

★ nuclearkatie.com | □ nuclearkatie

I In nuclearkatie

EDUCATION

University of Wisconsin--Madison

Madison, WI

PhD Student, Nuclear Engineering & Engineering Physics, GPA: 3.8 / 4.0

Aug. 2017 - PRESENT

M.S. Nuclear Engineering and Engineering Physics

May 2020

- Advisor: Professor Paul P.H. Wilson
- · Fellow, NNSA Nuclear Nonproliferation and International Safeguards (NNIS) Graduate Fellowship Program
- Graduate Associate, Consortium for Monitoring, Technology, and Verification (MTV)
- Graduate Certificates in Science Communication (LSC) and Energy Analysis & Policy (EAP)

University of Illinois at Urbana-Champaign

Urbana, IL

B.S. Nuclear, Plasma, and Radiological Engineering, Graduated with Honors, GPA: 3.6 / 4.0

May 2017

- · Concentration in Power, Safety, and the Environment
- Minor in Atmospheric Sciences

RESEARCH AND WORK EXPERIENCE _____

Los Alamos National Laboratory

Los Alamos, NM

Graduate Research Assistant, NEN-1 Safeguards Science & Technology

Jan. 2021 - **PRESENT**

- · Generating synthetic nuclear fuel cycle models, building tool to convert simulations into nuclear material accounting reports
- · Identifying novel signatures of diversion through comprehensive analysis of nuclear material accounting reports

UW-Madison Department of Engineering Physics

Madison, WI

Graduate Research Assistant, Computational Nuclear Engineering Research Group (CNERG)

Sept. 2017 - PRESENT

- Developing software to model the lifecycle of nuclear materials within Cyclus for nuclear nonproliferation applications
- · Reviewing public communication efforts in consent-based siting of radioactive waste disposal facilities worldwide
- Designed uranium enrichment cascades in the Cyclus fuel cycle code to model post-JCPOA cascade performance scenarios
- NE405: Nuclear Reactor Theory, Spring 2018

Los Alamos National Laboratory

Los Alamos, NM

Grad Research Assistant, NEN-2 Advanced Nuclear Technology & Glenn T. Seaborg Summer Research Fellow May 2018 - Aug. 2018 Visiting Student Guest, NEN-5 Systems Design & Analysis May 2017 - Aug. 2017

University of Illinois Department of Nuclear, Plasma, and Radiological Engineering

Urbana, IL

Undergrad Research Assistant, Advanced Reactors and Fuel Cycle Research Group

Aug. 2016 - May 2017

Undergrad Research Assistant, Analysis of Reactor Transients and Stability Research Group

Jan. 2016 - Dec. 2016

Undergrad Research Assistant, Experimental Thermal Hydraulics Research Group

Aug. 2015 - Dec. 2015

- Lead Engineering Learning Assistant, ENG 100 for Nuclear, Plasma, and Radiological Engineering. Fall 2015 & '16
- NPRE 100: Introduction to Nuclear, Plasma, and Radiological Engineering. Fall 2014, '15, & '16
- NPRE 101: Introduction to Energy Sources. Spring 2014 & '15

Grader

• ASTR 100: Introduction to Astronomy. Fall 2014

Idaho National Laboratory

Idaho Falls, ID

Intern, Fuels Modeling & Simulation

May 2016 - Aug. 2016

Forked River, NJ

Warrenville, IL

Oyster Creek Generating Station

Intern, Reactor Engineering Jun. 2015 - Aug. 2015

Exelon Generation Cantera Regional Headquarters

Jun. 2014 - Aug. 2014 Intern, Spent Fuel & Decommissioning

Fermi National Accelerator Laboratory

Batavia, IL

QuarkNet Summer Intern, Optical Astronomy

Jun. 2012 - Aug. 2012

PAPERS AND PRESENTATIONS.

JOURNAL ARTICLES

[1] **Mummah, K. A.**, Taylor, S., Ding, M., Blank, L., Crespo Montañés, C., and O'Shaughnessy, E. **Jul. 2022**, ``A holistic framework of the benefits of utility-scale solar,'' *Submitted, in revisions*,

CONFERENCES PAPERS AND ABSTRACTS

- [11] **Mummah, K. A.**, Jackson, D. E., Apt, K. E., Oakberg, J., Henzl, V., and Wilson, P. P. **May 2023**, ``Simulated State Accounting Data for Development of Advanced and Automated State-level Safeguards Analysis," in *Proceedings of the 64th Annual Meeting of the Institute of Nuclear Materials Management*, Vienna, Austria.
- [10] **Mummah, K. A. Apr. 2022,** `Learning from the "Successful Failure" of a Low- and Intermediate-Level Radioactive Waste Project as a Case Study in Consent-Based Siting," presented at the 2022 American Nuclear Society Student Conference, Champaign, IL.
- [9] Calice, M., Brossard, D., Edwards, M., Gruder, S., **Mummah, K.**, Nemet, G., Williams, S., and Wilson, P. P. **Nov. 2022**, `The Local Energy Transition: Perspectives on Community Energy Management in Wisconsin," presented at the Behavior, Energy and Climate Change (BECC) Conference, Washington D.C.
- [8] **Mummah, K.** and Wilson, P. P. **Jul. 2020**, ``Integrating Acquisition Pathway Analysis Into The Cyclus Fuel Cycle Simulator,' in *Proceedings of the 61st Annual Meeting of the Institute of Nuclear Materials Management*, Palm Desert, CA, USA.
- [7] **Mummah, K.**, Bahran, R., Miller, K., and Wilson, P. P. **Jul. 2019**, ``Acquisition Pathway Analysis using Fuel Cycle Simulators," in *Proceedings of the 60th Annual Meeting of the Institute of Nuclear Materials Management*, Palm Desert, CA, USA.
- [6] **Mummah, K. A. Jun. 2019**, ``Material Diversion Analysis Within a Fuel Cycle Simulator,' presented at the 2019 Technical Workshop of Fuel Cycle Simulation, Champaign, IL.
- [5] Mouginot, B., **Mummah, K.**, and WILSON, P. P. **Nov. 2018**, ``Assessing Material Inventory Uncertainties in Integrated Fuel Cycle Simulations,'' presented at the Advances in Nuclear Nonproliferation Technology and Policy Conference (ANTPC 2018), Orlando, FL.
- [4] Mouginot, B., **Mummah, K.**, and Wilson, P. P. **Jul. 2018**, ``Evaluating computational methods for modeling off-normal operation of gas centrifuge cascades," in *Proceedings of the 59th Annual Meeting of the Institute of Nuclear Materials Management*, Baltimore, MD, United States. [Online]. Available: https://resources.inmm.org/system/files/annual_meeting_proceedings/2018/a161_2.pdf.
- [3] Mouginot, B., **Mummah, K.**, and Wilson, P. P. **Jun. 2018**, ``Modeling Potential JCPOA Diversion Scenarios with Cyclus,'' presented at the 2018 American Nuclear Society Annual Meeting, Philadelphia, PA.
- [2] **Mummah, K. A.**, Bae, J. W., O'Grady, D., and Lopez, A. **Apr. 2017**, ``NuWWIS: An Interim Storage Solution for SPent Fuel,'' presented at the 2017 American Nuclear Society Student Conference, Pittsburgh, PA.
- [1] **Mummah, K. A.** and Kuprianczyk, C. **Apr. 2016**, ``Public Image in Spent Fuel Disposal: Lessons Learned from Sweden's SKB,'' presented at the 2016 American Nuclear Society Student Conference, Madison, WI, United States.

TECHNICAL REPORTS

[1] Henzl, V., **Mummah, K. A.**, and Apt, K. **2022**, ``Analysis of States' Cadence of Nuclear Operations: Detecting Safeguards Violations,'' Los Alamos National Laboratory, Los Alamos, NM, Tech. Rep. LA-CP-22-20328.

POSTERS

- [4] **Mummah, K. Mar. 2021**, ``Good Practices and Clear Communication Gaps in the Effort to Site a Low- and Intermediate-Level Deep Geologic Waste Repository in Ontario,' Poster, presented at the Waste Management Symposium (Virtual).
- [3] **Mummah, K. A.**, Mouginot, B., and Wilson, P. P. **Apr. 2018**, ``Off-normal Operation in Gas Centrifuge Enrichment Cascades,' presented at the 2018 American Nuclear Society Student Conference Poster Session, Gainesville, FL, United States.
- [2] **Mummah, K. A.** and Williamson, R. **Nov. 2016**, ``Investigating the Effects of Fuel Pellet Geometry on Pellet Cladding Mechanical Interaction using BISON," presented at the 2016 American Nuclear Society Winter Meeting, Las Vegas, NV, United States.

[1] **Mummah, K. A. Nov. 2015**, ``Reactivity Management: More than Just Reactor Engineers," presented at the 2015 American Nuclear Society Winter Meeting, Washington D.C., United States.

SPONSOR MEETINGS

- [8] **Mummah, K. A.**, Jackson, D. E., Apt, K., Oakberg, J., Henzl, V., and Wilson, P. P. **Mar. 2023**, *Progress in Simulated State Accounting Data*, Poster, Ann Arbor, MI.
- [7] **Mummah, K. A.**, Henzl, V., Apt, K., and Wilson, P. P. **Mar. 2022**, ``Creating Synthetic State Declarations Using Cyclus,' presented at the 2022 Consortium for Monitoring, Technology, & Verification (MTV) Workshop.
- [6] **Mummah, K.** and Wilson, P. P. **Mar. 2021**, ``Systems modeling of the nuclear fuel cycle to enhance safeguards implementation," Poster, presented at the Consortium for Monitoring, Technology, and Verification Virtual Workshop 2021 (Virtual). [Online]. Available: https://prezi.com/v/wineskjpbj6x/mtv2021/#.
- [5] **Mummah, K. A.** and Wilson, P. P. **Oct. 2019**, ``Can We Study Material Diversion Analysis Within a Fuel Cycle Simulator?,'' presented at the Consortium for Monitoring, Technology, & Verification (MTV) Fuel Cycle Facility Modeling Workshop 2019, Madison, WI.
- [4] **Mummah, K. A.** and Wilson, P. P. **Jun. 2019**, ``Extending the Cyclus Fuel Cycle Simulator for International Safeguards,'' presented at the 2019 NNSA University Program Review, Raleigh, NC.
- [3] **Mummah, K.**, Mouginot, B., and Wilson, P. P. **Jun. 2018**, ``Progress on Studying Gas Centrifuge Cascade Behavior of Off-Normal Enrichment Scenarios,' presented at the 2018 NNSA University Program Review.
- [2] **Mummah, K. A.** and Wilson, P. P. **Oct. 2018**, ``Simulation of the Nuclear Fuel Cycle and its Applications to International Safeguards," presented at the 2018 Consortium for Verification Technology (CVT) Workshop, Ann Arbor, MI, United States.
- [1] **Mummah, K. A.**, Mouginot, B., and Wilson, P. P. **Nov. 2017**, ``Modeling Post-JCPOA Cascade Performance with Cyclus,'' presented at the 2017 Consortium for Verification Technology Workshop, Ann Arbor, MI, United States.

HONORS & AWARDS

AWARDS

2022	American Nuclear Society Presidential Citation
2022	Best Presentation in Nuclear Technology & Society, ANS 2022 Student Conference
2022	Semi-finalist, Fulbright U.S. Student Program
2020	First place, Institute of Nuclear Materials Management J.D. Williams Student Paper Award
2017	Daniel F. Hang Outstanding Senior Design Award
2017	University of Illinois Knights of St. Patrick
2016	Alpha Nu Sigma
2016	Best Presentation in Public Image, ANS 2016 Student Conference
2016	William R. Schowalter Award
2016	American Nuclear Society Commendation for Service and Leadership
2014	American Nuclear Society UIUC Most Committed Member
2013	University of Illinois James Scholar

SCHOLARSHIPS AND FELLOWSHIPS

2019-20,21,22,23	Graduate Fellow, Nuclear Nonproliferation International Safeguards Program (NNIS)
2022-23	ANS Robert A. Dannels Memorial Scholarship
2021-22	ANS Graduate Scholarship
2020-21	ANS Michael J. Lineberry Memorial Scholarship
2018	Summer Research Fellow, Glenn T. Seaborg Institute
2017-18,19	Graduate Fellow, Consortium for Verification Technology
2017-18,19	ANS Fuel Cycle and Waste Management Division Randall Scholar

2015-16,17	DOE Nuclear Energy University Program IUP Scholarship Award
2015-16,17	Nuclear Regulatory Commission Scholarship
2015-16,17	American Nuclear Society Decommissioning & Environmental Sciences Scholarship
2016-17	Roy G. Post Foundation Scholarship
2016-27	Dale W. and Wanda L. Weaver Engineering Scholarship
2016-17	Crowe Horwath Scholarship
2016-17	Edith and Harry Darby Leadership Scholarship
2015-16,17	Catherine Pritchard Undergraduate Scholarship
2013-14,15,16,17	Mike Harper Leadership Scholarship
2015-16	Exelon Energy for Education Scholarship Award
2014-15,16	National Academy for Nuclear Training Scholarship
2014-15	ANS Incoming Sophomore Scholarships

INVITED TALKS _____

American Nuclear Society, Social Media for Local & Student Sections Webinar, Panelist	Aug. 3, 2023
ANS Student Conference, Saturday Plenary, Panelist	Apr. 15, 2023
ANS Student Conference, Holding Onto a Professional/Personal Identity in Your Career, Panelist	Apr. 15, 2022
Women in Nuclear Region III, Academia Panel, Panelist	Aug. 19, 2021
Generation Atomic, Nuclear Advocacy Lab, Seminar	June 17, 2021
American Nuclear Society Trinity Local Section, Keynote	May 21, 2021
Los Alamos National Lab, Nuclear Engineering and Nonproliferation Division, Seminar	May 11, 2021
American Nuclear Society, What Does Earth Day Mean To You? Webinar, Panelist	Apr. 22, 2021
ANS Student, Interested in Nonproliferation? Opportunities to Build Your Expertise, Panelist	Apr. 10, 2021
ANS Student Conference, Taking Care of You, Workshop	Apr. 8, 2021
Purdue University, Women in Nuclear Student Section, Seminar	Mar. 3, 2021
American Nuclear Society, Graduate Fellowships, Webinar	Dec. 21, 2020
Stanford & Moscow Engineering Physics Institute, Young Professionals Nuclear Forum, Speaker	Dec. 9, 2020
NAYGN, Science Communication Series, Speaker	Oct. 13, 2020
UW-Madison, American Nuclear Society Student Section, Seminar	Oct. 8, 2020
Nuclear Energy Agency, Global Nuclear Science and Engineering Commencement, Speaker	Aug. 27, 2020
ANS Annual, Communicating Safety & Risk to the Public, Panelist	June 9, 2020
ANS Young Professionals Congress, Advocating to Policymakers, Panelist	Nov. 16, 2019
Ecomodernism, Nuclear Big Vs. Small, Panelist	Sept. 2019
Idaho National Laboratory, Atomic Week 2019, Workshop	Aug. 6, 2019
ANS Annual, From Nuclear Advocacy to Policy, From Local to Global, Panelist	June 13, 2019
ANS Annual, Results of the April 2019 "Fastest Path to Zero" Summit and Unconference, Panelist	June 12, 2019
ANS Winter, Advocacy and Communication: A Clean Energy Discussion, Panelist	Nov. 1, 2017
Nuclear Innovation Bootcamp, Pitch Competition	July 28, 2017
Environmental Progress, Atomic Vintage, Lightning Talk	July 26, 2017
Fermilab, QuarkNet Summer Research Program, Symposium	Aug. 2012

MEDIA COVERAGE

- [16] Jones, E. **Feb. 2023**, ``Yes, Jimmy Carter helped lead the cleanup effort after the world's first nuclear reactor meltdown," *Verify*, [Online]. Available: https://www.verifythis.com/article/news/verify/national-verify/president-jimmy-carter-nuclear-reactor-meltdown-clean-up-united-states-navy-fact-check/536-b6e09851-3868-4eed-994a-f371a7b2389b.
- [15] Johnson, R. and Lynch, K. **Sep. 2022**, ``As a Matter of Fact: Interview with Katie Mummah,'' *Nuclear Matters*, [Online]. Available: https://www.nuclearmatters.com/aamof_mummah.
- [14] Schultz, L. **Feb. 2022**, ``Nuclear Experts Alarmed by Explosion of Chernobyl Misinformation," *Who What Why*, [Online]. Available: https://whowhatwhy.org/science/environment/nuclear-experts-alarmed-by-explosion-of-chernobyl-misinformation/.
- [13] Schafer, E. **Feb. 2021**, ``Nuclear Energy & Engineering in the Spotlight," *In The Spotlight by Northwestern University Science Policy Outreach Taskforce*, [Online]. Available: ttps://open.spotify.com/episode/112FG9Vm5GzTph53xEw0Krsi=geegzBGxSpqfU6qJsw-rlQ&nd=1.

- [12] Bain, A. **Aug. 2021**, `Nuclear Katie: Why net-zero needs nuclear," *Climate Challengers Podcast*, [Online]. Available: https://climatechallengers.com/news/episode-01/.
- [11] **Mummah, K. Dec. 2021,** `President Jimmy Carter and a Canadian nuclear meltdown," *The Kernel*, [Online]. Available: https://medium.com/generation-atomic/president-jimmy-carter-and-a-canadian-nuclear-meltdown-47c8a5b8989c.
- [10] **Mummah, K. Jul. 2021**, ``Reckoning With Deep Time For A Livable World," *Edge Effects*, [Online]. Available: https://edgeeffects.net/vincent-ialenti/.
- [9] Bettenhausen, C. **Apr. 2020**, `Chemistry in Pictures: Drop & Run," *Chemical & Engineering News*, [Online]. Available: https://cen.acs.org/safety/Chemistry-Pictures-Drop-Run/98/web/2020/04.
- [8] Bratburd, J. and Lauterjung, K. **Mar. 2020**, ``Ideas Across the National Science Policy Network,'' *In A Perfect Policy by Catalysts for Science Policy at the University of Wisconsin-Madison*,
- [7] Cooper, D. **May 2019**, ``Is it time we gave nuclear power another chance?" *Engadget*, [Online]. Available: https://www.engadget.com/2019-05-06-is-it-time-we-gave-nuclear-power-another-chance.html.
- [6] **Mummah, K. Oct. 2019**, With Climate Change on Her Mind, This Engineer Sees a Future in Nuclear. [Online]. Available: https://www.nei.org/news/2019/climate-change-on-her-mind-engineer-nuclear-future.
- [5] Hoff, S. Sep. 2019, ``Women in STEM Interview Series," WSUM 91.7 FM Madison,
- [4] `Faces of Nuclear Katie Mummah," Generation Atomic, 2018.
- [3] Mumm, S. **Aug. 2017**, ``Recent NPRE grad chosen as ANS national Student Director," [Online]. Available: https://npre.illinois.edu/news/stories/recent-npre-grad-chosen-ans-national-student-director.
- [2] ``ANS Illinois chapter recognized as country's top student section," *Department of Nuclear, Plasma, and Radiological Engineering Newsletter for Alumni & Friends*, 2016.
- [1] Mumm, S. **Apr. 2016**, ``NPRE junior Katie Mummah earns college, campus leadership awards," [Online]. Available: https://npre.illinois.edu/news/stories/npre-junior-katie-mummah-earns-college-campus-leadership-awards.

SERVICE AND LEADERSHIP _____

PROFESSIONAL AFFILIATIONS AND SERVICE

Since 2013	Student Member, American Nuclear Society
Since 2015	Member, Women in Nuclear
Since 2015	Student Member, Society of Women Engineers
Since 2018	Student Member, Institute of Nuclear Materials Management

American Nuclear Society (ANS)

Chair, Student Sections Committee (SSC) Treasurer, Decommissioning & Environmental Sciences Division Executive Committee, Fuel Cycle and Waste Management Division Committee Member, Student Sections Committee Referee/Reviewer Student Conference Judge	June 2021 - PRESENT June 2022 - PRESENT June 2021 - PRESENT June 2016 - PRESENT 2019 - PRESENT 2022 - PRESENT
Chair, Liaison Subcommittee of the Student Sections Committee	Apr. 2021 - June 2023
Executive Committee, Young Members Group	June 2019 - June 2022
Vice Chair, Student Sections Committee	June 2019 - June 2021
Executive Committee, Nuclear Nonproliferation Policy Division	June 2018 - June 2021
Committee Member, Diversity and Inclusion Committee	July 2018 - June 2021
Student Director, ANS Board of Directors	June 2017 - June 2019
Chair, Commendations Subcommittee of the Student Sections Committee	June 2016 - Jan. 2021
Committee Member, Local Sections Committee	June 2016 - June 2019

ACADEMIC SERVICE

American Nuclear Society, University of Wisconsin-Madison Student Section

Member	Aug. 2017-May 2022
Governor	May 2018 - Dec 2018
Advocacy co-chair	Jun. 2017 - Nov. 2017

University of Wisconsin-Madison Department of Engineering Physics	
Department Representative to the College of Engineering Graduate Advisory Committee	Aug. 2018 - Nov. 2022
Chair, Student Advisory Committee	Apr. 2019-Jan. 2022
Catalysts for Science Policy	
Member	June 2019 - June 2022
Wisconsin Baja Racing	
Steering Team Member	Aug. 2018 - May 2020
American Nuclear Society, University of Illinois Student Section	
Member	Aug. 2013 - May 2017
President	Apr. 2015 - Apr. 2016
Internal Vice President	Apr. 2014 - Apr. 2015
Freshman President	Oct. 2013 - Apr. 2014
Women in Nuclear, University of Illinois Student Section	
Cofounder	Aug. 2015
Member	Aug. 2015 - May 2017
University of Illinois Department of Nuclear, Plasma, and Radiological Engineering	
Undergraduate Advisory Board Representative	Apr. 2014 - Dec. 2016
Engineering Ambassadors, University of Illinois	
Recruitment & Publicity Chair	Apr. 2016 - Dec. 2016
Ambassador	Nov. 2015 - May 2017
Engineering Council, University of Illinois	
Student Introduction to Engineering (SITE) Reservations Chair	May 2015 - May 2016
University of Illinois Student Chapter of the American Meteorological Society	
Secretary	Apr. 2015 - Apr. 2016
Member	Jan. 2015 - May 2017
Illinois Space Society	,
RASC-AL Technical Team Member	Aug. 2014 - Dec. 2014
Representative to Students for the Exploration and Development of Space (SEDS)	Sept. 2013 - Sept. 2014
.,,	
OTHER SERVICE	
Generation Atomic	
Advisory Board Member	July 2020 - Jan. 2023
Rethinking Nuclear/Friends of Fission Midwest Chapter	July 2020 Juli. 2020
Science Advisor	2018 - 2022
Phi Mu - Delta Beta Chapter	2010 - 2022
Academic Excellence Chair	Dec. 2016 - May 2017
Academic excellence chair	Dec. 2010 - May 2011
SHORT COURSES AND OTHER TRAINING	
Nuclear Material Control and Accountability (MC&A)	Knoxville, TN
Oak Ridge National Lab and University of Tennessee, Knoxville	Aug. 2023
International Nuclear Facilities Experience	AT/SK/CZ/DE/NL
•	
Argonne National Lab and Texas A&M University	May 2023
IAEA Safeguards: From Theory to Practice	Richland, WA
Pacific Northwest National Lab	Mar. 2023
Machine Learning for International Safeguards	Virtua
NNSA Office of International Nuclear Safeguards (NA-241)	July 2022
Nuclear Engineering Student Delegation	Washington, D.C.
Independently student-organized. Delegation policy statement (link)	Sept. 2021
Young Professionals Nuclear Forum	Virtua
Stanford Center for International Security and Cooperation and the Moscow Engineering Physics Institute	Dec. 2020
International Safeguards Policy and Information Analysis-Intensive Summer Course	Virtua
Middlebury Institute of International Studies at Monterey and Lawrence Livermore National Lab	June 2023

Nuclear Security: The Nexus Between Policy and Technology

University of California, Berkeley Course NE C285

Nonproliferation and International Safeguards Summer Course

Pacific Northwest National Lab

Nondestructive Assay (NDA) Summer Course

Los Alamos National Lab

Nuclear Innovation Bootcamp

University of California, Berkeley

Dr. G. Robert Keepin Nonproliferation Science Summer School

Los Alamos National Lab

Geologic Storage of Nuclear Spent Fuel

Swedish Royal Institute of Technology (KTH) & Swedish Nuclear Fuel and Waste Management Co. (SKB)

Virtual

Jan. 2021 - Apr. 2021

Virtual

June 2020

Los Alamos, NM

June 2018

Berkeley, CA

July 2017

Los Alamos, NM

Jun. - Aug. 2017

Oskarshamn, Sweden

June 2015

HOBBIES & INTERESTS _____

Backpacking

Nuclear History

Solution Volleyball

Mentoring

Nuclear Communication

Reading

Fostering Dogs

Skiing

Search and Rescue Member

Los Alamos Auxiliary Fire Brigade

PRESENT

Expires

Nov. 2023

Certification

Oct. 2021

National Outdoor Leadership School (NOLS)

Leave No Trace Trainer

Leave No Trace Center for Outdoor Ethics

Wilderness First Aid Certification