SAND2013-4094P

AISES • 2013

George Randall McKee

TECHNICAL EXCELLENCE • NOMINEE

Exceptional service in the national interest

Sandia National Laboratories

George Randall McKee

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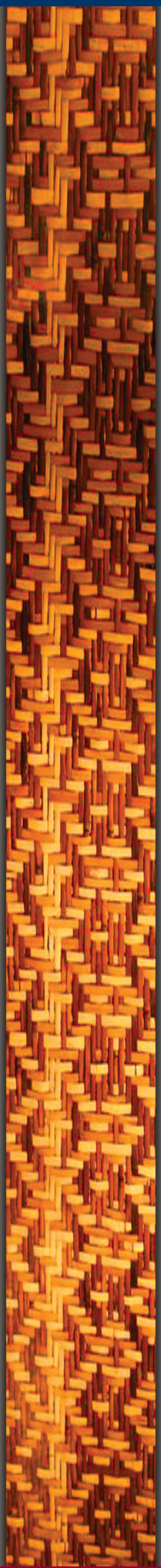
CHEROKEE NATION®



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Front cover: The Cherokee Capitol Building built in 1867 is a National Historic Landmark located in Tahlequah, Oklahoma. The building served as the Cherokee Nation's capital up until 1907 when Oklahoma was granted statehood. It continues to be a beloved tribal centerpiece and represents a symbol of sovereignty within the Cherokee Nation. This building now serves as the Cherokee's courthouse.

Nomination Letter - From John Porter

Sandia National Laboratories
Operated for the U.S. Department of Energy by
Sandia Corporation

John L. Porter – Senior Manager
Z Operations and Engineering

P.O. Box 5800
Albuquerque, NM 87185-1191
Phone: (505) 845-7526
Fax: (505) 845-7464
Internet: jlporte@sandia.gov

May 1, 2013

Dear AISES Selection Committee Member:

It gives me great pleasure and honor to nominate George Randall McKee for the 2013 American Indian Science and Engineering Society's Technical Excellence Award. Randy exemplifies engineering excellence, technical leadership, and service to the community.

Since March 2005, Randy has served as Manager of the Pulsed Power Engineering Department and Principal Engineer of Sandia's Pulsed Power Sciences Center. During this time Randy led the effort to engineer the capability to conduct safe and successful nuclear-material experiments on Sandia's Z accelerator. This capability has made it possible for the United States to measure with exquisite accuracy the properties of nuclear materials at high pressures in support of Sandia's national-security mission. This work has been recognized throughout the nation's nuclear-weapons complex. Dr. Donald Cook, National Nuclear Security Administration Deputy Administrator for Defense Programs, stated that "This accomplishment has been one of our most valuable technical contributions to our Stockpile Stewardship Program…" and that "These high quality data will likely provide new insights and challenge our fundamental understanding of this extraordinarily complex material."

Randy also served as Principal Engineer of the effort to commission and operate the Z accelerator, a 33-meter-diameter scientific instrument that is by far the world's largest and most powerful pulsed-power machine. Z generates an 80-trillion-watt 100-nanosecond electrical power pulse which is used to create extreme conditions of pressure and temperature in support of the National Nuclear Security Administration's Stockpile Stewardship program. The commissioning effort involved identifying and managing over 100 Z-accelerator-improvement projects that needed to be completed before Z could be made available for use by the broader scientific community. Prior to his management assignments, Randy was responsible for the engineering and manufacturing effort of the $90M Z Refurbishment Project. As a member of the project team, Randy delivered over $26M of precision hardware. In his early career here at Sandia, Randy was a program manager responsible for robotics and automation in plutonium and other nuclear materials processing. He built this program from inception to a $3M/year effort in less than 2 years.

Randy has exhibited technical excellence, exceptional leadership, and inclusive team building in delivering innovative engineering solutions to extremely complex, challenging, and critical problems. His team building crosses all lines of program responsibility and he has effectively immersed his engineers in an environment of collaboration with the rest of the pulsed-power community. In addition, Randy has co-authored six articles that were published in premier peer-reviewed physics and engineering journals, and twelve presentations that were given at international scientific conferences. His impact on Sandia's Pulsed Power Sciences Center and the broader high-energy-density science community is immeasurable.

Exceptional Service in the National Interest

Nomination Letter - From John Porter

Randy also serves as a role model and mentor in the American Indian community. Randy grew up in Tahlequah, Oklahoma with his grandmother, and later worked cattle and hay fields on the Isleta reservation in New Mexico with an uncle. Throughout his career, Randy has supported many young American Indian technologists and engineers in their pursuit of technical careers, providing coaching, counseling, encouragement, and opportunities. Randy has also made his horses and riding-and-training facility available to American Indian youth, and mentored, worked, and sponsored them as they participated in the confidence-building activity of showing horses in various competitive events at local, open, regional, and national levels.

I would very much like Randy to have an opportunity to be recognized for his outstanding technical contributions and leadership in creating pulsed power technology that enables Z to produce 80-trillion-watt electrical pulses with a reproducibility approaching 1%. Randy is an international resource, an engineer's engineer, who is highly regarded by all who work with him, and is a credit to his profession, Sandia National Laboratories, and the United States Department of Energy complex. Throughout his entire career, Randy has always done absolutely stunning and extremely professional and conscientious work. In addition, Randy has always made it a priority in his life to give back to his community. He is an outstanding candidate for the AISES Technical Excellence Award.

Sincerely,

John L. Porter

Nomination Application

Nomination Application
American Indian Science and Engineering Society
2013 Professional Awards

Award Category (Select One): (See the attachment or the AISES web site www.aises.org for award criteria.)

___ Executive Excellence X Technical Excellence ___ Most Promising Engineer or Scientist

Nominee's Information (All information below is required):

Name	George Randall McKee
Tribal/Native Affiliation	Cherokee Nation
Company or Organization	Sandia National Laboratories
Job Title	Technical Manager - R&D Science & Engineering
Principal Job Function	Mechanical Engineering
Discipline/Field of Work	Pulsed Power Sciences
Last School Graduated	University of New Mexico
Degree	B.S.M.E. MBA
Graduation Date	1986 1994

Years of Professional Experience 27 years

	Business	Home
Address	P.O. Box 5800	749 Chavez Rd. NW
City, State/Province	Albuquerque, NM	Los Ranchos de Albuquerque, NM
Country & Postal Code	USA 87185-1178	USA 87107
Phone	505-284-4385	505-280-8999
E-Mail	grmckee@sandia.gov	mrandy230@aol.com

Sponsor's Information:

Name John L. Porter
Address P.O. Box 5800 MS1191
City Albuquerque State/Prov. NM Country USA Postal Code 87185-1191
Phone 505-845-7526 E-Mail jlporte@sandia.gov

I affirm that the statements in this application are correct to the best of my knowledge and I understand that all Selection Committee decisions are final. I am personally acquainted with the nominee and hereby endorse his/her nomination.

Signature: John L. Porter Date: 5/1/2013

The nomination package must state tribal/native affiliation and should consist of a cover letter and information supporting the nominee, including, but not limited to: resume/curriculum vitae; detailed description of the qualifications for the award; letters of recommendation; job description(s); papers by or about the nominee; organization personnel chart; professional affiliations; a recent color photograph; and material highlighting involvement in the American Indian or Alaskan Native community.

Mail this signed application form along with a nomination package to:

AISES Professional Awards, 2305 Renard SE, Suite 200, Albuquerque, NM 87106

Faxed applications and nomination packages will not be accepted. Electronic PDF versions of the material in the nomination package are encouraged as a supplement to the mailed versions. PDF versions will not replace hard-copy versions but may be used to facilitate the selection process.

Nomination applications must be postmarked by June 14, 2013.

For information regarding the AISES Professional Awards, please visit the AISES website
http://www.aises.org/what/programs/change/pap

Letters of Recommendation

Sandia National Laboratories
Operated for the U.S. Department of Energy's
National Nuclear Security Administration
by **Sandia Corporation**
Albuquerque, New Mexico 87185-1190

date: May 3, 2013

to: AISES Selection Committee

M. Keith Matzen

from: M. Keith Matzen, MS-1190 (01600)

subject: Support Letter for Randy McKee for AISES Nomination

It is a pleasure to support the nomination of George Randall (Randy) McKee for the 2013 AISES Technical Excellence Award. For many years Randy has been an excellent engineering resource for my center, providing outstanding technical and managerial leadership, effective teaming and collaboration, and a strong safety focus to our diverse programs.

Sandia National Laboratories' Pulsed Power Sciences Center is the nation's steward of fast pulsed power science and technology, and we are the world's leader in the application of pulsed power drivers to create and diagnose extreme radiation, high energy density, and electromagnetic environments. Our research areas include dynamic material properties, radiation and electromagnetic effects on materials and systems, radiation physics, and inertial confinement fusion. I first started working with Randy about eight years ago when I became the center director, and I quickly learned that Randy was integral to the management and creation of this world class research capability.

Randy joined the Pulsed Power Sciences Center in 2002 as the Manufacturing Engineer for the Z Refurbishment Project, where he was responsible for the review of manufacturability and product realization of all redesigned components. The manufacturing effort was a $28 million procurement activity and required hundreds of travel days to many suppliers to keep them on task for quality and delivery. The refurbished Z facility was commissioned on schedule at the total project cost with minimal product issues (quality). It has become the world's premier pulsed power platform for radiation effects and high energy density science.

Randy was selected to manage the Pulsed Power Engineering Department in 2005. In this position he has provided engineering excellence to several projects by integrating the department's engineers into the Center's research teams. Randy manages his group with an emphasis on teaming and collaboration between his department's engineers and the center's scientists. This approach has resulted in successful improvements to both the Z facility itself and numerous experimental development projects. The scientific breakthroughs over the past several

Letters of Recommendation

years have resulted in numerous technical publications, Defense Program Awards of Excellence, and impacts to the stockpile modernization program. Randy's leadership of his group has been a key element of the Center's success. He is a highly valued member of the center's management team.

In summary, Randy is an excellent engineer, team builder, and role model. His contributions and program leadership in technology development have enabled my center to produce outstanding scientific results. He is truly an engineer's engineer with a passion for his profession. As stated by Steve Rottler (our former Vice President), the Pulsed Power Sciences Center does some of the best science and engineering at Sandia. I have no reservations in recommending Randy as an exceptional nominee for the AISES Technical Excellence Award. Please feel free to contact me contact me if you have any questions.

Letters of Recommendation

Sandia National Laboratories
Operated for the U.S. Department of Energy by
Sandia Corporation
Albuquerque, NM 87185-1196
phone: (505) 845-8856
email: wastyga@sandia.gov

William A. Stygar, Ph.D.
Manager of the Advanced Accelerator Physics Department
3 May 2013

American Indian Science and Engineering Society (AISES)
2305 Renard SE
Suite 200
Albuquerque, New Mexico 87106

Dear AISES Selection Committee Member:

Randy McKee and I have worked together at Sandia National Laboratories on various projects since March 2007. During this time, we have both been Research and Development Managers within Sandia's Pulsed Power Sciences Center.

Since March 2007, Randy has served as the Principal Engineer of the effort to commission Sandia's newly refurbished 33-meter-diameter Z accelerator, which is the world's largest pulsed-power machine. The commissioning effort involved managing well over 100 engineering projects. As a result of this work, Z has become history's most powerful and successful pulsed-power machine. Z now routinely generates an 80-trillion-watt electrical-power pulse that is delivered to various physics packages for high-energy-density experiments in support of Department of Energy (DOE) programs.

Since October 2009, Randy has served as the Principal Engineer of the effort to develop the capability to conduct nuclear-material experiments on Z. As a result of this work, the United States can now measure – for the first time in a safe and accurate manner on a pulsed-power machine – properties of nuclear materials at high pressures in support of Sandia's national-security mission. To date, Sandia has used this new capability to conduct on Z eight safe and successful plutonium experiments and seven safe and successful uranium experiments. These were conducted within a containment system that prevented the nuclear material from being released into the Z facility. The plutonium experiments were not allowed to release more than one part in a billion of the plutonium material that was fielded within the containment system, even though on each of the eight accelerator shots conducted with plutonium, on the order of a megajoule of electrical energy was delivered to the plutonium physics package. This specification was met on each of these eight shots. Not only were all the plutonium and uranium experiments conducted safely, the data acquired on these shots have revolutionized our understanding of the properties of these nuclear materials at high pressures.

The Z-commissioning and nuclear-material platform-development efforts, both of which were dominated by mechanical-engineering challenges, were extremely successful only because of Randy's involvement.

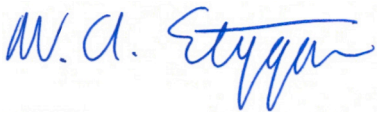
Exceptional Service in the National Interest

Letters of Recommendation

Randy is a world-class engineer, manager, leader, and role model; he is always professional, conscientious, collaborative, and constructive. All the projects completed by Randy and the other members of his department are characterized by relentless technical excellence. Randy has had an immense impact on Sandia, the United States DOE complex, and the international high-energy-density-physics community.

For the above reasons, it is a great honor to recommend – without qualification – Randy McKee for the AISES Professional Award in Technical Excellence.

Sincerely,



Dr. William A. Stygar
Manager
Advanced Accelerator Physics Department
Pulsed Power Sciences Center
Sandia National Laboratories

Letters of Recommendation

Sandia National Laboratories

Operated for the U.S. Department of Energy by
Sandia Corporation

Albert C. Owen
Principal Member of Technical Staff

P.O. Box 5800
Albuquerque, NM 87185-
Phone: (505) 844-2542
Fax: (505) 845-7114
Internet: acowen@sandia.gov

Date: 4/29/2013

Reference: American Indian Science and Engineering Society (AISES) Technical Excellence Award Nomination – George Randall McKee

Dear AISES Selection Committee Member:

I would like to offer my formal recommendation in support of Mr. G. Randy McKee as the recipient of the 2013 AISES Technical Excellence Award. As a Principal Member of Technical Staff in the Pulsed Power Engineering Department at Sandia National Laboratories (SNL) in Albuquerque, New Mexico, I have served under Randy's direct supervision as a Mechanical Engineer in his Department for the past 8 years. During this time, I have observed Randy in his roles as an effective Manager, leader, mentor, and role model. Subsequently, I feel as though I can provide the committee with some direct insight into why I believe that George Randy McKee should be the recipient of the 2013 AISES Technical Excellence Award.

During my time at SNL and under Randy's direct supervision, I have experienced our department being transformed from a mediocre group of inexperienced engineers to a very high performance Engineering Team that is sought out to address some of the world's most difficult engineering challenges dealing with pulse power. These challenges include diverse projects at the forefront of technology aimed at producing clean energy through sustainable fusion, engineering of complex systems in support of our Nation's nuclear arsenal, and performing detailed experiments to better understand the states of matter under extreme conditions like those that exist on the sun. To operate effectively in this high performance environment requires a success-oriented, strong leader who exhibits a thorough understanding of the principles of engineering and physics, sets and realizes high expectations, is respected by his peers, and possesses a strategic mindset for setting the path ahead. G. Randy McKee embodies all of these qualities for the Technical Excellence Award and many more additional qualities discussed below.

Over the past eight years, I have grown in technical excellence personally and professionally due to the one-on-one guidance, goal setting, and mentoring that Randy has invested in me. I have seen this same growth in many of our department's newest engineers and attribute it directly to Randy's approach in mentoring other engineers. The Pulse Power Engineering Team appreciates that we can all rely on Randy for guidance and trust that we will have his support for major successes and when there are failures. His balanced approach breeds trust within the group making it easy for everyone to learn and contribute without the fear of failure or persecution. Furthermore, he exhibits the characteristics of respect for others, understanding, flexibility, honesty, loyalty, and encouragement. These characteristics are what have made it easy for Randy to develop long lasting relationships within the Pulse Power Engineering Team and with other groups and teams throughout Sandia Corporation. Randy's respectful attitude, his professional behavior and manners, modeling by example, and expecting others to conduct

Letters of Recommendation

themselves also in a professional manner have set the bar for him as a solid role model for his teams and for Sandia Corporation.

In summary, based upon my experiences in observing Randy in his roles as an effective Manager, leader, mentor and role model, and as a close friend, I would once again like to highly recommend Mr. G. Randy McKee for 2013 AISES Technical Excellence Award. Through this Letter of Recommendation with the examples cited above, and Randy's extreme commitment he has made to Science and Technology, bettering himself and others around him, and building and environment of trust and team building he is an exceptional candidate for this award.

Thank you for considering Mr. George Randall McKee for the 2013 AISES Technical Excellence Award. Please feel free to contact me if you have any questions or would like to discuss his qualifications in more detail.

Sincerely,

Albert C. Owen

Letters of Recommendation

Sandia National Laboratories

Operated for the U.S. Department of Energy by
Sandia Corporation

Dr. Kenneth W. Struve
Principal Member of the Technical Staff
Directed Energy Special Applications

P.O. Box 5800
Albuquerque, NM 87185-1173
Phone: (505) 845-7483
Fax: (505) 844-8119
Internet: kwstruv@sandia.gov

May 1, 2013

RE: American Indian Science and Engineering Society (AISES) Technical Excellence Award Nomination – George Randall McKee

Dear AISES Selection Committee Member:

As a former manager in Center 1600 (Pulse Power Sciences), and as initial director of the Science of Extreme Environments (SEERI) student development program in the center, I am writing to recommend that you consider George Randall (Randy) McKee for the AISES Technical Excellence Award. I was the organizer of the board that we formed to interview Randy as he came to the center, and have worked closely with him and his staff on the $90 M Z-Machine Refurbishment project and subsequent improvements to the machine. Most importantly, I have been able to work directly with him in his efforts in finding and bringing outstanding students to Sandia through the SEERI program.

Besides being an outstanding engineer and an excellent manager, Randy has been extremely effective in bringing new top-level talent to the laboratory. In my opinion, he has been the most motivated and diligent manager in the center using the SEERI resources for developing new talent. He has found excellent candidates, brought them into the laboratory as student interns, assigned them to work one-on-one with professional engineers, and personally regularly followed up with each student on their progress. In this manner he has introduced these students to exciting work at the laboratory, nurtured and motivated them to continue their education and seek employment at Sandia.

Randy has had a direct impact in SEERI success. All of the students in this program working under Randy's mentorship and direction have gone on to pursue Masters and PhDs at the top universities in the country. These include Russell Maier, a graduate student at Penn State who is receiving a PhD in Materials Science in May 2013, Krystian Zimowski, who received a masters degree in Mechanical Engineering at the Univ. of Texas Austin in May 2012, and Mitchell Maier, a PhD student at the Univ. of Calif. Santa Barbara who will get a PhD in Materials Science in 2015.

Summary. I can think of no better candidate for this award, and highly recommend that George Randall McKee be seriously considered to receive the AISES Technical Excellence Award.

Conclusion. Please call or email if you need further information.

Sincerely,

Kenneth W. Struve

Exceptional Service in the National Interest

Letters of Recommendation

Sandia National Laboratories
Operated for the U.S. Department of Energy by
Sandia Corporation
P.O. Box 5800 MS 1497
Albuquerque, NM 87185-1497

Phone: (505) 844-1365
Fax: (505) 844-6079
Internet: keholle@sandia.gov

Kenneth E. Holley
Recruiting Specialist

Subject: American Indian Science and Engineering Society (AISES) Technical Excellence Award Nomination – George Randall McKee

Dear AISES Selection Committee:

I am pleased to have this opportunity to recommend Randall (Randy) McKee for the AISES Technical Excellence Award. Randy is currently the Manager for the Pulsed Power Engineering Department here at Sandia National Laboratories. I have known Randy for almost 20 years during our employment here at Sandia. He is an excellent manager and an even more outstanding mentor. Several years ago I administered the DOE Science and Technology Alliance and the DOE Historically Black Colleges and Universities (HBCU) programs for Sandia. These programs were designed by the Department of Energy to provide opportunities for minority students to gain experience within the DOE complex and to enhance the capabilities of minority universities to produce more quality engineers. As the administrator, I sought out managers who had an interest in developing young minds for STEM fields for future employment for Sandia and other laboratories in the DOE complex. I sought managers who could see potential beyond the person who they met in the summer but could envision the scientist or engineer of tomorrow in that person. Randy was one of my most outstanding managers.

As a champion for students, Randy promoted the recruitment and the placement of these students into his organization and other organizations where they were provided an opportunity to work in highly technical environments. At this time Randy was employed in Sandia's Robotics Department. He was assigned students from North Carolina A&T, Prairie View A&M University and the University of Turabo in Puerto Rico. He also had students from New Mexico Highlands University and several from the Montana Consortium of American Indian colleges. Randy volunteered to support this effort before he became a manager.

Beginning the first day of the programs, Randy began encouraging the students to consider graduate school and he stressed continuous development and improvement. My program required he provide a technical experience for the students but he became much more than a person providing work. He became a mentor and a valued coach in the students' development and success in the summer internship program. Randy was evaluated by the students as an outstanding mentor among all mentors (about 50) in the program. Randy's support and guidance started before the students arrived and he continued to communicate with them well after the program ended when they returned to school. He maintains contact with many even today.

The results of the summer program and the impact of Randy's mentorship is the reason why I have such pleasure in writing this letter of recommendation. All the students mentored by Randy were successful in the summer program but more importantly, they all completed their BS degrees in science and engineering and continued their educations to get Masters Degrees. Randy's mentoring and caring for their success in science and technology made a major difference.

Exceptional Service in the National Interest

Letters of Recommendation

Dear AISES Selection Committee: - 2 -

Today, Randy continues to inspire students in Sandia's regular internship programs. He continues to mentor and seeks opportunities to make a difference. He is very deserving of the AISES Technical Excellence Award for his technical abilities in Engineering. He is an excellent engineer and excellent leader of engineers. These accolades are evident in his technical position and technical awards. But I believe his greater skill is in the development of people, especially minority engineers who never knew they too could be engineers and work alongside the best and brightest engineers in in the DOE complex. I recommend Randy for his intrinsic skills for increasing the number of minority scientists and engineers by taking the opportunity to mentor and encourage others to be the best they can be and never giving up on them until they reached success.

I recommend Randy McKee highly for this award.

Respectfully submitted,

Kenneth E. Holley

Letters of Recommendation

P. O. Box 9378
Albuquerque NM 87119

May 1, 2013

Dear AISES Selection Committee Member:

American Indian Science and Engineering Society (AISES) Technical Excellence Award Nominee - George Randall McKee

We are pleased to recommend Mr. Randy McKee for the AISES Technical Excellence Award. We are a family who have benefitted from his involvement in community activities and from his extraordinary sportsmanship. We met Randy and his daughter at a horse competition in Alamogordo, NM in 2005. A few hours later, our daughter, Haley, suffered a serious injury. Randy showed up the next day to offer encouragement, support and a smile. Our friendship with Randy has evolved from that time. We believe we are qualified to recommend him based on our observations of his contributions to the New Mexico community of horsemen and women as well as a loose-knit community of professionals in Central New Mexico with American Indian roots. We will allow other references to describe his contributions to the basic sciences and to stewardship of nuclear science.

We are writing this letter in support of Mr. McKee's nomination. We see Randy's contribution to the community can best be described as one person at a time. He has a unique ability to make almost each acquaintance feel special and accomplished. His years of work with the Arabian Horse Association has produced numerous youth riders in New Mexico who have gone on to lead productive adult lives. Another result of Randy's involvement has been the continued development of the American Indian heritage of horsemanship. We don't know how he finds the energy to be cordial and supportive with his busy schedule; perhaps it's his family's fajita dinner. Each year, if requested, he has cooked a fajita dinner for anyone that shows up at New Mexico Expo on the last Wednesday evening of July during the Arabian Horse Youth National Championships. He personifies the concept of giving forward; Randy expects little personally in return for his generosity except that one helps others in return.

Randy has also served as an invaluable resource to encourage American Indian youth to "use their minds," and stay in school so they can support themselves and lead their communities in the future. This has included our daughters and many other youth from reservations around Central New Mexico. We understand Randy has stayed involved with his Cherokee tribal community in Oklahoma and Isleta Pueblo in New Mexico. More important, we feel Randy has made a significant impact of enabling our American Indian youth and adults to participate and contribute as professionals at Sandia National Laboratories and other places off-reservation. Again, we have seen him working one-on-one to help others to overcome their obstacles and to contribute to their own

Letters of Recommendation

workplace and community. This includes encouraging them to keep in touch with their tribal communities.

We recommend Mr. McKee without reservation for the AISES Technical Excellence Award. Please do not miss this opportunity for AISES to award this exceptional candidate. Award him not because of his impact as "Indian" in the community; award him because our communities have benefitted by Randy exemplifying American Indian values of nurturing others, encouraging positive life-skills and exhibiting sportsmanship.

You may contact either of us for further information in support of Randy's nomination.

Sincerely,

Miriam Hilborn
Technologist
Sandia National Labs
505 844-3610
mlhilbo@sandia.gov

Duane Hilborn
Officer; Union Chief Steward
Customs and Border Protection
505 346-6992
duane.hilborn@dhs.gov

Letters of Recommendation

Sandia National Laboratories
Operated for the U.S. Department of Energy by
Sandia Corporation
Albuquerque, New Mexico 87185-1178

date: May 3, 2013

to: AISES Selection Committee Members

from: Gregory Natoni
Sandia National Laboratories
Organization 01676
505-844-8414

subject: American Indian Science and Engineering Society (AISES) Technical Excellence Award Nomination – George Randall McKee

Dear AISES Selection Committee Members:

I would like to offer a formal recommendation for G. Randy McKee as the AISES selection for the 2013 Technical Excellence Award. I have been working as a Member of the Technical Staff for Sandia National Laboratories (SNL) for twelve years and as a mechanical engineer in his Pulse Power Department for eight years. Mr. McKee has also mentored me for the past 5 years as a subject-matter expert (SME) in many technical areas that are required for the safe daily operations of our department that require intense reviews, writing technical work documents (TWDs), and inspections.

Mr. McKee has established his presence as a Manager and mentor to all members of his organization. He has provided all individuals with mentoring to pursue areas of interest to make the organization a more diverse work force. Randy has done this not only for his department, but for SNL as a whole. His manger skills speak for themselves due to the amount of work that our department receives and produces. Randy has established great working relationships with other managers in our organization, and outside organizations that do similar technical work as the Pulse Power Department. These connections have helped our department to become a world class leader in the pulse power field due to Randy's professionalism and expertize that he shows in the field. Mr. McKee also has established within our group challenging, exciting, and diverse work for all members of the workforce (MOWs).

I highly recommend Mr. McKee for the 2013 Technical Excellence Award due his leadership abilities, his mentoring, his expertise and knowledge regarding the technical work he is committed to delivering, and his awareness and understanding of the diverse knowledge of his MOWs.

Sincerely,

Gregory Natoni
Mechanical Engineer/Designer
gnatoni@sandia.gov

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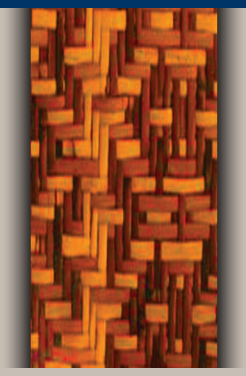
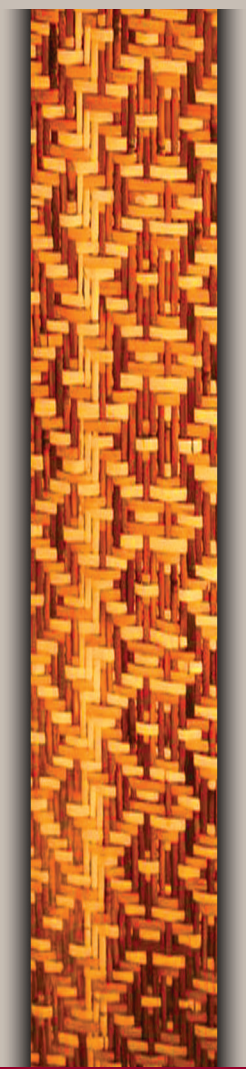


"Always pursue work that challenges your limits, then go there and work ever harder."

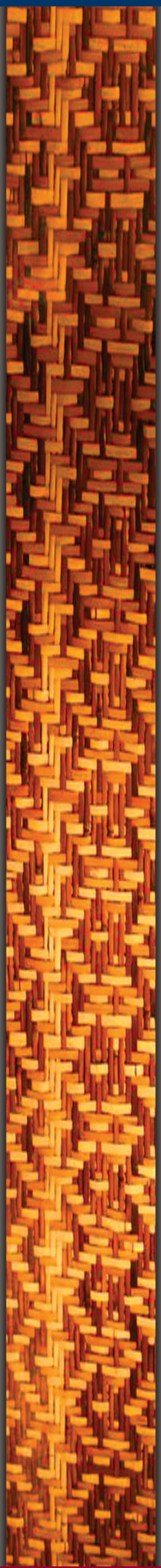
- G. Randall McKee



G. Randall McKee - Biography

G. Randall McKee was born to George David McKee III (whose Indian name was Gee-Stah) and Charlotte Ann Shouse. Randy's father was Cherokee born and raised in Stillwell, Oklahoma on the Cherokee Nation. His Grandmother, Welch McKee, or "Ahniwake" which translates in Cherokee as "Laughing Eyes" because of the always present sparkle in her eyes, was of the Wild Potato Clan. Both his Grandmother and Grandfather, George McKee II (whose Indian name was Ni-ne) were born and raised in Stilwell, Oklahoma. Randy spent his summers growing up with his Grandmother on the Illinois River in Tahlequah learning and understanding their Cherokee heritage. His Grandmother was affectionately called "Granny Wake" and was a very proud Cherokee. Her house displayed her Cherokee ancestry and pride in the Cherokee Nation, from her pottery and the Cherokee syllabary (a writing system where each symbol or character represents a spoken syllable) hanging on the walls to the pictures of Sequoyah and John Ross (the inventor of the Cherokee syllabary and the Cherokee's principal Chief, respectively). There were family stories behind each item, which were continually shared with Randy as he was growing up on the Cherokee Nation. His Grandmother was a hardworking and disciplined farmer. On her summer days, she was either working in the two-acre garden or swimming and fishing with Randy in the Illinois River. Dinner was often fresh caught fish and fresh vegetables picked from her garden. For Randy, summers were the most memorable living on the Cherokee Nation, growing up as a young boy and hearing the Indian legends and stories of his ancestors—What could have been better?

Randall, known to everyone as "Randy," attended Highland High School in Albuquerque, New Mexico. Then, as now, he managed his home life, work, and chores to assure that all tasks were accomplished. Randy worked on the family farm from a youngster to a teenager; there were many long hard days lasting 15 to 17 hours. Randy's Uncle, Alfred Lente, who was an Isleta Indian and lived and worked on the Isleta Pueblo, would routinely call on him to assist in the fields and help on the range working cattle. Randy's work on the farm and his passion for training and riding horses disciplined him at an early age and started his road to excellence, which was honed and tuned as he grew and matured through the years. Randy left for Stillwater, Oklahoma, in July 1973 to attend Oklahoma State University with the intent on becoming a veterinarian.



Early Career

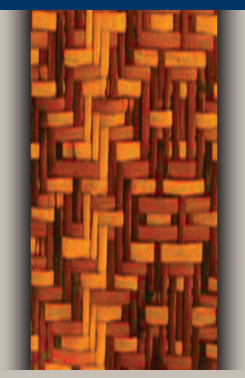
In 1974, his stepfather became ill, and he decided to return to Albuquerque after his freshman year to assist in the family business. The family business consisted of a large tool and die company that supplied precision components to the aerospace industry. Randy quickly learned the business and over the next six years obtained a Journeyman Machinist Accreditation and a Master Tool and Die Maker Certification from the New Mexico Department of Labor. He enjoyed running the family business and found that it was exciting with the many technical and administrative challenges he faced managing a precision manufacturing facility. In 1983, his stepfather retired and the business had to be sold.

Randy decided to go back to school and enrolled at the University of New Mexico (UNM) in 1983 majoring in Mechanical Engineering. Based on Randy's demonstrated discipline and focus, he was hired by Rocketdyne, a division of Rockwell International in his first year and began working at the Advanced Research and Optics Facility located on Kirtland Air Force Base. He worked full time at Rocketdyne while continuing to pursue his Mechanical Engineering degree full time. Randy's mechanical engineering courses coupled with his manufacturing knowledge allowed him to provide effective designs in state-of-the-art optical systems of high energy lasers.

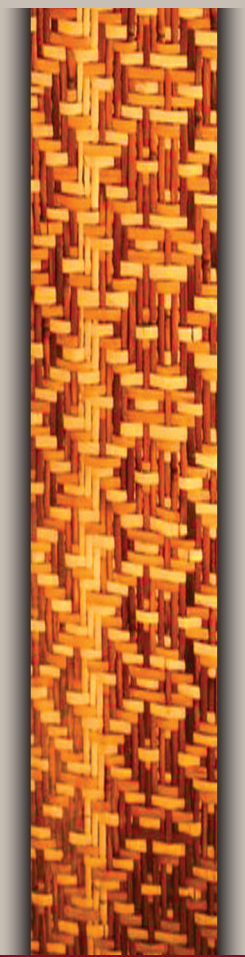
During his Senior year in college, Rocketdyne promoted Randy to Engineering Manager of the Directed Energy Research Facility (DERF). This was unheard of to still be in college and become a Rocketdyne Manager, but Randy's hard work, discipline, and previous managerial experience paid off. He was put in charge of a team of eight engineers and designers who were responsible for delivering pulsed power hardware to the Air Force team operating the facility. During this timeframe Randy continued to work very hard and put in long hours at work, and as a result, he had to put aside his passion for horses. Randy graduated with a Bachelor of Science in Mechanical Engineering in May 1986, receiving his degree in just three years while working a full time job.

Learning the Hard Way

Upon graduation Randy was offered a position as Director of Engineering for Advantage Production Technologies, a start-up company. This company was founded and managed by Michael McNeilly (who founded Applied Materials Inc., the largest semiconductor tool manufacturing company in the world). The company's challenge was to design and build the 'Next Generation' of

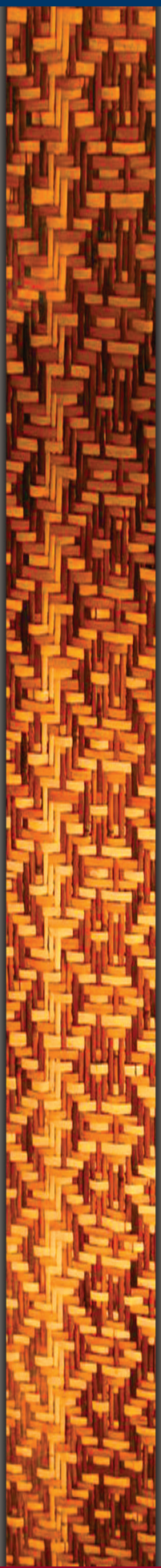


This didn't stop Randy's desire of hard work ethic or technical excellence, it did the exact opposite actually, it just increased his boundaries and pushed him even harder.



semiconductor manufacturing tools for the industry. The changing requirements of the semiconductor manufacturing industry were driving innovation and the manufacturers were impatiently pushing for these new tool designs. McNeilly selected two new innovative semi-conductor tools for development: These were an anhydrous hydrofluoric (HF) acid etcher and a reflux heated chemical vapor deposition reactor. Randy quickly hired a cutting-edge team of engineers and they began diligently working towards accomplishing this monumental challenge. The HF acid etching system presented significant challenges and dangers as the anhydrous HF gas was deadly and required rigorous engineered safety features. The engineering team worked 12 to 14 hour days, including weekends, to get the systems designed, built, and tested properly.

The engineering designs and performance data for the etcher and the vapor deposition systems were managed extremely carefully and the intellectual property was handled by patent attorneys. The patent attorneys recorded and documented the designs and data so that a patent position was assured. But in 1987, following the crash of the stock market (Black Monday, October 1987), the investment banker's funding on the project was dissolved and the funds were immediately pulled from the entire company. However, Randy's Advantage Production team was dedicated and they knew the importance of this project and the implications that these new tools would have on semiconductor industry—so the engineering staff continued developing the tools without pay. This project continued for 10 months as other venture capital funding firms tried to acquire this lucrative new technology. Randy and his engineering team continued with the development and testing of the discrete modules and components and completed their work in 1988. All that remained was the integration of the modules into a complete tool and the final build. At that point, in August, another venture capital firm took over Advantage Production Technologies and placed them into bankruptcy. This allowed them to take the designs, hardware, and testing systems (as their intellectual and physical property) and continue the final development of the tools themselves. Advantage Production Technologies was then sold to a large semiconductor tool manufacturing company along with the pioneering tools that Randy's engineering team had developed from the initial concepts and designs. This enormously disappointing turn of events did not deter Randy's hard work ethic or dampen his spirit for long; it did exactly the opposite—it increased his determination to push on even harder. Despite the loss in the end, Randy remembers this was one of the most rewarding experiences in his life because he and his team built one of the most technically advanced generations of semiconductor manufacturing tools for the industry.



Learning the Hard Way—Round 2

Randy immediately went to work as the Manager of Nelic Engineering (a division of Seeley Enterprises based in Albuquerque, New Mexico). This was a return to his roots in tool and die building and production manufacturing of aerospace parts. His next technical challenge was to change and develop the engineering division into a strong manufacturing organization. Using the past experiences he developed in the tool and die business along with his engineering degree, Randy developed manufacturing processes for high strength, heat-resistant nickel-based super-alloys (i.e., Waspalloy®, Hastalloy®, and Stellite®) that met the needs of jet engine manufacturers across the country.

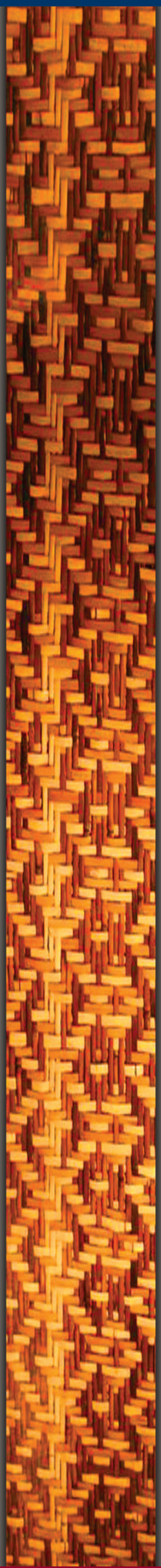
Growing the Nelic Engineering division became Randy's prime objective. Within one year, the division had built a prodigious reputation with the jet engine manufacturing community and was selected as one of two companies in the United States to supply all these specialty parts using the nickel-based super-alloys. Sales increased by 8 million dollars per year at Nelic Engineering due to Randy's technical expertise.

From 1988 to 1991, Randy led the Nelic Engineering business division to increased sales by expanding manufacturing techniques into the jet engine sector, automotive instruments sector, and city transit bus sector. Again, Randy found himself working 12-hour days regularly to meet the requirement of the growing business. In September of 1991, Thermo-Electron bought the thriving business and replaced the entire management team. This second disappointing career set back did not discourage Randy for long.

Beginning a New Robotics Career at Sandia Labs

In 1992, Randy was hired by EG&G Special Projects division and was contracted to Sandia National Laboratories, Intelligent Systems and Robotics Center. Randy enjoyed working at the Robotics Center for Sandia and began taking on more and more responsibilities including some managerial duties; he was subsequently hired by Sandia in 1995.

From 1992 to 2000 Randy worked in the nuclear materials processing research and development group at Sandia using state-of-the-art robotics and advanced automation technology for the Department of Energy Materials Disposition Program. He was awarded eight programmatic recognition awards from his Center Management for his outstanding work in program development and

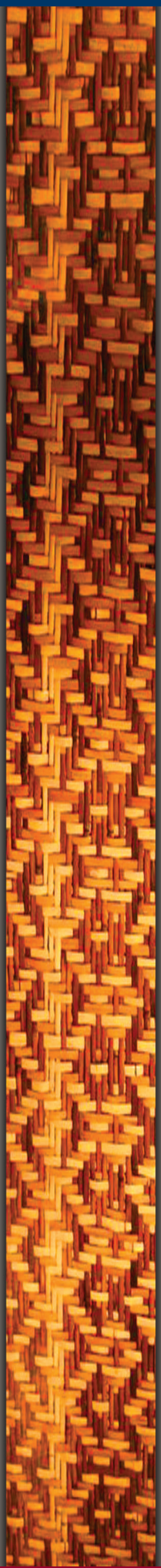


project completion. During this time Sandia was regarded as the world leader in the advance automation development and implementation field. Randy's group teamed with the Plutonium Processing Facility (PF-4) in Tech Area 55 at Los Alamos National Laboratories (LANL) because there was an urgent need for automated solutions for processes that involved the handling of highly radioactive materials. Sandia's new technology would significantly reduce radioactive exposure to workers. Randy managed these programs and also helped to develop innovative technologies that provided automated glove box operation for processing nuclear materials. These programs enhanced safeguards and security, as well as reduced radiation dose to workers. Randy said, "It was challenging, rewarding, and inspiring because of the differences we made in the future of robotics and the advanced automation technology."

Randy's work at LANL presented many challenges as the nuclear materials he worked with (i.e., plutonium, americium, and other actinides) are the most hazardous materials known to be in existence. This work is characterized as design and implementation of automation into the extreme environment of actinide materials processing. The end result was the reduction of radiation exposures to the workers performing hazardous processes in PF-4. The automated solutions developed by Randy's team for handling radioactive materials were widely implemented throughout the Department of Energy's weapons complex for conducting radioactive work.

Returning to the Semiconductor Industry

Randy's life took another turn in May 2000. With his excellent reputation as an innovator and his inventive past work in semiconductor technology, Ktech Corporation (now Raytheon Ktech) offered him a position as a Division Manager. His first assignment was a very quick turn-around project that had to deliver 3 million dollars' worth of semiconductor tools in less than 90 days. Randy quickly assembled a team of experienced technologists, many of whom were his past team members from Nelic Engineering, and for the next 90 days he developed processes, manufactured the tools components, and delivered them to the rigorous standards set by SEMI (Semiconductor Equipment and Materials International). The tools that needed to be built were a monumental challenge since they were dissimilar to any other type of tools that Randy had experience with in his history in the semiconductor arena. The work effort to accomplish this goal was phenomenal; 120-plus-hour work weeks were standard for the next 90 days to meet the technical excellence that Randy was accustomed to delivering.



Randy once again through his innovative spirit, perseverance, and determination met the deadline and met his goal to deliver the highest quality products to the customer.

In the months that followed, Ktech's Manufacturing division was contacted by numerous semiconductor tool manufacturing companies to build tools. Success had been realized for Randy and he was now working more manageable 60+ hour work weeks. However, in February of 2003, the semiconductor tool manufacturing industry crashed yet again and tool orders to Ktech were quickly canceled.

Maintaining Sandia's Marvelous Z machine

Randy decided to return to work at Sandia and took a position working in the Pulsed Power Sciences Center as a Manufacturing Engineer. The leading technology within this center is the world's largest pulse power machine—the "Z machine." His first project was to refurbish the Z machine, which would upgrade the machine from 13 million amperes to 26 million amperes of current. This project was a 100 million dollar effort for the Department of Energy. Randy's assignment was to manage the manufacturability and acquisition of all engineered and designed components for the upgrade of the machine. In this effort, over 2,000 individual CAD drawings of part designs were reviewed and procured. The entire Z machine had a total of two million new components. One major challenge that Randy had was assuring that the multiple suppliers could manufacture the parts to the rigorous quality requirements. To help with this issue, a Vendor Assessment/Qualification Program was established that included 20 major manufacturing suppliers to accomplish this work. Once the orders were placed, hundreds of hours were spent working with the suppliers on delivery schedules. Due to suppliers' inexperience with large pulsed power components, many of the parts were delivered late. Randy's role in this complex system was to place over 26 million dollars' worth of orders with the multiple vendors and to make sure that all of the hardware orders were delivered on time in accordance with the rebuild schedule. This was not an easy task but Randy's work ethic, extensive experience, and technical discipline served him well in meeting the project's goals.

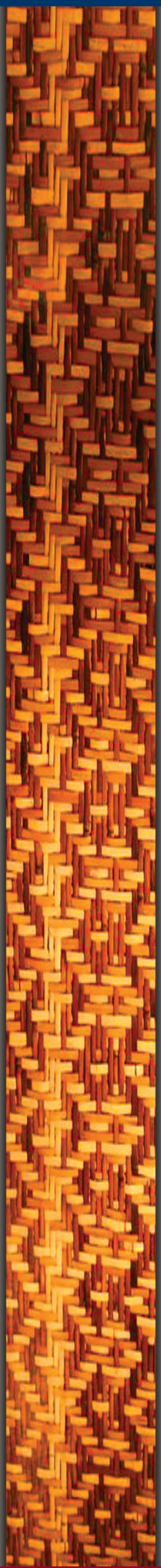
In March 2005, Randy was promoted to the position of Manager of Pulsed Power Engineering. This department provides general engineering support to the Z machine and other pulsed power machines in the Center. Randy managed 57 engineers, designers, and drafters that provided advanced design engineering to the pulsed power community and also to Sandia's satellite, missiles, and weapons programs.

In 2007, the Z machine moved from the refurbishment phase into the commissioning phase and Randy was asked to manage a new, smaller department that would focus only on pulsed power sciences. Randy selected his top 20 engineers and designers and focused on commissioning of the Z machine by December of 2007.

Randy's next goal was to lead his team in achieving the Z machine's requirement to reliably execute a shot every day at the highest current-to-load capability possible. These currents-to-load ranged in upwards of 26 million amperes—the stated high end of the capability—with exact precision. During this time, Randy collaborated with Sandia's pulsed power research scientists to devise and implement over 100 improvement projects for the machine that ultimately met the requirement. Today, the Z machine's capability is unmatched, providing an 80-trillion-watt 100 nanosecond electrical pulse that is used to perform high-energy density physics research as its primary mission.

Randy with the plutonium containment system used on the Z machine.

In 2009, Randy accepted program management for delivering an advanced containment system that would be used to conduct nuclear materials experiments on the Z machine (primarily for plutonium and uranium). From 2009 to 2011, Randy's team designed, engineered, and validated the containment system on the Z machine.



In November of 2011, the Pulsed Power Sciences Center conducted the first plutonium Dynamic Materials Properties experiment on the new Z machine in this containment system. This system must contain all nuclear materials undergoing the extreme environments of testing to ensure that the Z machine, a 500 million dollar asset, is not contaminated. There were significant challenges in this effort and Randy and his team successfully met all of them.

The next generation pulsed power machines are in the conceptual design phase and it will not be long before Randy and his engineering team are building a 300-trillion-watt 100 nanosecond machine that will push towards the ultimate goal of fusion ignition: The first step toward clean nuclear power is a self-sustaining fusion nuclear reaction. This is regarded as pulsed power's "Holy Grail."

Mentoring and Sharing Knowledge with the Next Generation

Randy holds that his greatest achievement isn't the technical work that he has performed, it is the leading, mentoring, and teaching of the next generation of engineers and designers… and learning from them in turn. The work he performs at Sandia gives him ample opportunity to do this every day and he remarks, "I really love doing one-on-one mentoring and teaching—it energizes me!" In mentoring his staff, his Sandia peers, and others outside of Sandia, such as within his young equestrian community, Randy stresses the importance of taking advantage of all learning opportunities—meaning both the good and the bad—and he points out that learning is a demonstration of how discipline and hard work holds everything together. Randy says that the development of a person's technical discipline is based on thoroughly understanding a problem to get to a solution. "Working at Sandia gives me plenty of opportunity to meet and help develop some of the smartest and most talented people in the world. It makes me feel very good to know that someone that I helped in some way in the past may eventually go on to make remarkable technological achievements in the future." Randy learned early on that there are teaching and learning opportunities in all that we do. He muses thoughtfully and says, "What is most important is that they often occur at the same time."

Resume

Professional Experience

Sandia National Laboratories, Albuquerque, NM

Manager, Department 01676 - Pulsed Power Engineering 2003 – Present

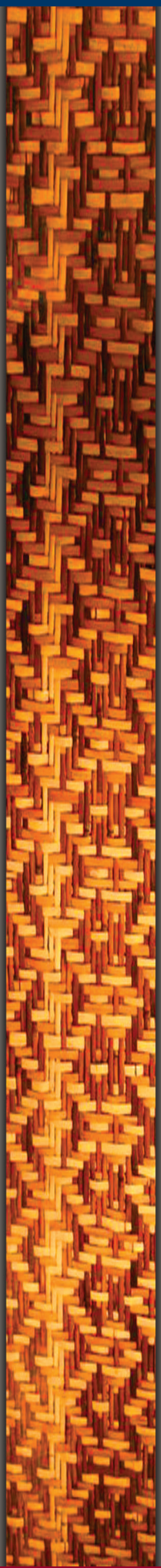
Managed up to 60 engineers and designers in providing engineering, design and hardware realization to demanding programmatic requirements. Using an engineered safety approach delivered high quality, effective engineered solutions and hardware into the extreme environments of Pulsed Power Sciences Center and other inter-laboratory programs including satellites, missiles, targets and nuclear weapons programs. Worked effectively across the center as well as the laboratory to build alliances with department managers, program managers, experimentalists, researchers, physicists and operations staff. These alliances were trust based and resulted in extensive and productive collaboration on critical technical issues.

- Managed the $15M Plutonium Isentropic Compression Experiment Restart Program that enabled the Pulsed Power Sciences Center to make the most significant contribution to the nuclear stockpile stewardship program in recent history.
- Led the incorporation of SNL engineering, design and documentation standards (PRIDE) into all departmental deliveries to assure all engineering documentation for the Pulsed Power Engineering was aligned to corporate requirements.
- Delivered the $28M manufacturing requirements for the $100M Z Machine Refurbishment to within 2% of budgeted estimate. The ZR effort resulted in a 50% increase in current to experiment load delivery.
- Led the engineering, design and hardware realization effort of the $20M Z Machine Improvement Program that improved the performance of the Z Machine to its current reliable 26 MA current to load delivery capability, (>98% availability and ± 1% reproducible).
- Managed the $8M Linear Transformer Driver Lab development working across SNL's multiple organizations (Facilities, ES&H, and Safety Basis) to realize a safe, state-of-the-art laboratory that provides the required research environment for developing SNL's next generation accelerator.

Raytheon - Ktech, Albuquerque, NM

Division Manager, Manufacturing Technologies 2000 – 2003

Managed high tech engineering and manufacturing effort producing high voltage



pulse power equipment, semiconductor manufacturing equipment and turn-key robotic work cells.

- Managed the division's transition from $50K per month to $3M per month in revenue over a three month timeframe.
- Directed the development of the division's Supply Chain Management, Quality Program Plan and financial accounting system to manage the explosive growth.
- Directed the implementation of Manufacturing Resource Planning including a multi-million dollar inventory management system which enabled the division to meet the critical delivery requirements of the customers.
- Delivered major semiconductor projects on time at budget with exceptional quality. Division was identified by Intel as a key supplier within 6 months of starting deliveries (an Intel first).
- Utilized extensive experience in engineering processes and configuration management to overcome constant requirement changes to the technical requirements of the customer's products being manufactured.

Sandia National Laboratories, Albuquerque, NM

Principal Member of Technical Staff 1995 – 2000

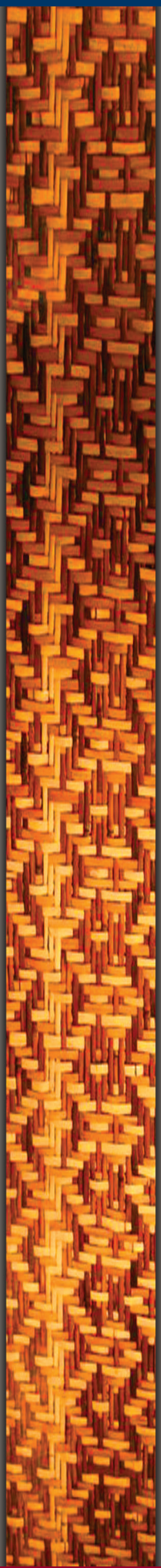
Managed the Special Nuclear Materials Processing effort in the Intelligent Systems and Robotic Center. Directed engineers and technicians in the development of complex state-of-the-art automation systems in nuclear materials processing and handling across the weapons complex.

- Developed a $3M annual program and managed automation efforts in plutonium processing for the Materials Disposition and Environmental Management Directorates in the DOE.
- Interfaced with EM-50 in the development of automated nuclear materials remediation projects at Mound, Rocky Flats, Idaho National Labs, and Los Alamos National Labs sites.
- Led a joint SNL/LANL engineering team in the development of multiple plutonium manufacturing and processing systems for NMT's TA-55 Plutonium Facility (PF-4) at Los Alamos National Laboratory.
- Managed a joint LDRD effort between SNL and LANL to develop a method to use automation to perform pit cutting for surveillance programs.

EG&G Special Projects, Albuquerque, NM

Engineering Supervisor, Robotics 1992 – 1995

Managed EG&G's engineering staff in the development of robotic work cells for



Sandia National Laboratories' Intelligent Systems and Robotics center. Managed the Automated Plutonium Packaging effort and was lead mechanical engineer on the Automated Component Cleaning System, both advanced robotic work cell developments for the DOE Weapons Complex.

Ray Rashkin Associates, Albuquerque, NM

MRP Consultant 1991 – 1992

Worked with Honeywell's Defense Avionics Systems materials management organization in the development of Manufacturing Resource Planning processes in their $240M annual manufacturing effort. Supported the effort with supplier quality management, engineering documentation, inventory management and Just-In-Time procurement process development.

Thermo-Electron, Tecomet Division, Albuquerque, NM

Division Manager 1988 – 1991

Managed the precision stamping division in the production of high tolerance jet engine components for General Electric and Pratt & Whitney. Directed the manufacturing engineering effort in the development of tooling and processes for the development of eutectic material part production.

Advantage Production Technologies, Albuquerque, NM

Director of Engineering 1986 – 1988

Directed the engineering staff in the development of a patented Anhydrous Hydrofluoric Acid etching system and a reflux heated CVD system for precision epitaxial silicon deposition.

Education

MBA, University of New Mexico, Albuquerque, NM 1994

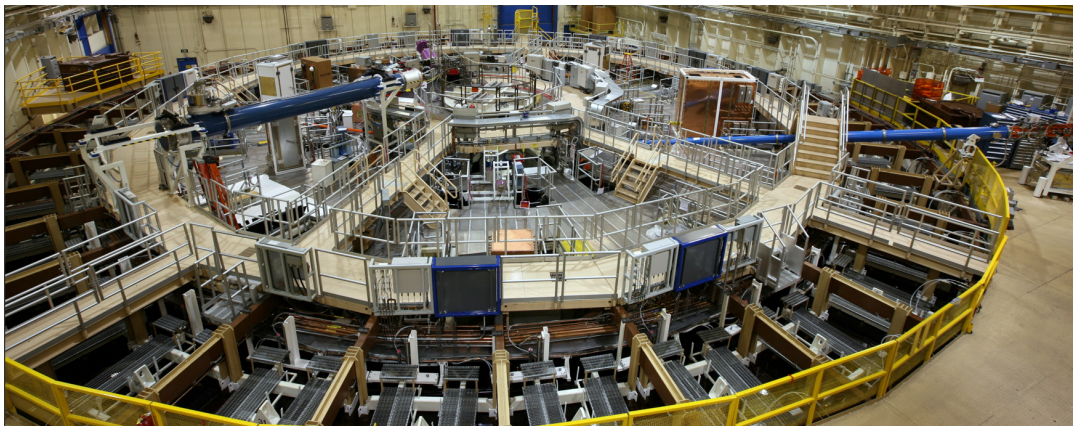
BS, Mechanical Engineering, University of New Mexico, Albuquerque, NM 1986

Job Description

Randy McKee is the Technical Manager in the Pulsed Power Sciences Center at Sandia National Laboratories. He is the manager of the Pulsed Power Engineering Department and also serves as the lead engineer for the Z machine. Randy's department is responsible for providing the engineering for the Z machine, at 80 terawatts, the world's largest pulsed power facility. These responsibilities include maintaining it, upgrading it, designing experimental containments, and keeping it functioning at its high precision level.

The Z machine was designed and engineered to store up to 22 megajoules (MJ) of energy in capacitor banks, which is compressed in both space and time into a ~100 nanosecond (ns), controlled rising current pulse with a peak value of up to 26 mega-amperes (MA). This current is used to create high-energy density conditions for experimentation in fusion, dynamic materials properties, astrophysics, and extreme radiation effects research. The Z programs and experiments are wide-ranging and of national strategic importance to the Department of Energy, the Department of Defense, and other government agencies. Randy and his Pulse Power Engineering team have been involved in many record setting experiments. The following are a representative sample of experiments conducted in the last six months:

- Diamond has been melted under 5 million atmospheres (72.5 million pounds per square inch [psi]) of pressure generated by the machine to perform research on advanced materials.
- Flyer plates have been launched to speeds in excess of 47 kilometers per second (105,000 miles per hour) to perform experiments that increase knowledge and understanding of material performance in extreme environments.

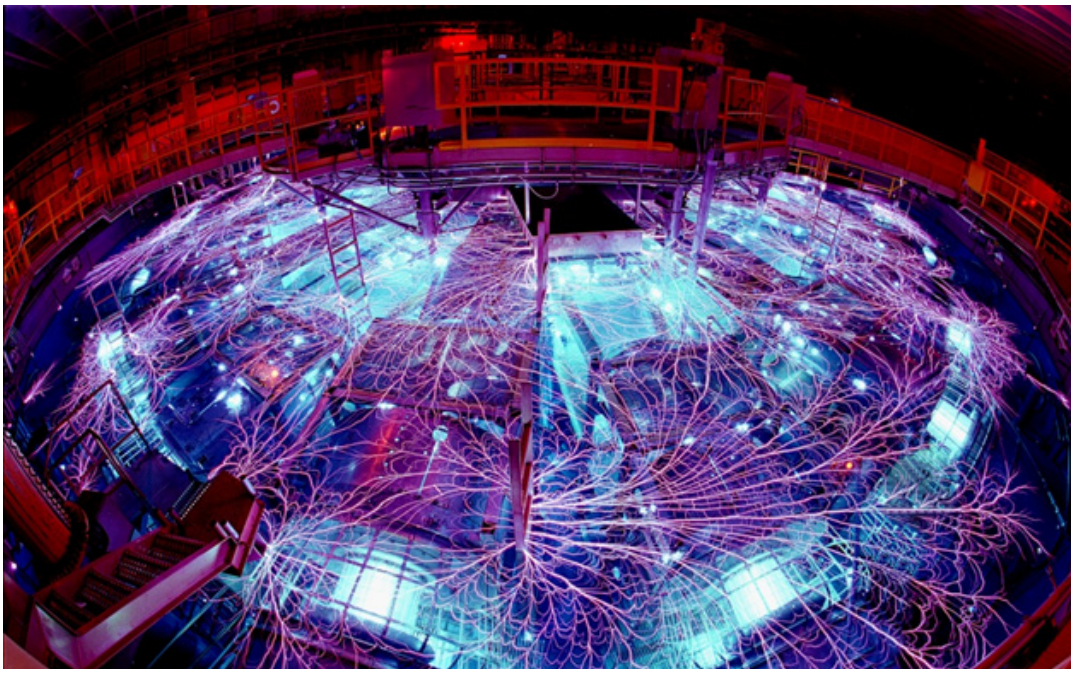


The Z Machine

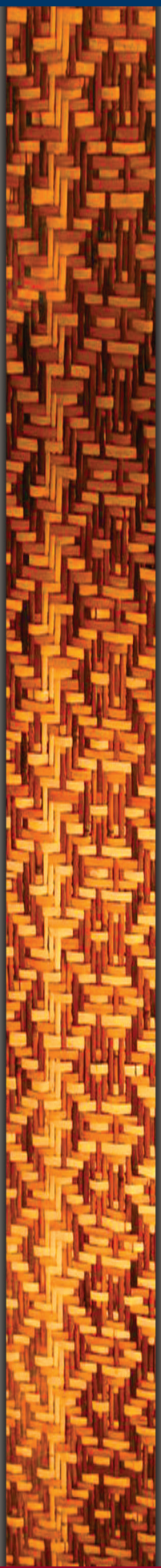
- Nuclear materials (such as uranium and plutonium) have been compressed in both non-shock and shock environments, which improve the understanding of their equations of state.
- Wire arrays have been used in experiments to create temperatures in excess of 3 million degrees Centigrade and pressures exceeding 6 million atmospheres enabling research paths to fusion.

Pulsed Power Engineering Team

Randy's Pulsed Power Engineering team includes 20 mechanical engineers and designers that provide state-of-the-art engineering solutions that must function in extreme environments (ultra-high temperatures, pressures, and impact velocities). Under the leadership and guidance of Randy, the engineers use advanced engineering finite element analysis software tools such as Abaqus®, Sandia's CTH®, and ANSYS® coupled with their extensive experience to realize complex hardware, loads, and experiments for the Z machine. Randy and his team work closely with the pulsed-power physicists in designing and building the hardware that makes this machine the national asset that it is. Laser-triggered gas switches, late-time energy diverters, Magnetic Insulated Transmission Lines (MITLs), power feed convolutes, and many other complex systems of pulsed power hardware have been engineered and manufactured to extremely rigorous requirements by the department's engineers. This enhanced collaboration between the engineers and physicists leads to highly successful experiments and is what drives the excellence in the department and the Center.



Z Machine Experiment - Arcs carrying current during and after the shot



Z Machine – Fusion Research

The Z machine is used for many different types of cutting-edge experiments; but the desire in the Pulsed Power Sciences Center is to accomplish fusion. Fusion will provide nuclear energy without the long-lived radioactive waste associated with today's fission nuclear reactors. It is the inertial confined fusion that is the 'Holy Grail' for Sandia physicists who are planning more and more complex experimental requirements for the Z machine every day. Meeting the rigorous requirements of the inertial confined fusion experiments takes a dedicated, focused, and technically excellent engineering organization with effective leadership.

A significant milestone was reached last year when applied magnetic force was added to the Z machine. This monumental achievement provided a path forward for significant advances for the research of fusion. Randy's Pulse Power Engineering team recently worked closely with the physicists and scientists to devise a method to bring up 10 Tesla magnetic fields onto the Z machine. This coupled with the engineering advances in load targets has increased the confidence that fusion is actually possible using pulsed power science and the Z machine approach.

Z Machine – Radiation Effects Testing

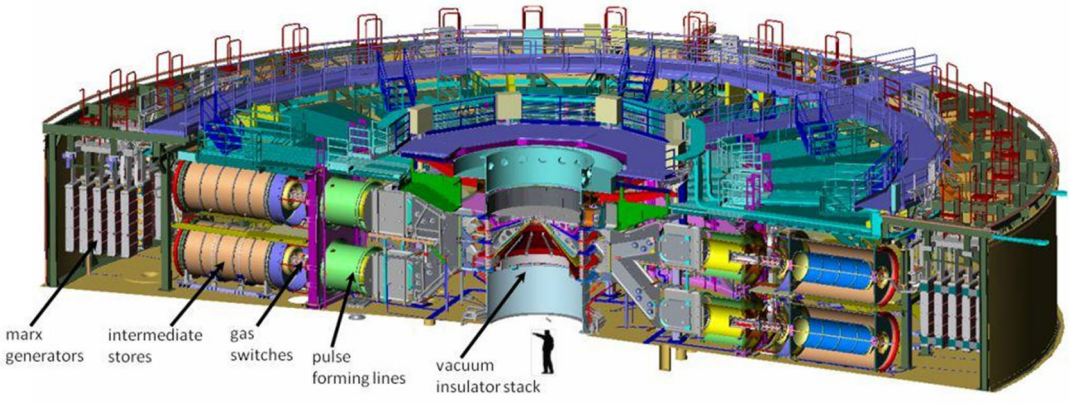
Randy and his Pulse Power Engineering team support radiation effects testing on the Z machine, advancing the knowledge and understanding of this science. Nuclear weapons scientists and engineers are required to understand the effects of radiation on all weapon components and supporting electronics. Studying the effects of nuclear radiation on materials under varying extreme conditions is the key to understanding vulnerabilities of the U.S. weapons stockpile. Today, simulations that are executed on supercomputers and validated by laboratory experiments are the primary method to assess the reliability and safety of our nuclear stockpile. This validation work, which involves experimental testing of existing systems to assess weapon component vulnerabilities to radiation, is used to predict performance and identify problems as the stockpile ages. As the lead in weapon engineering, Sandia develops designs to upgrade and harden future systems to ensure the safety, security, and reliability of the stockpile. The Z machine, the world's most powerful radiation producing system, has been crucial to the effort in all of these areas because it allows scientists to study materials, components, and full-scale systems under conditions similar to those that would be produced by the detonation of a nuclear weapon. Experiments conducted on the Z machine have produced crucial data used to validate the physics models

in advanced, high fidelity computer simulations. Randy and his pulsed power engineering team provide critical support and make essential engineering contributions to this effort by continuously maintaining and upgrading the performance and reliability of the Z machine within exceedingly tight specifications. The engineering team works closely with the pulsed power scientists in identifying opportunities to enhance the Z machine's precision, reliability, current delivery, and its online availability. An example of this is the greater than 100 improvement projects that Randy's team delivered over the past four years. One of the most significant projects was the Laser-Triggered Gas Switch program, which when fully implemented will significantly improve the pulse-delivering precision, performance reliability, and online availability of the Z machine.

Some of the most interesting recent improvements for the Z machine were engineered and designed by Randy and his team; these are outlined below.

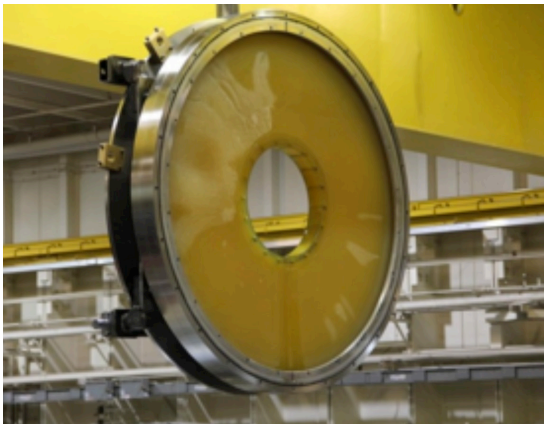
Z Machine's Energy Storage Section

The workhorse of the Z machine is the Marx generators, Intermediate Stores, and Pulse-Forming Lines (PFLs). All of these components are engineered, designed, and fabricated under the direction of the engineering team. These PFLs reliably carry the current from the Marx banks (initial energy storage) to the Vacuum



Z machine, cross sectional model

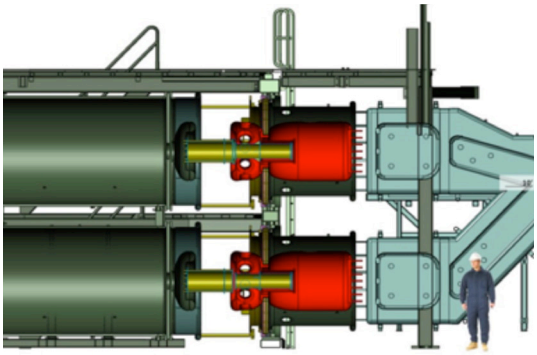
Insulator Stack with precision timing and reliability. Thirty six PFLs are arranged in a radial spoke configuration in the Z machine. The Marx generators are switched on sending the current out of the 36 banks into the first component—the Intermediate Stores—where the energy is stored. The laser-triggered gas switches are then triggered with precision timing (nanosecond range) to send the current through the water section PFLs and onto the Output Transmission



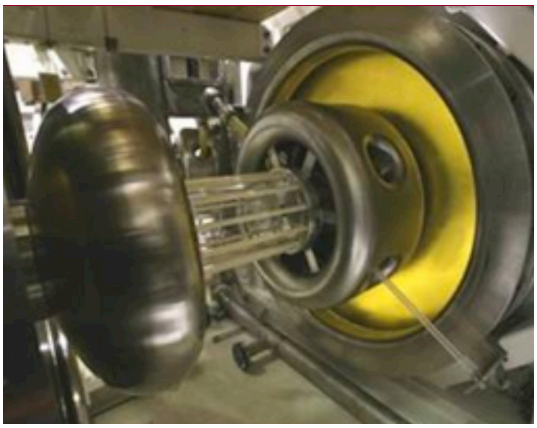
PFL Insulator Barrier

Intermediate Store being Moved

Lines (OTLs). Once the current is flowing on the OTLs, it continues unimpeded to the experimental load through the Vacuum Insulator Stack on the MITLs. These are large components that require expert engineering to assure the required operational parameters are achieved. This includes safety, as these components are moved into and out of the machine for maintenance on a regular basis. Managing the insulator fluids in the machine (750,000 gallons of oil and 400,000 gallons of de-ionized water) and their daily movement into and out of the machine is performed by the Pulse Power Engineering Department. Filtration of the oil to remove impurities at the 2 micron level and maintaining the de-



Model showing I-Stores (left), PFLs and OTLs

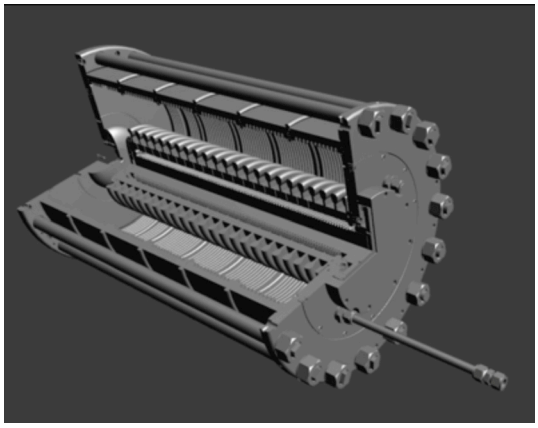


I-Store (left) with Gas Switch (middle) and PFL

ionized water at 5 megaohm, or better, resistance involves moving both the oil and water volumes to and from the Z machine's storage tanks at rates of up to 8,000 gallons per minute. This daily operation requires rigorous maintenance and management processes. Keeping the machine performing in top condition to assure the machine's capability of performing a shot every day of the week is a huge responsibility and challenge that the Pulsed Power Engineering team accepts and they take great pride in executing it flawlessly.

The Laser-Triggered Gas Switch

The Z machine pulse is delivered with precision timing that is controlled using a laser-triggered gas switch called the C1.1 Gas Switch. Each switch is about the size of an oil drum as shown in the photo below. This switch, which is one of the most advanced power switches in the world, was engineered and designed by Randy's team working with pulsed power scientists over a two year period. The switch, which is the key component and technical basis for the performance of the Z machine, controls the run time and the delivery of the current pulse to the experimental load. A computer controlled laser system is used to trigger all 36 switches of the Z machine with precision timing in the nanosecond range. This computer control allows the precision pulse-shaping that is so critical to the success of various research programs that rely on the machine. Prior to installation on the Z machine, advanced engineering and dynamic testing was conducted at Sandia's engineering test facilities to ensure confidence that the switch would perform to specifications prior to installation on the Z machine. The first four switches were built and installed on the Z machine in late 2012 and all performed beyond expectation. Randy and his team are currently upgrading the machine to use this switch in all 36 PFLs. This upgrade is expected to be completed by July of 2013. Specialized materials were engineered and developed for the switch outer housings (monomer cast acrylic) to assure required performance.



Model of C1.1 Laser Triggered Gas Switch

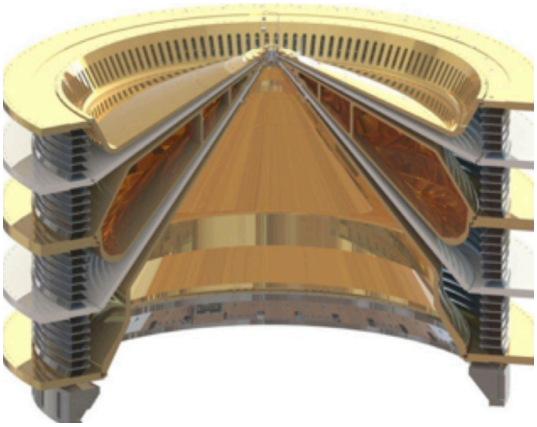
Photo of C1.1 Laser Triggered Gas Switch

The C1.1 Gas Switch performance has the following specifications:

- Operational Voltage: 6.1 MV
- Operational Amperage: 79 MA
- Energy: .8 MJ
- Runtime: 35 nanosecond runtime
- Jitter: < 4 nanosecond (1σ)

Magnetically Insulated Transmission Lines & Vacuum Insulator Stack

The true heart of the Z machine is the Vacuum Insulator Stack, which is positioned at the center of the machine. It is the most critical system in performance and always presents the most challenges in design, engineering, fabrication, and maintenance. As shown in the cutaway below, the Vacuum Insulator Stack consists of vertically stacked insulator rings and MITLs shown as the gold and silver cones. The photo on the right shows of the lower three MITLS suspended over the Z machine by the facility's 40,000 pound capacity crane. The insulator stack system combines the energy of the 36 PFLs and concentrates that energy in time and space at the apex of the MITLs in the center of the stack. Any flaw, scratch, or contaminate in the power flow areas will initiate an arc that would result in current loss and potential failure of an experiment. Randy's engineering team has spent years working with the pulsed power scientists refining and upgrading the insulator stack components. The team has developed machining processes that provide micro-finishes to current-carrying surfaces; engineered material manufacturing and machining methods for the insulator materials required; and designed power flow spacing and gaps, all in the quest of continuous improvement of this key system.



Model of Vacuum Insulator Stack with MITLS

Lower three MITLs suspended under Z facility 40,000 pound crane

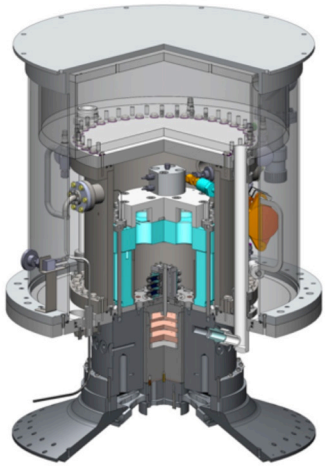
Randy and his engineering team not only design the static components of the Z machine but also deal with the engineering of the machine during operation. During Z machine shots, arcs form outside of the insulator stack in the water switches impart enough pressure through the water onto the stack to impulsively

launch it upwards with an acceleration rate exceeding 75 Gs. The MITLs on higher current shots have been launched 2 cm off of their current contact points, crashing back down into their original position. The resulting impact forces of such events take a toll on the machine over time. At one point in the commissioning phase of the program, Randy and his team designed and fielded a system to catch the upper anode MITL after it was launched to assure that it did not crash back down onto the insulator stack and cause damage. This effort was compared to throwing a Ford F350 one-ton truck into the air and catching it just before it crashed back onto the pavement. The effort was successful and was used until an improved insulator stack built to withstand the impact could be deployed. The Vacuum Insulator Stack and MITLs consist of the following specifications:

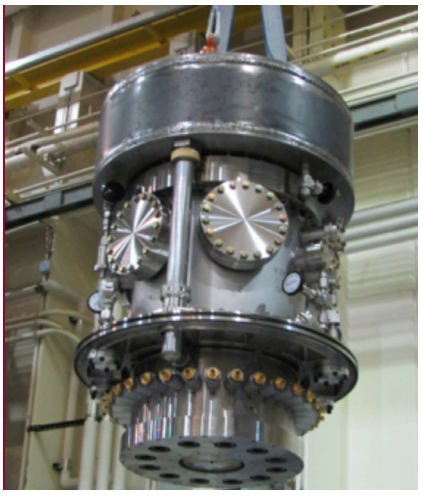
- Materials of Construction: 304 stainless steel
- MITL System Weight: 38,000 lbs (individual MITLs weigh 5,000 to 9,000 lbs each)
- Voltage Grading of the Stack: 10 MV per A-K level
- MITL Maintenance: Cleaned between every shot to remove all carbonization
- Runtime: 80 to 300 nanoseconds depending on pulse shape

Plutonium Containment System

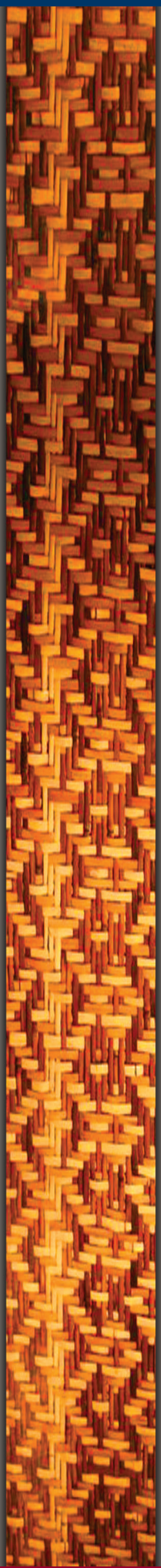
Designing a robust containment system used for conducting nuclear materials experimental testing is a highly critical task since the system must absolutely ensure that test material is completely contained during and after the experiment. If during these extreme environment experiments the container failed to contain nuclear materials, the Z machine and the surrounding facility could become



Model of plutonium containment system



Containment system shown with UCV



contaminated. A containment system designed, engineered, and validated by Randy and his team is used for each nuclear materials experiment and it is never re-used. The system has an explosively driven ultra-fast closure valve (UCV), which closes and hermetically seals in less than 40 microseconds; has containment baffles to prevent shrapnel damage; and is built with two layers of confinement. The figures below show a cutaway model and a photo showing a container ready for placement.

One of the biggest challenges in designing the containment system for Randy and his team was to mitigate the destructive force of the current on the load as the experiment is conducted on the Z machine. When the current is delivered to the experimental load, 2.5 MJ of energy is released that is equivalent to two and one half sticks of dynamite (trinitrotoluene [TNT]). The pressure inside the containment system reaches 22,000 psi in the baffle region (shown as the blue region of cutaway model above). The baffle system prevents shrapnel and pressure-driven debris from striking the primary confinement walls of the system which could cause a leak in the containment system resulting in the contamination of the Z machine. To date, eight plutonium and five uranium experiments have been conducted on the Z machine using the new containment system with 100% successful containment of the nuclear materials.

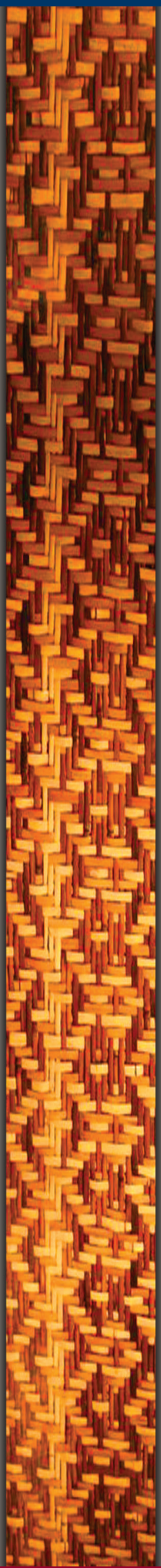
The plutonium containment system has the following specifications:

- Leak Tight Specification: 1 x 10-5 atm-cc/sec
- Materials: Pu and U up to Cat 3 levels (36 mg of Pu)
- Closure Time < 50 microseconds
- Maximum Pressure: 22,500 psi
- Maximum MITL Current: up to 16 MA

Additional Breakthroughs with the Z Machine

The Z machine has created a number of extremely interesting breakthroughs in science and engineering recently that have had significant impact to their respective fields.

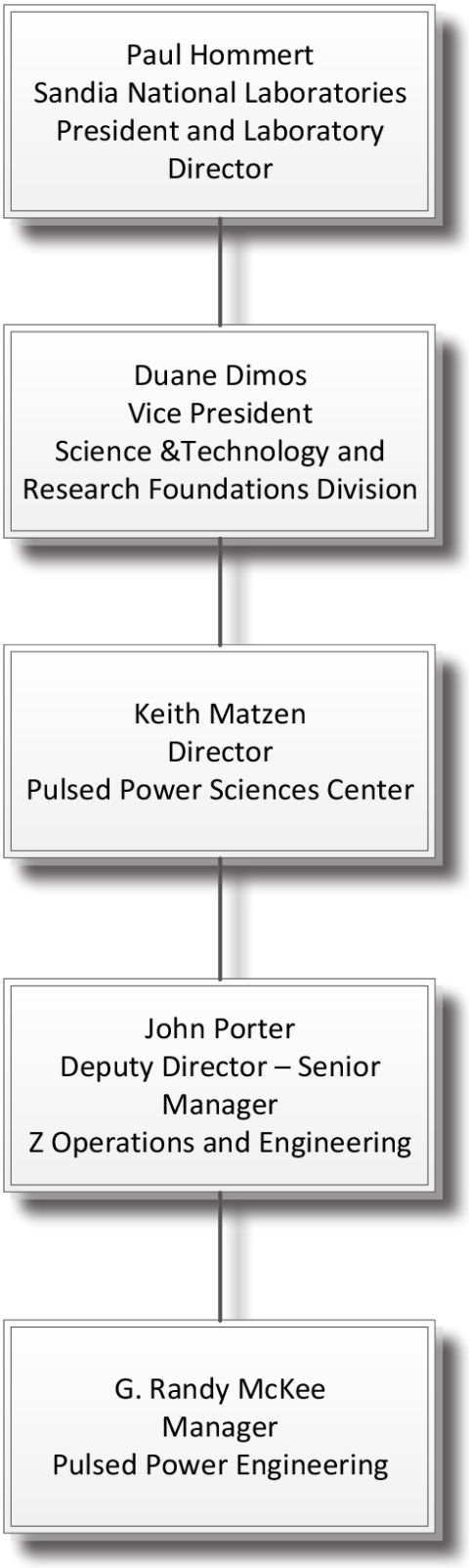
In mid-2012, the Z machine was used to compress hydrogen gas into a metal. This accomplishment was performed for the Fundamental Sciences Research program and has the Astrophysics community looking at the gas-giant planets (Saturn, Jupiter, Uranus, Neptune) with increased understanding.

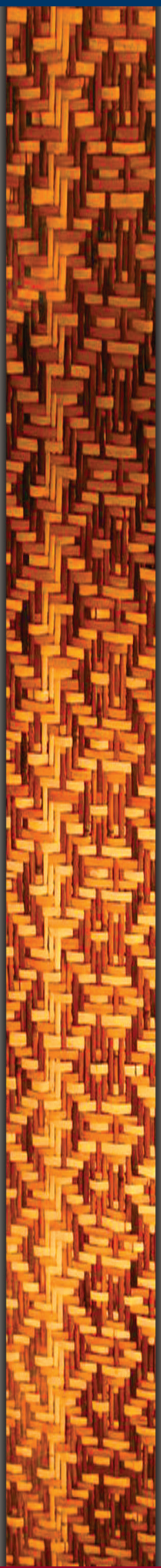


Over the last two years, Isentropic Compression experiments on plutonium and uranium have been successfully performed with exceptional results. This work is leading to better understanding of the equations of state for these materials. In 2012, Dr. Donald Cook, National Nuclear Security Administration Deputy Administrator for Defense Programs, stated, "This accomplishment has been one of our most valuable technical contributions to our Stockpile Stewardship Program…" and that, "These high quality data will likely provide new insights and challenge our fundamental understanding of this extraordinarily complex material." The Z machine is and continues to be a marvelous scientific research asset without compare. Randy and the Pulse Power Engineering Team have contributed significantly to the success of these nuclear material experiments collaborating closely with plasma physicists and scientists and other groups and organizations within the Pulse Power Center.

Many teams have helped to develop and make the Z machine the enormous technical achievement that it has become. This includes the people who operate the machine every day running the experiments; the experimentalist who design the experiments to be executed in the Z's extreme environments; the researchers who develop new advanced pulsed power concepts; and the Pulsed Power Engineering team who enable all of the aforementioned teams in achieving their goals. Randy says, "We're the ones that deliver the hardware—if they can think it, we try to build it." The teaming and collaboration approach to all of this work that the Pulse Power Engineering team pursues on a daily basis with all of the organizations within the Pulsed Power Sciences Center has laid the foundation for technical excellence in the Center's work.

Organizational Chart





Community Involvement

Randy has always enjoyed giving back to his community teaching and encouraging others in a large variety of areas whether it be in helping them scholastically in the fields of science and engineering, guiding them in choosing their best careers, or helping them excel in their professional lives. Regardless of the subject matter, Randy always counsels on building personal strengths and character—honesty, respect, fortitude, good work ethic, responsibility, and perhaps above all, understanding the value of commitment, trust in yourself, and perseverance in whatever goal you choose to pursue.

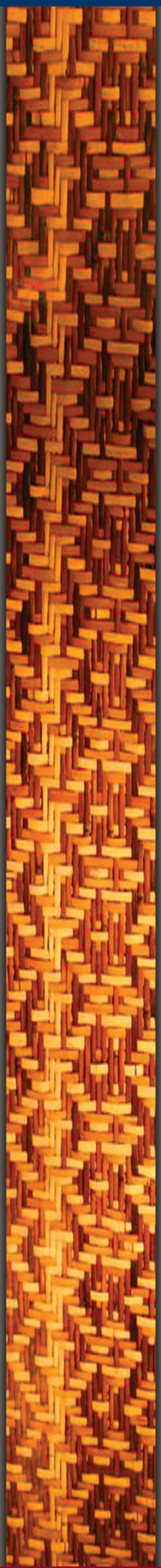
Through the years, Randy has always attempted to connect individually with those that have his passion for mechanical engineering, a connection to his American Indian heritage, or his strong interest in horses and horsemanship. Randy especially enjoys working with young people and encouraging them to learn and achieve on their own, to be inquisitive, to strive for self-sufficiency, and be steadfast in pursuing worthy goals. Nothing gives him greater satisfaction than watching a person who he has personally coached go on to achieve great things and excel in their lives. Randy, with his very diverse background has many life lessons to offer, and he does so with great respect and sensitivity for all those he works with.

Randy has supported, guided, and professionally mentored many young technologists and engineers in their pursuit of their technical careers. His desire is to share his interests, provide knowledge and experience, and to learn from these individuals as well.

Mentoring Young American Indians

As a proud Cherokee Native American, Randy particularly enjoys giving back to his Native American community working to pass on his knowledge and perspective to those who want to learn from him.

While working at Rocketdyne Division of Rockwell International, Randy mentored Sherwin Racehorse, who is a Shoshone Bannock from the Fort Hall Indian Reservation in southern Idaho. Sherwin had an exceptional talent in design and drafting of mechanical systems, especially three dimensional designing; but the confinement of the corporate environment presented many difficulties. Randy understood from a Native American's perspective, the difficulties that Sherwin was facing. Sherwin was struggling with the Indian life he had known and grown



up with which was very different from the required expectations of corporate life. Randy arranged for Sherwin to be assigned to his group so they could work together on engineering projects and so he could personally mentor him. Throughout the year that they worked together, Randy coached and counseled Sherwin, encouraging him to always perform at his highest level and capabilities. Sherwin began adapting and adopting the new ways under Randy's guidance, but the new expectations still presented many challenges and obstacles along the way. Under Randy's guidance in helping his young apprentice choose the best career for his design and drafting talents, Sherwin made the decision to pursue a Bachelor's degree in Architecture and Planning. Sherwin moved back home to the Fort Hall Indian Reservation and has become a very active member in the Shoshone Bannock community as an Urban Planner and as a school board member.

In 1995, while working for EG&G Special Projects Division, supporting Sandia National Laboratories Intelligent Systems and Robotics Center, Randy worked very closely with Ben Yazzie, a member of the Diné tribe (Navajo) from Tohatchi, New Mexico. Randy coached and mentored Ben while they worked closely together designing and engineering state-of-the-art robotics and automated systems for Sandia including the glove box automation program. Randy reflects, "Ben and I learned a great deal from each other and we have utmost respect for each other." In addition to robotics, they talked about different Indian tribal backgrounds and the value of having a strong work ethic. Randy and Ben, who still occasionally talk and catch up on each other's lives, are very thankful that their paths crossed.

Greg Natoni, a member of the Diné tribe who grew up near Shiprock, New Mexico, is a Sandia employee currently working as an engineering designer within Randy's Pulse Power Engineering Department. In 2006, Randy requested that Greg be transferred to his department where he could work on engineering designs as well as be mentored. Work assignments were developed that helped Greg move into a Member of Technical Staff position. Randy continued to coach and mentor Greg by expanding his assignments to align with his aptitude in regulation and compliance skills as well as his education in mechanical engineering. Randy assigned Greg as a subject matter expert in many of the regulatory activities (ES&H, OSHA, etc.) within the department so that he could continue developing himself as a successful engineer.

SEERI Program – Internships in Extreme Environments

One of Randy's many coaching and mentoring activities is his involvement with Sandia's Science of Extreme Environments Research Institute (SEERI) program,

which lays the foundation for developing the next generation of scientists and engineers working in the pulsed power arena. Randy and his team have recruited many outstanding undergraduate and graduate students in engineering and science fields to work as student interns at a world-class pulsed power facility. The internship provides them with the opportunity to learn about and have hands-on experience with projects involving radiation effects sciences, pulsed-power engineering, and high-energy density sciences. Randy and his staff of fellow engineers work one-on-one with the young interns to help them with professional development, and for those that show strong aptitude in these areas, encourage them to seek full-time employment at Sandia Labs.

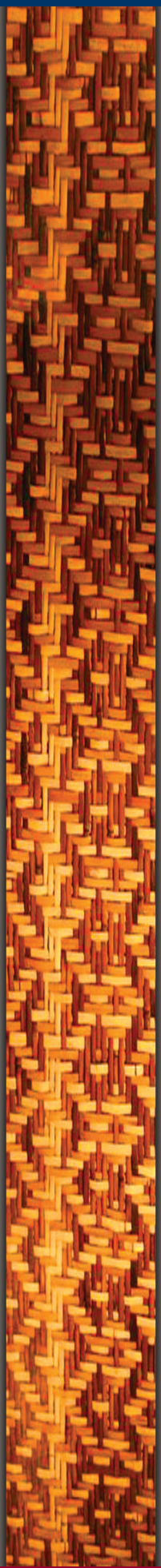
Randy proudly points out that all of the students in this program working under his mentorship and direction have gone on to pursue Masters degrees and PhDs at top universities around the country. Randy continues to track their progress and he visits them at school whenever he has a chance. These students include:

- Russell Maier, a graduate student at Pennsylvania State who will be receiving his PhD in Materials Science in May 2013
- Krystian Zimowski, who received a Master of Mechanical Engineering degree from the University of Texas in Austin in May 2012
- Mitchell Maier, a PhD student at the University of California in Santa Barbara who will get his PhD in Materials Science in 2015

Mentoring in Youth Horsemanship

There are those that ride horses and those that are classed as true horsemen—the difference being that a true horseman not only loves horses but strives to excel in good 'horsemanship,' which includes good riding but also everything else: care and feeding, handling and training, knowledge of equine anatomy, physiology, and psychology, and having a strong respect for the horse as a true partner in the sport. Randy understands that the characteristics that make a good horseman also make a good person—good sportsmanship, respect, taking responsibility, overcoming fears, having sensitivity and empathy for others, and developing balance and athletic ability—to name a few. In line with the American Indian heritage as one of the World's great horse people, Randy's passion for horses and his passion for teaching young people come together in his favorite pastime outside of work.

In 1995, Randy began working with the youth group in the Arabian Horse Association of New Mexico (AHANM). Randy assisted the Youth Director in any way that was needed from helping to paint show jumps to cooking at the fund raiser



BBQs. Randy has put in hundreds of hours of volunteer time each year to support the youth group. He has also assisted in forming youth camp programs, leading the youth horse judging teams, volunteering at horse shows, and fund raising. The youth camps were open to boys and girls ages nine to sixteen and to their horses of any breeding.

In 1998, Randy began working with the AHANM youth horse camp where he put an emphasis on teaching safety in all equestrian activities. In supporting the youth camp, Randy worked with the local horse community to build a learning program that assisted other young horsemen (and this term is inclusive of males and females) in becoming safer riders, such as through his helmet safety program; helping expand their knowledge in horse care; and helping them get the most enjoyment out of their equine partners.

To improve his student's horsemanship, equine knowledge, and appreciation, Randy enlisted riding instructors, veterinarians, equine nutritionists, artists, photographers, farriers, and tack experts who came to assist the camp effort by providing informative instruction in their fields of specialty. The kids loved it and they learned a lot from Randy's summer camps. This AHANM camp program has been identified in the local horse community as one of the best youth horse camps in New Mexico. The campers would stay in New Mexico State Fair ground dormitories the entire time of the camp (nine days), which required chaperones, nurses, and guards (all of whom were volunteers). This was done to assure that the price for camp was affordable to all children with the desire to attend. Randy also sponsored many campers that were not able to afford the cost. Putting this camp program together was an annual 300-hour effort. The payback was tremendous to Randy because he would have numerous children arrive with very minimal riding skills and they would leave the camp as confidant, safe riders.

In 2003, Randy became the AHANM Youth Director. Randy's volunteer positions within AHANM are as follows:

1995 – 2000: General volunteer
1998 –1999: AHANM Youth Camp – Full Time Volunteer
1999 – 2000: AHANM Youth Camp – Assistant Director
2001: AHANM Youth Camp – Co-Director
2002: AHANM Youth Camp – Director
2003 – 2006: AHANM Youth Director
2006 – 2007: AHANM Youth Director and Youth Judging Team Coach

Currently, Randy is an active volunteer in a wide range of AHANM support activities. Throughout the years, Randy has also made his personal horses and his riding and training facility available to children and young adults. Two special young individuals are Samantha and Haley Hilborn from the Laguna Indian Pueblo in New Mexico. These two young riders joined the McKee family in their passion for showing and riding Arabian horses. Randy worked with their parents (Miriam and Duane) and the girls by mentoring and coaching. He also provided them with horses to ride as needed for them to participate in the confidence-building activity of showing horses in various competitive events. The Hillborn girls have competed at the local, open, regional, and national levels. Randy says, "These girls have become a part of our family, and they share our family's strong passion for horses and horsemanship."

The USDF Competition: Samantha Hilborn (left) and Haley Hilborn (right) showing their horses

At Home with the Family

Randy married Linda McKee in Albuquerque in 1979 and shares his life with her and their daughter Kristen, who was born in 1988. Kristen and Linda are just as passionate for horses as Randy and the family spends many hours together enjoying equestrian activities.

Daughter Kristen with family's Arabians

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G. R. McKee "Automated Spray Cleaning Using Flammable Solvents in a Glovebox Environment", *American Glovebox Society Publication, October 1997*

G. R. McKee "Automation in Plutonium Processing", *Proceedings of Plutonium Futures - The Science: A Topic Conference on Plutonium and Actinides, August 1997,*

G. R. McKee "Automated Spray Cleaning using Flammable Solvents in a Glovebox Environment", *Proceedings of American Glovebox Society 1997 Conference,*

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G. R. McKee "Real Time Enterprise Opportunistic Scheduling in the Semiconductor Manufacturing Industry", *A White Paper, Sandia National Laboratories/Intel, November 1995*

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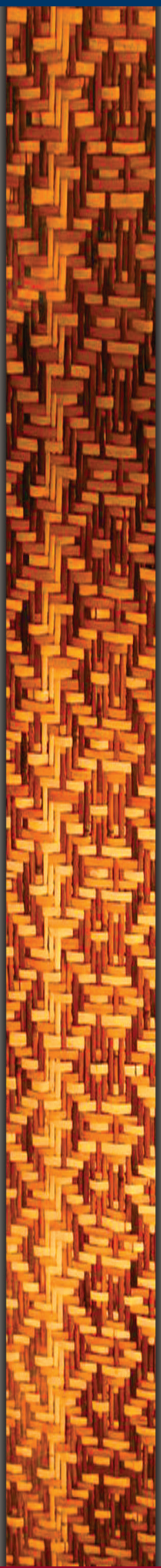

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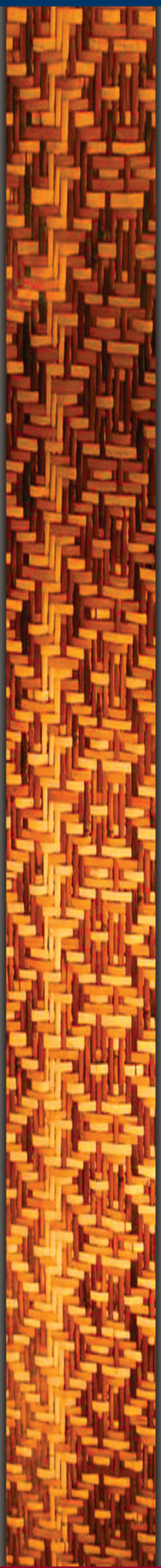
Twelve conference presentations (listed here in reverse chronological order):

M. G. Mazarakis, A. A. Kim, K. R. LeChien, W. E. Fowler, V. A. Sinebryukhov, F. W. Long, M. K. Matzen, D. H. McDaniel, **G. R. McKee**, J. L. Porter, K. W. Struve, W. A. Stygar, P.E. Wakeland, K. S. Ward, and J. R. Woodworth, "The High Current, Fast, 100ns, Linear Transformer Driver (LTD) Development Project at Sandia National Laboratories", Proceedings of the 2012 International Symposium on High Current Electronics, p. 1



M. G. Mazarakis, M. E. Savage, W. E. Fowler, L. F. Bennett, M. Jones, F. W. Long, M. K. Matzen, D. H. McDaniel, **G. R. McKee**, J. McKenney, J. L. Porter, B. S. Stoltzfus, K. W. Struve, W. A. Stygar, J. R. Woodworth, A. A. Kim, V. A. Sinebryukhov, K. R. LeChien, P. Wakeland, K. Ward, J. G. Puissant, T. F. Chavez, P. A. Jones, D. J. Lucero, G. Natoni, and S. A. Lewis, "Experimental validation of the first 1-MA water-insulated MYKONOS LTD voltage adder", Proceedings of the 2011 IEEE International Pulsed Power Conference, p. 625.

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M. G. Mazarakis, K. R. LeChien, W. E. Fowler, F. W. Long, M. K. Matzen, D. H. McDaniel, **G. R. McKee**, J. L. Porter, K. W. Struve, W. A. Stygar, J. R. Woodworth, A. A. Kim, V. A. Sinebryukhov, R. M. Gilgenbach, M. R. Gomez, D. M. French, Y. Y. Lau, J. Zier, K. S. Ward, and P. E. Wakeland, "1-MA Linear Transformer Driver (LTD) cavities as building blocks for ICE, ICF, and IFE drivers", Conference Record Abstracts of the 2010 IEEE International Conference on Plasma Science, p. 1.

K. LeChien, M. Mazarakis, W. Fowler, W. Stygar, F. Long, **G. R. McKee**, G. Natoni, J. Porter, K. Androlewicz, T. Chavez, G. Feltz, V. Garcia, D. Guthrie, R. Mock, T. Montoya, J. Puissant, A. Smith, P. Wakeland, K. Ward, D. Van De Valde, and A. Kim, "A 1-MV, 1-MA, 0.1-Hz linear transformer driver utilizing an internal water transmission line", Proceedings of the 2009 IEEE International Pulsed Power Conference, p. 1186.

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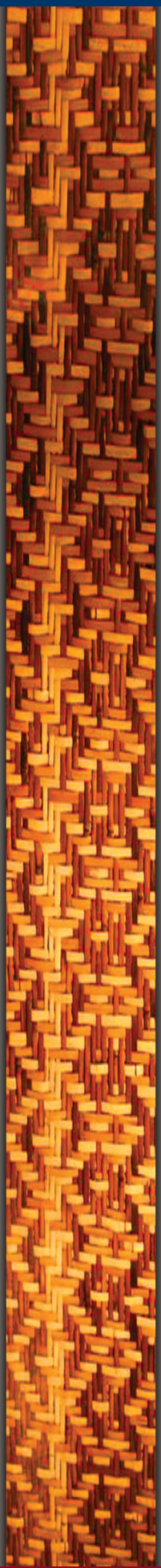

M. G. Mazarakis, S. Cordova, W. E. Fowler, K. R. LeChien, J. J. Leckbee, F. W. Long, M. K. Matzen, D. H. McDaniel, **G. R. McKee**, J. L. McKenney, B. V. Oliver, C. L. Olson, J. L. Porter, S. T. Rogowski, K. W. Struve, W. A. Stygar, J. W. Weed, J. R. Woodworth, A. A. Kim, V. A. Sinebryukhov, R. M. Gilgenbach, M. R. Gomez, D. M. French, Y. Y. Lau, J. Zier, D. L. Johnson, D. M. Van De Valde, R. A. Sharpe, and K. Ward, "Linear Transformer Driver (LTD) development at Sandia National Laboratories," Proceedings of the 2009 IEEE International Pulsed Power Conference, p. 138.

K. W. Struve, M. E. Cuneo, J.-P. Davis, S. F. Glover, K. R. LeChien, J. J. Leckbee, M. G. Mazarakis, **G. R. McKee**, J. L. Porter, M. E. Savage, B. S. Stoltzfus, W. A. Stygar, and J. R. Woodworth, "Recent pulsed-power technology advances in the pulsed power sciences center at Sandia National Laboratories", Proceedings of the 2009 IET European Conference on European Pulsed Power, p. 1.

E. A. Weinbrecht, D. D. Bloomquist, D. H. McDaniel, **G. R. McKee**, G. L. Donovan, J. W. Weed, T. V. Faturos, D. A. Tabor, and C. Moncayo, "Update of the Z Refurbishment project (ZR) at Sandia National Laboratories", Proceedings of the 2007 IEEE International Pulsed Power Conference, p. 975.

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Awards

NNSA Defense Programs Awards of Excellence

The NNSA Defense Programs Awards of Excellence formally recognizes outstanding staff achievements and contributions to the Stockpile Stewardship Program. Honorees are both individuals and teams selected yearly from multiple divisions across New Mexico and California sites.

- 2007 NNSA/DPAE - Z Refurbishment Project Component Installation and Test Leadership Team
- 2009 NNSA/DPAE - 6 Megavolt Z Laser Triggered Gas Switch Design and Development
- 2010 NNSA/DPA - Refurbished Z
- 2011 NNSA/DPAE - Uranium Experiments on the Z Machine

Sandia National Laboratories Employee Recognition Awards (ERA)

To Honor Individuals and Teams Who Have Made
Outstanding Contributions to Sandia's Success

- 2008 ERA - Z Refurbishment Outage and Workforce Planning Integration Team
- 2008 ERA - Z Plutonium Team

Sandia National Laboratories Sandia Awards for Excellence - SAFE

Sandia Award for Excellence are given in recognition of outstanding performance by an individual

- 1995 - Materials Disposition Program Development
- 1996 - Automation in Plutonium Processing at LANL
- 1996 - LANL Gamma Spectroscopy Automation Project Pull Down
- 1996 - LANL Nuclear Materials Vault Automation
- 1996 - Grand Challenge LANL/SNL Joint LDRD Funding
- 1996 - Precision Metallization Lab Realization
- 1997 - Integration of High Speed Collision Sensor into Nuclear Materials Processing
- 1997 - Nuclear Material Processing Glovebox Automation Lab
- 2000 - LANL Gamma Spectroscopy Automation Project Pull Down
- 2004 - Z Refurbishment MRP Implementation for Engineered Components
- 2006 - Z Refurbishment Manufacturing Engineering
- 2007 - Z Refurbishment Engineering
- 2009 - LTD Radiography Engineering

George Randall McKee

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