NATIONAL LABORATORY

Founded: yyyy[1]; Designated a National Laboratory: yyyy[2]; Reflected in Lab Name: yyyy[3]

Location: xxxx[4]

Areas of Research: xxxx[5]

<Laboratory description here>[6]

Link: History website if possible[7]

[1] From *Annual Report on the State of the DOE National Laboratories,* Department of Energy, 2017, https://www.energy.gov/articles/annual-report-state-doe-national-laboratories
[2] From lab history websites if possible; see individual entries for details
[3] From lab history websites if possible; see individual entries for details
[4] From *Annual Report on the State of the DOE National Laboratories,* Department of Energy, 2020, https://www.energy.gov/articles/state-doe-national-laboratories-2020-edition
[5] From *Around the US in 17 Labs*, Symmetry Magazine, Fermi National Accelerator Laboratory/SLAC National Accelerator Laboratory, 2013, https://www.symmetrymagazine.org/article/june-2013/department-of-energy-national-labs
[6] From *Annual Report on the State of the DOE National Laboratories,* Department of Energy, 2020, https://www.energy.gov/articles/state-doe-national-laboratories-2020-edition
[7] Provided by OSELP cohort members

LAWRENCE BERKELEY NATIONAL LABORATORY

Founded: 1931; National Laboratory Reflected in Lab Name: 1995[8]

Location: Berkeley, California

Areas of Research: physics, chemistry, nuclear science, accelerator research, photon science and engineering sciences; computational research and mathematics; earth sciences; energy efficiency; materials sciences; and life sciences, genomics and physical biosciences

Berkeley Laboratory creates useful new materials, advances the frontiers of computing, develops sustainable energy and environmental solutions, and probes the mysteries of life, matter and the universe. Deep integration of basic and applied science, advanced instrumentation, large-scale team science, and collaboration with the international scientific community enhance the laboratory's strengths, which lie in materials, chemistry, physics, biology, Earth and environmental science, mathematics, and computing. Berkeley's five national user facilities provide 14,000 researchers each year with capabilities in high-performance computing and data science, materials synthesis and characterization, and genomic science. Founded in 1931, Berkeley Laboratory's research and its scientists have been recognized with 14 Nobel Prizes.

Link: https://history.lbl.gov/

[8] From *UC Regents Approve New Name for Lab: "Ernest Orlando Lawrence Berkeley National Laboratory"*, Lawrence Berkeley National Laboratory, 1995, https://www2.lbl.gov/Science-Articles/Archive/new-name.html

LOS ALAMOS NATIONAL LABORATORY

Founded: 1943; National Laboratory Reflected in Lab Name: **1979[9]-1981[10]**

Location: Los Alamos, New Mexico

Areas of Research: accelerators and electrodynamics; bioscience, biosecurity and health; chemical science; Earth and space sciences; energy; engineering; high-energy-density plasmas and fluids; information science, computing and applied math; materials science; national security and weapons science; nuclear and particle physics; astrophysics and cosmology; and sensors and instrumentation systems

As a premier national security science laboratory, Los Alamos National Laboratory applies innovative and multidisciplinary science, technology, and engineering to help solve the toughest challenges of the nation—and to protect it as well as the world. In delivering mission solutions, Los Alamos ensures the safety, security, and effectiveness of the U.S. nuclear deterrent and reduces emerging national security and global threats. The multidisciplinary focus of the laboratory's mission extends to nuclear nonproliferation, counterproliferation, energy and infrastructure security, and technology—to counter chemical, biological, radiological, and high-yield explosives threats.

Link: https://about.lanl.gov/history-innovation/

[9] From *S. 673 – An Act to Authorize Appropriations for the Department of Energy for National Security Programs for Fiscal Year 1980, and for Other Purposes*, United States Congress, https://www.congress.gov/bill/96th-congress/senate-bill/673
[10] From *What's In a Name?*, Los Alamos National Laboratory, 2020, https://discover.lanl.gov/publications/national-security-science/2020-summer/what-s-in-a-name/

OAK RIDGE NATIONAL LABORATORY

Founded: 1943; Designated a National Laboratory (and Reflected in Lab Name): 1948[11]

Location: Oak Ridge, Tennessee

Areas of Research: energy-related science and technology, from basic research to the development and demonstration of breakthrough materials, processes and systems

Oak Ridge National Laboratory (ORNL) is the largest multiprogram science and energy laboratory in the DOE system. Its mission is to deliver scientific discoveries and technical breakthroughs that accelerate the development and deployment of solutions in clean energy and national security, creating economic opportunity for the Nation. Established in 1943 as part of the Manhattan Project, ORNL pioneered plutonium production and separation, then focused on nuclear energy and later expanded to other energy sources and their impacts. Today, the laboratory manages one of the Nation's most comprehensive materials programs; two of the world's most powerful neutron science facilities, the Spallation Neutron Source and the High Flux Isotope Reactor; unique resources for fusion and fission energy and science; production facilities for life-saving isotopes; leadership-class computers including Summit, the Nation's fastest; and a diverse set of programs linked by an urgent focus on clean energy, Earth system sustainability, and national security.

Link: https://www.ornl.gov/content/decades-of-discovery#historical_overviews

[11] From *A Nuclear Lab in Peacetime*, ORNL Review, 2018, Oak Ridge National Laboratory, https://www.ornl.gov/content/ornl-review-v51n3

ARGONNE NATIONAL LABORATORY

Founded: 1946; Designated a National Laboratory (and Reflected in Lab Name): 1946[12]

Location: Lemont, Illinois

Areas of Research: physics, chemistry, biological sciences, energy storage, high-performance computing, national security, engines and alternative fuels, environmental science and nuclear energy

Argonne National Laboratory accelerates science and technology (S&T) to drive U.S. prosperity and security. The laboratory is recognized for seminal discoveries in fundamental science, innovations in energy technologies, leadership in scientific computing and analysis, and excellence in stewardship of national scientific user facilities. Argonne's basic research drives advances in materials science, chemistry, physics, biology, and environmental science. In applied science and engineering, the laboratory overcomes critical technological challenges in energy and national security. The laboratory's user facilities propel breakthroughs in fields ranging from supercomputing and AI applications for science, to materials characterization and nuclear physics, and climate science. The laboratory also leads nationwide collaborations spanning the research spectrum from discovery to application, including the Q-NEXT quantum information science center, Joint Center for Energy Storage Research, and ReCell advanced battery recycling center. To take laboratory discoveries to market, Argonne collaborates actively with regional universities and companies and expands the impact of its research through innovative partnerships.

Link: https://www.anl.gov/our-history

[12] From *Our History: Inspiring the Nation's Future*, Argonne National Laboratory, https://www.anl.gov/our-history

BROOKHAVEN NATIONAL LABORATORY

Founded: 1947; Designated a National Laboratory (and Reflected in Lab Name): 1947[13]

Location: Upton, New York

Areas of Research: nuclear and particle physics; photon sciences and nanomaterials; and crossdisciplinary research on climate change, sustainable energy and Earth's ecosystems

With seven Nobel Prize-winning discoveries and more than 70 years of pioneering research, Brookhaven National Laboratory (BNL) delivers discovery science and transformative technology to power and secure the Nation's future. The laboratory leads and supports diverse research teams including other National Laboratories, academia, and industry, by designing, building, and operating major scientific user facilities in support of its DOE mission. These facilities reflect BNL/ DOE stewardship of national research infrastructure critical for researchers—such as response to national emergencies (e.g., COVID-19 research). Energy and data science, nuclear science and particle physics, accelerator S&T, quantitative plant science, and quantum information science are Brookhaven's current initiatives. Managed by a partnership between Stony Brook University (SBU) and Battelle plus six universities—Columbia, Cornell, Harvard, MIT, Princeton, and Yale— Brookhaven manages programs that also help prevent the spread of nuclear weapons, protect astronauts on future space missions, and produce medical isotopes to diagnose and treat disease.

Link: https://www.bnl.gov/about/history/

[13] From *About Brookhaven*, Brookhaven National Laboratory, https://www.bnl.gov/about/history/

AMES NATIONAL LABORATORY

Founded: 1947; National Laboratory Reflected in Lab Name: 2022[14]

Location: Ames, Iowa

Areas of Research: materials sciences and engineering; chemical and biological sciences; applied math and computational sciences; environmental and protection sciences; and simulation, modeling and decision science

Ames Laboratory delivers critical-materials solutions to the United States. Since its founding, Ames has successfully partnered with Iowa State University of Science and Technology to lead in the discovery, synthesis, analysis, and use of new materials, novel chemistries, and transformational analytical tools. Building upon its core strengths in the science of interfaces, science of synthesis, science of quantum materials, and science of rare earths—plus a proven track record of transitioning basic energy science through early-stage research to licensed technologies and commercialization—Ames leads the nation in translating foundational science for energy and chemical conversion into critical-technology innovation.

Link: https://www.ameslab.gov/about-ames-laboratory/manhattan-project-roots

[14] From *Ames Laboratory is now Ames National Laboratory*, Ames National Laboratory, 2022, https://www.ameslab.gov/news/ames-laboratory-is-now-ames-national-laboratory

SANDIA NATIONAL LABORATORIES

Founded: 1949; National Laboratory Reflected in Lab Name: 1979[15]

Locations: Albuquerque, New Mexico; Livermore, California; Tonopah, Nevada; Amarillo, Texas; Carlsbad, New Mexico; Kauai, Hawaii

Areas of Research: nuclear weapons; defense; energy; materials science and homeland security; nonproliferation; supercomputing and cybersecurity; robotics; climate and infrastructure security; nuclear reactor safety; nanodevices and microsystems; geosciences; bioscience; radiation effects; and nuclear fusion

Sandia grew out of the effort to develop the first atomic bombs. Today, maintaining the U.S. nuclear stockpile is a major part of Sandia's work as a multimission national security engineering laboratory. Its role has evolved to address the complex threats facing the United States through R&D in the following: Supporting U.S. deterrence policy by ensuring a safe, secure, and effective nuclear stockpile; protecting nuclear assets and materials, and addressing nuclear emergency response and global nonproliferation; supplying new capabilities to U.S. defense and national security communities; ensuring a stable energy supply and infrastructure; and creating science-based, systems engineering solutions to the Nation's most challenging national security problems.

After 75 years, Sandia's highly specialized research staff remains at the forefront of innovation, collaborating with government, academia, and industry to live up to its mandate of providing exceptional service in the national interest.

Link: https://www.sandia.gov/about/history/

[15] From *About Sandia: History: 1970s,* Sandia National Laboratories, https://www.sandia.gov/about/history/1970s/ and S. *673 – An Act to Authorize Appropriations for the Department of Energy for National Security Programs for Fiscal Year 1980, and for Other Purposes*, United States Congress, https://www.congress.gov/bill/96th-congress/senate-bill/673

IDAHO NATIONAL LABORATORY

Founded: 1949; Designated a National Laboratory (and Reflected in Lab Name): 2005[16]

Location: Idaho Falls, Idaho

Areas of Research: nuclear science and engineering; national security research and testing; energy and environmental sustainability

Idaho National Laboratory (INL) serves as the U.S. leader for advanced nuclear energy R&D and is home to an unparalleled combination of nuclear energy test-bed facilities, including those that focus on fuel development and fabrication, steady-state and transient irradiation, and macro-and microscale post-irradiation examination. INL's applied science and engineering discipline and problem-solving approach helps the Departments of Defense and Homeland Security, as well as industry, solve significant national security challenges in critical infrastructure protection, cybersecurity, and nuclear nonproliferation. INL's strategic initiatives include research related to resilient cyber-physical security, integrated energy systems (including clean energy technologies) and advanced manufacturing.

Under the DOE Office of Nuclear Energy (DOE-NE)'s direction, INL leads multiple initiatives to provide the nuclear community with access to the technical, regulatory, and financial expertise necessary to move innovative nuclear energy technologies (e.g., microreactors) toward commercialization while ensuring the continued safe, economical operation of the existing nuclear fleet.

Link: https://inl.gov/history/

[16] From *History of INL: Celebrating 75 Years of Science and Engineering,* Idaho National Laboratory, https://id.energy.gov/Home/BriefHistory

PRINCETON PLASMA PHYSICS LABORATORY

***Founded: 1951; Current Lab Name Established*: 1961**[17]

Location: Princeton, New Jersey

Areas of Research: nuclear fusion and plasma physics

Princeton Plasma Physics Laboratory (PPPL), a collaborative national center for fusion energy science, basic sciences, and advanced technology, has three major missions: (1) to develop the scientific knowledge and advanced engineering to enable fusion to power the U.S. and the world; (2) to advance the science of nanoscale fabrication for future industries; and (3) to further the scientific understanding of plasmas from nano- to astrophysical scales. PPPL has been a world leader in magnetic confinement experiments, plasma science, fusion science, and engineering. As the only DOE National Laboratory with a Fusion Energy Sciences mission, PPPL aspires to be the nation's premier design center for the realization and construction of future fusion concepts (e.g., next wave of scientific innovation in plasma nanofabrication technologies). The laboratory is evolving, broadening its expertise to more effectively contribute to U.S. economic health and competitiveness by being a national leader in computation, nanofabrication, surface science, and technology.

Link: https://www.pppl.gov/about/history

[17] From *Princeton Plasma Physics Laboratory Timeline*, Princeton Plasma Physics Laboratory, https://www.pppl.gov/timeline

LAWRENCE LIVERMORE NATIONAL LABORATORY

Founded: 1952; National Laboratory Reflected in Lab Name: 1979[18]

Location: Livermore, California

Areas of Research: nuclear weapons stockpile stewardship, nuclear nonproliferation, high performance computing, national security, biology, energy research, climate science, additive manufacturing, lasers and high-energy-density physics

S&T on a mission—this is the hallmark of Lawrence Livermore National Laboratory (LLNL). In service to DOE/National Nuclear Security Administration (NNSA) and other federal agencies, LLNL develops and applies world-class S&T to ensure the safety, security, and reliability of the nation's nuclear deterrent. Founded in 1952, LLNL also applies S&T to confront dangers ranging from nuclear proliferation and terrorism to energy shortages and climate change that threaten national security and global stability. Using a multidisciplinary approach that encompasses all disciplines of science and engineering—and that utilizes unmatched facilities—the laboratory pushes the boundaries to provide breakthroughs for counterterrorism and nonproliferation, defense and intelligence, and energy and environmental security.

Link: https://www.llnl.gov/purpose/history

[18] From *Our History: Lawrence Livermore Becomes a National Laboratory*, Lawrence Livermore National Laboratory, https://www.llnl.gov/purpose/history/1970s#event-lawrence-livermore-becomes-a-national-laboratory and *S. 673 – An Act to Authorize Appropriations for the Department of Energy for National Security Programs for Fiscal Year 1980, and for Other Purposes*, United States Congress, https://www.congress.gov/bill/96th-congress/senate-bill/673

SLAC NATIONAL ACCELERATOR LABORATORY

Founded: 1962; National Laboratory Reflected in Lab Name: 2008[19]

Location: Menlo Park, California

Areas of Research: accelerator research; astrophysics and cosmology; biology; elementary particle physics; environmental science; materials, chemistry and energy sciences; scientific computing; and X-ray science

Managed by Stanford University and located in Silicon Valley, SLAC is a vibrant multiprogram laboratory whose mission is to explore how the universe works at the biggest, smallest, and fastest scales and invent powerful tools that scientists around the globe use. Since its founding in 1962, SLAC has made revolutionary discoveries that have established the laboratory's leadership in high energy physics. Today, SLAC is the world's leading laboratory in X-ray and ultrafast science due in large part to its X-ray user facilities, the Stanford Synchrotron Radiation Lightsource (SSRL), and the Linac Coherent Light Source (LCLS). Through diverse research programs in materials, chemical, biological and energy sciences, high-energy density science, cosmology, particle physics, bioimaging and technology development, SLAC helps solve real-world problems and advances the interests of the Nation.

Link: https://www6.slac.stanford.edu/about/our-story/history

[19] From *ARHO: Archives, History and Records Office*, SLAC National Accelerator Laboratory, https://ahro.slac.stanford.edu/resources/histories-slac

PACIFIC NORTHWEST NATIONAL LABORATORY

Founded: 1965; Designated a National Laboratory: ~1984[20]; Reflected in Lab Name: 1995[21]

Location: Richland, Washington

Areas of Research: chemical and molecular sciences; biological systems science; climate change science; subsurface science; chemical engineering; applied materials science and engineering; and applied nuclear science and technology

Pacific Northwest National Laboratory (PNNL) advances the frontiers of knowledge, taking on some of the world's greatest S&T challenges. Distinctive strengths in chemistry, Earth sciences, biology and data sciences are the heart of PNNL's science mission, enabling innovations for energy resiliency and national security. PNNL advances theoretical and applied foundations of these disciplines, applying them to critical, complex challenges such as predicting ecosystem responses to climate change, power grid modernization, energy storage, cybersecurity, and nonproliferation.

PNNL stewards the Environmental Molecular Sciences Laboratory, a DOE user facility focused on deeper understanding of environmental processes from the molecular to the Earth system level. PNNL also manages the nine-laboratory DOE Atmospheric Radiation Measurement Program, a unique, distributed user facility with fixed and mobile sites worldwide gathering essential data on Earth's climate. PNNL's Energy Sciences Center, opening in 2021, will be a landmark research facility for the development of new materials and technologies for advanced clean energy systems.

Link: https://www.pnnl.gov/origins-richland-campus

[20] From *Discovery in Action: PNNL Through the Years*, Pacific Northwest National Laboratory, https://www.pnnl.gov/about/pdf/Timeline_06_09_2015.pdf

[21] From *Discovery in Action: PNNL Through the Years*, Pacific Northwest National Laboratory, https://www.pnnl.gov/about/pdf/Timeline_06_09_2015.pdf

FERMI NATIONAL ACCELERATOR LABORATORY

Founded: 1967; Designated a National Laboratory (and Reflected in Lab Name): 1967[22]

Location: Batavia, Illinois

Areas of Research: particle physics and accelerator science and technology

Fermilab's mission is to be the frontier laboratory for particle physics discovery. The accelerator complex powers research into the fundamental nature of the universe and is the only one in the world to produce both low- and high-energy neutrino beams for science and also enable precision science experiments. The construction of the Long-Baseline Neutrino Facility (LBNF) and Deep Underground Neutrino Experiment (DUNE), along with the world's most intense neutrino beams made possible by the Proton Improvement Plan II (PIP-II) project, will be the first international mega-science project based at a DOE National Laboratory. Fermilab integrates U.S. researchers into the global particle physics enterprise through its experiments and programs in neutrino, collider, precision, and cosmic science. The laboratory's scientific R&D advances accelerator, detector, computing, and quantum technology for use in science and society.

Link: https://history.fnal.gov/history-fermi.html

[22] From *A Brief History of Fermilab,* Fermi National Accelerator Laboratory, https://history.fnal.gov/history-fermi.html

NATIONAL RENEWABLE ENERGY LABORATORY

Founded: 1977; Designated a National Laboratory (and Reflected in Lab Name): 1991[23]

Location: Golden, Colorado

Areas of Research: renewable energy and energy efficiency research and development, including energy systems integration, solar, wind, renewable fuels and vehicle systems, buildings, geothermal, energy sciences, computational sciences and energy analysis

National Renewable Energy Laboratory (NREL) is DOE's primary National Laboratory for renewable energy and energy efficiency R&D. The laboratory delivers impactful scientific discoveries, innovations, and insights that transform clean energy technologies, systems, and markets. Also, the laboratory's research focuses on engineering of energy efficiency, sustainable transportation, and renewable power technologies and provides the knowledge to integrate and optimize energy systems. Finally, NREL's mission space delivers foundational knowledge, technology and systems innovations, and analytic insights to catalyze a transformation to a renewable and sustainable energy future.

Link: https://www.nrel.gov/about/history.html

[23] From *Laboratory History: 1990s*, National Renewable Energy Laboratory, https://www.nrel.gov/about/history.html

THOMAS JEFFERSON NATIONAL ACCELERATOR FACILITY

Founded: 1984; Designated a National Laboratory (and Reflected in Lab Name): 1996[24]

Location: Newport News, Virginia

Areas of Research: experimental nuclear physics, computational and theoretical nuclear physics, accelerator science, cryogenics, superconducting radiofrequency technologies, radiation detectors, medical imaging devices and free-electron lasers

Thomas Jefferson National Accelerator Facility (TJNAF) is the preeminent laboratory in precision studies of the fundamental nature of confined states of quarks and gluons, including the protons and neutrons that make up the mass of the visible universe. Central to that is the Continuous Electron Beam Accelerator Facility (CEBAF), the first large-scale application of superconducting radiofrequency technology. Tools, techniques, and technologies developed in pursuit of the laboratory's scientific mission enable an ever-increasing array of applications—from detectors for medical and biological use, to advanced particle accelerators for environmental remediation.

Link: https://www.jlab.org/about/visitors/history

[24] From *Jefferson Lab History,* Thomas Jefferson National Accelerator Facility, https://www.jlab.org/about/visitors/history

NATIONAL ENERGY TECHNOLOGY LABORATORY

Founded: 1910; Designated a National Laboratory (and Reflected in Lab Name): 1999[25]

Locations: Morgantown, West Virginia; Pittsburgh, Pennsylvania; Albany, Oregon; Houston, Texas; Anchorage, Alaska

Areas of Research: high-efficiency boilers, turbines, fuel cells and other power systems; emissions controls for coal-fired power plants; carbon capture and storage; efficiency and environmental quality of domestic oil and natural gas exploration, production and processing; and materials for extreme environments

The National Energy Technology Laboratory's (NETL) mission is to discover, integrate and mature technology solutions to enhance the Nation's energy foundation and protect the environment for future generations. NETL's advanced technology development is crucial to U.S. energy innovation. Through R&D, partnerships, and initiatives, NETL enables production of the clean, reliable, and affordable energy required to increase domestic manufacturing, improves our nation's energy infrastructure, enhances electrical grid reliability and resilience, expands domestic energy production, educates future scientists and engineers, promotes workforce revitalization, and supports U.S. energy and national security goals. As the only government-owned and government-operated laboratory in the DOE complex, NETL and its predecessor laboratories support DOE goals by maintaining nationally recognized technical competencies and collaborating with partners in industry, academia, and other research organizations to nurture emerging technologies.

Link: https://www.netl.doe.gov/about/history

[25] From *History,* National Energy Technology Laboratory, https://www.netl.doe.gov/about/history

SAVANNAH RIVER NATIONAL LABORATORY

Founded: 1951; Designated a National Laboratory (and Reflected in Lab Name): 2004[26]

Location: Aiken, South Carolina

Areas of Research: environmental remediation and risk reduction; nuclear materials processing and disposition; nuclear detection, characterization and assessments; gas processing, storage and transfer systems

From the beginning, Savannah River National Laboratory (SRNL) has put science to work to protect our nation. When it was established in the early 1950s, the laboratory's primary focus was the start-up and operation of the Savannah River Site (SRS), including its five reactors, to produce tritium and plutonium—the basic materials for the U.S. nuclear weapons used to maintain the balance of power during the Cold War. Today, SRNL protects our Nation by supporting multiple federal agencies in providing practical, cost-effective solutions to nuclear materials management, national security, environmental stewardship, and energy security challenges. Building upon its pioneering work at SRS, SRNL now performs cutting-edge scientific research and technology development in various fields to protect the country's interests here and around the world.

Link: https://www.srnl.gov/about-us/

[26] From *About SRNL: We Put Science to Work,* Savannah River National Laboratory, https://www.srnl.gov/about-us/