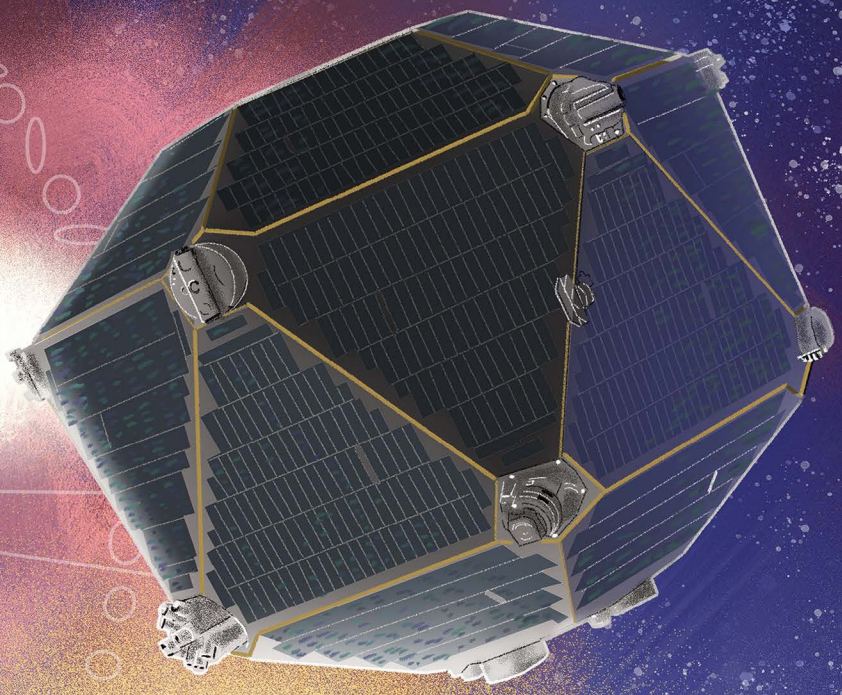

VELA
HOTEL PROGRAM

Scan the QR code for a recording of "The Vela Hotel Program: The AEC's Space-Based Nuclear Detection and Treaty Verification Program," a 45-minute presentation by National Security Research Center historian Madeline Whitacre.

On October 17, 1963, the U.S. launched the first pair of Vela Hotel satellites, a critical component of Project Vela, initiated to detect nuclear detonations in the atmosphere, in outer space, underwater, and underground—and thus monitor compliance with the 1963 Partial Test Ban Treaty.

Developed by Los Alamos and Sandia scientists, the Vela Hotel satellites were designed to detect nuclear tests in space. These watchers in the sky were equipped with x-ray, gamma ray, and neutron detectors and were powered by solar panels. Their sensitivity and capacity for real-time data transmission ushered in the age of science-based nuclear deterrence, led to the discovery of cosmic gamma ray bursts, and provided early insights into solar winds, among other significant astronomical discoveries.

The Vela Hotel program forever changed the landscape of national and global security. Its innovation and influence continue to inspire the Lab's mission today.

LOS ALAMOS
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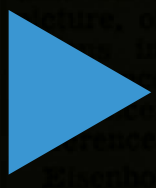
“Our story to tell”

THE MAKING OF THE NATIONAL SECURITY RESEARCH CENTER'S OPPENHEIMER DOCUMENTARY

Jennifer Snead, communications specialist, National Security Research Center





J. Robert Oppenheimer has long been the subject of legends. From the *Time* magazine–produced 1946 short film *Atomic Power* (starring the Lab director himself) to Hollywood filmmaker Christopher Nolan's 2023 Oscar-winning biopic, numerous variations have depicted Oppenheimer's leadership of the top-secret World War II laboratory in Los Alamos and his shocking public downfall in 1954, when the "father of the atomic bomb" was stripped of his security clearance due to alleged Communist associations.

In the summer of 2023, the Lab's National Security Research Center released its own version of Oppenheimer's story, connecting past with present and shedding new light on the lasting influence of the Lab's first director in *Oppenheimer: Science, Mission, Legacy.*

Drawing from the NSRC's collections as well as interviews with historians, technical experts, and today's Lab leadership, the three-part documentary "is a story of historical discovery, world-changing innovation, and unfolding current events," according to its lead creator Dave Tietmeyer. Like the film's content, the 10-month journey of its production is a tale of history in the making. Read on to learn how the Lab's documentary itself became a part of Oppenheimer's legacy.

Lab filmmaker Dave Tietmeyer (with filmmaker Howard Coe, right) filming in the National Security Research Center. The NSRC creates informational videos as part of its educational outreach mission.

MORE THAN A MOVIE

In the late spring of 2022, as on-location filming was wrapping up in Los Alamos for the Hollywood Oppenheimer movie (in which current Lab personnel participated as extras and for which the NSRC and the Bradbury Science Museum provided unclassified historical artifacts), Lab filmmaker Dave Tietmeyer had an idea.

Tietmeyer had just finished a documentary about the Trinity test—the July 16, 1945, detonation of the first atomic weapon, developed by Oppenheimer and his team—through which he was first fully introduced to the NSRC collections. He realized that the Lab was uniquely positioned to tell Oppenheimer's story, from its 1943 beginning to the first director's lasting scientific legacy at the Lab. "I came to the thought that not only is Trinity our story to tell, but Oppenheimer is our story to tell. In the context of Nolan's movie, this seemed the perfect time to do it," Tietmeyer said. NSRC leadership agreed.

As the Lab's classified library, the NSRC traces its lineage back to the original technical library that Oppenheimer assembled in 1943 for Manhattan Project scientists. In addition to the classified and unclassified technical collections that inform the work of today's weapons researchers, the NSRC also houses documents, photos, and videos related to Lab history, along with an expert team of librarians, archivists, and historians. "Having worked with the NSRC, Dave was familiar with our collections," said NSRC Director Brye Steeves. "The documents, the photographs, the original handwritten notes . . . We have

the historical subject matter experts and all of the media assets that we needed to tell Oppenheimer's story."

"LANL, particularly the NSRC and its collections, holds the key to understanding both the complexity of the Lab's wartime success as well as Oppenheimer's scientific genius," said Lab historian Roger Meade. Senior Lab historian Alan Carr added that while Oppenheimer's and the Manhattan Project's stories have been told many times by many others, "we can pull together perspectives, images, audio, and video that have never been seen before—and give viewers a glimpse of what it is like to work within Oppenheimer's legacy at the Lab today. It's the story as only we can tell it."

"The Nolan movie is a movie," said Ethan Frogget, Media Production group leader. "Our documentary is a history and an official communication of the Lab. We could have made this a three-minute video, but Dave wanted to do it right. He believed that the story of Oppenheimer and his legacy for the Lab needed much more time to tell."

DISCOVERIES, INTERVIEWS: BEHIND THE SCENES

In the yearlong research and filming process for *Oppenheimer: Science, Mission, Legacy*, historians and technical experts shared their insights over many hours of interviews. These sessions made for some of the most powerful moments in the film.

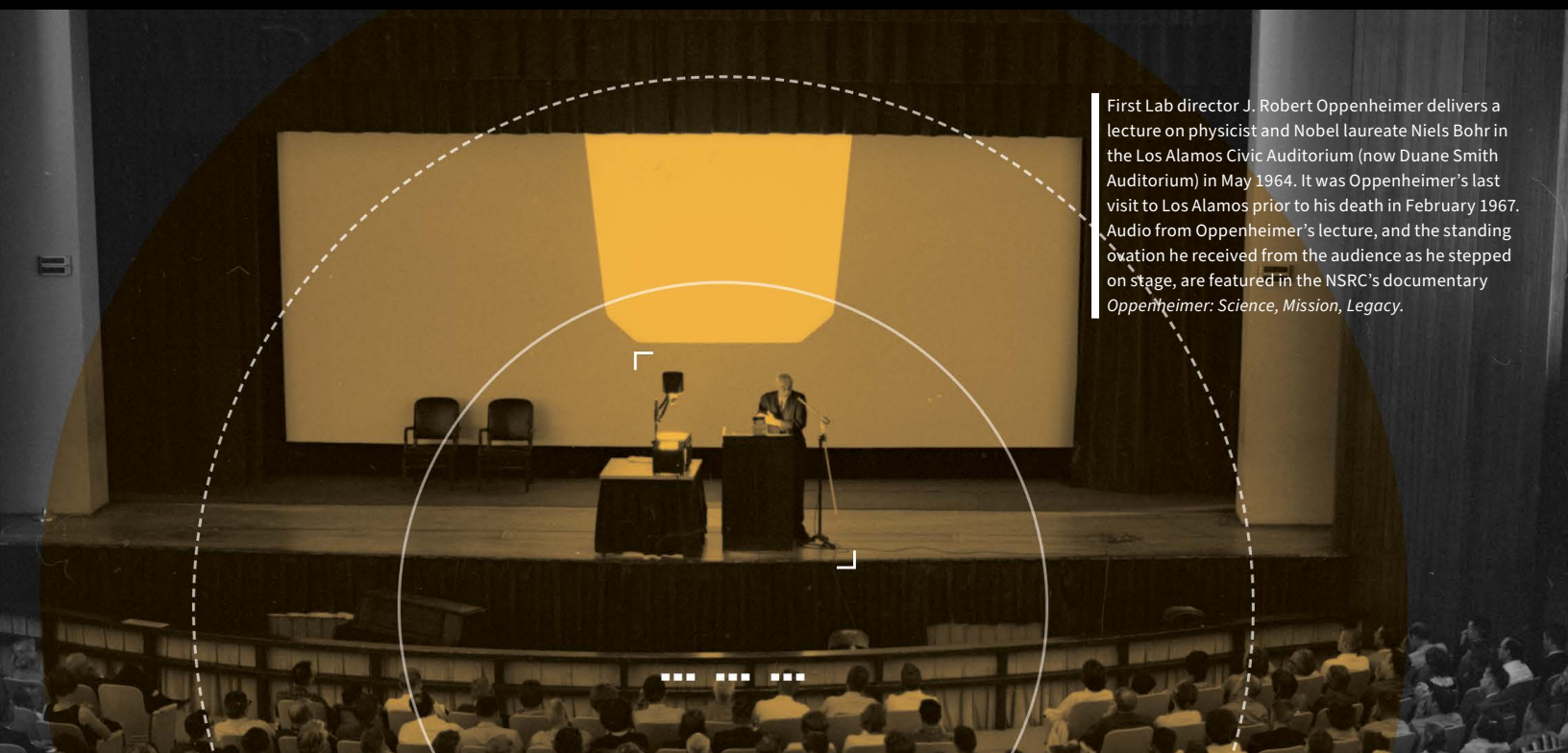
One such moment arose from a late addition to the documentary that was inspired by a chance discovery: the surprising contents of an old, marked-up folder in the NSRC archives. Inside were dozens of photographs, probably unseen for decades, from Oppenheimer's last known visit to the Lab in 1964. Tietmeyer saw a rare opportunity to depict the Lab's first director toward the end of his life. (Oppenheimer died in February of 1967.) No longer in the spotlight but no less cherished by the Lab community, Oppenheimer gave a talk during that visit about Nobel laureate and Manhattan Project contributor Niels Bohr that packed the Los Alamos High School auditorium.

In the documentary's third episode, Tietmeyer weaves the rediscovered 1964 photographs with clips from the NSRC's original recording of Oppenheimer's talk, bringing his voice and the 10-minute standing ovation that greeted him as he walked on stage to one of the film's most emotional scenes. The moment brought historian Jim Kunetka, author of *The General and the Genius* and one of the documentary's interviewees, to the verge of tears on camera.

"Bringing in Oppenheimer's voice and the applause was an addition that came later in production," said Carr. "It's powerful and the most emotional part of the film."

Steeves adds, "It gives me goosebumps every time. It's quite dramatic and my favorite part of the documentary. This man's accomplishments and what would be his enduring legacy after his death are exemplified in this scene."

Authors like Kunetka and Kai Bird (whose 2005 book *American Prometheus* was the basis for Nolan's Oppenheimer movie) as well as the subject's grandson, Charles Oppenheimer, lend another layer to the story of



First Lab director J. Robert Oppenheimer delivers a lecture on physicist and Nobel laureate Niels Bohr in the Los Alamos Civic Auditorium (now Duane Smith Auditorium) in May 1964. It was Oppenheimer's last visit to Los Alamos prior to his death in February 1967. Audio from Oppenheimer's lecture, and the standing ovation he received from the audience as he stepped on stage, are featured in the NSRC's documentary *Oppenheimer: Science, Mission, Legacy.*

Lab senior historian Alan Carr (below, left) moderates an August 11, 2023, panel discussion following a screening of the NSRC documentary *Oppenheimer: Science, Mission, Legacy.* Panelists were NNSA Administrator Jill Hruby (above, left), J. Robert Oppenheimer's grandson Charles Oppenheimer (above, right), U.S. Department of Energy Secretary Jennifer Granholm (below, center), and Lab Director Thom Mason (below, right).

science, mission, and legacy: Oppenheimer as his friends, family, and colleagues knew him. An in-depth version of Bird's interview was recently released as a "bonus" fourth episode that delves deeper into Oppenheimer's life in its social context.

To complete the arc from 1943 to 2023, Tietmeyer also gathered insights from modern-day Los Alamos leaders, including current director Thom Mason. Their perspectives of Oppenheimer's lasting influence on science and culture at the Lab brought the scope of the film into the present day.

Scan the QR code to watch the bonus fourth episode of the NSRC documentary *Oppenheimer: Science, Mission, Legacy*—an in-depth interview with biographer Kai Bird.

BECOMING PART OF OPPENHEIMER'S HISTORY

Midway through production, Tietmeyer and his team suddenly found themselves a part of history in the making and revising the documentary's final episode—twice—in response to current events.

In December 2022, U.S. Department of Energy (DOE) Secretary Jennifer Granholm officially vacated the decades-old decision by the Atomic Energy Commission (AEC; the DOE's precursor) to revoke Oppenheimer's security clearance. Besides its impact on Oppenheimer's personal life and career, the 1954 decision had far-reaching consequences in the scientific community. The implication made during the hearing that Oppenheimer's policy recommendations as a government advisor were a litmus test for his political loyalty led to concerns that scientists could be silenced for publicly expressing dissenting views.

In a statement, Granholm called the decision part of a "flawed process" and underscored the DOE's "responsibility to correct the historical record and honor Dr. Oppenheimer's profound contributions to our national defense and the scientific enterprise at large." Once he heard the news, Tietmeyer said, "We realized that we had to switch gears. Originally, we weren't even talking about the AEC hearings. We were focusing on Oppenheimer's legacy at the Lab." The production team shifted focus for the film's final episode—"Legacy"—to include this part of Oppenheimer's history and its unexpected contemporary conclusion. They finalized this version and held a public screening of the full documentary in partnership with the Los Alamos Historical Society in mid-July 2023 (see page 12).

Arriving at the Laboratory for a screening and panel discussion of the NSRC documentary *Oppenheimer: Science, Mission, Legacy* on August 11, 2023, U.S. Department of Energy Secretary Jennifer Granholm (right) greets (from left) NNSA Administrator Jill Hruby; Lab Director Thom Mason; and Ted Wyka, manager of the NNSA's Los Alamos Field Office.

Little did anyone know that there would be one more revision to the ending, involving the secretary of energy herself. In the spring of 2023, the Laboratory invited Secretary Granholm to Los Alamos for a screening of *Oppenheimer: Science, Mission, Legacy* in honor of her vacating the AEC's 1954 ruling. After months of working through schedules with the DOE office, the news came that the secretary would indeed make her first-ever visit to the Laboratory to view a 45-minute version of the film and participate in a panel discussion immediately afterward.

With the secretary's visit in August, Tietmeyer saw another way to deepen the film's depiction of Oppenheimer's life—by incorporating footage of the panel discussion, which also included Lab Director Mason; Charles Oppenheimer; and Jill Hruby, Administrator of the National Nuclear Security Administration. The result brought Oppenheimer's history and legacy fully into the present moment.

"It was amazing that the secretary came all the way here to watch our film," said Frogget. "While she was here, we were able to get her first recorded commentary on the decision to vacate the AEC's revocation of Oppenheimer's clearance. This will be relevant for decades to come."

"Oppenheimer's life and work mattered then and they still matter today," said Steeves. "Secretary Granholm's vacation of the AEC decision is part of his legacy—his dissent in scientific conversations elsewhere did not mean disloyalty. Truth in science matters, and our documentary spells that out for audiences."

Reflecting on the evolution of *Oppenheimer: Science, Mission, Legacy*, Tietmeyer said, "We were constantly tweaking it. And who knows when a new discovery will come out of the NSRC collections? The story may never end." He added, "The real 'Oscar winners' here are Brye, Alan, Roger, and the NSRC staff, who were incredible to work with. And I have to thank my Media Production filmmakers who assisted with the project. It was a complete team effort and an enjoyable experience."

Voyage of DISCOVERIES

CONTRIBUTORS:
Angie Piccolo, archivist
Andrew Gordon, librarian
Jennifer Snead, communications specialist

Fascinating finds are down every aisle and around every corner of the National Security Research Center, the Lab's classified library. In addition to housing classified reports, drawings, photographs, and other materials from some of history's greatest scientific minds, the collections are filled with unclassified legacy materials dating back to World War II and the start of the nuclear enterprise.

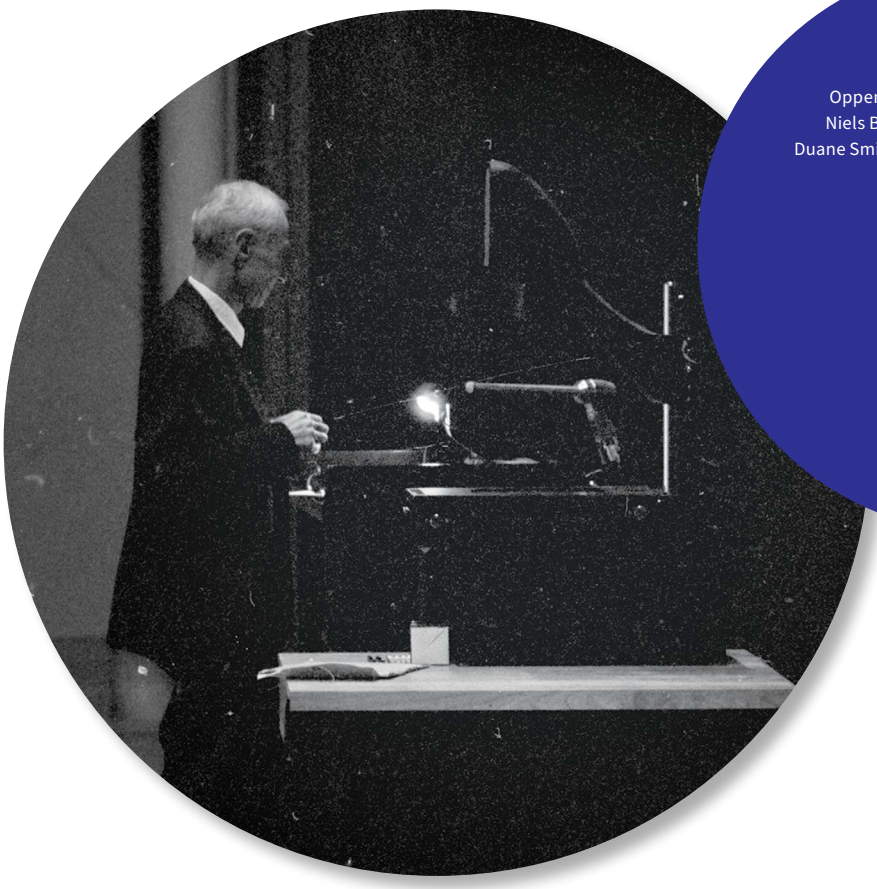
These materials are often rediscovered as NSRC archivists work with today's researchers to fulfill the Lab's national security mission. Here are just a few of the latest exciting discoveries.

First director of the Laboratory J. Robert Oppenheimer (1943–1945) (right) and second director Norris Bradbury (1945–1970) greet photographers and community members during Oppenheimer's visit to the Lab, May 1964.

REDISCOVERED PHOTOGRAPHS OF OPPENHEIMER'S 1964 VISIT TO THE LAB

While searching through other historical collections, NSRC archivist and historian John Moore came across over 130 black-and-white photographs of J. Robert Oppenheimer's last visit to the Laboratory. Tucked away among the NSRC's millions of classified and unclassified photographs, the images had not been seen for over 30 years.

Oppenheimer, who served as the Lab's first director from 1943–1945, came back in May 1964 to deliver a lecture about Niels Bohr (a Nobel Prize–winning physicist) and visit the Los Alamos Scientific Laboratory Museum (today's Bradbury Science Museum), as captured in the photos. While the images center around Oppenheimer, they also include other Manhattan Project–era figures, like his wife Kitty Oppenheimer, Norris Bradbury and his wife Lois, and Oppenheimer's former secretary Dorothy McKibbin.



Oppenheimer delivers a lecture about Niels Bohr in the Civic Auditorium (now Duane Smith Auditorium) during his last visit to Los Alamos, May 1964.

Scan the QR code to listen.

Oppenheimer signs the guest book at the Los Alamos Scientific Laboratory Museum (now the Bradbury Science Museum) during his visit to the Lab in May 1964.

The two specially modified tanks used to collect soil samples from the Trinity test site. The samples gathered helped determine the yield of the first nuclear device, detonated July 16, 1945.

Scan the QR code to watch footage of the tanks at work.

WATCH RARE FOOTAGE FROM THE TRINITY TEST SITE

Immediately after the July 16, 1945, Trinity test—in which a team of Los Alamos scientists successfully detonated the world's first atomic device in a remote section of New Mexico desert—its participants were faced with the hazardous task of entering the test area to collect and study radioactive particles from the explosion.

A seven-minute film from 1945 depicts the important role played by two Sherman tanks specially modified for this work, which included gathering soil samples remotely using rockets equipped with scoops. The film shows the rocket tank in action as well as a lead-lined tank that carried scientists—according to some accounts, Enrico Fermi among them—into the crater left behind by the nuclear blast.

A digital version of the film, made in 2017, was recently rediscovered by the NSRC Multimedia Digitization Services team and edited for clarity.

"The film depicts the ingenuity and inventiveness of staff to meet a critical need—the recovery of radioactive samples to assess the performance of the Trinity device," said Lab historian Roger Meade. "The film also depicts safety measures—remote recovery and handling—to keep staff safe from radioactive exposures . . . [and] the rugged and primitive environment in which wartime staff worked."

“BOMB BOOKS”: ESSENTIAL NUCLEAR TEST DOCUMENTS MADE AVAILABLE TO RESEARCHERS

The NSRC is currently uploading hundreds of “bomb books” into the Online Vault, a classified repository for weapons researchers. These one-of-a-kind compilations contain critical pieces of information on historic nuclear tests that researchers use for today’s mission work.

Bomb books can be anywhere from a few dozen to thousands of pages long, depending on the test and the amount of information preserved. The “one-stop-shop” packages enable researchers to more efficiently track down records, which may include schematics, photographs, assembly information, and valuable pre-shot documentation from the design and preparation stages.

Lab scientist Jim Hill, in the Theoretical division, says a well-prepared bomb book may contain drawings, material assays, and just about everything else a weapons analyst needs to model a test device and begin comparing computational results to the actual experiment. He added, “If you don’t write it down, it didn’t happen. For me, the bomb books are the essence of writing it down.”

(Top) An engineering drawing of Fat Man, one of the two nuclear weapons developed by the Manhattan Project, from the National Security Research Center collections.

(Left) A photograph from Operation Redwing, a series of tests conducted by the United States in 1956 at Bikini and Enewetak Atolls in the South Pacific.

LOS ALAMOS AND THE STRATEGIC DEFENSE INITIATIVE

The Strategic Defense Initiative (SDI) was a 1983 plan to develop a space-based defense program enabling the United States to identify and destroy incoming ballistic missiles. SDI was nicknamed "Star Wars" and widely criticized for its expense, feasibility, and potential impact on the U.S. relationship with the then-Soviet Union. The program ended in 1993.

Research and development for SDI involved the U.S. national laboratories and academic and industrial entities.

Principal SDI projects at LANL included the Free-Electron Laser and BEAR (Beam Experiments Aboard a Rocket). The technical challenges posed by these ambitious efforts in particle research and accelerator technologies continue to inform the Lab's current work on projects such as medical imaging, cancer therapies, groundwater remediation, and wastewater treatment. Videos and photos of LANL's SDI initiatives are preserved in the National Security Research Center's collections, where they are made accessible to today's researchers.

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About the Photos

These images of the *Vault* team are graphically rendered in the early-twentieth-century halftone style, which uses varied sizes of dots to create color and tonal variations. Originally developed to reproduce photographs on printing presses while saving ink costs, the halftone process became a staple for books, newspapers, and periodicals as well as screen printing on garments and textiles.

The team photos echo the halftone illumination and layering effects featured in this issue's "Summer of Oppenheimer" story, a showcase of the events surrounding the NSRC's production and release of its documentary *Oppenheimer: Science, Mission, Legacy*, which sheds new light on the life and legacy of the Laboratory's founding director.

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