Statement of Professional Qualifications

Kenneth J. Karwoski

Senior Level Advisor for Steam Generator Integrity and Materials Inspection
Division of Engineering
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission

Summary
Mr. Kenneth J. Karwoski, is the Senior Level Advisor for Steam Generator Integrity and Materials Inspection in the Division of Engineering, Office of Nuclear Reactor Regulation, U.S. Nuclear Regulatory Commission (NRC), in Washington, District of Columbia (DC). His academic credentials include a Bachelors of Science degree in chemistry and a Bachelor of Science degree in computer science. Mr. Karwoski also qualified as an Engineering Officer of the Watch in the U.S. Navy's nuclear power program. His technical background includes extensive involvement in several materials engineering issues related to safe nuclear power plant operations including welding and steam generator integrity issues. Mr. Karwoski has numerous publications and has extensive experience in making presentations to a variety of technical and public audiences, including the Advisory Committee on Reactor Safeguards. Mr. Karwoski has been a participant in the American Society of Mechanical Engineers (ASME) Working Group on Welding and Special Repair Processes, the subgroup on Repair and Replacement Activities, and the Board on Nuclear Codes and Standards. Mr. Karwoski is also the NRC's Dam Safety Officer and represents the NRC on the Interagency Committee on Dam Safety.

Education:
Wayne State University (Detroit, Michigan), Chemistry, BS, 1985
University of Maryland University College (College Park, Maryland), Computer Science, BS, 1993

Experience:

United States Nuclear Regulatory Commission

July 2001 to Present:
Senior Level Advisor for Steam Generator Integrity and Materials Inspection
Division of Engineering / Office of Nuclear Reactor Regulation

This position involves providing advice and guidance to management, division and higher, related to steam generator integrity issues. My official responsibilities include the technical, safety, and regulatory compliance reviews of a variety of steam generator submittals. I provide advice to management, supervisors and staff to support the activities of the division, including review of license renewal applications. This included providing advice and guidance to the staff related to adoption of new steam generator technical specification requirements contained in TSTF-510, Revision 2, "Revision to Steam Generator Program Inspection Frequencies and Tube Sample Selection," and TSTF-449, Revision 4, "Steam Generator Tube Integrity." It also included preparing U.S. Nuclear Regulatory Commission Generic Letter 2006-01, "Steam Generator Tube Integrity and Associated Technical Specifications," to facilitate adoption of these new technical specification requirements at all pressurized water reactors in the U.S. and

peer reviewing/reviewing most of the plant-specific submittals adopting these new technical specification requirements.

January 2001 to July 2001
Assistant Branch Chief
Engineering Research and Applications Branch / Office of Nuclear Regulatory Research

This position included supervising a multi-disciplined group of approximately 15 engineers and scientists responsible for research in the areas of mechanical, civil, structural, geotechnical, and electrical (instrumentation and control) engineering.

April 2000 to October 2000
Acting Assistant Branch Chief
Materials Engineering Branch / Office of Nuclear Regulatory Research

This position included supervising approximately 15 individuals responsible for evaluating issues associated with pressurized thermal shock, environmentally assisted corrosion, steam generator tube integrity, electrical engineering (cable degradation), and dry cask integrity.

April 1999 to April 2000 and October 2000 to January 2001
Technical Assistant
Division of Engineering / Office of Nuclear Reactor Regulation

This position involved assisting the Division Director on administrative and technical tasks including developing and implementing an Operating Plan for use by Division management. This position also involved coordinating and developing the Division's response on various generic licensing and policy issues.

October 1991 to April 1999
Materials Engineer
Materials and Chemical Engineering Branch / Office of Nuclear Reactor Regulation

This position involved reviewing plant-specific steam generator tube integrity issues. In addition, it involved writing or being a significant contributor to Information Notices and Generic Letters that informed stakeholders of recent events and trends. This position also involved providing guidance to junior members of the branch, briefing senior management on safety-significant issues, and participating in NRC inspection activities of licensee's steam generator tube inspections.

<u>DuPont</u>
August 1990 to October 1991
Area Consultant
Deepwater, New Jersey

This position involved ensuring product quality met customer specifications and supervising numerous technical projects. The primary focus was making my business unit more cost effective while maintaining safety. Specific projects included upgrading analog instrumentation to digital, improving the mechanical utility of a waste water treatment system, developing the design for dilution facilities and chemical emissions control systems, developing techniques for operator's use to ensure optimal performance of the product line, and designing and constructing a waste water treatment system.

U.S. Navy
Lieutenant
July 1984 to June 1990

This position involved serving as the Chemistry and Radiological Controls Assistant and Main Propulsion Assistant on-board a nuclear submarine and supervising approximately 35 highly trained technical specialists in both a refueling overhaul and operational environment ensuring the proper operation and maintenance of the reactor coolant system, steam generating system, steam propulsion plant, and associated auxiliaries. Specific accomplishments included revising and writing numerous technical procedures, supervising the initial criticality of a new reactor core in a highly scrutinized and political environment, directing at-sea testing of propulsion plant equipment following a refueling overhaul, and formally instructing and certifying all mechanical watchstanders.

Honors/Awards:

NRC Performance Awards: 2014, 2013, 2012, 2011, 2010, 2009, 2008, 2007, 2006, 2004, 2003, 2002
NRC High Quality Increase / Special Act Awards: 2007, 2006, 2004, 1998 (2), 1996, 1994, 1992
Certificates of Appreciation: 2012
U.S. Navy Achievement Medal: 1990
Commander Submarine Group Six Commendation: 1989
Admiral A.I. McKee Award: 1987

Publications:
Author, co-author, peer reviewer of numerous NRC reviews/documents, including:

NUREG-1841, "U.S. Operating Experience with Thermally Treated Alloy 690 Steam Generator Tubes," August 2007

NUREG-1771, "U.S. Operating Experience with Thermally Treated Alloy 600 Steam Generator Tubes," April 2003

NUREG-1604, "Circumferential Cracking of Steam Generator Tubes," April 1997

U.S. Nuclear Regulatory Commission Regulatory Issue Summary 2009-04, "Steam Generator Tube Inspection Requirements," April 3, 2009, ML083470557

U.S. Nuclear Regulatory Commission Regulatory Issue Summary 2007-20, “Implementation of Primary-to-Secondary Leakage Performance Criteria,” August 23, 2007, ML070570297

U.S. Nuclear Regulatory Commission Generic Letter 2006-01, “Steam Generator Tube Integrity and Associated Technical Specifications,” January 20, 2006, ML060200385

U.S. Nuclear Regulatory Commission Generic Letter 2004-01, “Requirements for Steam Generator Tube Inspections,”

U.S. Nuclear Regulatory Commission Generic Letter 95-03, “Circumferential Cracking of Steam Generator Tubes,” April 28, 1995

U.S. Nuclear Regulatory Commission Information Notice 2013-20, “Steam Generator Channel Head and Tubessheet Degradation,” October 3, 2013, ML13204A143

U.S. Nuclear Regulatory Commission Information Notice 2013-11, “Crack-Like Indications at Dents/Dings and in the Freespan Region of Thermally Treated Alloy 600 Steam Generator Tubes,” July 3, 2013, ML13127A236

U.S. Nuclear Regulatory Commission Information Notice 2012-07, “Tube-to-Tube Contact Resulting in Wear in Once-Through Steam Generators,” July 17, 2012, ML120740578

U.S. Nuclear Regulatory Commission Information Notice 2010-21, “Crack-Like Indication in the U-Bend Region of a Thermally Treated Alloy 600 Steam Generator Tube,” October 6, 2010, ML102210244

U.S. Nuclear Regulatory Commission Information Notice 2010-05, “Management of Steam Generator Loose Parts and Automated Eddy Current Data Analysis,” February 3, 2010, ML093640691

U.S. Nuclear Regulatory Commission Information Notice 2008-07, “Cracking Indications in Thermally Treated Alloy 600 Steam Generator Tubes,” April 24, 2008, ML080040353

U.S. Nuclear Regulatory Commission Information Notice 2007-37, “Buildup of Deposits in Steam Generators,” November 23, 2007, ML072910750

U.S. Nuclear Regulatory Commission Information Notice 2005-09, “Indications in Thermally Treated Alloy 600 Steam Generator Tubes and Tube-to-Tubesheet Welds,” April 7, 2005, ML050530400

U.S. Nuclear Regulatory Commission Information Notice 2004-16, “Tube Leakage Due to a Fabrication Flaw in a Replacement Steam Generator,” August 3, 2004, ML041460357

U.S. Nuclear Regulatory Commission Information Notice 2004-10, “Loose Parts in Steam Generators,” May 4, 2004, ML041170480

U.S. Nuclear Regulatory Commission Information Notice 2002-02, Supplement 1, “Recent Experience with Plugged Steam Generator Tubes,” July 17, 2002, ML021980191

U.S. Nuclear Regulatory Commission Information Notice 2002-02, “Recent Experience with Plugged Steam Generator Tubes,” January 8, 2002, ML013480327

U.S. Nuclear Regulatory Commission Information Notice 97-49, "B&W Once-Through Steam Generator Tube Inspection Findings," July 10, 1997

U.S. Nuclear Regulatory Commission Information Notice 96-38, "Results of Steam Generator Tube Examinations," June 21, 1996.