LETTERS OF RECOMMENDATION

Several Letters of Recommendation are presented here to provide a representative cross section of work experience. Each reference was associated with a different part of my career, where all of these career experiences engage skills that are essential to water main break research. References for these Letters are briefly mentioned as follows.

1. **Wyatt Clark, Senior Vice President of Operations** and Previous Acting Chief Operating Officer for **Savannah River Nuclear Solutions** (SRNS), which is a DOE nuclear material processing and research facility in South Carolina. At different times over 26 years, I worked for Wyatt Clark in his positions as Engineering Manager, Operations Plant Manager, and Senior Vice President.
2. **Bradley Walker, Engineering Director for Y12 and Pantex** and previous Chief Engineer for Y12, where Y12 and Pantex are facilities of the DOE nuclear weapons complex. I worked with Brad Walker to eliminate nearly 20 years of pipeline breaks in a safety class fire suppression system at the Pantex facility.
3. **Travis Knight,** Professor and **Director of the Nuclear Engineering Department of the University of South Carolina**. Dr Knight is my graduate school advisor to support my earlier research and new theories that explain fires and explosions in nuclear power plants and water main breaks.
4. **Mary Grace Stefanchik, ASME Press Publications Manager** (American Society of Mechanical Engineers). I worked and contracted with Mary Grace Stefanchik when I wrote and published an engineering textbook on “Fluid Mechanics, Water Hammer, Dynamic Stresses, and Piping Design”. This book presented the Leishear Stress Theory, which is a new theory that I invented to explain water main breaks, where failure causes for water main breaks and piping failures throughout industry have been misunderstood for more than a century.
5. **Billy Giddings, SRNS Project Manager** and previous Engineering Manager for the Savannah River National Laboratory (SRNL), Pilot Scale Fluids and Heat Transfer Testing Laboratory. Billy Giddings served as my direct manager for a few years when I worked as a Fluids and mass transfer Research Engineer for SRNL.
6. **Arris Tijsseling, Associate Professor** at the Eindhoven University in the Netherlands is a world-renowned water hammer expert.
7. **Trey Walters,** Chairman and Founder of AFT water hammer software.
8. **Mary Grace Stefanchik,** ASME Press Manager provided a reference to my next, in-process engineering book, "Fluid Transients, The Water Hammer and Gas Hammer Disaster".

Department of Energy
Nuclear Energy Technology Laboratory

Nuclear Power Plant Fire and Explosions Research Grant

I have had the privilege of working with Dr. Robert Leishear for many years, on multiple projects. As a result, I strongly encourage his consideration for a DOE grant to investigate "Fires and Explosions in Nuclear Power Plants."

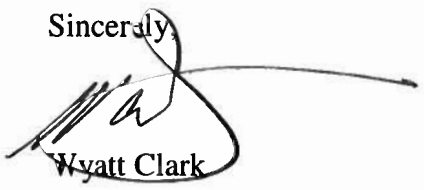
Dr. Leishear's work has been transformational and his innovative approaches to applied research have resulted in significant savings as noted below:

1. Dr. Leishear researched and developed a solution that would eliminate hundreds of piping failures, spanning over 40 years at the Savanah River Site. Based on his research, he authored an engineering textbook for the American Society of Mechanical Engineers. His innovative solution has the potential to eliminate water main failures, a multibillion-dollar problem in the US.
2. Dr. Leishear researched and implemented a pump design that saved twenty-five million dollars at the Savannah River Site. This was especially significant since these pumps were used in highly radioactive waste processing and a failure represented a repair / disposal challenge. His work was documented in a Six Sigma project.
3. While working at the Savannah River National Laboratory, Dr. Leishear designed a robotic arm to drill and deliver radioactive samples. Sampling a radioactive million-gallon tank for regulatory closure required his innovative approach.

In addition to the applied solutions, Dr. Leishear has contributed to the technical community with over 75 technical publications.

His recent formal education advancements, i.e. Nuclear Engineering PhD and studies in Engineering Law, have strengthened his knowledge of reactor operations and design. As a result, he is highly qualified to identify applied solutions for the nuclear power industry.

Sincerely,



Wyatt Clark
Senior Vice President, Environmental Management Operations
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Wyatt Clark

Senior Vice President
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cell 803.761.1733
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bldg 703-H

To the National Energy Technology Laboratory,

I would like to recommend Dr. Robert Leishear for the DOE research grant for his work on "Stop Fires and Explosions in Nuclear Power Plants". I have known Dr. Leishear for several years through our work on the ASME B31.3 Process Piping Committee. Some of our early conversations revolved around our challenges in working the piping issue at our respective sites at Savannah River and the Y-12 National Security Complex. I learned early on in my Code Committee participation that Dr. Leishear was a valuable resource in the fluids engineering arena to our Committee.

However, last year I called on him to directly participate in solving a very complex fluid problem I was experiencing at our sister facility at Pantex in Amarillo, TX. After multiple discussions, I brought Dr. Leishear to Pantex to investigate potential water hammer issues.

In the weeks we worked together with other Pantex engineers, my previous perspective of Dr. Leishear's knowledge in fluids engineering grew exponentially. I watched him eagerly mentor young engineers in the basics of fluids engineering. As Dr. Leishear successfully completed his work for us, I was astonished with his knowledge and compassion for this field. Therefore, I highly recommend Dr. Leishear for consideration in this research endeavor.

Regards,

Brad Walker, P.E.

Senior Director – Mission Engineering, Consolidated Nuclear Security, LLC

Oak Ridge, TN

865-574-893

UNIVERSITY OF SOUTH CAROLINA
DEPARTMENT OF MECHANICAL ENGINEERING

Date: 6 December 2018

TO: Department of Energy, Nuclear Energy Technology Laboratory

RE: Nuclear Power Plant Fire and Explosions Research Grant

I strongly support Dr. Robert Leishear's receipt of a DOE grant to research "Fires and Explosions in Nuclear Power Plants". He has dedicated the past several years toward comprehensive studies of the background related to this research, and he has extensive industrial and research experience to ensure project success.

In addition to writing a dozen peer reviewed publications on nuclear power plant fires and explosions, Dr. Leishear's studies over the past three years include:

1. All of the classes needed to complete a PhD in Nuclear Engineering.
2. More than 30 additional courses from around the world, which included International Nuclear Law, combustion, and explosions, as well as computer code courses for designing nuclear reactors and reactor cooling systems.

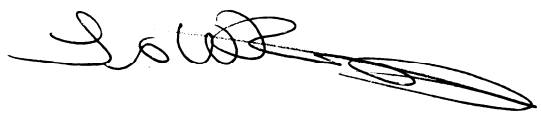
His studies prior to this research also lead to an understanding of fires and explosions in nuclear power plants, where studies included:

1. ASME piping and pressure vessel design courses.
2. A PhD in Mechanical Engineering which focused on fluid dynamics and failure analysis of pipe systems.
3. Qualification Cards and Oral Boards at DOE facilities, which taught all of the infrastructure, safety, and nuclear processes for nuclear fuel reprocessing, nuclear waste processing, instrumentation calibrations, and Shift Technical Engineer responsibilities.
4. Practical experience as an electrician, Journeyman Sheet Metal Worker, and welder.

As a research engineer at Savannah River Site, Dr. Leishear applied innovative concepts to save that DOE facility more than 50 million dollars during his career. As a research engineer for Leishear Engineering, LLC he recently solved a safety class problem related to the fire protection system at Pantex, which is a nuclear weapons production facility. Even so, his recent efforts have been directed toward related studies of commercial nuclear power plants which have the potential to cut costs and improve safety.

If you have any questions regarding this matter, please feel free to contact me by telephone at (803) 777-1465 or by e-mail at twknight@sc.edu.

Sincerely,



Travis W. Knight
Professor and Director
Nuclear Engineering Program

Two Park Avenue, New York, NY 10016 ■ Telephone 1-212-591-7962 ■ Fax 1-212-591-7292

August 31, 2018

Department of Energy
Nuclear Energy Technology Laboratory

Re: Reference and Support to Secure a DOE Research Grant

Dear Sir/Madam:

I write on behalf of **Robert A. Leishear**, in support of his research proposal to the DOE for a grant to fund research, which will "Stop Fires and Explosions in Nuclear Power Plants." PhD research will be performed by R. A. Leishear at the University of South Carolina, in association with an explosives test facility in Arkansas. His research has discovered a common cause for explosions at nuclear reactor plants, which include the Fukushima hydrogen explosions, a hydrogen explosion at Three Mile Island, and hundreds of small explosions in U.S. nuclear reactors that have been misdiagnosed as water hammer since the 1950s.

Through this letter, ASME acknowledges that in the event this proposal is funded, we would expect our role following the project to include:

- Provide a book publishing opportunity for this research under the ASME Press publishing imprint, pending peer review and other internal ASME approvals.
- This new book will be the latest in a series of three ASME Press books that improve international technology and infrastructure by inventing new theories.
- The previous two books, along with more than 60 ASME Conference and Journal publications, provide a technical foundation for this proposed research, while curtailing an expected trillion dollars in U.S. water main breaks in the next 25 years.

ASME Press looks forward to having the opportunity to publish this important research and supports the funding of this proposal.

Sincerely,

Mary Grace Stefanchik
Manager, Publications Development
ASME Press
stefanchikm@asme.org

Letter of Reference for Research Grant to Improve US Nuclear Facility Safety

August 13, 2018

Dear Selection Committee,

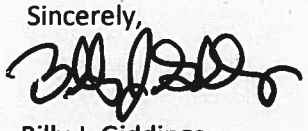
I am writing this letter to give my highest possible recommendation for Dr. Robert Leishear. I have known Dr. Leishear through his work both in the Savannah River National Laboratory, where he served as a Principal Engineer in the Engineering Development Laboratory and as a System Engineer at the H-Canyon Facility at the Savannah River Site. Dr. Leishear's research and diagnostic skills are excellent and has contributed to the successful resolution of many complex matters that spans the gamut nuclear and mechanical technical issues.

Dr. Leishear's engineering work and research performance has been with a fundamental belief that text books and existing theory are tools to develop new theory, rather than restrictive rules for design. Because of this belief, Bob frequently promoted singular dissenting opinions that turned projects around and led those projects to success. Resulting from these projects, numerous theories have been developed in areas of expertise to solve complex technical problems. In summary, extensive engineering education, technical training, and practical experience supported million dollars in cost savings to SRS, numerous innovative technical publications, including an ASME text book on Fluid Mechanics, Water Hammer, Dynamic Stresses, and Piping Design, and in teaching of the techniques he has learned and developed to 600 -700 engineers and operators. He has consistently demonstrated the skills needed to identify new solution techniques to complex technical problems that were previously unsolved

I have had the privilege to nominate Bob to the Senior Fellow Engineer position at the Savannah River National Laboratory and had no difficulty obtaining recommendations from Engineering and Operations Management across the Savannah River Site, for whom Bob has interfaced throughout his career. Some of the sentiments provided by these references include opinions I share as it comes to his technical competence and abilities. Bob is a creative thinker, who carefully considers all aspects of technical challenges and many times proposed solutions that are considered "outside the box" and correct. He is committed to knowledge and technical accuracy and gives due considerations and thoughtful recommendations. He communicates effectively on all levels and provides customers with valuable, effective information that can be used to make key decisions. He is one of the hardest working engineers I have ever encounters and is never satisfied with anything less than complete success.

In summary, Dr. Robert Leishear is clearly the best engineering resource I can recommend for research into nuclear facility safety as it applies to fires and explosions and he is well deserving of this grant. I give him my highest recommendation.

Sincerely,



Billy J. Giddings
Project Manager, H-Canyon Operations
Savannah River Nuclear Solutions
Savannah River Site
Building 221-H
Aiken, SC, 29809

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28 February 2024

To whom it may concern

Dr Robert Leishear is a leading expert in the understanding and the publication of waterhammer incidents and accidents. Incidents cost money, accidents cost lives. Leishear undertakes deep investigations into disastrous accidents, and he develops new theories to explain them. Numerical simulations with advanced software are an unmissable tool in his research work. One of the main goals is to teach others of what may go wrong. His findings finally will find their way to Codes and Standards.

Probably best known – worldwide – is Leishear from his 2013 textbook *"Fluid Mechanics, Water Hammer, Dynamic Stresses, and Piping Design"*. This much-cited book is a reference for practicing engineers and advanced engineering students. For me, it contains much valuable information.

Robert Leishear is an internationally recognized professional in the nuclear energy field, in water supply and gas delivery industries, specializing in the areas of unsteady hydraulics, stress analysis, corrosion, fatigue, etc. His long record of achievements can be found elsewhere. He is a hard and dedicated worker, aiming at a safer world. On a personal note, he is a nice guy, always prepared to help others with their technical problems. Robert, his projects, and his drive to achieve things, are – in my opinion – most eligible for the Langer Prize.

Yours sincerely,

Dr Arris S. Tijsseling

Associate Professor

2955 Professional Place, Suite 301
Colorado Springs, CO 80904 USA
(719) 686 1000
www.aft.com

February 28, 2024

Re: Langer Prize Recommendation Letter for Dr. Robert Leishear

Dear AIChE Committee:

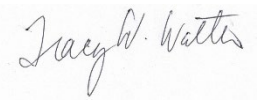
Dr. Leishear has developed several highly innovative approaches in how one might view the impact of fluid transients (i.e., water hammer) on industrial systems. He is unquestionably an “outside the box” thinker. One can clearly see this in the content within his extensive list of publications in peer-reviewed literature.

Dr. Leishear accomplishes this by bringing a multi-disciplinary approach to his research. As such, he challenges views held by those with a narrower technical expertise.

Moreover, Dr. Leishear brings a highly pragmatic approach to his work. His many years working on systems in a Department of Energy facility (Savannah River Site) are a well-known part of his resumé.

I recommend Dr. Leishear for the Langer Prize based on his track record of generating innovative perspectives to explain observed fluid system behavior and, in some cases, accidents.

Respectfully,



Trey Walters, P.E.
Chairman and Founder
Applied Flow Technology

ASME Fellow

February 29, 2024

Re: Robert Leishear - Letter of Reference for Langer Prize

To Whom It May Concern:

Please consider this a letter of reference for Robert Leishear regarding his nomination for the Langer Prize grant, which will enable him to continue his critical research on disaster prevention.

Mr. Leishear is dedicated to teaching engineers through writing, as well as dedicated to saving lives, property, and the environment through his writing.

He brings background and expertise to his ASME books related to chemical engineering fluid mechanics, chemical engineering mass transfer, advanced thermodynamics, finite element analysis, fatigue failure of materials, fracture mechanics, materials science, machinery dynamics, explosion dynamics, structural dynamics, gas dynamics, water hammer, and nuclear engineering.

Mr. Leishear has created new water hammer and failure analysis knowledge where such knowledge did not previously exist and has been at the forefront of engineering technology for water hammer through the invention of new theories.

He has written two books published by ASME on "*Fluid Mechanics, Water Hammer, Dynamic Stresses, and Piping Design*" and "*Supplement to Fluid Mechanics, Water Hammer, Dynamic Stresses, and Piping Design*. We look forward to publishing his latest book on "*Fluid Transients, The Water Hammer Disaste*r" in 2024 and to working with him on future plans, including an ASME book on "*Fluid Transients, Water Hammer Explosion Modeling and Dynamic Stress Modeling for Piping*."

Thank you very much for your consideration.

Sincerely,

Mary Grace Stefanchik

Mary Grace Stefanchik
Senior Director, Publishing Development, ASME
Two Park Ave
New York, NY 10016
stefanchikm@asme.org