



Nuclear Safety

Associates

The Clear Leader in Nuclear Criticality Safety



www.nuclearassociates.com

Design Support and Safety Integration

NSA criticality safety engineers serve as an integral part of design teams for numerous new non-reactor nuclear facilities. We devise reliable active and passive engineered criticality safety controls during the design phase and implement such controls prior to facility operation.

- Nuclear Fuel Services, Navy Fuel Manufacturing Facility
- Nuclear Fuel Services, Uranium Recovery Operations
- Areva NP – Erwin UO₂ Powder Production Facility
- Zircatec Precision Industries – CANDU Enriched Fuel Manufacturing Facility
- Nuclear Fuel Services, BLEU Production Facility

Facility Operation

Our criticality safety engineers have extensive experience supporting operations at both commercial fuel fabrication facilities and DOE non-reactor nuclear facilities.

- Commercial nuclear fuel fabrication facilities we have provided operational support to include Westinghouse (Columbia), Nuclear Fuel Services and AREVA NP (Richland).
- DOE non-reactor nuclear facilities we have provided operational or D&D support to include BWXT Y-12, Fluor Hanford, Kaiser Hill (Rocky Flats), and CWI for the Idaho Cleanup Project.

Nuclear Criticality Safety Program Development

We have extensive, recent experience developing new Criticality Safety Programs, or modifying existing programs. NSA expertise also extends to criticality safety computer code verification, validation, and configuration control.

- Developed criticality safety programs from scratch for Zircatec Precision Industries and Cameco Corporation
- Modified existing criticality safety programs at numerous sites
- Compliance with ANSI/ANS 8 standards, DOE O 420.1, 10CFR70, and site-specific requirements

Nuclear Criticality Safety Evaluation

NSA criticality safety engineers have produced literally thousands of high-quality nuclear criticality safety evaluations.

- Double contingency analysis to satisfy 10CFR70 and DOE O 420.1 requirements
- Qualitative risk assessment to satisfy Subpart H of 10CFR70
- Formatting to DOE STD 3007 and numerous site-specific requirements
- Flowdown of NCSE controls

Safety Basis Document Integration

Coordinate with nuclear safety engineers to integrate criticality safety requirements into the safety basis documents.

- Integrated Safety Analysis (ISA), Documented Safety Analysis (DSA), Safety Analysis Report (SAR), etc.
- Clients for these activities include BWXT Y-12, CH2M Washington Idaho, Nuclear Fuel Services, AREVA NP, and Zircatec Precision Industries

Packaging and Transportation

NSA staff members have extensive experience supporting design and safety analysis of Type A and Type B shipping packages for both NRC and DOE licensing/approval.

- Chapter 6 SARP to satisfy 10CFR71 and IAEA requirements
- Onsite shipping packages to site-specific requirements
- Fresh fuel packages, spent fuel casks, UO₂ powder packages, and DOE SNM shipping packages.

Criticality Accident Alarm Systems

We have performed analyses to determine placement of detectors for criticality accident alarm systems for numerous commercial and DOE facilities.

- Determination of Minimum Accident of Concern – Fission yield, neutron/gamma ratio, neutron and photon energy distribution
- Coupled neutron/photon Monte Carlo transport utilizing MCNP
- Point kernel analysis for photons when appropriate, utilizing MicroShield
- Clients include Westinghouse (Columbia), Nuclear Fuel Services, Framatome (Erwin and Richland), and DCS MOX.



SUPERIOR STAFF

A Superior Staff

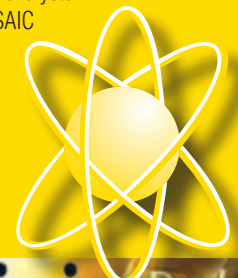
- More than 20 criticality safety engineers with more than 300 years combined experience
- More than 70% hold advanced degrees from accredited universities
- Over 60% hold active DOE security clearances

OUR CLIENTS

Our Clients for Criticality Safety Support include:

Nuclear Fuel Services
Westinghouse Electric Company
Shaw AREVA MOX Services
Areva NP
Global Nuclear Fuels
Zircatec Precision Industries
Cameco Corporation
Bruce Power
AECL

BWXT Y-12
CH2M Washington Idaho LLC
Fluor Hanford
BNFL Fuel Solutions
Kaiser Hill
Los Alamos National Lab
Sandia National Lab
Sonalysts
SAIC



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