
BIOGRAPHICAL SKETCH

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NAME Brown, Theresa Jean	POSITION TITLE Distinguished Member of Technical Staff
eRA COMMONS USER NAME (credential, e.g., agency login) tjbrown	

EDUCATION/TRAINING (Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable.)

INSTITUTION AND LOCATION	DEGREE (if applicable)	MM/YY	FIELD OF STUDY
Adams State College	B.S./B.A.	12/81	Earth Science / Secondary Education
University of Texas at Austin	M.A.	12/89	Geology
University of Wisconsin Madison	Ph.D.	05/94	Geology

A. Personal Statement

Dr. Theresa Brown is a Distinguished Member of Technical Staff at Sandia National Laboratories and serves as both the Program Director and the Applications Lead for the Complex Adaptive Systems of Systems (CASoS) Engineering team as well as the science advisor to National Infrastructure Simulation and Analysis Center (NISAC). The CASoS Engineering team develops engineered solutions for reducing risks in complex adaptive systems. Applications include evaluation of regulatory policy design and operational planning for incidents that impact population health. Theresa was the Technical Lead for the NISAC work at Sandia from 2005-2010. NISAC is a joint program with staff at DHS in the Infrastructure Strategy and Analysis Division, at Los Alamos National Laboratory and at Sandia that provides analysis in support of infrastructure protection decisions. NISAC activities include development of improved methods for asset prioritization, providing fast-turn analyses for DHS on an event basis (e.g., potential hurricane impacts), analysis of the potential impacts of an influenza pandemic and recommendations for preparedness and mitigating those impacts. Theresa's technical expertise is in conceptual model development and decision-making under uncertainty using vulnerability and risk analyses and probabilistic performance assessments. While at Sandia National Laboratories, this expertise has been applied to infrastructure interdependencies vulnerability assessment, probabilistic performance assessments of radioactive waste disposal sites for the Department of Energy, risk assessment methodology development and analyses for the Nuclear Regulatory Commission. Theresa has a Ph.D. in Geology from the University of Wisconsin - Madison, an M.A. in Geology from the University of Texas at Austin and a B.S. in Earth Science and Secondary Science Education from Adams State College. She has been an Adjunct Professor at the University of New Mexico, the Wellhead Protection Project Coordinator for the City of Stevens Point, Wisconsin, a Geologist for Associated Drilling in Austin, Texas and the Crew Leader on a National Geographic Society paleontological dig. Theresa has been a Sandian since 1994.

B. Positions and Honors

Positions and Employment

1979-1981 Crew Leader – Research Assistant National Geographic Soc. Paleontological Dig, Alamosa CO
1984-1985 Geologist for Associated Drilling Co., Austin, TX
1989-1990 Wellhead Protection Coordinator, City of Stevens Point, WI
1994-2007 Senior/Principal Member of Technical Staff, Sandia National Laboratories, Albuquerque, NM
2007- Distinguished Member of Technical Staff, Sandia National Laboratories, Albuquerque, NM

Other Experience and Professional Memberships

- *Adjunct Professor appointment at the University of New Mexico*
- *Invited member of UK Infrastructure Transitions Research Consortium External Advisory Board, June 2011*
- *Invited member of University of New Mexico Prevention Research Center Community Advisory Committee, Spring 2011*

Honors

- *Distinguished Member of Technical Staff, Sandia National Laboratories, less than 8% of Sandia staff achieve this distinction, 2007*
- *Lockheed Martin NOVA Award, Full Spectrum Leadership, 2007.*
- *Sandia Employee Recognition Award, Sandia National Laboratory, for Individual Leadership for the National Infrastructure Simulation and Analysis Center, 2007.*
- *NNSA Certificate of Recognition, National Nuclear Security Administration, for individual dedication and technical contribution to the Greater Confinement Disposal Project, 1998.*
- *Outstanding Women in Geoscience, Association for Women Geoscientists, Student Award, 1981*

C. Selected Peer-reviewed Publications (Selected from journal articles and book chapters and reports)

Most relevant to the current application

1. Brown, T.J., Conrad, S.H., Beyeler, W.E. and Glass, R.J., in press. "Complex Adaptive Systems Engineering and Risk Reduction," *Engineering Sustainability*.
2. Conrad, S.H., Beyeler, W.E. and Brown, T.J., 2012. "The value of utilizing stochastic mapping of food distribution networks for understanding risks and tracing contaminant pathways," *Int. J. Critical Infrastructures* Vol. 8, Nos. 2/3, p.216-224
3. Brown, Theresa J., 2008. "Dependency Indicators", *Wiley Handbook of Science and Technology for Homeland Security*
4. Brown, Theresa, 2007. "Multiple Modeling Approaches and Insights for Critical Infrastructure Protection", in *Computational Models of Risks to Infrastructure, NATO Science for Peace and Security Series D: Information and Communication Security, Vol. 13. IOS Press, Amsterdam p. 329.*
5. O'Reilly, Gerard, Ahmad Jrad,
6. Theresa Brown and Stephen Conrad, 2006. *Critical Infrastructure Analysis of Telecom for Natural Disasters, Networks 2006.*
7. Min, H-S. J., Beyeler, W., Brown, T., Young, J. S. and Jones, A., 2006 "Toward Modeling and Simulation of Critical National Infrastructure Interdependencies" *IIE Transactions* 39 (01),
8. Brown, Theresa, Walt Beyeler and Dianne Barton, 2004. *Assessing Infrastructure Interdependencies: The Challenge of Risk Analysis for Complex Adaptive Systems, International Journal of Critical Infrastructures* Vol. 1, 1, p. 108-117.
9. Webb, E.K., S.H. Conrad and T.J. Brown, 1996, "An Iterative, Probabilistic Environmental Decision Analysis Approach," in *Risk Based Decision Making in Water Resources VII*, Y. Haimes, D. Moser and E. Stakhiv, ed.s, American Society of Civil Engineers, New York, p. 249-264.

Other recent relevant publications

1. Glass, R.J., Beyeler, W.E., Ames, A.L., Brown, T. J. S., Maffitt, L., Brodsky, N., Finley, P.D., Moore, T., Mitchell, M., and Linebarger J.M., 2012. *Complex Adaptive Systems of Systems (CASoS) Engineering and Foundations for Global Design, Sandia Report, SAND2012-0675*
2. Brown, T.J., Glass, R.J., Ames, A., and Linebarger, J., 2011. *Complex Adaptive System of Systems (CASoS) Engineering Applications Version 1.0, Sandia Report, SAND2011-8032.*
3. Brown, Theresa J., Parks, M.J., Hernandez, J, Jennings, B.J., Kaplan, P.G., and Conrad, S.H., 2010. *Uncertainty Quantification and Validation of Combined Hydrological and Macroeconomic Analyses, Sandia Report, SAND2010-6266.*
4. Department of Homeland Security, 2007. *National Population, Economic and Infrastructure Impacts of Pandemic Influenza with Strategic Recommendations. (T.J. Brown, co- PI with J.P. Smith).*

D. Research Support

Ongoing Research Support

Title: National Infrastructure Simulation and Analysis Center

PI: Kayser (SNL), Brown (SNL), Pless (SNL) Ammerlahn (SNL) Parrott (SNL) ; Michelson (LANL), Smith (LANL), Berscheid (LANL)

Source of Support: Office of Infrastructure Protection, US Department of Homeland Security

Total Award Amount: 186,500K

Total Award Period Covered: FY 02-13

Location of Project: SNL and LANL

Title: Policy Complex Adaptive Systems of Systems Engineering and Application to Policy Evaluation and Design

PI: Brodsky

Source of Support: US Food and Drug Administration

Total Award Amount: 6100K

Total Award Period Covered: FY 10-13

Location of Project: SNL

Title: Complex Adaptive Systems of Systems Engineering and Application to the Global Energy System

PI: Glass

Source of Support: Laboratory Directed Research and Development, Sandia National Laboratory

Total Award Amount: 1925K

Total Award Period Covered: FY 09-11

Location of Project: SNL

Title: Vulnerability of Multi-network Systems to Cascading Failure

PI: Glass

Source of Support: Laboratory Directed Research and Development, Sandia National Laboratory

Total Award Amount: 1270K

Total Award Period Covered: FY 09-11

Location of Project: SNL

Completed Research Support

Title: Uncertainty Quantification and Validation of Combined Hydrological and Macroeconomic Analyses

PI: Brown

Source of Support: Laboratory Directed Research and Development, Sandia National Laboratory

Total Award Amount: 75K

Total Award Period Covered: FY 10

Location of Project: SNL

Title: Vulnerability Analysis of the Strategic Petroleum Reserve's Critical Infrastructures and Cyber Systems

PIs: Torres (SNL)

Source of Support: Fossil Energy, US DOE

Total Award Amount: 500K

Total Award Period Covered: FY 02

Location of Project: SNL

Title: Dynamic Infrastructure Interdependency Simulation and Analysis

PIs: Brown (SNL)

Source of Support: Energy Assurance, US DOE

Total Award Amount: 780K

Total Award Period Covered: FY 02-04

Location of Project: SNL

Title: National Infrastructure Simulation and Analysis Center

PIs: Rinaldi (SNL), Kayser (SNL), Michelson (LANL)

Source of Support: Office of Energy Assurance, US DOE

Total Award Amount: 4500K

Total Award Period Covered: FY 00-01
Location of Project: SNL, LANL

Title: Residual Radioactive Contamination from Decommissioning: Development and Testing of the DandD Screening Tool

PIs: Brown (SNL)

Source of Support: US Nuclear Regulatory Commission

Total Award Amount: 1500K

Total Award Period Covered: FY 98-99

Location of Project: SNL

Title: Performance Assessment of the Greater Confinement Disposal Facility

PIs: Gallegos (SNL), Brown (SNL) and Cochrane (SNL)

Source of Support: Nevada Operations Office, US DOE

Total Award Amount: 4500K

Total Award Period Covered: FY 97-99

Location of Project: SNL

Title: Wellhead Protection Program and Monitoring System Design, Stevens Point, Wisconsin

PIs: Brown (City of Stevens Point)

Source of Support: Environmental Monitoring Systems Laboratory, US EPA

Total Award Amount: 150K

Total Award Period Covered: FY 91-93

Location of Project: Stevens Point, WI