United States Nuclear Regulatory Commission Official Hearing Exhibit
In the Matter of: SHINE MEDICAL TECHNOLOGIES, INC.
(Medical Radioisotope Production Facility)
Commission Mandatory Hearing
Docket #: 05000608
Exhibit #: SHN-021-MA-CM01 Identified: 12/15/2015
Admitted: 12/15/2015 Withdrawn:
Rejected: Stricken:
Other:

Exhibit SHN-021

Eric N. Van Abel

ENGINEERING EXPERIENCE

ENGINEERING SUPERVISOR 2014 to Present

SHINE Medical Technologies – Monona, WI

- Led the effort to design and develop a hybrid fusion / fission device for the production of medical radioisotopes using a novel solution-based fissile target
- Completed NRC Requests for Additional Information (RAIs) for a wide range of subjects, such as nuclear analysis, chemical safety, mechanical design, radiological dose assessment, thermal design, maintainability, safety related system design bases, and others, in order to support SHINE's Construction Permit application
- Trained mechanical and nuclear engineers on the design of the SHINE facility, methods to perform analyses, and the nuclear quality assurance measures necessary for successful design and operation
- Led the design and fabrication effort for a full-scale prototype of the safety-related radiolytic gas recombination system, which culminated in successfully testing the system at full plant power levels
- Provided technical review and guidance for systems calculations and design documents to advance the designs, including frequently integrating expertise from the national laboratories, reference materials, and literature to solve new problems
- Led and successfully completed an effort to perform in-depth MCNP shielding analyses of radioactive processes throughout the production facility, minimizing potential uncertainties and changes during detailed design

NUCLEAR SYSTEMS ENGINEER II 2011 to 2014

SHINE Medical Technologies – Monona, WI

- Created detailed neutronics models that serve as the basis for SHINE's technology and predicted plant outputs
- Created a new, unique, and simple methodology for ensuring safety of a highly multiplying subcritical system, which became fundamental to the design and licensing of SHINE's facility
- Performed parametric and optimization studies of the subcritical system neutronics and thermal-hydraulic behavior to maximize assembly yields
- Performed analyses of vital safety parameters for the subcritical system, such as feedback coefficients, response to abnormal events, and effects of other interacting systems
- Assisted with the overall plant design in the processing and irradiation facilities, including process flow diagrams, facility layouts, and equipment requirements and design constraints
- Participated in and significantly contributed to the development of SHINE's Preliminary Safety Analysis Report (PSAR)
- Worked directly with researchers and scientists at the national laboratories, including LANL for nuclear and thermal-hydraulic design, SRNL for tritium separations technologies, ANL for target solution behavior and stability, and ORNL for materials corrosion and irradiation damage

NUCLEAR REACTOR ENGINEER 2008 to 2010

Dominion Energy – Kewaunee, WI

- Monitored and analyzed reactor flux distributions and burnup histories
- Provided supervision and engineering guidance for nuclear fuel movements and refueling operations
- Assisted control room operators during power maneuvers by analyzing reactivity effects in real time
- Provide daily input to plant staff regarding nuclear phenomena such as B-10 depletion, xenon transients, and axial offset anomaly

NUCLEAR SAFETY ANALYSIS ENGINEERING INTERN 2007

Dominion Energy – Richmond, VA

- Performed qualification of the AREVA High Thermal Performance nuclear fuel critical heat flux correlation using the VIPRE-D thermal-hydraulics computer code
- Updated containment pressure analyses following design-basis accidents for the Surry Power Station simulator using the GOTHIC computer code
- Prepared engineering calculation documents detailing the analyses performed and the results obtained

NUCLEAR ENGINEERING INTERN 2006

U.S. Nuclear Regulatory Commission – Washington, D.C.

- Communicated daily with engineers in many branches of the NRC
- Updated the NRC's Standard Review Plan sections on flood protection and the spent fuel storage facility by incorporating senior engineering judgments and industry guidance
- Prepared NRC documents to be issued for public comment

CIVIL ENGINEERING INTERN 2003 – 2005

Braun Intertec Corporation - Bloomington, MN

- Managed the engineering testing work for large construction projects
- Performed inspections of work quality and compliance with structural plans
- Consulted frequently with project engineers, supervisors, and crews

EDUCATION

M.S. NUCLEAR ENGINEERING, SUMMER 2011, *University of Wisconsin – Madison,* GPA: 4.0 / 4.0

- National Academy for Nuclear Training (NANT) fellowship
- Thesis: Computational studies of supercritical CO_2 heat transfer and pressure drop in printed circuit heat exchangers

B.S. NUCLEAR ENGINEERING, SPRING 2008, *University of Wisconsin – Madison,* GPA: 4.0 / 4.0

- M. M. El-Wakil Nuclear Engineering Scholarship for Spring 2007
- Department of Nuclear Engineering Scholarship for 2006-2007
- Landman Scholarship for Final Two Years of Undergraduate Study
- National Merit Scholarship for Four Years
- Department of Electrical Engineering Scholarship
- Department of Material Science Scholarship
- College of Engineering Outstanding Freshman Scholarship
- John and Elizabeth Moore Award In General Chemistry
- Centennial Academic Scholarship