CARL L. DUKES

OBJECTIVE

I have gained significant technical and team experiences in the U.S. Navy, private industry, and in a national laboratory setting. I have worked in a wide range of fields including nanotechnology, nuclear fission, nuclear fusion, information security, national security interest, sensors and controls, and biometrics.

WORK EXPERIENCE

Sensors and Controls Research (SCR) Group, ORNL; Oak Ridge, Tennessee; 2005 - Present
Research and Development Staff Member for Electrical and Electronics Systems Research Division.

- Active holder of high-level security clearances.
- Active member on the US ITER (International Thermonuclear Experimental Reactor) team working on ECH (Electron Cycolotron Heating) waveguide systems and their support systems including 170 GHz Gyrotrons, corrugated waveguides, beam optics, cooling water, vacuum, power supplies, magnets, control systems, and diagnostic systems.
    - Lead Vacuum Technician for all ECH needs
    - Leading efforts in alignment designs internally and externally for ECH waveguides and associated optics.
    - Conceive, write, test, and document testing of various systems including beam optics, gyrotrons, waveguides, and various test articles.
- Contributed in technical and complex issues within projects considered to be sensitive to national security.
- My roles and responsibilities in the Sensors and Controls Research (SCR) group include conceiving, designing, building, testing, and deploying sensors and control systems to solve challenges of national importance.
- Sensor technologies have included fiber optics, optics, infrared, vacuum, electronic, electromagnetic, mechanical, environmental, radiological, and wireless sensors.
- Control system experience with the following processes: nuclear, fluid dynamics, thermal systems, chemical, rotating machinery, pumps, power supplies, and special research equipment.
- Hardware experience with the following manufacturers: EPICS, General Electric, Square-D, and Westinghouse.
- Qualified in operation of a wide range of machine shop equipment including fabricating parts using metal working lathes and milling machines.
- Contributed to evaluation of methods and processes for reliability.
- Led work on overseas electrical equipment to obtain electrical code compliance.
- Performed certification testing of sensor and detection devices.
    - Testing included electro-magnetic, radio frequency, electrical, mechanical, and environmental characterization, analysis and technical support on multiple chambers, instruments and associated equipment.
    - Provided technical leadership in test plan development, implementation, data acquisition, data analysis, and reporting.
    - Test instrumentation and automation required software development and testing for

Environmental Chambers, Radiological and Mechanical Instrumentation using C, C++, VB, SQL, PLC logic, LabView, and EPICS.
- Setup local area networks for data acquisition and analysis.
- Identified the customer's needs and translated those needs into testing requirements and testing protocols.
- I have presented technical information to staff, customers and government officials on various projects/programs.

Holifield Radioactive Ion Beam Facility, ORNL; Oak Ridge, Tennessee; 1995 - 2005
Experimental Facility Operations Senior Technician for Physics Division.

- Certified operator for the Tandem Electrostatic Accelerator, Oak Ridge Isochronous Cyclotron (ORIC) and Radioactive Ion Beam (RIB) Target Ion Source.
- Responsible for the operation of the facility accelerators, ion sources, beam transport, vacuum systems and Bldg. 6000 utility systems.
- Provide support, troubleshooting, development, and maintenance on accelerators, and their associated systems in areas of machinery and process.
  - Coordinate and supervise work done by craft personnel.
  - Lead vacuum technician, responsible for leak testing and certifying vacuum systems.
  - Experienced in operation, maintenance, and analysis of residual gas analyzers and mass spectrometry.
  - Aligned and/or assisted in the alignment of Beam Profile Monitors, beam lines, targets, optics and more.
  - Assist engineering staff on special projects and designs.
  - Developed operator requirements and implemented software graphical user interface utilizing Epics Device Manager.
  - Developed technical procedures and logs for various systems and components.

Alcatel Fiber Plant North America, Claremont, North Carolina, 1993 – 1995
Technical Trade Skill Associate for Measurements (Quality Control) and Environmental Laboratory.

- Trained in programming and debugging of the Programmable Logic Controllers.
- Hardware experience with the following manufacturers: Allen-Bradley, Honeywell, Siemens, and Modicon.
- Skilled in maintaining sensitive electrical and mechanical equipment.
- Experienced in the use of analog and digital test equipment.
- Performed complex optical and mechanical alignments using various techniques.
- Developed quality control and maintenance procedures including calibrations for machinery in multiple departments.
- Instructed training classes of manufacturing associates on both production and technical content.
- Developed solutions for the problem of Modular Noise on the Optical Time Domain Reflectometer.
- Guided and/or Assisted many sensitive projects from which solutions were derived. Developed and delivered presentations to the engineering staff based on the data obtained.

United States Navy, 1988 - 1993
Primary Duty: Nuclear Engine Room Supervisor with multiple collateral duties. Served on board three Nuclear Submarines: **USS M. G. VALLEJO (SSBN-658)**, **USS GEORGE BANCROFT (SSBN-643)**, and **USS HENRY L. STIMSON (SSBN-655)**.

- Supervised mechanical plant operations and maintenance within engineering spaces.
- Coordinated all mechanical watch stations during normal and adverse conditions. Conducted briefs to engineering staff on special plant conditions/procedures for sensitive maintenance.
- Radiological Controls
    - Performing surveys, monitoring personnel exposure levels, setting up boundaries, cleaning up spills (decontamination process), donning and removal of anti-contamination clothing, packaging and transporting radioactive material, and performing maintenance on radioactive systems/components.

- Quality Assurance/Control Supervisor
    - Conceived, designed and administered NUCLEAR and NON-NUCLEAR quality work packages for all mechanical systems.
    - Performed internal audits, conducted exams and assisted in critical training of all personnel after a major revision in the ship's Quality Assurance System.

- Audit/Surveillance Coordinator
    - Responsible for overseeing sixteen collateral duties for the Mechanical Division.
    - Organized an audit program vital in finding and eliminating weak areas necessary for efficient operations during an OPERATIONAL REACTOR SAFEGUARDS EXAMINATION.

- Calibrations Coordinator
    - Trained personnel and procured the required equipment to certify the ship as a fleet calibration facility. Arranged my efforts with other divisions to ensure all precision instruments in calibration.

- Nuclear/Non-Nuclear Maintenance Technician
    - Accountable for the administration, operation and maintenance of the Propulsion Plant. Analyzed and repaired all primary plant systems and associated support equipment. Accomplished maintenance on steam turbines, pumps, heat exchangers, diesel engines, radioactive systems, valves, pneumatic systems, hydraulic systems, air conditioning, and refrigeration systems.

EDUCATION

Lewis University, Romeoville, Illinois **currently enrolled**
Pursuing M.S in Information Security

- Course work includes: Intrusion Detection Response and Recovery, Data Networking, Encryption and Authentication Systems, Legal and Ethical Issues, Computer Forensics, Information Security Strategies, Risk Management, Wireless Security, LINUX, Software Vulnerability and Defense,

and Database Management and Security.

University of Phoenix, Phoenix, Arizona **2007-2010**
B.S. in Information Technology/Software Engineering, Graduated with honors, 4.0 GPA

- Course work included: Project Planning and Implementation, Networking, Telecommunications, Operating Systems, Database, Information Processing, WEB Design, and Programming Concepts.
- Programming Languages: C, C++, SQL, Java, JavaScript, Visual Basic, and WEB Design (XML, HTML, XHTML, and CSS)

Harold Washington College, Chicago, Illinois **1991-1994**
A.S. in Science, Graduated with High Honors

UNITED STATES NAVY 1988-1993
Nuclear Field "A" School (Mechanical Principles)
Nuclear Power School, Nuclear Power Prototype School
Completed approximately 3600 hours of additional Technical training.