

NextEra Energy Seabrook, LLC
(Seabrook Station, Unit 1)
License Renewal Application

**NRC Staff Answer to Motion for
Summary Disposition of Contention 4D**

ATTACHMENT 4D-A

John G. Parillo

SUMMARY

Thirty nine years of demonstrated expertise in nuclear power plant operational and decommissioning related radiological engineering, specializing in design basis dose consequence analyses and more recently in severe accident mitigation alternative (SAMA) analyses. Specific experience includes the review of SAMA analyses and design basis dose consequence analyses as well as shielding analyses, control room habitability, in-plant filter assembly design and testing, post-loss of coolant accident (LOCA) sampling dose analyses, radiological site characterization, emergency action level (EAL) development, emergency planning scenario development and off-site dose projection computer code development and training. Field experience includes plant positions in Emergency Planning, Radiological Protection, Site Characterization, Quality Assurance and Reactor Engineering as well as participation in many emergency planning drills as a controller, observer and radiological technical advisor.

EDUCATION

M.S., Environmental Engineering, Rensselaer Polytechnic Institute (RPI), 1973
B.S., Mechanical Engineering, Worcester Polytechnic Institute (WPI), 1971

EXPERIENCE

Senior Reactor Engineer
United States Nuclear Regulatory Commission (NRC) **06/2010 - Present**

Shortly after being promoted to Senior Reactor Engineer, my responsibilities expanded to include the review of SAMA analyses submitted as part of the license renewal process. I am currently involved in the SAMA reviews for Davis-Besse, Callaway, Seabrook and the Byron and Braidwood plants.

I have also retained responsibilities for design basis accident (DBA) dose assessment reviews and provided support to the regional offices to assist in enforcement determinations. I provided radiological dose technical advice and analysis input regarding the use of filters in containment venting as part of the Fukushima Near-Term Task Force recommendation.

I am currently serving as an incident responder for the NRC Emergency Operations Center filling the position of dose assessment analyst on the Protective Measures Team. This responsibility included an extended full time assignment following the incident at Fukushima Daiichi.

Health Physicist/Reactor Engineer
U.S. NRC **09/2005 - 06/2010**

In this position, my responsibilities included developing licensing policies in the general area of reactor systems assessment with an emphasis on DBA dose assessments. I was also responsible for reviewing and evaluating radiation doses to the public and plant personnel as well as conducting technical and regulatory reviews for reactor accident dose assessment. As a member of the accident dose branch at the NRC I have completed many safety evaluations (SEs) including a full implementation of the alternative source term amendments for Millstone 3, Susquehanna, Palisades, South Texas, St. Lucie and McGuire. I served as the technical monitor for a DOE Sandia contract to review a PWROG submittal for a new method of determining the dose contribution from post LOCA ESF leakage. I also served as the cognizant engineer for a

user need to revise the RADTRAD computer code which is used extensively in the accident dose branch.

As an incident response member I developed a dose assessment input data form for use in incident response drills. This form has been adopted by the protective measures team and incorporated into the incident response procedures.

**Radiological Engineering Consultant
Contingency Management Consulting Group
CN Associates Inc.**

03/2004 - 09/2005

During this time period I worked as a radiological consultant to the Emergency Planning group at the San Onofre Nuclear Generating Station on an Emergency Plan and Procedure Upgrade Project. The project involved rewriting the emergency plan and implementing procedures to incorporate the latest guidance from NEI, INPO etc. as well as insuring that the procedures accurately reflect all NRC commitments. In addition, the project was expanded to include the integration of the emergency plan with the security plan in response to changes in the design basis threat assessment.

**Radiological Engineering Consultant
CN Associates Inc.**

09/2003 - 03/2004

In this position I was responsible for interpreting and summarizing industry responses for incorporation in an EPRI report entitled Survey of Material and Personnel Radioactive Monitoring & Release Practices. I also performed technical editing for a License Termination Plan submittal and an EPRI report on the use of Robotic Tools in the Decommissioning of Nuclear Plants. In addition, I conducted an audit of a local pharmaceutical corporation's Radiation Safety Program.

**Senior Radiological Engineer
Framatome ANP - Marlborough, MA**

01/2003 - 09/2003

During this time period I performed radiological analyses including RETS/REMP calculations and reports. I also co-authored a technical document establishing the means to adjust Equipment Qualification dose analyses to retain positive margins with the incorporation of a planned power uprate for the Vermont Yankee nuclear power station.

**Senior Radiological Engineer
Framatome ANP
Duke Engineering & Services**

**04/2002 - 01/2003
03/2001 - 04/2002**

Site assignment at the Yankee Nuclear Power Station (YNPS) as a Radiation Protection Engineer responsible for procedures, detector calibrations, the personnel dosimetry program, dose assessment and radiological accident evaluations associated with the Yankee Nuclear Power Station. In addition, I assumed project management responsibilities for the development of an EPRI Technical Report entitled, Determining Background Radiation Levels in Support of Decommissioning Nuclear Power Plants, EPRI, Palo Alto, CA:2001.1003030.

**Senior Radiological Engineer
Duke Engineering & Services**

02/1999 - 03/2001

During this time period I was assigned to the YNPS as Lead Engineer for Radiological Site Characterization. My work responsibilities included preparing sample plans, directing sampling activities, reviewing sample results and the preparation of summary documents on the status of radiological characterization. I also assessed the suspended Final Status Survey (FSS) effort conducted at YNPS and integrated elements of the former FSS program into the radiological site characterization program.

**Senior Radiological Engineer
Duke Engineering & Services**

02/1998 - 02/1999

During this time period I was assigned to the radiological engineering group at Northeast Utilities and was responsible for the development of radiological response algorithms used in an off-site dose projection code. This work involved analyzing all potential accident conditions, documenting the source terms and beta testing the completed computer program.

**Senior Radiological Engineer
Duke Engineering & Services
Yankee Atomic Electric Company**

**12/1997 - 02/1998
01/1996 - 12/1997**

During this time period I was assigned to the YNPS Quality Services Group. Responsible for surveillance of all radioactive waste shipments including vehicle inspections prior to site entry; package and cask inspections; loading and securing procedures; and final vehicle inspections for proper marking, labeling and placarding. I performed standard surveillances to assure proper adherence to radiological controls and Occupational Health and Safety Administration (OSHA) standards during Yankee decommissioning work activities. I served as a Technical Specialist for radwaste audits at the Maine Yankee, Vermont Yankee and YNPS.

**Radiological Engineer
Yankee Atomic Electric Company**

01/1974 - 01/1996

I performed radiological accident analyses necessary to support YNPS Possession Only License (POL) and Decommissioning Plan. I developed a simplified approach for off-site dose projection to support the YNPS POL and a calculation package to support Seabrook Nuclear Power Station's post-accident sampling dose analysis. I also conducted training on the NRC Response Technical Manual, RTM-90, at the Palo Verde and Maine Yankee Nuclear Power Stations. In addition, I served as Radiological Advisor to a team simulating NRC site responses at the Palo Verde, Maine Yankee and Pilgrim nuclear power plants. I provided radiological support to all Yankee plants and coordinated on-site filter testing during the 1988 Maine Yankee Nuclear Power Station outage. I also developed and conducted a training program for both plant and state personnel in off-site dose projection methodology.

In addition, I developed radiological data for Vermont Yankee Nuclear Power Station emergency drills and exercises and participated in numerous emergency drills and exercises at all Yankee plants as a Controller and Observer. I developed a method to quickly estimate off-site thyroid dose rates based on effluent monitor responses for all Yankee plants.

I also performed safety-related design basis radiological calculations, including loss of coolant accident (LOCA), small line break outside containment, and boiling water reactor (BWR) high energy line break (HELB) calculations. I developed an emergency response code for off-site dose projections, which used plant radiation monitor response to estimate off-site dose during the early

stages of emergency response.

I performed radiological habitability analyses of emergency operations facilities at the Yankee Rowe, Maine Yankee, Vermont Yankee and Seabrook Nuclear Power Stations. I evaluated control room operator post LOCA doses, including access and egress through high radiation fields to establish compliance with federal criteria.

I was also responsible for the radiological aspects of expanding spent fuel storage capability at several nuclear power plants, including double-tier fuel storage at Yankee Rowe and a proposed fuel compaction process for Maine Yankee. I performed extensive radiological evaluations of on-site post-LOCA radiological conditions at Yankee Rowe, Maine Yankee and Vermont Yankee Nuclear Power Stations.

In addition, I was responsible for radiological environmental monitoring programs at three nuclear power plants. I worked in the Reactor Engineering Department at Yankee Rowe throughout a major shutdown and participated in a Containment Class A leak test as well as providing engineering support determining acceptance for Class B and C leak testing. I performed visual inspections of spent fuel, developed a procedure for setting up a Westinghouse analog reactivity computer and assisted the plant reactor engineer in reactivity measurements during start-up. I prepared a radiological health physics manual and working procedures to determine internal doses from inhaled and ingested radionuclides.

TRAINING

- Accident Consequence Analysis P-301, USNRC, Sandia National Laboratories
- Perspectives on Reactor Safety R-800, USNRC, Sandia National Laboratories
- MARSSIM Training, SC&A
- Environmental Regulations Training, Lion Technology
- Radwaste Shipping Courses on U.S. Nuclear Regulatory Commission (NRC) Bulletin 79-19 and U.S. Department of Transportation (DOT) 49CFR172 Subpart H
- Protective Action Guideline (PAG) Seminar, Environmental Protection Agency (EPA)
- Meteorology and Nuclear Power Seminar
- Radioactive Waste Management Course, American Society of Mechanical Engineers (ASME)
- Reactor Safety Course, Massachusetts Institute of Technology (MIT)
- Pressurized Water Reactor (PWR) Systems Course, Westinghouse
- Environmental Surveillance for Nuclear Power, Harvard School of Public Health
- Filter Testing Workshop, Harvard School of Public Health
- Professional Affiliations/Certifications
- American National Standards Institute (ANSI) N45.2.6 Qualified Level II Inspector, Radwaste Packaging Discipline 1996-1999
- Health Physics Society, Member

PUBLICATIONS

Determining Background Radiation Levels in Support of Decommissioning Nuclear Power Plants, EPRI, Palo Alto, CA: 2001.1003030.