



**Global Nuclear
Network Analysis, LLC**

SUSAN S. VOSS

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QUALIFICATIONS

Twenty-nine years experience as a systems analyst with emphasis on nuclear issues. Expertise in nuclear nonproliferation and nuclear power engineering. Proven leadership skills in managing technical teams.

EXPERTISE

Three years as a private consultant in an engineering firm. Over twenty-two years as a Los Alamos National Laboratory technical staff member specializing in nuclear engineering and systems analyses and four years experience at the Air Force Weapons Laboratory. Areas of expertise:

- International Nuclear Diversions, Terrorism, Counter-terrorism and Detection Architecture
 - Developed SENTRY a method and tool for information analyses
 - Analysis of nuclear sources, pathway and detection probabilities
 - Research on nuclear diversions and anticipated patterns
 - Sponsors include: DHS DNDO, NNSA and State Department with support to DTRA and JFCOM
- International Nuclear Power and Weapon Programs
 - Over 16 years studying Russian nuclear power, facilities, materials and programs
 - Analyses of Pakistan, India, Japan, Kazakhstan and other countries nuclear programs and materials
 - Sponsors include: NNSA NA-24, NA-25 and NA-26; State Department, DHS DNDO, DTRA and other agencies.
- Nuclear Engineering and Analysis
 - Design of nuclear power systems
 - Design of space nuclear power systems
 - Reactor safety analysis
 - Safety design basis for production reactors
 - Modeling advanced nuclear fuel cycles
 - Analysis of plutonium characteristics and management
 - Analyses of low enriched uranium for research reactors
 - Former member of the LANL reactor safety committee

EMPLOYMENT

January 2008 to present Global Nuclear Network Analysis, LLC

President of the Global Nuclear Network Analysis, LLC

- Member of the Hyperion nuclear reactor design team specializing in the system, safety, and nuclear fuel. Research on uranium-nitride fuel. Lead on modifying the General Design Criteria (GDC) for a small liquid metal cooled reactor system.
- Monitoring of the future Russian nuclear power expansion and analysis of their advanced fuel cycle,
- Analysis of the Russia-Iran interactions,
- Support for the US/Russian 123 agreement and
- Modeling of international nuclear terrorism.
- Working towards a PhD in Depth Psychology and Cultural Psychology.

1995 through January 2008 Los Alamos National Laboratory

Project Leader, Team Leader and Technical Staff Member

- Developed the Sentry data management system for tracking nuclear materials, nuclear diversions, and international terrorism. Deployed at DOE, DTRA, CIA and DIA.
- Modeling of the Russian nuclear complex:
 - NNSA Material Protection, Control and Accountability program,
 - NNSA Global Threat Reduction Initiative program research reactor evaluation,
 - Support for the US/Russian 123 Agreement nonproliferation assessment,
 - DOE Global Nuclear Energy Partnership (GNEP),
 - State Department Office of Nonproliferation,
 - NNSA Plutonium Disposition Program, and
 - NNSA evaluation of the Russia-Iran nuclear interactions.
- Russian nuclear program including their advanced fuel cycles, nuclear materials and plutonium analyses. Assessment of nuclear diversions and pathways. START III analysis for future arms control agreements.
- Project Leader for International Nuclear Pathway Analysis for the Department of Homeland Security Domestic Nuclear Detection Office. Lead analysis of Russia, Kazakhstan, India, Pakistan, Belarus, Japan and other North Korea.
- Technical staff on the US Plutonium Disposition project establishing technical standards for the fuel and working with the Russian's on cooperative efforts.
- Deputy Team Leader for the US New Production Reactor Project.
- Project Leader for the US/Russian Topaz Space Reactor Project.
- Project Leader for the US MPC&A team for the Kurchatov Institute and Mayak Production Association.
- Nuclear Systems lead for the US SP-100 space nuclear power program. Reactor design and analyses.
- Three years on assignment to the Department of Energy in Washington DC.

1981 through September 1985 Air Force Weapons Laboratory, Albuquerque, NM

Technical Staff

- Technical staff evaluating the US space reactor program. System selection committee for the US SP-100 space reactor program.
- Reactor analyses and design.

EDUCATION

University of New Mexico, Albuquerque, NM
 B.A., Nuclear Engineering Graduated 12/1983

M.S., Nuclear Engineering Graduated 8/1985

AWARDS

2007 LANL Distinguished Award for North Korean Nuclear Threat and Detection

Architecture Analyses

2001 LANL Directorate Award Threat Analysis Team Establishing the 911 War Room

2001 LANL Individual Distinguished Performance Award

1996 LANL Group Distinguished Performance Award MPC&A

1994 LANL Small Group Distinguished Performance Award MPC&A

VOSS PUBLICATIONS

1. SNAP Reactor Overview, US Air Force Weapons Laboratory, 1985. AFWL-TN-84-14, S. Voss.
2. A Review of the Rover Safety Program 1959-1972, S. Voss and G. P. Dix, Presented at the Space Nuclear Propulsion Workshop, 12/11-13/1984.
3. Space Reactors – What is a Kilogram?; D. Buden, J. Angelo, D. Ek and S. Voss; IECEC meeting, 8/19-24/1984.
4. Review of Previous Shield Analysis for Space Reactors, W. Barattino, M. El-Genk and S. Voss; January 1984; First Symposium on Space Nuclear Power Systems.
5. Burn up versus Criticality Limitations for a Potential Space Reactor Design in the 1 to 100 MWt Range; Space Nuclear Power Conference; 1986; S. Voss, P. McDaniel and D. Woodall.
6. Comparative Weights of Nuclear and Chemical Prime Power for Sprint-Mode SDI Applications; M. Emerson, S. Voss, K. Cooper and R. Rothrock; LANL; LA-UR-86-24; 1986.
7. SP-100 Project Nuclear Reactor Power for a Space-Based Radar; L Jaffe et al, 8/31/1986; JPL Publication 86-47.
8. Space reactors, a prospective for the future; E. Wahlquist and S. Voss; ANS; 4/25-28/1989; ANS Fifty years with nuclear fission conference; 1989.
9. Nuclear Reactor Power for an Electrically Powered Orbital Transfer Vehicle, AIAA Conference, 5/11-13/1987, Colorado Springs, Co, AIAA-87-1102; L. Jaffe et al.
10. SP-100 Nuclear Assembly Test Environmental Compliance; the Safety, Status and Future of Non-commercial Reactors and Irradiation Facilities; 10/4/1990 ANS Conference Boise, ID. S. S. Voss.
11. Potential Radiation Doses from a Space Nuclear Reactor Following Reentry; J. Boudreau, C. Bell, W. Scoggins, S. Voss, LANL.

12. Topaz II Preliminary Safety Assessment, AIP Conference Proceedings 1993. A. Marshall/SNL, S. Voss, V. Standley and E. Haskin, SAND-92-2242C.
13. Topaz II Reactor Modifications Overview, AIP Conference Proceedings; 1994. R. Haarman, S. Voss and V. Usov/KIAE.
14. Topaz II Design Evolution, AIP Conference Proceedings; 1994. S. Voss.
15. Russian Topaz II System Test Program (1970-1989); AIP Conference 1994. S. Voss and E. Rodriguez.
16. The Topaz 2 Flight Experiment: What We Would Learn, AIP Conference Proceedings, 1994. G. Cameron, B. Mauk and S. Voss.
17. The Topaz II Space Reactor Response Under Accident Conditions, Conference on the Safety of Advanced Reactors, April 18-20, Pittsburgh, PA. S. Voss.
18. Overview of the Nuclear Electric Propulsion Space Test Program (NEPSTP) Satellite, Proceedings of the Intersociety Energy Conversion Engineering Conference; 1994. S. Voss and E. Reynolds/APL.
19. Autonomous Power System for Remote Locations, Proceedings of the Intersociety Energy Conversion Engineering Conference; 1994. S. Voss, V. Serbin, I. Victor, I. Vishnepolsky,, V. Korindyasov, N. Brown/GE, N. Khlopin, B. Buinitzky, and E. Kaplar.
20. Topaz II System Description, 4th International Conference on Engineering, Construction and Operations in Space; 2/26, 1994 Albuquerque. S. Voss.
21. Evaluating Russian Space Nuclear Reactor Technology for United States Applications, Aerospace Testing Seminar/Conference October 11-13, 1994. G. Polansky/SNL, E. Reynolds/APL, S. Voss/LANL and G. Schmidt.
22. Satellite-Based VHF Interferometry for the Global Monitoring of Atmospheric and Ionospheric Phenomena, D. Suszcynsky et al, 11th International Beacon Satellite Symposium, LA-UR-94-1043, 7/11-15, 1994.
23. US-Russian Laboratory-to-Laboratory MPC&A at the RRC Kurchatov Institute, INMM 36th Proceedings 1995. JD Williams, et al.
24. A Systems Framework for Nonproliferation Research and Development; INMM; C. Olinger and S. Voss, 1995.
25. US-Russian Laboratory-to-Laboratory Program in Materials Protection, Control, and Accounting at the RRC Kurchatov Institute, INMM 37th Annual Proceedings. V. Sukhoruchkin, et al. 1996.
26. Sprites and Tipps over North America, LA-UR-96-3241, 1996 Fall AGU Meeting, December 15-19, 1996.
27. Blue-Light Imagery and Photometry of Sprites, LA-UR-96-3152, December 15-19, 1996.

28. Nuclear Fuels Technologies Fiscal Year 1997 Research and Development Test Results, 1997. H. Trelle et al, LANL.
29. A Model of the Russian Nuclear Complex for Warhead Transparency Analyses; 1997. S. Voss, W. Mugford, A. Oyer and D. Hayden.
30. Weapons-Grade Plutonium Mixed Oxide Feed Database Architecture, LA-UR-97-4496, 11/1997. P. Chodak, H. Trelle and S. Voss.
31. Cooperation between the Russian Federation and the United States to Enhance the Existing Nuclear Material Protection, Control and Accounting Systems at Mayak Production Association. INMM July 26-30, 1998 Naples, Fl. Prischepov, A. I, et al.
32. Comprehensive Review of Nuclear Materials of the Former Soviet Union, including Illicit Diversions, S. Voss et al, INMM Conference 1998.
33. Russian Nuclear Weapon and Nuclear Material Sites with Estimated Quantities: 1998, MAP, J. Schroeder, S. Voss, Y. Bodenstein, D. McCallum and D. Hayden, 8/1998.
34. Sites of MPC&A Cooperation – Map; J. Schroeder, S. Voss, Y. Bodenstein, D. McCallum and D. Hayden, LA-UR-98; 8/1998.
35. Analytic Survey of Illicit Trafficking of Nuclear Materials from the Former Soviet Union, INMM Conference 1998. R. Ruminer, S. Voss, Y. Bodenstein and K. Gardner.
36. An Overview of Minatom’s Ten Closed Nuclear Cities, S. Voss et al, INMM conference, 1988.
37. Model of the Russian Nuclear Weapons Complex for Application of Nuclear Weapons Transparency, START III, LANL/LDRD, 5/1999. S. Voss et al.
38. The Application of Potential Technologies for Future Nuclear Weapon Dismantlement Transparency Regime with Emphasis on Nuclear Weapon Components: Analysis, Correlation and Demonstration, INMM July 2000. L. Krouglova, A. Sviridov, VNIIA, S. Voss and J. Doyle.
39. A Comparison of the US and Russian Nuclear Infrastructures and Ideas for US Cooperative Programs in Support of Nonproliferation and Arms Control (U), NIS-8-01-021. 2/2001, S. Voss, W. Mugford, A. Oyer and D. Hayden.
40. Nuclear Diversion Database: Summary of Statistical Trends, LA-CP-01-508, S. Eaton, A. Nichols and S. Voss, 10/2001.
41. An Overview of the ASSET Information System: Analyst System Support and Evaluation Tool (ASSET), NIS-8(OUO)01-106, 8/29/2001. S. Voss et al.
42. The Evolution of Russia’s Nuclear Weapons Serial Production Complex (U), NIS-8(S)-00-247, LA-CP-01-373, 9/2001, W. Mugford and S. Voss.

43. Definition of the Transparency Regime from Nuclear Component Receipt through Disposition; INMM. L. Krouglova, A. Sviridov, VNIIA, S. Voss and J. Doyle, 2001.
44. An Overview of the Sentry Information System, NIS-8(OUO)-02-047, May 6, 2002. S. Voss et al.
45. Advanced Knowledge Integration in Assessing Terrorist Threats, December 2003, LA-UR-02-7867. S. Voss and C. Joslyn.
46. Evaluation of the Ministry of Atomic Energy and Nuclear Export Control Training, S. Voss, NIS17(U)-03-123, 9/24/2003.
47. Characteristics of Russian Plutonium, Briefing of results to NA-26, S. Voss, 9/27/2004, LACP-04-0739.
48. Status of the Russian Complex, Briefing of Results to J. Bolton, State Dept, S. Voss, 9/29/2004, LACP-04-0738.
49. Minatom's Role in Iran's Nuclear Program and related charts, S. Voss, 4/2005.
50. 2005 Chart of the Integrated Nuclear Detection Architecture: Nuclear Source-Russia; S. Voss, J. Thompson and A. Christensen, 8/2005 (Counter-terrorism analysis).
51. Russian Nuclear Material Estimates, Briefing of Results to NA-25, S. Voss, 2/7/2006, LA-CP-06-0162.
52. Rosatom Organization chart 36" by 60" wall chart, S. Voss, A. Christensen, S. Danilov and D. Maximov, 4/21/06, LA-CP-05-0218
53. Modeling of the International Nuclear Architectures of the former Soviet Union and Worldwide Research Reactors: Baseline, Gaps, Options, and Recommendations, S. Voss and J. Thompson, LA-CP-06-0377, 5/1/2006 (Counter-terrorism analysis).
54. Modeling of the International Nuclear Architectures of the Former Soviet Union and Worldwide Research Reactors, S. Voss et al, LA-CP-06-0655, 6/2006 (Counter-terrorism analysis).
55. Overview of the Nuclear Architecture of India, A. Beloousov, S. Voss and J. Thompson, LA-CP-06-0713, July 2006 (Counter-terrorism analysis).
56. Overview of the Nuclear Architecture of Pakistan, J. Gavrillov, J. Thompson, S. Voss and D. Leonard, 8/2006, LACP-06-0733 (Counter-terrorism analysis).
57. Overview of the Nuclear Architecture of Japan, M. Abhold, S. Voss and D. Leonard, 8/2006, LACP-06-0958 (Counter-terrorism analysis).
58. Nuclear Containment Strategy for Nuclear Korea and Northeast Asia, S. Voss et al, 12/2006, LACP-07-0569 (Counter-terrorism analysis).
59. Nuclear Containment Strategy for Nuclear Korea and Northeast Asia: Executive Summary and Recommendations, S. Voss, J. Thompson and M. Abhold, 12/2006, LACP-07-0569.

60. Nonproliferation Insights into the Russian Nuclear Power Program – for US State Department, S. Voss, 4/26/2007, LACP-07-0423 (Counter-terrorism analysis).
61. Russian Rosatom Reorganization and Future Plans for Nuclear Power Development – for NNSA GNEP management, 2/23/2007, LACP-07-0195.
62. Map of Nuclear Material Sites and Radiation Monitor Deployments, S. Voss, J. Thompson and J. Gavrillov, 1/8/2007, LACP-07-0075 (Counter-terrorism analysis).
63. Assessment of Research Reactors Under Construction in Russia, S. Voss and A. Christensen, Los Alamos National Laboratory with contributions from IBR, LLC Moscow and NIIAR, Dmitrovgrad, 6/20/07, NNSA GTRI Program.
64. Pakistan Nuclear Detection Architecture Issues and Design; S. Voss, et al, Los Alamos National Laboratory, 9/2007. LACP-07-1217 (Counter-terrorism analysis).
65. Evaluation of Russian IRT and VVR Research Reactor for Conversion to Low Enriched Uranium (LEU), S. Voss, et al., 11/2007.
66. An Assessment of Russian Plutonium, 12/2007.
67. The Dichotomy between Russian Energy Goals, Nuclear Power Development and Military Objectives, S. Voss, 1/2008, LAUR-07-7862, CSIS PONI Publication.
68. An Assessment of Russian Nuclear Safeguards, S. Voss, 6/2008, INMM Conference.
69. Assessing the Global Nuclear Threat, S. Voss, GNNA, 6/2008, INMM Conference.
70. NPT Noncompliance, S. Voss, GNNA, 3/2009, INMM Risk Conference.
71. Risk Assessment of Nuclear Proliferation and Nuclear Terrorism; Power Point Presentation; April 2009; Risk Conference, Santa Fe, NM.
72. Global Energy Assessment Report, Nuclear Power, Von Hippel/Princeton Un., F. et al, IIASA, Vienna. Draft.
73. Assessment of Uranium Nitride Fuel for a Small Reactor, S. Voss, Draft, 11/2010.
74. Proposed Modifications to the General Design Criteria for a Small, Liquid Metal Cooled Reactor System, S. Voss and K. Sasser; Presentation; 10/2010.