Nancy K. Hayden, PhD

 (505) 250-6895 or (505) 845-9634

nkhayde@sandia.gov

# Curriculum Vitae

#### **Summary of Expertise and Skills**

Subject matter expert in applied complexity science and systems engineering for national security policy analysis and executive-level decision making. Demonstrated excellence at creating and leading collaborative research partnerships between US Government agencies, universities, Non-governmental organizations, international partners and local communities to insightfully direct theoretical research to inform critical and timely decision-making under politically sensitive conditions. Successfully bridge research communities to build multi-disciplinary teams in fundamental physics, information sciences, systems engineering and social sciences. Extensive overseas field work and cross-cultural interview experience in conflict settings. An innovator and visionary, willing to take risks necessary to effect organizational change. Out-of-the-box, creative thinker with broad interdisciplinary technical expertise built on deep mathematical foundations in logical analysis. Excellent at building networks and managing collaborative relationships at all levels and across different cultures. Self-motivated with positive attitude; clear communicator, culturally sensitive; handle high-stress and ambiguous situations with composure. Experienced handling sensitive business and/or classified data. Flexible problem-solving approaches, working equally well in teams or independently. Passionate about mentoring next-generation peace engineers.

#### **Current Positions (2016 to present)**

*R&D Systems Research Analyst, Strategic Futures and Policy Analysis, Sandia National Laboratories* Design and lead multi-disciplinary research to guide strategic decisions of executive leadership to advance corporate purpose. Build teams to frame, distill and communicate results of decision and foresight analysis at nexus of systems engineering, science and technology, and national security applications and policy. Areas of applied expertise: Space Control and Deterrence policy, Artificial Intelligence and Autonomy for National Security, Applied Complexity Science, Peace Engineering.

*Research Associate, Center for International and Security Studies at Maryland, School of Public Policy, University of Maryland* Apply systems dynamics and complexity science to study global security and strategic stability in contested settings.

*Faculty Associate, Electrical and Computing Department, UNM* (appointment in progress). Conduct joint research and develop curriculum for systems engineering solutions to advance peace and stability.

#### **Previous Positions**

2013-2015 Doctoral Candidate, International Security and Economic Policy, UMD*.*

*Conduct field research, prototype hybrid analytic techniques to explain long-term impacts of conflict interventions.*

2012-2013 R&D Systems Research Analyst, Emerging Technologies, Sandia National Labs*.*

*Create & implement quantitative prioritization framework for decisions on emerging science and technology security threats.*

2008-2012 R&D Systems Research Analyst, Proliferation Assessments, Sandia National Labs. *Stand-up analytic capabilities for interagency intelligence fusion cell based in Washington, DC for Counter-WMD engineering analysis; technical reach-back to Sandia & other national laboratories.*

2007-2008 Senior Fellow, Defense Threat Reduction Agency/Advanced Systems & Concepts Office. *Intergovernmental personnel loan (IPA) to create, manage, and evaluate Agency’s funding portfolio of academic and applied research in dynamic network analysis.*

2004-2007 R&D Systems Research Analyst, Proliferation Assessments, Sandia National Labs.

*Lead projects to prototype applications of complexity science, network analysis, and behavioral sciences to threat assessments for national security community.*

2001-2004 R&D Systems Research Analyst, Advanced Concepts Group, Sandia National Labs. *Explore epistemology & applications of complexity science to dynamics of terrorism.*

2000-2001 R&D Systems Research Analyst, Nonproliferation and National Security Business Unit, Sandia National Labs.

*Develop and present strategic concepts to USG for Sandia and US leadership in developing programs to advance Global Nuclear Materials Management.*

1999-2000R&D Systems Research Analyst, Cooperative Monitoring Center, Sandia National Labs. *Project leader for nuclear nonproliferation and global nuclear materials management.*

1998-1999 Senior Fellow, Office of Nonproliferation and National Security, Department of Energy. *Intergovernmental personnel loan (IPA) to provide subject matter expertise on cooperative nuclear materials management programs with China, Russia, Korea*

1996-1998 R&D Systems Research Analyst, International Security Initiatives, Sandia National Labs. *Sandia project leader for Tri-lab China Arms Control Technical Exchange.*

1994-1995 R&D Systems Research Analyst, WIPP Systems Analysis, Sandia National Labs*.*

*Co-managed decision analysis of complex policy, engineering, science trade-offs to support Congressionally mandated strategy for Waste Isolation Pilot Plant (WIPP) license application.*

1992-1994 R&D Systems Research Analyst, Environmental Restoration, Sandia National Labs.

*Lead technical integration projects to assess and resolve community concerns*.

1982-1986 R&D Systems Research Analyst, Yucca Mountain Project, Sandia National Labs*.*

*Lead US team for international benchmarking performance assessment codes for nuclear waste repository.*

1978*-*1980R&D Experimental Analyst, Nuclear Reactor Safety Program, Sandia National Labs.

#### **Education**

|  |  |
| --- | --- |
| **PhD International Security and Economic Policy, University of Maryland** | 2016  |
| Thesis Title: *Balancing Belligerents or Feeding the Beast: Transforming Conflict Traps.* Dynamics of peace & security interventions in persistent civil conflicts.  |  |
| Committee Chairs: Dr. John Steinbruner (Director of Center for International and Security Studies at Maryland), Dr. Robert Orr (Dean, UMD School of Public Policy) |  |
| Academic Advisor: Honorable Dr. Jacques Gansler  |  |
|  |  |
| **M.S. Mechanical Engineering University of California at Berkeley**  | 1982 |
| Thesis Title: *Efficacy of Thermoclines as Energy Storage Systems for Solar Towers.* Application of computational thermodynamics and fluid mechanicsfor energy efficiency. |  |
| Academic Advisor: Dr. “Pepe” Humphries, Computational Fluid Mechanics Lab |  |
|  |  |
| **B.S. Mathematics, University of Texas at Austin**  | 1978 |
| *Theoretical mathematical foundations and logical analysis*  |  |

**Continuing studies:** graduate courses in complexity science, operations research, probability and statistics, network analysis, fuzzy logic, uncertainty quantification, decision analysis, system dynamics, organizational behavior, social movements, cultural psychology, intelligence analysis, and earth sciences

**Professional training**: National Security Space Policy certification (CSIS executive program), Nonviolent Conflict Management certification (Fletcher School of International Studies), certified USG Contract Officer Technical Representative, strategic planning, team building, diversity.

#### **Clearances**

TS/SI and DOE/Q

#### **Career Highlights**

* Led trans-laboratory team to develop unifying framework and Corporate Strategy for AI and Autonomy, and to inform National AI R&D Strategy. Identified key R&D foundations, gaps, challenges, & transformational opportunities for across diverse missions. (2017-2018)
* Developed mixed-methods analytic approach to explain and assess dynamic impact of interactions between peace and security interventions in complex conflict settings. Applied to conflicts in Africa to show unique role of gender empowerment. (2014-2016)
* Developed framework to prioritize emerging science and technology threats. Predicted disruptive impacts and guided mid-term (3-5 yr.) strategic planning for USG. (2013)
* Created test bed for dynamical network analysis for intelligence sciences. Successfully predicted unanticipated developments during Arab Spring to inform national security policy. (2011)
* Pioneered applications of complexity science to understand social movements, radicalization, WMD proliferation, and terrorism. Resulted in two book publications and foundations for UMD Center of Excellence in Studies of Terrorism and Responses to Terrorism (START). (2002-2006)
* Led the development of alternative DOE technical program to implement US-Russian Plutonium Production Reactor Conversion Treaty to satisfy treaty obligations while addressing security and nonproliferation goals concerns. (1998-1999)
* Established technical dialogue with Chinese nuclear scientists during early years of rapprochement in US-Chinese nuclear relations. Laid foundations for present-day China Center of Excellence for nuclear security established in 2016. USG officials cited effort as the “only window” into the Chinese nuclear community during critical period. (1995-1998)
* Managed multi-disciplinary team to analyze and prioritize DOE technical and policy programmatic decision options to successfully license world’s first underground nuclear waste disposal facility. DOE Secretary Hazel O’Leary directed DOE facility managers to adopt method as a decision support model for all technical programs. Continues as a precedent for strategic decision support to regulatory analysis. (1994-1995)
* Developed experimentally based engineering and physics models of loss-of-coolant accidents in nuclear power plants. Models incorporated into standard industry analysis tools that were critical for responding to the Fukushima disaster. (1984-1986)

#### **Critical Skills**

* Leadership and Mentoring
	+ Strategic planning – work with executive teams and staff to define and direct R&D portfolios, initiate collaborations for start-up organizational missions
	+ Project innovation and management – conceptualize new strategic possibilities, develop and manage multi-million-dollar research programs to implement in interagency government, university, and sensitive international settings
	+ Mentor staff and student interns studying engineering, social science, and data sciences
	+ Develop, organize, and co-lead study abroad student programs
* Research and development
	+ Team with academia and national labs to develop multi-disciplinary, theoretical and applied analytic methods for understanding of threat behaviors impacting national security and global peace
	+ Develop and publish original applications of complexity sciences for assessing behaviors in socio-technical systems in national security contexts
	+ Conduct all source information discovery and analysis of technical, social, and political trends to produce actionable intelligence with significant impact to international stability and security
	+ Present finished research results in peer-reviewed technical conference papers and book publications, policy briefs, intelligence assessments
* Analysis
	+ Develop and apply formal analytic frameworks to identify key drivers, future scenarios, and intervention strategies to anticipate and shape strategic futures
	+ Conduct risk-based decision support at intersection of policy and technology
	+ Develop computational modeling and simulation of complex adaptive system dynamics
	+ Apply quantitative statistics for identifying correlation and evaluating causation in data sets for evaluating decision pathways and outcomes
	+ Physics-based engineering research and development to support experimental studies in nuclear physics
* Customer Engagement and Partnership Building
	+ Team with customers and potential partners to build networks, envision new possibilities, and negotiate mutually beneficial, sustainable relationships to build and sustain them
	+ Communicate complex technical programs in pubic venues to senior executives (SNL, DOE, DOD, DHS, DOS, NSC), academia, Congressional staff, mass publics (e.g., diverse advocacy groups), external peer groups, diplomats and press corps
	+ Engage with city, state, and national legislative bodies through committee testimony (US Congress, State of NM, Cities of Albuquerque and Santa Fe)

#### **Select Global Security Consultations and Decision Briefs**

|  |  |
| --- | --- |
| * *National Security Space Policy and Nonproliferation,* Department of Energy
 | 2019  |
| * *AI and Autonomy: Strategic Implications for National Security, Decision Brief,* Sandia Executive Leadership Team
 | 2018 |
| * *Future of Global Governance Dynamics,* Sandia Executive Leadership Team
 | 2017 |
| * *Complexity and Strategic Understanding for Intelligence Analysis*, National Academy of Sciences Decadal Study Panel
 | 2017 |
| * *Balancing Belligerents or Feeding the Beast: Conflict Transformation,* National Intelligence Council
 | 2016 |
| * *Wicked Risks, Space Weather, and Critical Infrastructure Resiliency*, Carlton University and Canadian Intelligence Services, Quebec, Canada
 | 2013 |
| * *Terrorist Innovation and Learning*, Swedish National Defense College
 | 2012 |
| * *Social Network Analysis: State of art and applications for the intelligence community*, DTRA Intelligence Threat Reduction Advisory Committee
 | 2008 |
| * *Tailored Deterrence in the Transatlantic Alliance: Nuclear, Conventional and Non-military strategies*, Wilton Park Conference, United Kingdom
 | 2008 |
| * Strategic Intelligence Decision Briefs to Senior USG Officials
 | 2007-2010 |
| * *Homeland Security and Complexity*, Massachusetts Institute of Technology/OSTP
 | 2004 |
| * *Nontraditional Counterinsurgency Measures*, Secretary of US Air Force
 | 2003 |
| * *US and China Cooperation on Arms Control and Nonproliferation*, Eighth International Arms Control Conference, Albuquerque, NM
 | 1998 |
| * *US-China Lab-to-Lab*, US Congress and staff
 | 1998 |
| * *WIPP Decision Brief*, DOE Secretary O’Leary
 | 1995 |

#### **Select Transformation Workshops**

|  |  |
| --- | --- |
| * Autonomy and National Security – organized series of workshops with strategic academic partners on autonomy and the transformation of national and global security
 | 2017/2018 |
| * Transnational Islamic Activism and Radicalization - organized series of international workshops with academia and intelligence organizations culminating in joint theory development and application for understanding radicalization and violent extremism
 | 2006 |
| * Take Our Daughters to Work Day – organized a national workshop for girls 9-12 years old with remote participation from women leaders at the National Academy of Sciences and US Department of State to address issues of young women in Afghanistan
 | 2004 |
| * Know Net – international workshop to initiate knowledge sharing network of international terrorism experts in academia, government, and public
 | 2003 |
| * Terrorism and Complexity Science – established working group of experts in academia, government and industry through the Santa Fe Institute for Complexity Sciences
 | 2002 |

#### **Special Appointments**

* Assistant Director, Study Abroad Program for Leadership, Human Rights and Democracy in the Arab World (2013-2014), School of Public Policy, UMD.
* NAS Decadal Study on Social and Behavioral Science Research for Intelligence (2018).

#### **Professional Societies and Boards**

|  |  |
| --- | --- |
| * INCOSE –Augmented Intelligence Challenge Team, *Co-leader*
 | 2018 - present  |
| * System Dynamics Society (*Executive Council Member 2016 – 2019)*
 | 2008 – present |
| * Dean Search Committee, UMD School of Public Policy, *student member*
 | 2013 - 2014 |
| * Threat Reduction Advisory Council on Intelligence*,* DTRA, *SME*
 | 2008 |
| * Social, Neurological, and Psychological Working Group of the Science and Technology for Intelligence Committee (STIC), *Sandia representative*
 | 2007 – 2010  |
| * Women in International Security, *member*
 | 2006 -present |
| * American Sociological Association, *member*
 | 2004 – 2012 |
| * American Political Science Association, *member*
 | 2006 -present |
| * Association for Public Policy Analysis and Management, *member*
 | 2007 -present |
| * American Nuclear Society, *member*
 | 1978 – 2008 |
| * Society of Women Engineers, member
 | 1982 – 2008 |
| * Journal of Asymmetric Conflict, *Editorial Review Board Member*
 | 2007- present |
| * DHS Review Panel for University COE for Study of Terrorism, *member*
 | 2006 |

#### **Awards and Honors**

* Sandia Employee Recognition Award for Leadership (nomination) 2018
* Sandia SPOT Award for Corporate Strategy for Autonomy 2017
* Yamamoto-Scheffelin Award for Best Dissertation UMD/CISSM 2016
* Sandia Lifelong Learning Award 2013
* President’s Volunteer Service Award 2011, 2012
* Sandia High School Outstanding Volunteer Service Award 2005
* Sandia Employee Recognition Award Nomination 2002
* Sandia Award for Excellence, Integrated Nuclear Materials Management Plan 2000
* Sandia Employee Recognition Award for System Prioritization Method (SPM) 1995
* Sandia Award for Excellence for Community Outreach Program 1994

#### **Community Leadership and Service**

* Girls, Inc. of Santa Fe 2016 - present
* Science and Technology Advisor, Santa Fe City Council 2016 - 2017
* State of the Democratic Party of NM Platform and Resolutions Committee 2016-2019
* Albuquerque Interfaith Community Organizer and Leader, *Board of Directors* 2010 – 2013
* Dismas House, *Board Member* 2012 - 2013
* Public Policy Advocacy and Social Justice Ministry Chair, 2010 - 2013

 *St. Michaels and All Angels Episcopal Church, Albuquerque, NM*

* Environmental Stewardship Spiritual Program Chair, 2007 – 2008

 *Christ Church, Alexandria, VA*

* Music Director, *Prince of Peace Catholic Community, Albuquerque, NM* 2004 – 2007
* United Way Women in Philanthropy Leadership Circle 2002 -present

*Grant review panel member*

* Parish Council, Education Representative, 1993 – 1995

 *Prince of Peace Catholic Community, Albuquerque, NM*

* Chamber Orchestra, Board Member, Albuquerque, NM 1990 – 1992

#### **Publications and Presentations**

* Hayden, Nancy K., Diana Bull, George Backus, Joe Hardesty, Mark Ivey, Lori Parrott, Jonathan Whetzel, “The Raven: A Multi-scale SDAC System for the Arctic”, Sandia National Laboratories, November 2019, Tracking No. 1055780.
* Hayden, Nancy K., Peter Gambill, Mallory Stewart, “Evolving USG Space Policy Impacts on NNSA Nonproliferation and Arms Control Mission”, Sandia National Laboratories, September 2019, SAND2019-10528.
* Hayden Nancy K., Richard Craft, Mikaela Armenta, Yasmin Dennig, Elizabeth Kisten-Keller, Howard Passell, Natacha Peter-Stein, Michael Vannoni, “Peace Engineering and Sandia: A Concept Paper”, Sandia National Laboratories, February 2019, SAND 2019-17210.
* Hayden, Nancy K., George Backus, Diana Bull, Sharon Deland, Chad Haddal, Elizabeth Kistin-Keller, Howard Passell, “Strategic Foresight Analysis: Critical Risks and Future Threats”, Sandia National Laboratories, January 2019, Tracking No. 902776.
* Hayden, Nancy K., “Engineering Peace and Security Interventions: Dynamics in Somalia”, WEEF-GEDC 2018 Peace Engineering Conference, 12-16 November 2018, Albuquerque, NM. SAND2018-12969C.
* Hayden, Nancy K., Troy Peterson (SSI), Mark Petrotta (SSI), Donna Rhodes (MIT), and Bill Schindell (ICTT Systems Sciences), “INCOSE Augmented Intelligence for Systems Engineering”, MIT Human-Machine Collaboration for National Security, Lexington KY, October 2018. SAND2018-12403C.
* Carroll, Ed, Dana Grisham, Nancy K. Hayden, Steve Jenkins, Anne O’Neil, Elliot Rich, Frank Salvatore, Bill Schindel, Chris Schreiber, Sharon Trauth, “A Model-Based Engineering Manifesto”, 21st Annual Systems & Mission Engineering Conference, National Defense Industries Association, 22-25 October 2018, Tampa Florida.
* Aimone, J. Bradley, Richard Craft, John Feddema, Nancy Hayden, Philip Kegelmeyer, Wendy Shaneyfelt, Ann Speed, David Stracuzzi, “Artificial Intelligence for National Security - An RFI Response to the 2016 National Artificial Intelligence R&D Strategic Plan”, Sandia National Laboratories, October 2018.
* Hayden, Nancy K., “Transforming the Conflict Trap: From Theory to Practice”, 36th International Conference of the System Dynamics Society, 6-10 August 2018, Reykjavik, Iceland. SAND2018-11140C.
* Hayden, Nancy K., Asmeret Naugle, and Mark Smith, “Autonomy and the Future of Work”, 36th International Conference of the System Dynamics Society, 6-10 August 2018, Reykjavik, Iceland. SAND2018-8523C.
* Hayden, Nancy K., James Bradley Aimone, Daniel Grubbs, Phillip Heerman, Alexander Roesler, Jonathan Salton, Hannah Stangebye, Bradley Steinfeld, Hartono Somali, Karla Weaver, “Strategic Priority Analysis: Systems Approach to AI and Autonomy”, Sandia National Laboratories, May 2018. Tracking No. 808141.
* Hayden, Nancy K., “Balancing Belligerents or Feeding the Beast: Transforming Conflict Traps”, CISSM Policy Brief, February 26, 2018, Center for International & Security Studies at Maryland, School of Public Policy, University of Maryland at College Park. <http://www.cissm.umd.edu/publications/balancing-belligerents-or-feeding-beast-transforming-conflict-traps-0>
* Haddal, Chad, Nancy K. Hayden, Len Malcynzski, Thor Osborn, Howard Passell, Elizabeth Kistin-Keller, Drake Warren, George Backus and Tom Nelson, “The Future of Global Governance Dynamics”, Global Futures Series, Sandia National Laboratories, March 2017. SAND2017-13599PE.
* Hayden, Nancy K., Rick Craft, Tom Nelson, John Wagner and Jeff Apolis, “Sandia National Hayden, Nancy K., “Autonomy at Sandia National Laboratories: Executive Summary of Workshop on Programmatic Management Unit Perspectives January 24, 2017”, Sandia National Laboratories, September 2017. SAND2017-10514.
* Laboratories Corporate Strategy for Autonomy, Rev 0”, Sandia National Laboratories, November 2017. SAND2017-13243.
* Hayden, Nancy K., and Steven Kleban, “Autonomy and Complexity at Sandia – Executive Summary of Academic Alliance Workshop on Complexity and Autonomy”, Sandia National Laboratories, May 2017. SAND2-17-5237R.
* Hayden, Nancy K., Mark Ackerman and George Backus, “Complexity Science: A Mechanism for Strategic Foresight and Resiliency in National Security Decision-Making, White Paper for National Academies of Sciences, Engineering and Medicine Decadal Survey of Social and Behavioral Sciences and Applications to National Security”, March 23, 2017, SAND600369
* Meeks, Kent, Richard Craft, and Nancy K. Hayden, “Executive Perspectives on Autonomous Systems Work at Sandia”, Sandia National Laboratories, February 2017. SAND2017-1844PE.
* Hayden, Nancy K., “Balancing Belligerents or Feeding the Beast: Transforming Conflict Traps”, PhD dissertation, University of Maryland, May 2016.
* Hayden, Nancy K., “Resilience in Civil Conflict and Implications for Intervention Policies: An integrative systems approach to policy design”, System Dynamics International Conference, Delft, Amsterdam, July 2014. SAND2015-10664C.
* Hayden, Nancy K., “Innovation, Learning, and Resiliency in Covert Organizations” System Dynamics International Conference, Boston, MA, July 2013, SAND2013-5937C
* Hayden, Nancy K., “[Innovation and Learning in Covert Organizations: A Complex Adaptive System Framework”, SAND2012-6753A](http://librarysearch.sandia.gov:1701/primo_library/libweb/action/display.do?tabs=detailsTab&ct=display&fn=search&doc=snlraa5311415&indx=9&recIds=snlraa5311415&recIdxs=8&elementId=8&renderMode=poppedOut&displayMode=full&frbrVersion=&dscnt=0&vl(3411670UI0)=creator&vl(28095602UI1)=reports&scp.scps=scope%253A%2528%2522SNL%2522%2529%252Cprimo_central_multiple_fe&tab=default_tab&dstmp=1375141598944&vl(freeText0)=Hayden%252C%2520N&vid=snl&mode=Basic) Sandia National Laboratories, Albuquerque, NM August 2012
* Hayden, Nancy K., “Democracy and Authority in the Episcopal Church of the USA: A Case Study of the Diocese of the Rio Grande”, Memo to Rt. Rev Micheal Vono, January 24, 2012, Albuquerque, NM. https://www.academia.edu/7098144/Democracy\_and\_Authority\_in\_the\_Episcopal\_Church\_of\_the\_USA
* Hayden, N. K. “Terrifying Landscapes: Understanding Motivations of Non-State Actors to Acquire and/or Use Weapons of Mass Destruction,” in Unconventional Weapons and International Terrorism, Magnus Ranstorp & Magnus Normark (eds.) Rutledge, 2009.
* N. K. Hayden, "Dynamic Social Network Analysis: Present Roots and Future Fruits," Advanced Systems and Concepts Office, Defense Threat Reduction Agency, Ft. Belvoir, VA July 2009.
* Hayden, Nancy, “Terrifying landscapes.” Report to Defense Threat Reduction Agency, SAND2007-5375P, Sandia National Laboratories, Albuquerque, NM August 2007
* Hayden, N. K. “The Complexity of Terrorism: Social and Behavioral Understanding Trends for the Future,” Information Age Warfare Quarterly (2006) Vol 1, Number 2, Alidade, Inc.
* Hayden, Nancy K., Nancy Orlando-Gay, Linda Gilliam, and Irene Dubika, “[Sandia Analytic Test Bed” SAND2006-2149P](http://librarysearch.sandia.gov:1701/primo_library/libweb/action/display.do?tabs=detailsTab&ct=display&fn=search&doc=snlraa5240527&indx=6&recIds=snlraa5240527&recIdxs=5&elementId=5&renderMode=poppedOut&displayMode=full&frbrVersion=&dscnt=0&vl(3411670UI0)=creator&vl(28095602UI1)=reports&scp.scps=scope%253A%2528%2522SNL%2522%2529%252Cprimo_central_multiple_fe&tab=default_tab&dstmp=1375141598944&vl(freeText0)=Hayden%252C%2520N&vid=snl&mode=Basic) Sandia National Laboratories, Albuquerque, NM Nancy Kay Hayden April 2006
* Hayden N.K., L. Cumerford, and S. Spires, “Surprise: Search and Find Strategies to Counter Insurgencies, Terrorism, and Proliferation of WMD,” Office of Secretary of Defense White Paper, Washington DC, 2006.
* Hayden, Nancy K., “[The Complexity of Terrorism” SAND2006-2230](http://librarysearch.sandia.gov:1701/primo_library/libweb/action/display.do?tabs=detailsTab&ct=display&fn=search&doc=snlraa5240505&indx=5&recIds=snlraa5240505&recIdxs=4&elementId=4&renderMode=poppedOut&displayMode=full&frbrVersion=&dscnt=0&vl(3411670UI0)=creator&vl(28095602UI1)=reports&scp.scps=scope%253A%2528%2522SNL%2522%2529%252Cprimo_central_multiple_fe&tab=default_tab&dstmp=1375141598944&vl(freeText0)=Hayden%252C%2520N&vid=snl&mode=Basic), Sandia National Laboratories, Albuquerque, NM Nancy Kay Hayden April 2006
* Hayden, Nancy K., Leslie D. Cumerford and Shannon V. Spires, “Surprise!” SAND2006-2294, Sandia National Laboratories, Albuquerque, April 2006
* Hayden, Nancy K., “Terrorism: social behavior and understanding and trends for the future.” SAND2005-1858P Sandia National Laboratories, Albuquerque, NM Nancy Kay Hayden March 2005
* Hayden, Nancy K., “Emerging Threats and Terrorism Analysis – Commentary”, SAND2005-6460C, Sandia National Laboratories, Albuquerque, NM October 2005
* Hayden, Nancy K., “Communication, cooperation, and organization: rethinking security in an increasingly complex world.” SAND2004-2557C, Sandia National Laboratories, Albuquerque, NM April 2004.
* Hayden, Nancy K., “Knowing terrorism.” SAND2004-0518P, Sandia National Laboratories, Albuquerque, NM February 2004
* Hayden, Nancy K., “The Knowledge Network (KnowNet): deepening the nation's understanding of terrorist behavior.” SAND2004-0476P, Sandia National Laboratories, Albuquerque, NM February 2004
* Hayden, Nancy K., “Know Fest: a workshop to explore building a terrorism knowledge network (KnowNet).” SAND2004-0475P, Sandia National Laboratories, Albuquerque, NM January 2004
* Hayden, Nancy Kay (Sandia National Laboratories); Wendell B. Jones (Sandia National Laboratories); Marc Sageman (University of Pennsylvania), Gunter Scharz (Germany); Ted Myer (MITRE Corporation); Tom Lomas (Navy Postgraduate School), “Project Albert International Workshop 7.1: The Clique Working Group Results.” SAND2004-0919P Sandia National Laboratories, Albuquerque, NM September 2003
* Hayden, Nancy K., “National security, the homeland, and complexity.” SAND2003-2180P, Sandia National Laboratories, Albuquerque, NM June 2003
* Ellis, Doris E., Nancy Kay Hayden, Stanley K Fraley, and Dennis Leslie Mangan, “The nuclear fuel cycle: transparent decision-making in the new nuclear future.” SAND2001-1186C, Sandia National Laboratories, Albuquerque, NM April 2001
* Prindle, Nancy Hayden; Dennis L. Manga; Thomas L Sanders; and Doris E Ellis, “Global nuclear materials management: building the framework.” SAND2000-2480C Sandia National Laboratories, Albuquerque, NM July 2000
* Prindle, N. Hayden, “The U.S.-China Lab-To-Lab Technical Exchange Program”, The Nonproliferation Review, 5:3, James Martin Center for Nonproliferation Studies, 1998.
* Prindle, Nancy K. Hayden, “How the US reaches internal technical consensus on nuclear export control issues.” SAND97-2039C, Sandia National Laboratories, Albuquerque, NM July 1997
* Boak, Deidre M, Sandia National Laboratories. Laboratories., Albuquerque, NM; Nancy Hayden Prindle, Sandia National Laboratories. Laboratories., Albuquerque, NM; R. A Bills U.S. Department of Energy, Carlsbad, NM; Stephen Curtis Hora University of Hawaii at Hilo, Hilo, HI; Richard C Lincoln Sandia National Laboratories. Laboratories., Albuquerque, NM; Frederick T Mendenhall Sandia National Laboratories. Laboratories., Albuquerque, NM; Ruth F Weiner, “Condensed summary of the Systems Prioritization Method as a decision-aiding approach for the Waste Isolation Pilot Plant.” SAND96-2991C, Sandia National Laboratories, Albuquerque, NM March 1997
* Boak, Deidre; Nancy Hayden Prindle; R. A Bills; Stephen Curtis Hora; Richard C Lincoln; Frederick T Mendenhall; Ruth Weiner, “Summary of the systems prioritization method (SPM) as a decision-aiding tool for the Waste Isolation Pilot Plant.” SAND95-1998, Sandia National Laboratories, Albuquerque, NM December 1996
* Prindle, Nancy Hayden; Frederick T Mendenhall; Deidre M Boak; Walter Eugene Beyeler; David Keith Rudeen; Richard C Lincoln; Kathleen M Trauth; Daniel Richard Anderson; Melvin Gary Marietta; Jon Craig Helton, “The Second iteration of the systems prioritization method: A systems prioritization and decision-aiding tool for the Waste Isolation Pilot Plant. Volume I, Synopsis of method and results.” SAND95-2017/1, Sandia National Laboratories, Albuquerque, NM May 1996
* Prindle, Nancy Hayden; Frederick T Mendenhall; Walter Eugene Beyeler; Kathleen M Trauth; Stephen Curtis Hora; David Keith Rudeen; and Deidre M Boak, “The Second iteration of the systems prioritization method: A systems prioritization and decision-aiding tool for the Waste Isolation Pilot Plant, Volume II, Summary of technical input and model implementation.” SAND95-2017/2 Sandia National Laboratories, Albuquerque, NM May 1996
* Prindle, Nancy Hayden; Deidre M Boak; Ruth F Weiner; Walter Eugene Beyeler; Stephen Curtis Hora; Melvin Gary Marietta; Jon Craig Helton; David Keith Rudeen; Hong-Nian Jow; Martin S Tierney, “The second iteration of the systems prioritization method: A systems prioritization and decision-aiding tool for the Waste Isolation Pilot Plant, Volume III, Analysis for final programmatic recommendations.” SAND95-2017/3, Sandia National Laboratories, Albuquerque, NM May 1996
* Helton, Jon Craig; Daniel Richard Anderson; Bruce L Baker; James E Bean; Jerry W Berglund; Walter Eugene Beyeler; Rebecca Lynn Blaine; Kathleen M Economy; James W Garner; Stephen Curtis Hora; Richard C Lincoln; Melvin Gary Marietta; Frederick T Mendenhall; Nancy Hayden Prindle; David Keith Rudeen; J. D Schrieber; A. W Shiver; Lanny N Smith; Peter N Swift; Palmer Vaughn, “Computational implementation of a systems prioritization methodology for the Waste Isolation Pilot Plant : a preliminary example.” SAND94-3069, Sandia National Laboratories, Albuquerque, NM April 1996
* Prindle, N. Hayden, et al, “The second iteration of the Systems Prioritization Method: A systems prioritization and decision-aiding tool for the Waste Isolation Pilot Plant: Volume 2, Summary of technical input and model implementation”, Sandia National Laboratories, Albuquerque, NM, SAND--95-2017/2
* Tierney, Martin S; Nancy Hayden Prindle; Ruth F Weiner; Deidre M Boak; and Stephen Curtis Hora “Decision-making for geologic repositories - a case study.” SAND95-2459A, Sandia National Laboratories, Albuquerque, NM November 1995
* Walter, Eugene Beyeler; Curtis Lee Harris; Nancy Hayden Prindle; and Deidre M Boak, “Systems prioritization method (SPM) CD-ROM demonstration for Waste Management '96.” SAND95-2015A, C Sandia National Laboratories, Albuquerque, NM August 1995
* Phelan, James M., Nancy Hayden Prindle, and S. T. Purvis, “Sandia National Laboratories mixed waste landfill integrated demonstration.” SAND92-1139C May 1992
* Prindle, Nancy K. Hayden and Jeffrey Foster, “Sandia implementation of the TRACR3D flow and transport code.” SAND85-0008 Sandia National Laboratories, Albuquerque, NM June 1987
* Hayden, Nancy K., “Benchmarking NNWSI flow and transport codes: Cove 1 results.” SAND84-0996, Sandia National Laboratories, Albuquerque, NM June 1985
* Tyler, L.D., Ralph R Peters, Nancy Kay Hayden, J Keith Johnstone, and Scott Sinnock, “Nevada Nuclear Waste Storage Investigation performance assessment considerations.” SAND83-1451C, Sandia National Laboratories, Albuquerque, NM November 1983
* Hayden, Nancy, “Performance assessment in the Nevada nuclear waste storage investigation.” SAND82-1581A Sandia National Laboratories, Albuquerque, NM June 1982
* McArthur, Dave and Nancy K. Hayden, “[Preliminary results of the first four TRAN fuel-freezing experiments.” SAND82-0262A](http://librarysearch.sandia.gov:1701/primo_library/libweb/action/display.do?tabs=detailsTab&ct=display&fn=search&doc=snlhorizon41528&indx=4&recIds=snlhorizon41528&recIdxs=3&elementId=3&renderMode=poppedOut&displayMode=full&frbrVersion=&dscnt=0&vl(3411670UI0)=creator&vl(28095602UI1)=reports&scp.scps=scope%253A%2528%2522SNL%2522%2529%252Cprimo_central_multiple_fe&tab=default_tab&dstmp=1375141598944&vl(freeText0)=Hayden%252C%2520N&vid=snl&mode=Basic) Sandia National Laboratories, Albuquerque, NM January 1982
* Hayden, Nancy K., “[TRAN experiment series in the Sandia Annual Core Research Reactor Facility – abstract for presentation at American Nuclear Society Annual Conference.
SAND81-2206A](http://librarysearch.sandia.gov:1701/primo_library/libweb/action/display.do?tabs=detailsTab&ct=display&fn=search&doc=snlhorizon40990&indx=2&recIds=snlhorizon40990&recIdxs=1&elementId=1&renderMode=poppedOut&displayMode=full&frbrVersion=&dscnt=0&vl(3411670UI0)=creator&vl(28095602UI1)=reports&scp.scps=scope%253A%2528%2522SNL%2522%2529%252Cprimo_central_multiple_fe&tab=default_tab&dstmp=1375141598944&vl(freeText0)=Hayden%252C%2520N&vid=snl&mode=Basic) Sandia National Laboratories, Albuquerque, NM October 1981
* [Hayden, Nancy K., “Analytic model of freezing liquid penetration in tube flow.”
SAND81-1647C](http://librarysearch.sandia.gov:1701/primo_library/libweb/action/display.do?tabs=detailsTab&ct=display&fn=search&doc=snlhorizon40554&indx=1&recIds=snlhorizon40554&recIdxs=0&elementId=0&renderMode=poppedOut&displayMode=full&frbrVersion=&dscnt=0&vl(3411670UI0)=creator&vl(28095602UI1)=reports&scp.scps=scope%253A%2528%2522SNL%2522%2529%252Cprimo_central_multiple_fe&tab=default_tab&dstmp=1375141598944&vl(freeText0)=Hayden%252C%2520N&vid=snl&mode=Basic), Sandia National Laboratories, Albuquerque, NM July 1981