SAND2015-4407C

HENAAC 2015 | NOMINEE

PATRICK SENA

HENAAC 2015 - Pat Sena

NOMINATOR	Dr. Paul J. Hommert
Title	President and Laboratories Director
Organization	Sandia National Laboratories
Email	pjhomme@sandia.gov
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NOMINEE	Pat Sena
Nominee title	Senior Engineer
Organization	Stockpile Systems Center
Award category	Lifetime Achievement Award
Nominee email	pasena@sandia.gov
Nominee phone	505-844-5491
Nominee fax	505-844-2716
Nominee address	PO Box 5800, MS 0453, Albuquerque, NM 87185-0453
Undergraduate school	New Mexico State University
Degree & major	B.S., mechanical engineering, machine design
Graduate school	Purdue University
Degree earned	M.S., mechanical engineering
Years of professional experience	35
Ethnicity	Hispanic

Table of Contents

Patches documenting a few of the national security programs Pat Sena has contributed to.

Nomination Letter

Exceptional service in the national interest

Sandia National Laboratories

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

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Dr. Paul J. Hommert
President and Laboratories Director

May 27, 2015

HENAAC Award Selection Committee
Great Minds in STEM
602 Monterey Pass Road
Monterey Park, CA 91754

Dear HENAAC Selection Committee:

Subject: Nomination of Mr. Patrick Sena for the 2015 HENAAC Lifetime Achievement Award

I am proud to introduce this year's nominee from Sandia National Laboratories for the 2015 HENAAC Lifetime Achievement Award. Throughout his career, this nominee has continually demonstrated technical excellence, innovative thinking, excellent communication skills, superb leadership, and unimpeachable integrity. He is committed to nurturing the development of young scientists and engineers while serving as an example through his own impressive technical and personal achievements.

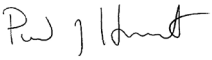
For 35 years, Patrick Sena has served the nation. He spent several years working on barrier and access denial technologies to keep U.S. military bases safe. He rose through the ranks at Sandia to become an expert on nuclear weapons systems, helping transform the U.S. nuclear weapons program from its Cold War-era wartime footing to its current role as a sustained, safe, secure, and reliable nuclear deterrent in support of U.S. national security. His expertise is both broad and deep, and he is sought for advice from both inside and outside the Laboratory. He has served for many years as the Lab's liaison to the U.S. National Nuclear Security Administration, the Navy, the Air Force, and Sandia's partners in the U.K. on nuclear weapons matters. He has guided, as both a technical expert and administrator, many multi-million dollar programs involving hundreds of staff members.

In recognition of his technical expertise and leadership, Pat was recently promoted to senior engineer, a position and honor restricted to less than one percent of the research staff at Sandia. As one of only five senior engineers in Sandia's nuclear weapons program, he is in a position to apply his broad expertise in engineering to guide the technical direction of the U.S. nuclear deterrent. He is relied on by Sandia's partners, customers, technical staff, and leadership for advice, guidance, and example.

Pat is a model Sandia employee and he places service to the community ahead of all other priorities. He has worked throughout his career to promote education, personal growth, and professional development for Sandia employees, both informally and through formal programs—including the Hispanic Leadership Outreach Committee (which he led for seven years) and Sandia's Corporate Special Degree Programs. Through Sandia's Executive Mentoring Program he has mentored many staff members who went on to become managers and senior managers, and students who went on to become staff. He leads the support group for the USS New Mexico Submarine crew to help sailors' families, and he serves individuals and families in his church with the goal to become a full-time deacon after retirement.

It is with great pleasure that I nominate Patrick Sena for the HENAAC Lifetime Achievement Award in recognition of his service and commitment to Sandia, to the nation, and to his community.

Sincerely,



Dr. Paul Hommert
President and Laboratories Director
Sandia National Laboratories

Résumé

EDUCATION

Purdue University, 1981

- M.S., Mechanical Engineering, Machine Design

New Mexico State University, 1979

- B.S., Mechanical Engineering

RESEARCH AND PROFESSIONAL EXPERIENCE

1980-Present, Sandia National Laboratories, Albuquerque, NM

March 2015-Present

- Organization: New Mexico Stockpile Systems Center and Office of the Chief Engineer for Nuclear Weapons
- Title: Senior Engineer
- Research: Develop and implement strategic initiatives, develop concept options for the future of the U.S. nuclear weapons stockpile, assess impact of stockpile surveillance shortages, establish methodology for component mechanical stockpile qualification, contribute to improvements to the corporate engineering environment, serve in the Stockpile Intelligence Group, update the principles for extending a weapon's lifetime.
- Leadership: Mentor younger staff, serve as a resource for directors and senior managers, participate with the Research Leadership Team to review proposals for discretionary research for their alignment with and impact on Lab's mission areas.

December 2014-March 2015

- Organization: New Mexico Stockpile Systems Center and Office of the Chief Engineer for Nuclear Weapons
- Title: Acting Deputy Chief Engineer for Nuclear Weapons
- Responsible for the direction of 165 staff members, department managers, and senior managers in Sandia's New Mexico Stockpile Systems Engineering Group, Sandia's Nuclear Weapons Advanced and Exploratory Group, and Sandia's Chief Engineer Support Group.
- Responsible for customer relationships with the National Nuclear Security Administration (NNSA), Los Alamos and Lawrence Livermore national laboratories, Navy, Air Force, U.S. Strategic Command, Office of the Secretary of Defense, U.K. Atomic Weapons Establishment, Pantex Plant, Kansas City Plant, and internal Sandia organizations.
- Responsible for stockpile stewardship of the B61-3/4/7/10/11, W76-0/1, W78, W88, and U.K. Trident systems; configuration management; annual stockpile assessment; W76-1 production; support for the B61-12 Life Extension Program; support for the W88 ALT 370; development of the Code Management System; W78 Life Extension Program; Enhanced Navy Test Bed; B61 Joint Test Assembly First Production Unit; and other critical programs/projects.

2008-2014

- Organization: New Mexico Stockpile Systems Engineering Group
- Title: Senior Manager
- Provided senior management oversight for seven nuclear weapon-responsible organizations.
- Co-led Sandia's Annual Assessment process (which leads to the Lab Director's annual letter to the President of the United States certifying the U.S. nuclear weapons stockpile); led nuclear safety R&D deliverables from Sandia; and assured that milestones pertaining to the B61, W76, W78, W88, and nuclear safety R&D were accomplished on time and within budget.
- Engaged, integrated, built, and fostered strategic relationships with the NNSA's headquarters

and Albuquerque field office; the U.S. Air Force Nuclear Weapons Center; the National Security Agency; the Office of the Secretary of Defense; the U.S. Defense Threat Reduction Agency; the U.S. Defense Nuclear Facilities Safety Board; Nuclear Command and Control System Support Staff; the NNSA production agencies (Pantex and Kansas City plants) and design agencies (Los Alamos National Laboratory and Lawrence Livermore National Laboratory); and contributing Sandia organizations.
- Served as the Sandia nuclear weapons interface to the Defense Nuclear Facilities Safety Board.
- Led the Sandia Hispanic Leadership Outreach Committee.
- Provided assistance to the Corporate Special Degree Programs Committee.
- Mentored several managers and staff.

2007-2008
- Organization: Stockpile and Weapon Product Realization Center
- Title: Deputy Director
- Assisted NNSA in defining the future direction of the nuclear weapons stockpile, negotiated requirements and resources with the NNSA for performing Sandia's nuclear weapons mission, communicated progress and risks, and implemented the NNSA nuclear weapons program within Sandia.
- Responsible for the following program areas: B61 and W76 Life Extension Programs; B61, W76, W78, W80, B83, W87, and W88 weapon systems; Joint Test Assemblies; dismantlement and disposition; use control; neutron generators design and production; component development and manufacturing; surveillance; and independent assessment.
- Help manage over $425M in annual programming.

2002-2006
- Organization: Nuclear Weapons Use Control Systems Department
- Title: Manager
- Managed the department and its interfaces with contributing departments, including weapon system engineering, component design, software design, safety, quality, reliability, manufacturing, security, military liaison, and stockpile surveillance groups.
- Interfaced with NNSA organizations including headquarters, production and design agencies, and national labs.
- Interfaced with Department of Defense organizations including the Air Force, Navy, Defense Threat Reduction Agency, National Security Agency, Office of the Secretary of Defense, U.S. Strategic Command, European Command, U.S. Air Force in Europe, and the Joint Chiefs of Staff.
- Served on Sandia's Use Control Project Officers Group, which was responsible for integrating work activities with the NNSA and the Department of Defense.
- Provided engineering support for all fielded nuclear weapons use control systems.
- Developed and delivered a new Code Management System to the U.S. Air Force Materiel Command and U.S. Strategic Command.
- Developed a strategic plan for future nuclear weapons use control concepts.
- Managed an average of $12M and 40 full-time equivalents (personnel) per year.

2000-2002
- Organization: Navy and U.K. Projects Department
- Title: Manager
- Served as a Sandia Project Officers Group member on the W76, W88, and U.K. Trident

programs and contributed to the management of Sandia activities on these programs.
- Contributed to a Navy analysis of design and production capabilities and of the history of responses to stockpile problems and engaged in strategic planning with the Navy that led to a 6.2/6.2A Feasibility Study and Option Down-Select for the W76-1/Mk4A weapon system.
- Represented Sandia in a review of the Navy and Army Tactical Missile Systems-Penetrator (TACMS-P) project.
- Contributed to the NNSA effort to reengineer project and program management for nuclear weapons programs.
- Represented the New Mexico Stockpile Engineering Center on the Neutron Generator Supply Chain Team and helped resolve issues across all neutron generator projects.
- Led a study to recommend the role of Sandia and U.S. nuclear weapons for the next 30 years.

1995-2000
- Organization: Strategic Reentry Systems Department
- Title: Manager
- Managed department responsible for systems integration and technical and programmatic leadership for Sandia components in the W76/Mk4 and W88/Mk5 deployed on the U.S. Navy Trident Strategic Long Range Ballistic Missile systems, the W78 deployed on the U.S. Air Force Minuteman III ICBM system, and the U.K. Trident weapon system.
- Interfaced with the Navy, Air Force, NNSA, national labs, U.K. Atomic Weapons Establishment, U.K. Ministry of Defense, the Pantex Plant, Honeywell/FM&T Plant, and Lockheed Martin Missiles and Space.
- Led, managed, and contributed to all stockpile stewardship activities for the W76, W78, W88, and U.K. Trident programs and interfaced with the NNSA, Navy, Air Force, U.K., and U.S. Strategic Command customers.
- Initiated the W76-1/Mk4A Life Extension Study.
- Led development, fabrication, and testing of the first W76/Mk4 Enhanced Fidelity Flight Body flown successfully in April 1999.
- Completed the Life Extension Study for the W78.
- Led development and first production unit delivery of the MC4380 neutron generator, the first radiation-hardened nuclear weapon component to be qualified without underground testing, which achieved first production two months ahead of schedule.
- Contributed to the development and completion of systems and projects including the Acorn; W76/Mk4 Dual Revalidation Project; NESS Revalidation for the W76 and W78; W76/Mk4 SS-21 Project for disassembly and inspection operations at Pantex; W88/Mk5 Existing Operations Reauthorization Project for Pantex disassembly and inspection and assembly operations; and W88 Arming, Fuzing, & Firing rebuilds.
- Helped develop the Stockpile Life Extension process.
- Made significant contributions to revitalize or preserve the capabilities of Sandia test facilities, including the Magnetic Flyer Plate Facility, Light-Initiated High Explosive Facility, Annular Core Research Reactor, and Sandia Pulse Reactor III.

1990-1995
- Organization: New Mexico Systems Engineering Operations Department
- Title: Manager
- Provided project management expertise and assistance for all New Mexico nuclear weapons projects and for the Sandia corporate budget planning process.
- Contributed to the establishment of Sandia's Chief Information Officer and organization.
- Developed a software system that facilitated the creation, management, and sharing of project management documentation.

- Managed a major building remodeling to enable explosives operations.
- Established a new laser laboratory.
- Implemented new Environment, Safety, and Health (ES&H) requirements for Sandia and the Weapon Systems Engineering Center and managed the resolution of more than 1,000 ES&H findings.

1980-1990

- Organizations: Survivability and Security Division, Control Technology Division, and Access Denial Technology Division
- Title: Project Manager and Lead Mechanical Engineer
- Developed concepts for operations and quickly deployable security systems to increase the survivability of tactical aircraft in two military theaters.
- Developed a security monitor, control, and display system; perimeter sensors; and emergency management system for Marines who guard U.S. embassies.
- Designed, developed, tested, characterized, and transferred to companies and government agencies barriers to prevent terrorist vehicles loaded with explosives from crashing through entrances and perimeters of facilities. Designs were used throughout the U.S. Department of Energy Nuclear Weapons Complex and at U.S. government facilities.
- Designed, developed, and installed systems to protect weapon storage facilities.

SELECTED LEADERSHIP ACTIVITIES

- Designed and taught an 8-hour course for Sandia National Laboratories, WR715 Weapon Project Reviews, 2005 - 2007.
- Contributed to the Sandia National Laboratories Weapon Intern Program Steering Committee, in charge of influencing and selecting young, promising staff for a one-year intern program in the nuclear weapon program, 2012-2015.
- Led the development and coordinated the delivery of a series of two-hour colloquiums on the nuclear weapons program for the U.S. Air Force, over 15 individual colloquiums delivered, 2012-2015.
- Contributed to the Sandia Special Degree Programs Committee to evaluate applications for staff wishing to enroll in the Masters Fellowship, the Critical Skill Masters, the Doctoral Study, Tuition Assistance, and University Part Time Programs. Mentored many individuals on assembling their application packages, 2004-2013.
- Led the Hispanic Leadership Outreach Committee (HLOC) at Sandia National Laboratories, August 2007-December 2013. Championed Hispanic employees to best serve Sandia and advance their careers; defined, planned, staffed, and executed a program to implement the HLOC objectives and goals; implemented a mentoring program; mentored and advised employees; implemented a recruiting program; implemented activities to recognize and reward exceptional job performance for Hispanic employees; welcomed summer interns and helped them find connections to satisfying jobs; contributed to STEM (science, technology, engineering, and mathematics) education in the Albuquerque community; and created awareness of the Hispanic community through the celebration of Hispanic Heritage Month.
- Completed the year-long MIT seminar "Foreign Politics, International Relations, and the National Interest," April 2002, focusing on ethnic conflict; religion and politics; intervention; realism, liberalism, and Europe; U.S. national security policy; proliferation and terrorism; democratization; and national economies in a globalizing world.
- Completed the Sandia Nuclear Weapon Strategic Business Unit's Leadership Development Program, January 2002, focusing on conducting in-depth dialogues with executive management; working on projects that address special topics

of national importance; studying leadership; and defining the future desired direction for our careers.

- Led development of two Sandia courses to teach project management processes and use of project management software.
- Taught a semester course on dynamics and kinematics to Sandia staff during lunch hour. The students were diverse in the stages of their careers at Sandia.
- Taught physics to high school freshmen in a Sandia-sponsored summer program.

SELECTED HONORS

- Received an NNSA Award of Excellence as a member of the Code Management System Project Team for the Air Force Materiel Command application, 2006. The Code Management System provides a secure user interface for every U.S. nuclear weapon equipped with the Permissive Action Link security system.

- Received an NNSA Award of Excellence as a member of the Stockpile Stewardship Program Team for the MC4380 neutron generator qualification, 2001. The MC4380 neutron generator was the first radiation-hardened Sandia component to be qualified for the nuclear stockpile without the use of underground nuclear testing.
- Received a U.S. Department of Energy Award of Excellence as a member of the Stockpile Stewardship Team for the completion of the W76/Mk4 Dual Revalidation Program, 1999. The Dual Revalidation Project evaluated the requirements for the W76-0/Mk4 weapon and updated the technical basis for qualification of the system. The project also strived to identify component and material aging concerns.

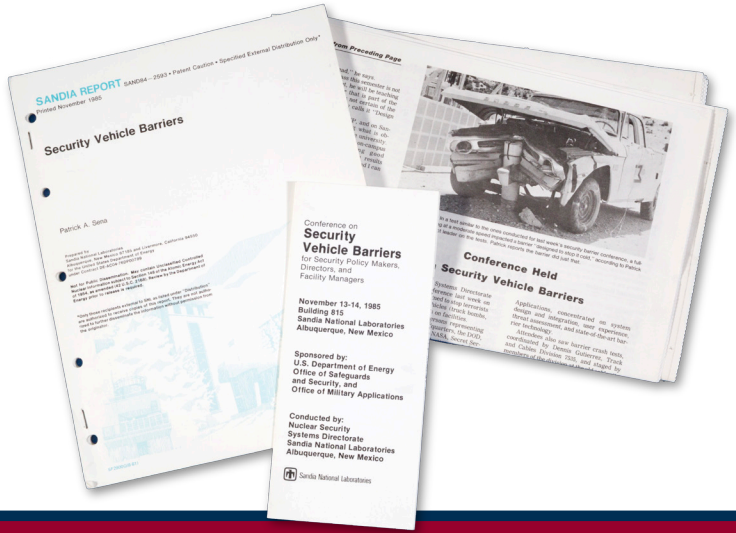
- Received a Sandia National Laboratories President's Quality Award for Excellence for Annual Certification, January 2000. This award was for leadership and implementation of the annual process whereby Sandia assesses the entire body of knowledge for each weapon system, develops an assertion for their ability to meet safety and reliability requirements, and develops presentations, reports, and a letter signed by the Sandia director and provided to the U.S. Secretary of Energy and Secretary of Defense with assessment results.
- Nominated by Sandia for the Hispanic Engineer National Achievement Award, 1997. This award nomination was for contributions in science and engineering.

TUTORIALS & WORKSHOPS

- "Vehicle Barrier Systems," Nuclear Material Management Institute, New Orleans, LA, July 1986.
- "Vehicle Barrier Systems," Carnahan Conference, Lexington, KY, August 1986

PUBLICATIONS

- "Vehicle Barrier Systems," Carnahan Conference on Security Technology, 1986
- "Security Vehicle Barriers," Sandia National Laboratories Report SAND84 – 2593, 1985
- "Vehicle Barrier Systems," Institute of Nuclear Materials Management, 1984
- "The Department of State/SNL Marine Automated Security Console Systems



Development Program," Sandia National Laboratories Report SAND88-1451, 1988
- W76, W78, W88 Annual Assessment Reports and presentations, 1995-2000

PROFESSIONAL & HONOR SOCIETIES MEMBERSHIPS

- Tau Beta Pi, Engineering Honor Society, 1978
- Pi Tau Sigma, Mechanical Engineering Honor Society, 1978
- American Society of Mechanical Engineers, 1990-present

SERVICE & VOLUNTEERISM

- Diaconate Formation, 2013-present. Studying to become a deacon for the Archdiocese of Santa Fe. Included a 60-hour practicum, part of which included serving food to the poor and homeless.
- Adult Faith Formation Facilitator, 2011-present, Albuquerque, NM. Co-led courses including The Great Bible Timeline, the Book of Matthew, the Book of Acts, the Catechism of the Catholic Church, the Mass, the Eucharist, the Sacraments, and Rediscovering Catholicism.
- Pastoral Council Chair, 2010-present, Albuquerque, NM. Led a team of 10 members who advise the pastor on the future direction of the parish.
- Choir Leader, 1983-present, Albuquerque, NM.
- Marriage Preparation, 2007-present, Albuquerque, NM. Worked together with wife for more than seven years to help more than 15 couples prepare for marriage.
- Respect Life/Project Defending Life, 2006-present, Albuquerque, NM. Volunteer to help pregnant women and their families who are in crisis situations with food and shelter aid.
- Rite of Christian Initiation for Adults (RCIA) Sponsor, 2003-present, Albuquerque, NM. Worked with seven adults to prepare them to become members of the Catholic Church.
- Cantor, 1970-present, Albuquerque, NM; Blessed Sacrament Church, West Lafayette, IN; and St. Anne, Santa Fe, NM.
- Member, men's bible study, 2010-present, Albuquerque, NM.
- Speaker at St. Pius High School Career Fair, 2000-2006, St. Pius X High School, Albuquerque, NM.
- Co-led Cub Scout activities, 1989-1992, Albuquerque, NM.

ACTIVITIES

- Running
- Camping
- Gardening
- Playing the Guitar and Singing

Award in recognition of dedication and leadership from the Hispanic Leadership Outreach Committe, 2007-2013.

Recommendation Letters

Sandia National Laboratories

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

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Gary A. Sanders
Vice President
Weapons Engineering and Product Realization

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Fax: (505) 844-8512
Email: gasande@sandia.gov

May 7, 2015

HENAAC Award Selection Committee
Great Minds in STEM
602 Monterey Pass Road
Monterey Park, CA 91754

Subj: Recommendation for Patrick Sena

Sandia National Laboratories was born in 1949 when the President of the United States, Harry Truman, wrote to the president of the American Telephone and Telegraph (AT&T) Company, Leroy Wilson. President Truman stressed the importance of AT&T accepting a contract under the Atomic Energy Commission to direct "the Sandia Laboratory at Albuquerque, New Mexico" to provide technical leadership for the atomic weapons program which he described as being of extreme importance and vital to national defense. President Truman wrote; "In my opinion you have here an opportunity to render an exceptional service in the national interest."

It is my pleasure to nominate Patrick Sena for the HENAAC Lifetime Achievement Award because he has dedicated over 35 years to providing "*Exceptional Service in the National Interest*" with outstanding performance. He has also contributed to our community by providing many years of leadership through the Hispanic Leadership Outreach Committee at Sandia, by teaching and mentoring Sandians, and by leading multiple ministries through the Catholic Church.

Patrick was recently promoted to a senior engineer at Sandia National Laboratories. Some of the key attributes of a senior engineer are: they are recognized by Sandia and external peers as among the best in their respective fields, have unimpeachable technical leadership, a significant history of mentorship, impacts that benefit Sandia and the nation, and demonstrated strategic leadership and a commitment to Sandia's values. Patrick Sena is a role model for each of these attributes.

Patrick's history of technical and programmatic leadership and his passion for national security reaches back to the very beginning of his Sandia career. Within months of starting at Sandia in 1980, Patrick was given the lead mechanical design responsibility for a security system that was installed in many military bases to protect nuclear weapons from terrorist attacks. Motivated by the terrorist bombing that killed 285 US Marines in Beirut, Lebanon, in 1983, he led the design and evaluation of barriers that would stop trucks from crashing through perimeter fences and gates. Many of these designs are used in U.S. facilities throughout the world. He then led the development of a security system that could be used at all U.S. Embassies throughout the world. Patrick began working in the Nuclear Weapon Program in 1990 and through the present time period he has had significant leadership responsibilities

including the full life cycle systems engineering support for the weapon systems that are the responsibility of Sandia in New Mexico; the Use Control Systems that control the security and use of the weapons; the program management that prioritizes, funds and tracks progress for the entire scope of Sandia's weapons work; and the interfaces with many of Sandia's main sponsors and customers. Patrick has helped formulate, negotiate and implement a large number of Sandia requirements, processes and procedures, and he has expertly worked with auditors and assessors of the Nuclear Weapon Program.

In addition to his history of technical and programmatic leadership, Patrick has many accomplishments from pursuing his second passion of teaching others through classes that he developed on program management and technical aspects of the weapon program, through one-on-one mentoring, and through leadership of the Sandia Hispanic Leadership Outreach Committee. All these activities have been focused on helping others grow in their careers at Sandia so they, too, could better serve the nation and take on higher and more satisfying job opportunities.

Patrick has also focused his energy outside Sandia by leading his family (he is married, he and his wife, Kerrie, have 4 children and 9 grandchildren), helping siblings and extended family members with day-to-day and special needs, and by leading numerous activities in his faith community. He has taught science to disadvantaged youth in local schools and has consulted for and judged science fairs. He and his wife have taught numerous courses on scripture and have served in many ministries ranging from preparing food and serving the food to homeless people to preparing couples for marriage.

Sandia National Laboratories is proud of our unique work environment that values diversity and fosters programs that supports the people that are the core of the laboratory including providing stimulating career opportunities with responsibilities that impact National Security, performing work through teams who respect each other and who are often world-class experts, and by providing continuing education, and mentoring. We encourage everyone at Sandia to excel and to provide "*Exceptional Service in the National Interest*". We also highly encourage our employees to give back to the community. Patrick Sena exemplifies the Sandia values. He has demonstrated a lifetime of commitment to and achievement of excellence in performance, continuing education, caring about and helping others to do their best, and taking responsibility for significant responsibilities and deliverables for national security.

Gary A. Sanders
Vice President, Weapons Engineering and Production Realization

Sandia National Laboratories

Operated for the U.S. Department of Energy's
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May 6, 2015

HENAAC Award Selection Committee
Great Minds in STEM
602 Monterey Pass Road
Monterey Park, CA 91754

Dear Committee Members:

Subject: 2015 HENAAC Nomination - Recommendation for Patrick A. Sena

I am pleased to recommend Patrick Sena for the HENAAC Lifetime Achievement Award. Patrick has exhibited exemplary leadership and accomplishments during his 35-year career at Sandia National Laboratories in three important areas for which he has passion: Technical, People, and Community.

As a technical leader, he has been a key part of the national team that keeps the U. S. Strategic Deterrent safe, secure and reliable for over 25 years. Patrick has an encyclopedic knowledge of the U. S. deterrent including the capabilities and characteristics, the operations, and the responsible agencies; which he uses to make and help others make smart decisions that impact the capabilities of the deterrent, and the management of millions of taxpayer's dollars annually.

From a People perspective, Patrick has invested tirelessly as a mentor and coach. The people he has led, coached and mentored are in many key positions throughout Sandia, including current senior managers and managers such as: Melecita Archuleta, Larry Luna, Tom Henderson, Dennis Helmich, John Lorio, Dennis Owens, Manuel Contreras, Carmen Allen, John Wharton, and Roger Showalter. In addition, Patrick has worked to plant engineering and science career seeds in the lives of mid- and high-school students by teaching hands-on engineering and science seminars, consulting for science fair projects, and speaking at career fairs.

A third area where Pat has worked tirelessly is in the Community. He led the Hispanic Leadership Outreach Committee, served multiple years on the Corporate Special Degree Programs Committee, is a member of the group that supports the young men serving on the USS New Mexico Submarine, and serves in his church with a goal to become a full-time deacon after retirement. The goals of each of these activities has been to serve others and help others grow in their ability to do their best and continuously improve.

Patrick is looked at as a model by the management and staff of Sandia's Division 2000, which has broad responsibility for the Strategic Deterrent. Patrick makes friends out of all his customers, bosses, peers, staff and acquaintances by focusing on both getting the job done right and on each person's needs and objectives.

Patrick Sena would be a superb representative of this award. If you have any questions, I would be pleased to answer them.

Sincerely,

Sandia National Laboratories

Operated for the U.S. Department of Energy's
National Nuclear Security Administration
by **Sandia Corporation**

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James L. Handrock
Director, NM Weapon Systems Engineering

May 6, 2015

HENAAC Award Selection Committee
Great Minds in STEM
602 Monterey Pass Road
Monterey Park, CA 91754

Subject: ***HENAAC Letter of Recommendation for Patrick A. Sena***

I strongly recommend Patrick Sena for the HENAAC Lifetime Achievement Award. I have worked closely with Pat for over seven years. Together, we have been responsible for major elements of the nation's nuclear deterrent at Sandia National Laboratories.

I have observed Pat handle a broad spectrum of responsibilities with outstanding performance including: acting as the Director for the Program Management Office that manages hundreds of millions of dollars, acting as the Director with responsibility for half the nation's nuclear deterrent, helping our production partner be successful moving a 3 million square foot manufacturing facility, educating congressmen and senators on the nuclear weapon program, and work on several special projects. He has worked to maintain the current nuclear deterrent and to develop concepts and direction for the future stockpile. He is one of the most knowledgeable persons at Sandia on the nuclear weapon deterrent. His breadth and depth, and his leadership and accomplishments are highly valued at Sandia National Laboratories.

Pat cares deeply about others and their success. He has recruited many people to Sandia who have strong job performance. He has a passion for making investments in people by teaching them knowledge and skills that will impact their lives and their careers. His teaching applies inside and outside of the workplace. He has put together and taught project management and technical courses for Sandia staff, put together a series of colloquiums for the U.S. Air Force Nuclear Weapon Center, he has taught students in high school about physics, and he has taught a number of courses through his church. He has a long track record of mentoring people at all levels within Sandia to help them obtain the needed background to do their jobs effectively. Pat has invested a lot of his own time over several years leading the Hispanic Leadership Outreach organization, which also interacts with and helps the Asian, Native American, Black, and Veterans Outreach organizations.

Pat has contributed to some of the most important national security projects for which Sandia has responsibility. He considers his work at Sandia his mission. The projects have improved national security in a number of ways – both tactically and strategically. He has led physical security projects and he has had responsibility for weapon systems engineering. A notable trait of Pat is that he has a desire

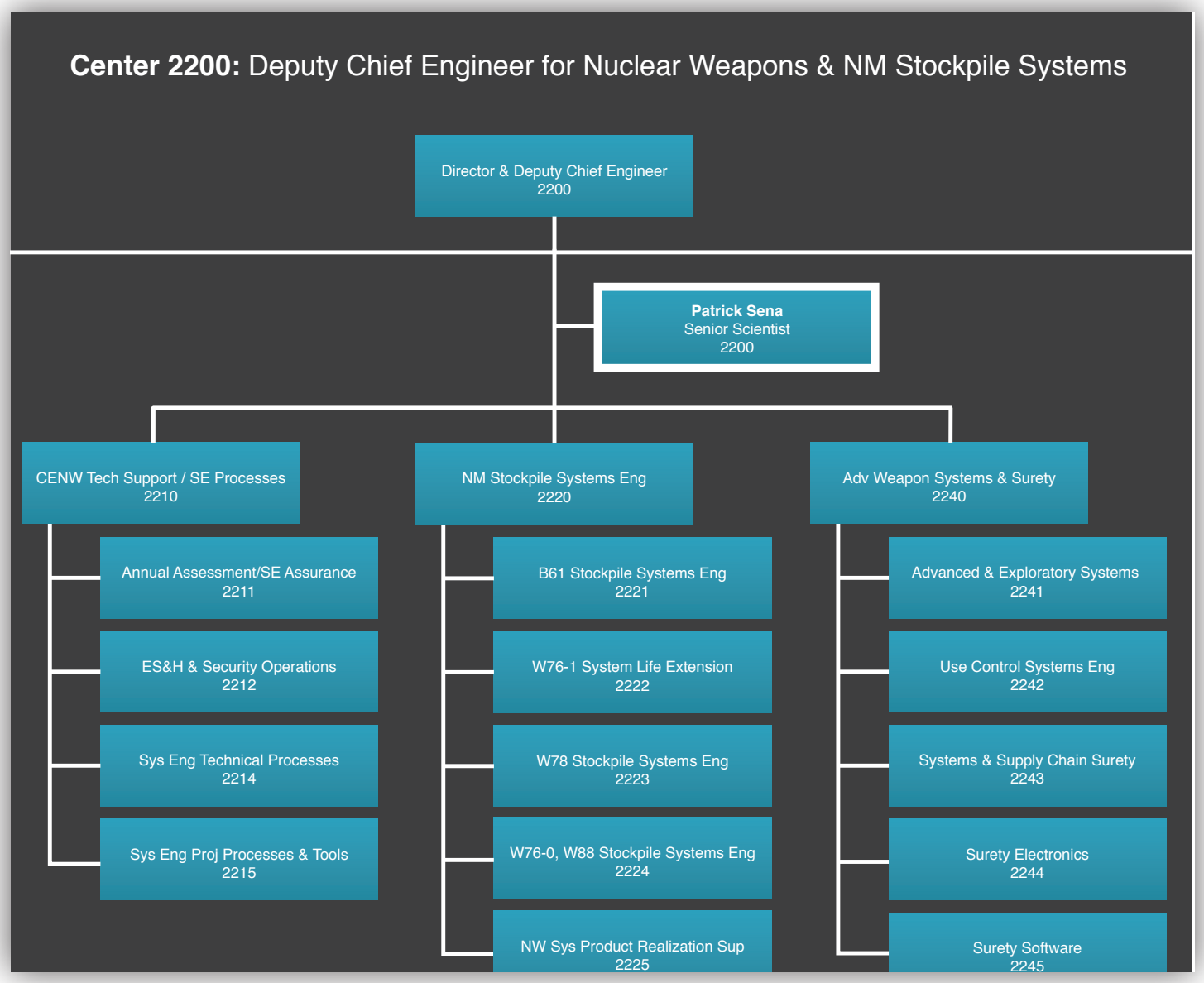
and ability to find synergy between seemingly unrelated projects. He likes to consider the big picture and strives to find solutions at the highest level.

Pat fills all the requirements for the Lifetime Achievement Award and is an impactful role model for those who wish to learn from HENAAC award winners.

Sincerely,

James L. Handrock
Director, NM Weapon Systems Engineering

Organizational Chart



Job Description

Position: Senior Engineer, New Mexico Stockpile Systems Center
As senior engineer, a position and honor limited to less than one percent of the technical staff at Sandia, and as one of five senior engineers in Sandia's nuclear weapons program, Pat Sena is in a position to apply his broad expertise in engineering to guide the technical direction of the U.S. nuclear deterrent. The senior engineer reports to and advises Sandia's Chief Engineer and Deputy Chief Engineer for Nuclear Weapons.

The senior engineer focuses on the strategic direction of the U.S. nuclear weapons stockpile, analysis of future threats, development of improved stockpile evaluation and production processes, participation in Red Teams and independent reviews of weapons programs, and mentoring of the next generation of stockpile system managers and staff. He represents the Chief Engineer on special issues teams, studies, and processes; troubleshoots key customer issues; and counsels others in handling external audits of Sandia's nuclear weapons program and processes.

The senior engineer is relied on for detailed knowledge of all stockpile systems, subsystems, components, safety, and use control systems; ancillary equipment; testers; delivery platforms; and customer and partner requirements, concerns, procedures, and facilities. The senior engineer serves as the key technical advisor in Sandia's annual stockpile assessment process, which results in the Sandia Director's annual letter to the President of the United States certifying the nuclear weapons stockpile. The senior engineer provides leadership for Sandia's stockpile systems community and is a point of trusted contact for the Navy, Air Force, and federal program managers.

Color Photo

Biography

If you had to boil down a person's life into three words, for Pat Sena, those words would be faith, family, and service. For 35 years, his service has been to the nation; he is a senior engineer at Sandia National Laboratories, where he applies his broad and deep expertise in nuclear weapons engineering to the development of a safe, secure, and reliable nuclear deterrent in support of U.S. national security. As one of only five senior engineers in Sandia's nuclear weapons program, he is relied on by Sandia's partners, customers, technical staff, and leadership to guide the technical direction of Sandia's nuclear weapons programs.

Pat and his older brother Phil in cowboy outfits.

Born on July 20, 1958, in Santa Fe, New Mexico, Pat was the third of ten children, five boys and five girls. His mother, Maria Vicenta (she prefers to be called Bessie), ran a tight, and tightly packed, household. Until Pat's junior year in high school, a dozen people lived in a two-bedroom, one-bathroom home in Santa Fe. Before school each morning, the kids made their beds, vacuumed the house, washed the breakfast dishes, and cleaned the kitchen. The older children helped the younger ones get dressed and on their way to school on time. "We took on a lot of responsibility at a very young age," he says.

"Our father was a big part of our lives," says Pat. "He instilled in us our strength and our work ethic." José Sena drove a large diesel dump truck. The work was seasonal, and so was the family income. "In the summer we had plenty of food on the table, but in the winter we went into deep cycle," he says. "We had simple meals. Some Christmases there were few presents under the tree, but Mom and Dad always made Christmas and the other holidays special and memorable."

Pat as a young boy.

The boys helped José around the house. "We'd be trying to watch TV after school and our Dad would come home and always have something for us to do—fix the truck, shovel something, chop wood," says Pat. "My Dad would always invite us to help him by saying: 'Come on with me and learn something.' We completely overhauled that truck. We built additions to our house together. He called on us to do everything. He'd say: 'Let's fix it with what we have.' It was a great way to learn for a future mechanical engineer."

The deeply religious family marked time by the Catholic calendar: Christmas, Easter, Holy Week, Holy Days, Saints Days, and the Sacraments. Holidays were characterized by extended family gatherings. "Sometimes there were 65 of us together in the house," he says. The kids spent ample time, especially in the summer, with their grandparents: Tobias and Isidora Flores on his mother's side, and Pablo and Vitalia

Sena on this father's side. Both pairs of grandparents lived on small ranches within three miles of each other near the town of Villanueva in the Sangre de Cristo mountain range northeast of Santa Fe. But Villanueva ("new village" in English) was anything but new, Pat says. Its heritage and lifestyle echoed hundreds of years of northern New Mexico tradition. "My grandparents taught us so much about life—how to prepare a field, how to plant it and harvest from it, how to raise animals and how to butcher them for food, how to respect people, how to keep the family close together, and how to pray always," he says.

Pat's high school senior photo.

Education was important to the Senas, but the family had little money, certainly not enough to put 10 children through private Catholic school. "My parents said if you want to go to private [high] school, you have to pay the tuition," says Pat. As soon as he was old enough to work, Pat got a job as a part-time dishwasher in a Chinese restaurant in downtown Santa Fe. The next year he worked as a shelf stocker, then as a sacker in a grocery store. "I made just enough money to barely pay the $150 tuition every month," he says. He remembers those as tough years; while his friends were playing sports, he was at work. "I would go to school all day, then work from 5 until 7 or 8, then go home and do homework until I passed out. Then I'd get up and do it again." It was the genesis of work habits that continue to this day. "Even now I typically do some work every day, even on weekends, even if it's just learning something new that helps me understand something more fully, beyond what I'm required to know," he says.

Pat graduated from St. Michael's High School at the top of his class and was accepted to New Mexico State University in southern New Mexico. He had learned to play the guitar in 6th grade and had enjoyed singing in church, so he thought he might want to be a musician. But when he sat down with the dean of NMSU's music school, they both realized he was missing a key skill—he couldn't read music. "I had always played by hearing the music," he says. "The dean suggested I try another degree." As he thought about the skills he possessed, he realized that he had a knack for building and fixing things from his years working on his father's truck and around the house. He also enjoyed mechanical drafting and was the top student in that class. He liked writing, doing math, and science experimentation. These were the skills of an engineer. "I walked straight from the music school to the engineering school, and they welcomed me," he says.

To help pay for college, he took a job helping convert a large radar dish into a solar collector, and he corrected papers for professors. In addition, most weekends he made the five-hour drive to Santa Fe to help his father, who had since become a plumber. Pat's high school sweetheart, Kerrie, followed him to NMSU after spending her freshman year at the University of New Mexico. The two were married after their sophomore year, on August 19, 1978. One afternoon, a recruiter from Sandia knocked on their apartment door. He had been poking

around the math and engineering schools and had heard that Pat and Kerrie were both strong students. "They said they could help us get our masters degrees," Pat says. "This opened my eyes. I had been thinking of going back to Santa Fe to work for my Dad."

Later that year, Pat had several interviews, including with Sandia. That interview led to a visit to the Lab. "They took me to a room where they were developing systems for locking weapons to the floor so terrorists couldn't steal them," Pat says. "I took one look at one of their systems and told the engineer: 'I think I can get into that using a plumber's tool called a basin wrench.' He quickly turned my attention to a different system and asked me if I thought I could get into that too. I thought I had really messed up, but he offered me a job. I guess he thought I had just enough of a bad guy in me that I could think of ways to defeat them and design [the systems] better."

Both Kerrie and Pat started at Sandia in 1980, and Sandia sent them both to Purdue University for one year to get their masters degrees. When they returned, Kerrie, now pregnant with their first child Michael, started at Sandia as a software developer and Pat started as a member of the technical staff in the Access Denial and Security Systems group. "I didn't fully appreciate the national security mission at the time," he says, "but I found out I had many of the ingredients needed for this mission embedded in me."

Pat and his older brothers had grown up during the Vietnam War. "Our cousins were going off to war, getting injured, and we had been almost old enough to go ourselves," he says. "When the Beirut [Lebanon] bombing happened in 1983, that's when it hit me," he says. "I said to myself 'I can think of ways to stop that. I can stop vehicles from crashing into a military base.' I worked that night thinking of solutions and sketching them out. In the morning my boss came in and said he wanted me to think about designs for stopping terrorist vehicles from crashing through fences and gates. I said I already had, and I showed him what I had drawn."

But Pat still didn't appreciate the nuclear weapons part of Sandia's mission until he bid on and was selected for a manager job in weapon systems in 1990. Before he took the job, he thought carefully about the moral dilemma nuclear weapons presented through the lens of his religious faith. "Weapons are out there," he says. "It's like you live in a rough neighborhood with drive-by shootings and gangs. You want to protect your family, so you sit on the front porch with a big gun. That's how I saw nuclear weapons. They are the big gun. They protect your family and your way of life." He took the job.

For 35 years, Pat has served the nation, helping transform the U.S. nuclear weapons program from its Cold War-era wartime footing to its current role as a sustained deterrent. He rose through the ranks at Sandia to become the Lab's expert on several nuclear weapons systems, serving as a key nuclear weapons liaison to the U.S. National Nuclear Security Administration, the Navy, the Air Force, and Sandia's partners in the U.K. Many people will specialize in one narrow field. Pat prefers to be an expert in

a broad sense, and 35 years of dedication to that ambition has led to him now being recognized as Sandia's top expert in nuclear weapons engineering —indeed as one of the top experts in the world. He was recently promoted to senior engineer, a position and recognition limited to one percent of Sandia's technical staff. This puts him in a position to drive the technical direction of Sandia's nuclear weapons work and to serve as an internal advisor and mentor.

Today Pat and Kerrie have four grown children: Michael, Juanita, Christa, and Emilee, with nine grandchildren among them. Michael and Emilee work at Sandia. Juanita and Christa are medical transcriptionists and work-at-home mothers.

Pat and Kerrie at the DEI Awards, April 2015

"Kerrie, my wife, is the most important person in my life," says Pat. "One time I meant to tell her 'I love you' but I said 'I live you' instead. I guess that was my heart saying that she is a major part of my life. I admire everything about her and am totally happy with her. She is loving, has strong faith in God, and is compassionate, beautiful, smart, and hard-working—more than I could ever hope for in a lifetime partner. She motivates me to do my best."

Kerrie changed careers after their second child and was a stay-at-home mom, then became a teacher. She taught at St. Pius X High School in Albuquerque for many years, and now teaches math at the University of New Mexico. Today Pat plays the guitar and leads the choir at his church. He learned to read music through guitar lessons with famed master guitarist Hector Pimentel in 2010.

Pat has worked throughout his career to promote education and professional development for all Sandia employees, both informally and through formal programs—including the Hispanic Leadership Outreach Committee (which he led for seven years), Sandia's Special Degree Programs, and Sandia's Executive Mentoring Program. "I've had some very important and influential mentors at Sandia," he says. "The world is very complicated, and Sandia is a very sophisticated place. There are a lot of people all around trying to figure out what they want to do, make career decisions, life decisions, relationship decisions." Pat's approach is to listen to their thoughts and feelings and feed them back to help the person clarify their own feelings and explore their options. "I like helping connect the dots," he says. "I like seeing people discover themselves."

"My career has been very satisfying and I have had many opportunities to contribute to national security in significant ways," he says. "I have worked to protect national assets and terrorist targets, and I have worked to assure that the nuclear weapons deterrent is safe, secure, and reliable. Nuclear weapons exist and are an awesome power and responsibility. I thank God that the awesome power of the United States' nuclear weapon stockpile is in the hands of God-fearing men and women. I pray that we will always do the right thing with this responsibility, and I pray all nuclear weapons on the earth may someday be dismantled and destroyed. Until, that day comes, I will help defend our country through this important mission."

Pat is working toward the next phase of his life; he is two years into the four-and-a-half-year diaconate, a program that prepares men to be a deacons in the Catholic Church. After retirement, he plans to shift his focus. "I came to Sandia to fulfill a mission of national service," he says. "When I retire, I want to transition from serving my country to serving God for the rest of my life."

Sena family in 1995

U.S. DEPARTMENT OF ENERGY

National Nuclear Security Administration

Sandia National Laboratories is a multi-program laboratory managed and operated by Sandia Corporation, a wholly owned subsidiary of Lockheed Martin Corporation, for the U.S. Department of Energy's National Nuclear Security Administration under contract DE-AC04-94AL85000. SAND2015-XXXXX