

About Dynematics

Dynematics is an S-Corporation contractually doing business as either **Dynematics Corporation** or as **Guy R. Wilson**. Mr. Wilson, President of Dynematics, brings the following experience *click below to proceed to details*

- [**Nuclear Licensing and Permitting**](#)
- [**Project Engineering and Engineering Director**](#)
- [**Mathematical Modeling**](#)
- [**Project and Business Management**](#)
- [**Facility Safety Analysis**](#)
- [**Regulatory Compliance, Health Physics, and Safety**](#)
- [**Preparing Procedures, Plans, and Technical Reports**](#)



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Examples of Nuclear Licensing and Permitting

Determined permitting needs for a major UF₆ shipping campaign involving about 5,000 UF₆ shipments, established the licensing approach, and led the preparation of successful applications for six DOT Special Permits (over 30% of the Special Permits held by DOE nationally in 2006) This included the following currently or recently active DOT special permits:

- ⇒ [Special Permit 13738](#)
- ⇒ [Special Permit 14185](#)
- ⇒ [Special Permit 14215](#)
- ⇒ [Special Permit 14221](#)
- ⇒ [Special Permit 14263](#)

As a staff augmentation consultant subcontractor, Guy Wilson served as the Project Engineer for Bechtel-Jacobs LLC, DOE's prime contractor, through the entire Project. The campaign employed changes to the UX-30 SARP, changes to the 20PF specification package, and equivalent safety development based on designing, testing, and fabricating a new overpack housing large diameter noncompliant cylinders loaded with up to 28,600 lbs of UF₆ each. Mr. Wilson coordinated the effort and interfaced with the NRC and DOT HQ in Washington in obtaining the DOT Special Permits. He also was the preparer and interfaced with affected state regulators and stakeholders in completing the major campaign transportation plan including comprehensive route selection and emergency response provisions.

Other examples of **nuclear licensing and permitting** include:

- Prepared on-reservation transportation plan used to relocate and handle large sodium shields, including one large ruptured shield. Large shields house 31,000 lbs each of neutron-irradiated sodium.

- Prepared an on-reservation transportation plan for Neptunium-237 metal at secular equilibrium with its significant gamma contributing daughter Pa-233, and DU-Np alloy.
- Prepared load plans for shipment in commerce of decommissioned UF₆ enrichment centrifuges, empty UF₆ cylinders, contaminated equipment, and a broad spectrum of mixed waste packages.
- Supported successful RCRA Permit application for Mixed Waste Treatment Center at ETPP.
- Prepared application and obtained agreement-state agency (TDEC) issuance of Radioactive Materials License for Mixed Waste Treatment Center at ETPP
- Prepared and obtained DOE approval of the Radiation Protection Plan for Centrifuge Test Facility D&D.
- Prepared applications and obtained Radioactive Materials Licenses for four new startup commercial facilities
- Maintained 11 radioactive materials licenses nationwide for five years.
- Served on technical committee for Southeast Compact Commission for Low Level Radioactive Waste Management in developing disposal site criteria.
- Completed licensing review of proposed changes to dirty radwaste system for a BWR-6 power reactor.
- Developed error trapping and data correction software for licensing commitment tracking of over 1200 commitments for commercial power reactor startup.

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Project Engineer or Engineering Director from planning through completion of the following projects

- UF₆ Cylinders (relocation to safe storage)
- ETTP UF₆ Cylinder Disposition (transportation offsite)
- K-33 Internal Security Fencing (design and construction)
- Large Sodium Shields (sodium cleanup, rupture repair, and shield reinforcement and relocation to safe storage)
- Morris Illinois INS Nuclear Laundry licensing, design, construction, and startup
- Osceola Iowa INS Nuclear Laundry licensing, design, construction, and startup

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Examples of Mathematical Modeling

- Dispersion Modeling and Stand-Off Distance Determination for Gaseous Diffusion Test Loop D&D and for Gaseous Diffusion Plant Feed and Withdrawal Building D&D (two facilities and projects)
- Dispersion Modeling and Emergency Management Hazards Assessment preparation for the UF₆ Cylinder Storage Yards at ETPP, which included four Cat 2 and one Cat 3 nuclear facilities
- Dispersion Modeling and evaluation of the safety of potential phosgene, fluorophosgene, or hydrochloric acid in model 30A UF₆ cylinders at the ETPP
- Dispersion Modeling for mixed (radioactive LLW and RCRA hazardous) waste treatment center licensing at ETPP
- Modeling exposure rates for various Np-237 transportation packaging configurations and processing options
- Exposure rate modeling for enriched recycled UF₆ heel handling
- Derived and applied an empirical dosimetry model for dose as a function of uranium assay in hypothetical release scenarios, with results employed as the basis for a successful Cat 2 Technical Safety Requirements change
- Modeling personnel exposures for RCRA-LLW mixed waste treatment facility, including all shielding calculations
- Adsorption isotherm modeling for radiocations on surface active media, and exposure rates as a function of distance, shielding, vessel geometry, and adsorptive media capacity
- Modeling Von Mises Stress in overpressured corrosion-thinned cylinder walls subjected to an external atmospheric pressure drops and stress in cylinders under vacuum subjected to deep water immersion for comparison to the ultimate strength
- Derived formula and developed field measurement procedures for volume in large right circular cylinders with ellipsoidal heads used as transportation packaging as part of DOT special permit application
- Developed software for modeling well log functions, including neutron, gamma, resistivity, acoustic, and spontaneous potential
- Derived dosimetry model and computer code for modeling exposure risk from transportation of radioactive materials

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Examples of Project and Business Management

As a staff augmentation consultant subcontractor, Guy Wilson served as the Project Manager for Babcock Wilcox Technical Services, DOE's prime contractor, for the following work:

- Aberdeen Pulse Reactor HEU-Molybdenum fuel processing, packaging, and disposition
- Health Physics Research Reactor HEU-Molybdenum fuel processing, packaging, and disposition
- Sandia Pulse Reactor HEU-Molybdenum fuel processing, packaging, and disposition
- Skua pulse reactor HEU-Molybdenum fuel processing, packaging, and disposition
- Pure Np-237 metal and DU-Np alloy disposition
- Surplus HEU-Np alloy disposition

Other examples of project and functional group management experience:

- President and Chairman of Dynemetics Corporation
- Vice-President and Chief Operating Officer for Frit Environmental Inc.
- Manager of Environmental, Safety, and Health at Materials and Energy Corporation
- Manager of Health Physics and Engineering group at INS Corporation
- Branch Director (for radioactive waste and transportation branch) for MS Radiological Health (an NRC-agreement agency)

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Some Other (DOE) Nuclear Facility Safety Analysis Work for ETTP UF₆ Cylinder Yards (four Cat 2 nuclear facilities and one Cat 3 nuclear facility):

- Prepared and defended through the DOE approval process Technical Safety Requirements changes
- Prepared evaluations of safety and the supporting calculations and analyses
- Prepared dozens of Unreviewed Safety Question Determinations (USQD)
- Prepared dozens of USQD screenings
- Prepared or reviewed portions of Documented Safety Analysis (DSA)

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Examples of Regulatory Compliance, Health Physics, and Health and Safety Work

- Set up environmental, health, and safety, health physics, and transportation programs for the ETTP Mixed Waste Treatment Center and obtained DOE approval of the phase 1 Integrated Safety Management System
- Served as alternate and as Health and safety Officer for mixed waste treatment in Plant 6 at the Fernald DOE site
- Audited the health physics program, industrial safety program, OSHA compliance, and radioactive materials transportation program compliance with DOT at eleven INS facilities nationwide
- As the corporate Radiation Safety Officer, directed the radiation safety program for over 600 radiation workers for five years
- Evaluated "hot particle" skin exposures, issues unique to contaminants resulting from the Three Mile Island cleanup, sludge particulate exposures, and ALARA issues
- Prepared evaluations of worker safety and made recommendations for protective measures related to fluorine, fluorophosgene, phosgene, chlorine trifluoride, uranium hexafluoride, and hydrogen fluoride
- Prepared dozens of health and safety plans and jobs hazards analyses
- Supported the design and/or design review and hazards control selection for the chemical processes used or planned for such projects as the Fernald Plant 6 mixed waste chemical treatment processes, ETTP mixed waste chemical treatment processes, K-1004 fluorine and fluoride capture using skid-mounted activated alumina banks and lime reactor, K-25 uranyl fluoride removal by chlorine trifluoride rehalogenation process, uranium hexafluoride conversion to magnesium trifluoride using a portable magnesium hydroxide unit, and uranium hexafluoride conversion to triuranal octaoxide by the large scale commercial process

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Examples of Experience Preparing Procedures, Plans, and Technical Reports

- Prepared calibration procedures for instruments, including pH meter, turbidity meter, flow meter, conductivity meter, hand-held radiation scalers / ratemeters, single channel analyzers, and laboratory counters
- Prepared operating procedures for several wastewater treatment systems
- Prepared air sample collection and analysis procedure for rad discharge sampling
- Prepared rad wastewater sampling and analysis procedure for sampling prior to discharge
- Prepared HEPA filter change-out procedure
- Prepared shipper/receiver agreements for Nuclear Material Control and Accountability
- Prepared sampling plans for groundwater and soil
- Prepared user guides for engineering software
- Supported preparation of Environmental Assessments and Environmental Impact Statements
- Prepared position papers and white papers on dosimetry, public exposure, halogen gases, transportation of radioactive materials, free release, emergency planning, the NEPA process, and radioactive waste disposal
- Prepared numerous procurement specifications and design documents
- Prepared planning documents such as baseline scope and budget documents, quality assurance plans, waste management plans, health and safety plans, ALARA plans, decontamination plans, emergency plans, contingency plans, business plans, site assessments, risk evaluations, etc

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