Fusion Safety and Regulation Course

Course Goal

Through a blend of lectures, real-world case studies, and interactive discussions with other fusion professionals, participants will gain the practical knowledge needed to meaningfully engage with the topics of fusion radiation safety and regulation. The course will include key radiation safety considerations for fusion devices, the regulations that apply to planned fusion facilities, and how other industries develop safety cultures.

Course Organizers and Hosts

The course is organized by Clean Air Task Force (CATF) in partnership with the University of Tennessee, Knoxville (UTK). The course is hosted by Professor Livia Casali at the University of Tennessee with support from Oak Ridge National Lab (ORNL) for site visits.

Course Location

Room 405, John D. Tickle Building, University of Tennessee Knoxville, 863 Neyland Dr, Knoxville, TN 37916

Course Dates and Times

Wednesday, Day 1 | Introduction to Fusion Energy and Fusion Safety | July 29, 2026

Course Activities: 9 am – 5:15 pm

Reception: 5:15 pm – 7:30 pm

Thursday, Day 2 | Case Studies on Radioactive Material, Accelerator, and Fusion Machine Safety | July 30, 2026

Course Activities: 9 am – 5:30 pm

Friday, Day 3 | Considerations for Creating and Implementing Fusion Regulation | July 31, 2026

Course Activities: 9 am – 5:30 pm

(Optional) Monday, Day 4 | Site Visits | August 3, 2026

ORNL Site Visits: 9 am – 6 pm

Course Timetable

Subject to change

Wednesday, Day 1 | Introduction to Fusion Energy and Fusion Safety | July 29, 2026

Time	Lecture	Speaker, Affiliation
8:15 – 9:00am	*Refreshments available; registration*	-
9:00 – 9:30am	Introduction to Fusion Energy Technology Safety and Regulation Course	Sehila Gonzalez de Vicente, CATF Livia Casali, UTK Troy Carter, ORNL
9:30 am – 10:00am	Keynote	Invited: Chris Mowry, Type One Energy
10:00 – 10:45am	Introduction to fusion energy technology and commercial fusion power plants	Steve Zinkle, ORNL
10:45 – 11:15am	*Break*	-
11:15 – 11:30am	*Course Photograph*	-
11:30am – 12:15pm	Overview of different fusion energy concepts and technologies currently under development	Arnie Lumsdaine, ORNL
12:15 – 1:00pm	*Lunch break*	-
1:00 – 1:45pm	Radiation safety and shielding principles for fusion	Livia Casali, UTK
1:45 – 2:30pm	Overview of industrial and chemical fusion energy safety considerations for research and power plants	Patrick White, CATF
2:30 – 3:00pm	Case study: Lessons learned with ITER safety case and licensing	Jöelle Elbez-Uzan, CEA Eurofusion
3:00 – 3:30pm	*Break*	-
3:30 – 4:15pm	Overview of radiation related fusion energy safety considerations for research and power plants	Adriaan Riet, INL
4:15 – 4:45pm	Panel: Importance of appropriate certainty and regulatory efficiency for deployment of commercial fusion energy	Ed Harvey, NRC Beth Shelton, Tennessee Pascal Dumont, Type One Energy
4:45 – 5:15 pm	Closing discussion on fusion safety considerations	Moderated by CATF
5:15 – 6:15 pm	*Welcome reception*	-

Thursday, Day 2 | Case Studies on Radioactive Material, Accelerator, and Fusion Machine Safety | July 30, 2026

Time	Lecture	Speaker, Affiliation
8:15 – 9:00am	*Refreshments available*	-
9:00 – 10:00am	Industry experience and best practices for tritium handling and processing	Walter Shmayda, Tritium Solutions
10:00 – 11:00am	US national lab experience with tritium safety and management	Dave Babineau, SRNL
11:00 – 11:30am	*Break*	-
11:30am – 12:30pm	Panel: Design and operating experience with proposed fusion blanket materials (FLiBe, Lithium, Others)	Gus Merwin, Kairos Power Rémi Delaporte-Mathurin, MIT PSFC Bibake Uppal, Kyoto Fusioneering
12:30 – 1:15pm	*Lunch break*	-
1:15 – 1:45pm	CERN experience with activated material safety and activated waste management	Luca Bruno, CERN
1:45 – 2:30pm	Eurofusion experience with activated material safety and activated waste management	Sandrine Rosanvallon, CEA Eurofusion
2:30 – 3:00pm	*Break*	-
3:00 – 3:30pm	Tritium Environmental Monitoring	Ed Waller, Ontario Tech
3:30 – 4:30pm	Panel: Experience with tritium operations, management, and environmental monitoring	Diana Grandas, EPRI Dave Babineau, SRNL Tony Williams, TVA
4:30 – 5:00pm	Case study: Lessons learned with JT-60SA safety case and licensing	Koji Takahashi, QST
5:00 – 5:30pm	Closing discussion on fusion case studies	Moderated by CATF

Friday, Day 3 | Considerations for Creating and Implementing Fusion Regulation | July 31, 2026

Time	Lecture	Speaker, Affiliation
8:15 – 9:00am	*Refreshments available*	-
9:00 – 9:30am	Connecting Fusion Energy Safety and Fusion Energy Regulation	Patrick White, CATF
9:30 – 10:00am	Case Study on Safety-By-Design for Fusion Energy	Larry Harisis, Type One Energy
10:00 – 10:30am	*Break*	-
10:30 – 11:15am	Panel: United Kingdom – Experience with Commercial Fusion Regulation Development	Stuart Muldrew, UK Fusion Energy Nicola Barber, UKAEA
11:15am – 12:00pm	International Regulatory Considerations for Fusion Safeguards and Byproduct Material Management	Prof Howard Hall, UTK Jackson Stanley, UTK
12:00 – 1:00pm	*Lunch break*	-
1:00 – 2:00pm	Panel: United States – Experience with Commercial Fusion Regulation Development	Ed Harvey, NRC Andrew Proffitt, Helion Pascal Dumont, Type One Energy Becki Harisis, Chair-Elect (OAS)
2:00 – 2:45pm	Panel: Agreement State – Experience with Developing Fusion Regulation, Pre-application Engagement, and Initial Licensing	Beth Shelton, Tennessee Lea Perlas, Virginia
2:45 – 3:15pm	*Break*	-
3:15 – 4:15pm	Panel: Fusion Byproduct and Waste Management	Sandrine Rosanvallon, CEA Eurofusion Ed Harvey, NRC Tom Hansen, Southeast Compact Commission
4:15 – 5:00pm	Panel: Experience with Fusion Energy Public Engagement	Andrea Schneibel, Type One Energy Lea Perlas, Virginia Jeff Semancik, Connecticut Duncan White, Tennessee
5:00 – 5:30pm	Concluding Remarks and Open Discussion	Brian Wirth, UTK Moderated by CATF

Monday, Day 4 | Oak Ridge National Lab Site Visits | August 3, 2026

Tour Stops (Subject to Availability):

- Graphite Reactor
- High Flux Isotope Reactor (HFIR)
- Spallation Neutron Source (SNS)
- Materials Plasma Exposure Experiment (MPEX)
- Pellet Lab

Speaker Biographies

Dave Babineau. *Director, Tritium Technology Division, Savannah River National Laboratory (SRNL)*
Mr. Babineau has a diverse background in leading research, development, design, commissioning, and operation of hydrogen isotope and light isotope processing systems and processing facilities. He has worked at the Savannah River Site and Savannah River National Lab since 1988. His leadership experience began in 1996 as a Shift Operations Manager and has consistently progressed through positions of increasing responsibility. This includes two-year assignment in an international environment working for the ITER International Organization in Cadarache, France as the Tritium Plant Section Leader. Noteworthy accomplishments in leadership include; Persuading tritium management to adopt and then leading and the development of automation of the Tritium Extraction Facility, Successfully negotiated a major scope change for the tritium Storage and Delivery System with the Korean Domestic Government for use on the ITER project, Stood up a Program Management Office for the Tritium Technology Division which led the way for the recently established Office of Strategic Programs in WPT, Championed the development of a Fusion Energy Program at SRNL, Led the growth of tritium research programs with approximately 67% growth (60 to 100 headcount) since becoming the Division Director. Most recently being appointed to the new Science Energy and Innovation Directorate as the Chief Operating Officer.

Nicola Barber. *Group Director of QSHE Risk and Assurance, United Kingdom Atomic Energy Authority*
Nicola joined UKAEA in 2022 and is a Fellow of the Institute of Risk Management. Nicola has worked in a number of disciplines within the nuclear industry for the last 20 years. This includes holding senior roles in risk and assurance across a number of nuclear sites. For the last 5 years Nicola is leading the Fusion Safety Advisors team and QSHE Risk and Assurance team at UKAEA. Nicola's previous experience also includes leading planning teams in the Rail and Oil & Gas industries and project management in the Utility industry.

External appointments: UKAEA appointed Board member of RADSAFE CLG (CLG = Company Limited by Guarantee).

Luca Bruno. *Nuclear Engineer, Occupational Health & Safety and Environmental Protection Unit, CERN.*
Luca BRUNO studied nuclear engineering at the University of Palermo (Italy). After graduating, he moved to Germany to work on the ITER nuclear fusion project. He later joined CERN, the European Organization for Nuclear Research based in Switzerland, where he has been active in the field of particle accelerator engineering since 1998.

He currently serves as the project leader for the development of CERN's new facility for radioactive waste treatment and interim storage.

Troy A. Carter. *Director, Fusion Energy Division, Oak Ridge National Laboratory (ORNL).*
Troy Carter was named Director of Fusion Energy Division at Oak Ridge National Laboratory in July 2024. Carter oversees the division's world-class technical capabilities in plasma physics, fusion materials and fusion

technologies. He is responsible for developing major projects such as the Materials Plasma Exposure eXperiment, or MPEX, and ORNL's research contributions to the international ITER experiment.

Carter was previously a Professor of Physics at the University of California, Los Angeles for 22 years. There Carter was the Director of the Basic Plasma Science Facility (BaPSF), a national collaborative research facility for plasma science supported by DOE and NSF. He was also the Director of the Plasma Science and Technology Institute (PSTI), an organized research unit at UCLA. His research into waves, instabilities, turbulence and transport in magnetically confined plasmas is motivated by the desire to understand processes in space and astrophysical plasmas as well as by the need to develop carbon-free electricity generation via nuclear fusion. He is a Fellow of the American Physical Society, a Fellow of the American Association for the Advancement of Science and is a recipient of the APS DPP John Dawson Excellence in Plasma Physics Research Award.

Carter has served on a range of advisory committees for the plasma physics and fusion research communities, including the DOE Fusion Energy Sciences Advisory Committee, the Scientific Advisory Board (Fachbeirat) for the Max Planck Institute for Plasma Physics, and Program Advisory Committees for the DIII-D and Alcator C-Mod tokamaks and the NSF Frontier Center for Magnetic Self Organization. Carter served on the NASEM Committee for the 2020 Decadal Assessment of Plasma Science and led the DOE FESAC Long Range Planning process that resulted in the 2021 report "Powering the Future: Fusion and Plasmas." He was awarded the Fusion Power Associates Leadership Award in recognition of his fusion community leadership contributions.

Livia Casali. *Assistant Professor and Zinkle Fellow, University of Tennessee, Knoxville.*

1. Nuclear and plasma physicist with years of international experience in nuclear fusion research
2. Core-Edge Integration Area Leader for the DIII-D tokamak, the largest tokamak in the US and leading fusion facility worldwide
3. US Member of the International Tokamak Physics Activity SOL and Divertor
4. DOE Edge Coordinating Committee, Vice-Chair
5. U.S. Burning Plasma Organization Council
6. Executive Member Transport Task Force
7. 2022 ITER Scientist Fellow
8. 2022 US Department of Energy Office of Science Early Career Research Program Awardee

Francisco Castejón * *Commissioner, Consejo de Seguridad Nuclear (National Nuclear Safety Council, Spain).*

Francisco Castejón is a commissioner of the Nuclear Safety Council (CSN in Spanish) since 2019. During his job of commissioner, he is the president of the Link Committee between CSN and IFMIF-DONES (International Fusion Materials Irradiation Facility-Demo Neutron Early Source), a facility for material qualification for fusion reactors. He is the president of the Link Committee between CSN and ENSA (Nuclear Equipment). ENSA has some projects devoted to fusion, among other nuclear equipment projects. He is in charge of relations with ASNR, the French regulator, and belongs to the CSNI of NEA.

He has participated in a number of IAEA conferences. In particular he has acted as chairman of Country Group-7 during 7th Convention on Spent Fuel and Radioactive Waste Management and also of Country Group-1 during the 8th 7th Convention on Spent Fuel and Radioactive Waste Management.

As a commissioner he has had relevant participations in the two first Technical Meetings on Fusion Regulation organized by IAEA in 2023 and 2025. He has also contributed to the elaboration of the 1st Safety Report on Fusion to be published by IAEA. He is a member of the Executive Committee of Spanish Fusion Strategy.

Before being a Commissioner he has been the Head of fusion Theory Unit of the Spanish Fusion National Laboratory (FNL). He has been Project Leader of Stellarator Theory in Eurofusion Consortium.

He has published more than 250 papers on peer-reviewed scientific journals. His *h* index is 24. He has supervised 14 PhD works on plasma physics and controlled fusion, and he has leaded more than 25 national and international research projects, including EUFORIA (EU for ITER applications, funded by H-2020 Programme)

Rémi Delaporte-Mathurin. *Research Scientist, Massachusetts Institute of Technology Plasma Science and Fusion Center (PSFC - MIT).*

Rémi Delaporte-Mathurin is a Research Scientist at the MIT Plasma Science and Fusion Center (PSFC), where his work focuses on tritium transport modeling and computational methods in support of fusion energy development. He is the lead developer of FESTIM, an open-source finite element code for simulating hydrogen isotope transport in fusion materials, which has become a widely used tool across the international fusion community.

At MIT PSFC, Rémi contributes to several experimental and modeling programs at the interface of tritium science and plasma-material interactions, including the LIBRA tritium breeding experiment, HYPERION, and SHIELD.

Before joining the PSFC as a Research Scientist, Rémi was a postdoctoral researcher at the same center. He completed his PhD jointly at the French Alternative Energies and Atomic Energy Commission (CEA) in Cadarache and the Université Sorbonne Paris Nord. Prior to his doctoral studies, he worked at the UK Atomic Energy Authority (UKAEA).

Beyond his research, Rémi is committed to advancing open and collaborative science in fusion energy. He serves as Chair of the Open Source Software for Fusion Energy (OSSFE) initiative, which works to foster a community of practice around open-source tools for fusion research and engineering.

Pascal Dumont. *Senior Director of Regulatory Affairs and Licensing, Type One Energy Group, Inc.*

Senior Director of Global Regulatory Affairs and Licensing at Type One Energy since summer 2023, Mr. Dumont has close to 25 years' experience in radiation protection, nuclear safety and regulatory affairs. He has held positions as Associate Director of the Radiation Protection Bureau of the Government of Canada's Department of Health in Ottawa (2011 -2014); Canadian expert in nuclear safety analysis and assessment at the International Atomic Energy Agency (IAEA) in Vienna, where he led more than 20 international missions in Europe and the Middle East (2014 – 2016); and Senior Regulatory Officer at the Canadian Nuclear Safety Commission (2016 – 2022) where he led analyses enabling the modernization of regulatory document (Deterministic Safety Analysis,

Probabilistic Safety Assessment, Severe Accident Management, etc.) to include Advanced Nuclear Reactors (ANRs) considerations. He joined General Fusion in Vancouver in 2022 as the VP of Regulatory Affairs before moving to Type One Energy where he is leading the global licensing efforts for Infinity One and Two. Mr. Dumont holds a B.Sc. and M.Sc. (Earth Sciences) from the University of Ottawa, Canada.

Jöelle Elbez-Uzan. *Head of Innovation Department DEMO fusion power plant, CEA Eurofusion.*
Joëlle Elbez Uzan is the Head of the Fusion Power Plant Innovation Department at EUROfusion, where she oversees cross-disciplinary efforts to advance the design and realization of future fusion power plants, with a focus on engineering integration, nuclear safety, licensing, and large-scale project coordination. Her work contributes directly to the development of DEMO, the European demonstration fusion power plant intended to produce net electricity and bridge the gap between ITER and commercial fusion energy.

Before joining EUROfusion, Joëlle held a pivotal leadership role at ITER, serving as Head of the Nuclear Safety and Licensing Division. In this capacity, she was responsible for navigating one of the most complex international nuclear licensing frameworks, ensuring ITER's compliance with French nuclear regulations and supporting the project's safety case development from early design stages to licensing milestones.

With a solid background in nuclear engineering, safety governance, and high-impact project management, Joëlle has more than two decades of experience in the fusion energy domain. She is particularly engaged in fostering innovation pathways that make fusion a viable, regulated, and societally accepted energy source for the future.

Her career reflects a deep commitment to the success of European fusion programs and to building the foundations of a safe, sustainable, and regulated fusion industry.

Sehila M. Gonzalez de Vicente. *Global Director, Fusion Energy, Clean Air Task Force.*
Sehila M. Gonzalez de Vicente joined Clean Air Task Force in 2023 as the Global Director for Fusion Energy. She holds a BSc and MSc in Physics and a PhD in Materials Physics from University Complutense de Madrid as well as a MBA from the EOI Business School. She has more than 18 years of experience in fusion technologies and materials.

Previously, she was the senior expert in fusion as a nuclear fusion physicist at the International Atomic Energy Agency (IAEA). Before joining IAEA, she was responsible for the fusion materials development program at European Fusion Development Agreement/Eurofusion in Garching bei Munchen, Germany.

She was appointed European Technical Coordinator of the International Fusion Energy Research Centre (IFERC) project between Europe and Japan as well as member of the Karlsruhe Institute of Technology (KIT) scientific advisory board in the research field of energy. She has been chair of the 9th Annual Assessment of Fusion for Energy and member of the Review Committee for the European Spallation Source Re-baseline Review. She is also member of the UK Fusion Technical Advisory Group and the IFMIF-DONES España Technical Advisory Committee. She is co-editor and contributing author of the book Fundamentals of Magnetic Fusion Technology. She is also chair of the Women in Fusion Group.

Diana Grandas. *Fusion Energy Research Analyst, Electric Power Research Institute (EPRI).*
Diana Grandas serves as Lead Fusion Research Analyst within EPRI's Fusion Energy Strategic Program, supporting execution of a strategic portfolio of R&D projects focused on enabling the commercial deployment of fusion energy. Diana's research areas include capturing fusion fuel cycle-relevant operating experience, defining owner operator requirements for fusion, assessing fusion component testing infrastructure needs, and de-risking fusion materials and supply chain challenges. Diana holds bachelors degrees in Physics and Mathematics from Bowdoin College and a masters degree in Applied Energy and Electromechanical Engineering from the University of North Carolina at Charlotte.

Howard Hall. *Professor, Department of Nuclear Engineering, University of Tennessee at Knoxville*
Dr. Howard L. Hall is Professor of Nuclear Engineering and Director of the Institute for Nuclear Security at the University of Tennessee, Knoxville, where he also holds appointments in the Bredesen Center for Interdisciplinary Research and Graduate Education and a joint appointment at the Y-12 National Security Complex. Internationally recognized for his leadership in nuclear threat reduction, he has spent more than three decades working at the intersection of nuclear science, national security, and public policy.

Before joining the University of Tennessee in 2009, Dr. Hall spent more than twenty years at Lawrence Livermore National Laboratory, rising from postdoctoral researcher to senior program and division leader. There he led major scientific and operational missions across the Department of Energy and Department of Homeland Security complexes—including nuclear threat detection, nuclear forensics, and emergency response, as well as aviation safety and security. He directed the $35M Air Cargo Explosives Detection Pilot Program and briefed senior national leaders, including the Secretary of Homeland Security. In 2005, his CounterMeasures Test Beds team received the DHS Science and Technology Directorate Under Secretary's Award for Science.

At the University of Tennessee, Dr. Hall founded the Institute for Nuclear Security, building a campus-wide partnership that links the university with Oak Ridge National Laboratory, the Y-12 National Security Complex, and the broader East Tennessee nuclear enterprise. He established the peer-reviewed, open-access International Journal of Nuclear Security and founded the Global Security Policy program at the Howard H. Baker Jr. Center for Public Policy (now the Baker School of Public Policy and Public Affairs). A dedicated educator, he has mentored more than eighty-five graduate students to completion—including forty-five doctoral and fifty-eight master's degrees—with roughly three-quarters entering the U.S. national-security and nuclear enterprise.

Dr. Hall is a Fellow of the American Association for the Advancement of Science and of the American Institute of Chemists. He earned his Ph.D. in nuclear and radiochemistry from the University of California, Berkeley, and his B.S. in chemistry from the College of Charleston. He speaks widely on nuclear security, nonproliferation, workforce development, and the policy challenges of the nuclear age.

Tom Hansen. *Executive Director, Southeast Low-Level Radioactive Waste Management Compact.*
Tom Hansen is the Executive Director of the Southeast Low-Level Radioactive Waste Management Compact. In this role, he collaborates with Commissioners from Alabama, Florida, Georgia, Mississippi, Tennessee, and Virginia on matters concerning the region's radioactive waste. He is a Certified Health Physicist and possesses a PhD in public health from the University of Tennessee, a master's in health physics from Oregon State University, and a bachelor's in radiation protection from Thomas Edison State University. Dr. Hansen is formerly the

President of Ameriphysics, a Nuclear Regulatory Commission licensed decommissioning and waste firm that he founded in 2008. His experience at Ameriphysics includes decommissioning projects at 40 particle accelerator facilities and 6 former reactor sites.

Becki Harisis. *Chair-Elect, Organization of Agreement States (OAS).*

Becki Harisis is an Environmental Manager 3 with the Tennessee Department of Environment and Conservation (TDEC), Division of Radiological Health, where she works on radiological health and regulatory issues affecting the state of Tennessee. Prior to joining TDEC, she served nearly 15 years with the State of Nebraska, including as Director of Nebraska's Radiation Control Program, where she provided leadership on radiation safety and regulatory oversight initiatives. Becki currently serves as Chair-elect of the Organization of Agreement States (OAS), supporting collaboration and policy discussions among Agreement State programs nationwide. She earned a Bachelor of Science in Radiation Sciences and is currently completing a Master of Health Physics. Her professional interests include radiation safety, emerging technologies, and the evolving regulatory considerations surrounding fusion energy.

Larry Harisis. *Senior Radiation Safety Officer, Type One Energy Inc.*

Larry Harisis is the Senior Radiation Safety Officer for Type One Energy, where he leads radiation protection and radioactive materials licensing activities supporting the development of commercial fusion energy systems. With more than 15 years of experience in health physics, regulatory compliance, and radiation safety, including service as a state regulator, federal program manager, university Radiation Safety Officer, and industry safety leader, he has worked across government, academia, and private industry. He currently supports licensing and safety case development for Type One Energy's Bull Run fusion project, bringing practical experience from active fusion licensing efforts to discussions of fusion safety and regulation.

Ed Harvey. *Senior Health Physicist, Office of Nuclear Material Safety and Safeguards, Nuclear Regulatory Commission (NRC).*

Ed Harvey is a Senior Health Physicist in the NRC's Office of Nuclear Material Safety and Safeguards and currently serves as the technical lead for the NRC's fusion program, including vision & strategy, rulemaking, policy matters, and ADVANCE Act fusion activities. Previously, Mr. Harvey served as the Director of Radiation Health for the US Naval Nuclear Propulsion Program, where he oversaw radiation safety programs implemented to protect nearly 50,000 civilians and sailors working at nuclear-capable shipyards, laboratories, and aboard nuclear-powered warships. Mr. Harvey began his professional career with the NRC in 2014 as a materials health physics inspector, where he performed safety and security inspections of licensees authorized by the NRC to use byproduct material for medical, industrial, research, and academic applications. In 2020, Mr. Harvey transitioned to a health physicist position with the NRC's Office of Research, where he managed the maintenance and development of several dose assessment computer codes developed and maintained under the NRC's Radiation Protection Computer Code Analysis and Maintenance Program. Mr. Harvey holds both a Bachelor and Master of Science in Nuclear Engineering & Radiological Sciences from the University of Michigan. Go Blue!.

Arnold Lumsdaine. *Private-Public Partnerships Lead, Fusion Energy Division Oak Ridge National Laboratory (ORNL).*

As Private-Public Partnerships Lead, Arnie identifies, evaluates and secures opportunities for ORNL to partner with the private fusion energy sector in areas that mutually benefit both the Lab and partner companies, including planning for large facilities. He also serves as director of the Innovation Network for Fusion Energy program, or INFUSE, which he has led since 2022, and leads a Milestone Evaluation Board to support the Department of Energy's milestone-based fusion development program.

Arnie served as leader for FED's Fusion Engineering group from 2020 to 2025, and was lead engineer for the Material Plasma Exposure eXperiment, or MPEX, from 2018 to 2022. He is well-known as a mechanical engineer in the fusion community. Since joining ORNL, he has served in lead engineering roles for the design and analysis of high-heat flux divertor components, high-power microwave transmission line components, high-vacuum vessels, and plasma-facing systems.

He chaired the Fusion Energy Division of the American Nuclear Society from 2016-19 and co-chaired the FESAC Subcommittee on Transformative Enabling Capabilities from 2017-18

Augustus (Gus) Merwin. *Director, Salt Chemistry and Materials, Kairos Power*

Dr. Augustus Merwin is the Director of Salt Chemistry and Materials at Kairos Power. In this role, he leads engineering programs related to the use of molten Flibe as reactor coolant and materials performance for the Kairos Power Fluoride Salt-Cooled High-Temperature Reactor (KP-FHR). Dr. Merwin's career has centered on experimental work with molten salts and materials testing in nuclear chemical engineering applications. Initially specializing in corrosion and electrochemical engineering in molten salts for reprocessing technologies, he developed expertise in hands-on work with high-temperature fluids and designbuild-test cycles with molten salts. At Kairos Power, his work has spanned materials testing, radionuclide chemistry, radiological source term, and test programs using molten Flibe. Prior to joining Kairos Power, Dr. Merwin was the 2016 Maria Goeppert Mayer Postdoctoral Fellow in the Nuclear Engineering Division of Argonne National Laboratory. He obtained his Ph.D. and M.S. in Materials Science and Engineering as well as dual B.S. degrees in Physics and Engineering Physics from the University of Nevada, Reno. Dr. Merwin is a licensed Professional Nuclear Engineer in the state of Nevada.

Stuart Muldrew. *Whole Plant Analysis Manger, UK Fusion Energy Ltd.*

Dr Stuart Muldrew is a Principal Fusion Technologist at the UK Atomic Energy Authority (UKAEA), specialising in fusion power plant design, modelling and integration. He is the Whole Plant Performance lead for STEP (Spherical Tokamak for Energy Production; a programme to deliver a UK prototype fusion energy plant, targeting 2040, and a path to commercial viability of fusion).

In addition to spherical tokamaks, Stuart has worked on alternative fusion power plant concepts, including conventional aspect ratio tokamaks (EUROfusion-DEMO, SST-2), stellarators (HELIAS 5- B) and inertial fusion. His work also includes the socioeconomics of fusion energy.

Prior to joining UKAEA, Stuart obtained an MPhys Physics and Astronomy from Durham University and a PhD from the University of Nottingham. He subsequently held research positions in physicsat the University of Nottingham and University of Leicester. Stuart has authored 31 peer-reviewed publications, with 2,287 citations and an h-index of 21. His teaching experience includes lecturing on the Culham Plasma Physics Summer School, Karlsruhe Institute of Technology International School on Fusion Technologies, University of Oxford Materials Application Fusion CDT and Imperial College London Fusion and Advanced Reactors Masters course.

Lea Perlas. *Fusion Program Director, Department of Health, Virginia.*

Lea Perlas is the Fusion Program Director at the Virginia Department of Health. Over her 29-year career with VDH, she has also held the positions of Radiological Health Office Director, Division Director, and Radiation Compliance Officer. Lea's educational background includes Political Science, Radiation Science, and master's in public health.

Andrew Proffitt. *Regulatory Policy Lead, Helion Energy.*

Andrew Proffitt is Senior Director of Regulatory Policy at Helion Energy, where he leads regulatory policy strategy and execution at state, federal, and international levels to enable the deployment of fusion energy at scale. His work spans nuclear, environmental, and energy policy — building the regulatory frameworks and policy infrastructure needed to support fusion from first-of-a-kind deployment through global commercialization.

He engages directly with the NRC, Congress, DOE, and state regulators in the U.S., and works with policymakers, regulators, and stakeholders in the UK, Canada, the EU, and at the IAEA to drive international regulatory alignment for fusion. He also serves as the inaugural chair of the Fusion Industry Association's Regulatory Committee.

Prior to Helion, he spent nearly 15 years at the U.S. Nuclear Regulatory Commission in roles including Branch Chief of Advanced Reactor Licensing and Senior Project Manager for Fusion, where he led development of the Commission's fusion regulatory policy and served as the agency's primary interface with industry, Congress, and international counterparts. He holds a bachelor's degree in nuclear engineering from the University of Tennessee.

Adriaan Riet. *Researcher, Idaho National Laboratory (INL)*

Dr. Adriaan Riet performs computational modeling within the fusion safety program at Idaho National Laboratory. He manages the development of the fusion branch of the MELCOR severe accident simulation software that has been used for the site licensing basis for ITER. He also directs the effort to digitize and modernize access to historical program records and analyses, and supports efforts to develop high-fidelity and mixed-fidelity models of critical fusion systems and components for safety purposes using MOOSE-based tools. He also works in the Advanced Gas Reactor program to develop BISON models which characterize fission product transport in TRISO fuel, and has a background modeling defect-assisted transport in ceramic media.

Sandrine Rosanvallon. *Senior Safety Engineer, EUROfusion DEMO Central Team Safety Office.*
Sandrine Rosanvallon began her career as an engineer specializing in fast breeder reactor materials at the French Alternative Energies and Atomic Energy Commission (CEA). In the early 2000s, she was involved in the site studies for the construction of ITER in France, dealing with waste, decommissioning and tritium processes. Her experience in tokamaks has been strengthened by working at JET (Culham UK) on fusion technology and machine operation and at Tore Supra (Cadarache France) on the development of diagnostics to support the safety studies for ITER. She has worked for the ITER Organization for more than 13 years in the Nuclear Safety and Environment Division dealing with remote handling systems, radioactive waste treatment and storage, hot cell and radwaste building design and decommissioning. She was involved in the licensing process and later in the coordination of the construction activities from a safety and environmental point of view.

Since 2022 she has been working for EU DEMO Safety Office involved in the definition of the safety baseline, definition and propagation of high-level safety requirements, development of the waste management strategy and management of the EUROfusion work package on safety and environment. She is a nuclear safety expert for the CEA Fundamental Research Division.

Andrea Schneibel. *Community Partnerships Lead, Type One Energy.*
With a passion for scientific storytelling and community building, Andrea serves as Community Partnerships Lead at Type One Energy. She first joined the company in September 2023 as Communications Manager, helping establish its strategic communications function during the company's early growth. In her current role, Andrea leads internal inclusion efforts and drives global community engagement, connecting Type One's offices and teams worldwide with the communities where they live and work, and expanding awareness of fusion energy as a cornerstone of the clean energy future.

Her career has been shaped by experiences with the United Nations Convention to Combat Desertification, the University of Tennessee, and Oak Ridge National Laboratory, where she spent several years promoting fusion research.

Andrea holds a Bachelor's degree in Communications and Journalism from the Central University of Venezuela, a Master's in Scientific Communication from Universitat Pompeu Fabra, a Master's in Scientific Culture from the University of Oviedo in Spain, and an MBA from the University of Tennessee, Knoxville. Originally from Venezuela, she now lives in East Tennessee with her two daughters, Anna and Sofia.

Jeff Semancik. *Director (Radiation Division), Connecticut Department of Energy & Environmental Protection.*
Jeff Semancik is the Director of the Radiation Division at the Connecticut Department of Energy and Environmental Protection (DEEP), where he serves as Connecticut's Radiation Control Program Director and leads the state's radiation protection and nuclear materials regulatory programs. He oversees licensing, inspections, emergency preparedness, radioactive waste management, and radiation policy, and represents Connecticut before the U.S. Nuclear Regulatory Commission (NRC), Department of Energy, and Department of Homeland Security. Mr. Semancik is Connecticut's Governor-designated official for the NRC Agreement State Program and serves as the state's NRC Liaison Officer. He has been instrumental in developing Connecticut's

Agreement State program and in advancing regulatory approaches for emerging technologies, including advanced nuclear reactors and fusion energy. A nationally recognized leader in radiation control, Mr. Semancik is a past Chair of the Conference of Radiation Control Program Directors (CRCPD) and currently chairs its Committee on Commercial Nuclear Power. He has played a leading role in developing state regulatory perspectives on fusion energy and frequently speaks on nuclear regulation, emergency preparedness, and the evolving role of states in regulating advanced nuclear technologies.

Beth Shelton. *Director of the Division of Radiological Health, Tennessee.*

Beth Shelton is the current Director for the Tennessee Division of Radiological Health. She has been with the State of Tennessee for 25 years working in all sections of the Division, including oversight of regulation compatibility and development, inspection of Division licensees and managing the Division's radioactive material licensing program. Beth has served as an Integrated Materials Performance Evaluation Program (IMPEP) team member and is currently an IMPEP team leader in training. She has also served on the Executive Board of the Organization of Agreement States as Treasurer for two terms and is currently the Past Chair.

Beth served as an advisor to the Tennessee Nuclear Energy Advisory Council and is a member of the Tennessee Nuclear Network's Advocacy, Policy & Regulatory Affairs Committee. She has represented Tennessee as well as the Organization of Agreement States at various national and international conferences and on panels presenting on fusion topics. She is passionate about the advancement of clean energy sources and is working hand in hand with government agencies and industry to make this a reality for the States.

Beth holds a Bachelor of Science Degree in Biology and Chemistry from Middle Tennessee State University. She also holds a Master of Professional Studies Degree in Strategic Leadership as well as a certification in Lean Management from Middle Tennessee State University. She is a member of both OAS and CRCPD.

Walter Shmayda. *Tritium Solutions.*

W. T. Shmayda's career started at the Ontario Hydro Research Division located in Toronto, Ontario, where he designed and operated a 6-gram tritium facility. The Lab focused on tritium research in support of the Darlington Nuclear Generating Station Tritium Removable Facility and the Canadian Fusion Fuels and Technology Project. The Tritium Lab developed technology for tritium storage, monitoring, scavenging and investigated tritium interactions with metals.

He joined the University of Rochester, Lab for Laser Energetics in Sept 2001 to develop the infrastructure needed to manipulate 1.5 g of tritium in support of inertial confinement fusion research. At UR/LLE, he served as a Distinguished Scientist and the lab's Radiation Safety Officer. On campus, he chaired the Radiation Safety Committee for the University and was a Professor in the Chemical Engineering Department. He retired from the university July 2023 to form a consulting company is support of entities that require tritium handling guidance.

He holds 8 patents. He has published 168 peer-reviewed papers and 52 research reports

Koji Takahashi *Deputy Director General, Naka Institute for Fusion Science and Technology (QST), Director, Department of JT-60SA Project and Japan Home Team Project Manager, JT-60SA.*

Koji Takahashi is a research scientist on microwave heating technology for fusion devices. In 1994, he started his carrier at Japan Atomic Energy Research Institute, currently National Institutes for Quantum Science and Technology (QST) to join the development of high-power RF sources, so-called gyrotron for fusion plasma heating.

He was also involved with the development of transmission line components such as antennas and waveguides for JT-60U and ITER.

He was responsible for the design and development of the RF power injecting antenna for ITER from 1998 to 2015 and completed the antenna reference design. He also took the responsibility of ITER gyrotron procurement from 2016 as a group leader of RF heating system and completed manufacturing of all eight gyrotrons.

He has joined the JT-60SA project since 2021 as the Deputy Director, Department of Tokamak System Technology, currently Director, Department of JT-60SA Project and managed the project as JA Home Team Project Manager since 2022

Bibake Uppal * *Head of Kyoto Fusioneering America, Kyoto Fusioneering.*

Bibake leads business development for Kyoto Fusioneering's (KF) North American subsidiary, KF America. His role spans developing commercial and R&D partnerships throughout the fusion supply chain.

Prior to KF, Bibake consulted clients in the Energies, Resources & Industrials (ER&I) sector on M&A strategy. Through this experience, he discovered that the inertia and incentives among ER&I incumbents keeps them on a track of incremental change and prevents them from genuine innovation.

Meanwhile, like their counterparts in renewables and advanced fission, fusion startups are radically rethinking our relationship with energy. Realizing commercial fusion energy will not only solve foreseeable problem, it can enable energy superabundance and unlock latent human potential in unfathomable ways.

Bibake received his MBA and MSc. in Data Science from IE University in Spain. Moreover, he is a former professional athlete and avid outdoorsman. He wants his children and his grandchildren to enjoy our beautiful planet in the same way, if not a better way, than he has.

Ed Waller. *Professor, Ontario Tech University*

Dr. Edward Waller is Senior Health Physics Advisor at Type One Energy and is Professor at Ontario Tech University, in the Department of Energy and Nuclear Engineering, Oshawa, Ontario, Canada. He is currently UNENE Ontario Tech Chair in Health Physics and Environmental Safety.

Ed is a Professional Engineer (PEng) and Certified Health Physicist (CHP). Ed earned his BSc in Physics and MScE in Chemical Engineering at the University of New Brunswick (UNB), Masters in Nuclear Security from Technical University Delft (TU Delft), and his PhD in Nuclear Engineering at Rensselaer Polytechnic Institute, New York (RPI). He worked in industry for over 15 years in applied health physics, threat assessment and applications of radiation technologies. In 2003 he joined Ontario Tech U, where he teaches radiation protection, dosimetry, environmental radiation and shielding design, and performs research in areas of radiation safety, environmental radioactivity, radiation dosimetry, applied health physics, emergency response and nuclear security.

Ed has worked at the International Atomic Energy Agency Incident and Emergency Centre (IAEA-IEC) and as an IAEA expert for Member State training. He was a Canadian representative to the United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR). Ed is a past-President of the Canadian Radiation Protection Association (CRPA).

Patrick White. *Group Lead, Fusion Energy Safety and Regulation, Clean Air Task Force.*

Patrick White joined Clean Air Task Force (CATF) in 2025 as the Group Lead for fusion energy safety and regulation. He leads the CATF International Working Group on fusion energy safety, waste, and non-proliferation, focused on creating globally harmonized regulatory policy and frameworks for commercial fusion energy.

His work includes detailed technical and policy analysis of fusion technology to help develop proportional regulatory frameworks that enable the effective, efficient, and predictable licensing and deployment of commercial fusion energy. He also contributes to CATF's work on advanced fission energy with a focus on regulatory issues, and stakeholder outreach and education.

He holds a B.S. and M.S. in Mechanical Engineering from Carnegie Mellon University and an M.S. and PhD in Nuclear Science and Engineering from the Massachusetts Institute of Technology (MIT). His PhD research focused on developing new licensing methods and regulatory frameworks for commercial fusion technology and his M.S. research focused on new advanced fission reactor licensing pathways. He also was coauthor of the 2018 MIT "Future of Nuclear Energy in a Carbon-Constrained World" study and he led report research on new nuclear power plant licensing.

Previously, he was the Research Director at the Nuclear Innovation Alliance, leading technical analysis and stakeholder engagement on advanced nuclear energy, and worked with the commercial nuclear industry at MPR Associates.

Tony Williams. *Executive Sponsor, Infinity Project. Tennessee Valley Authority (TVA).*
Biography to follow

Steve Zinkle. *Professor. UT/ORNL Governor's Chair, University of Tennessee at Knoxville.*

Steve Zinkle is the Governor's Chair Professor for Nuclear Materials at the University of Tennessee, Knoxville, with a joint appointment at Oak Ridge National Laboratory (ORNL). His research interests include deformation and fracture mechanisms in structural materials, advanced manufacturing, and radiation effects in ceramics, fuel systems, and metallic alloys for fission and fusion energy systems. His research encompasses basic and applied materials science and engineering investigations under a wide range of extreme operating conditions (e.g., high temperatures, applied stresses, and radiation environments), with a particular emphasis on using transmission electron microscopy and other advanced microstructural characterization techniques to elucidate the linkage between microstructure and properties/performance in materials. He received his PhD in Nuclear Engineering and an MS in Materials Science from the University of Wisconsin-Madison. He is a member of the National Academy of Engineering.