CURRICULUM VITA

George H. Baker III, Ph.D.

Dr. Baker's professional background spans academia, industry, and government. A professor at James Madison University's Department of Integrated Science and Technology, he also serves as the Technical Director of the university's Institute for Infrastructure and Information Assurance (IIIA). In addition to his teaching and administration duties, he presently provides consulting services to the Defense Threat Reduction Agency, SAIC, Defense Group Inc, The Infrastructure Security Partnership (TISP), the Federal Emergency Management Agency (FEMA), the National Research Council and the Maritime Emergency Preparedness Project. Dr. Baker managed the initial start-up of the IIIA, including development of the charter, design of the research program, structuring of the organization, name-branding, marketing and press coverage. He currently directs the IIIA research program, developing technology and techniques to improve homeland security. He is currently participating as a member of the National Defense Industrial Association Homeland Security Executive Board, and the TISP Certification, Academia, Research, and Educations Programs Committee (CAREPC), the Regional Infrastructure Disaster Resilience Task Force and the Virginia Alliance for Secure Computing and Networking (VASCAN).

In 1999, Dr. Baker joined the faculty of JMU's College of Integrated Science and Technology. In this position he has taught undergraduate laboratory courses in analytical methods, instrumentation & measurement, energy, and complex systems. He is a member of the Information Analyst (IA) , Foundations, S&T Social Context, and Energy Sector Committees. He participated in the development and implementation of the university's new IA curriculum. He has served as a mentor for honors projects in the areas of high power electromagnetic effects, space radiation effects, pandemic flu modeling, and underground facility applications. Dr. Baker developed and teaches a new complex systems course that is oriented toward critical infrastructure assurance. While at JMU, he has served as a consultant to DTRA, the National Park Service, FEMA, the Congressional EMP Commission, the National Research Council, the American Society of Mechanical Engineers, the Institute for Defense Analyses, Northrop-Grumman, TASC, SAIC, NSR, IAN, Emprimus, and ORSA in the areas of critical infrastructure assurance, high power electromagnetics, weapon effects, ground sensors and risk assessment.

Courses taught include:
ISAT 142: Analytical Methods I
ISAT 152: Concepts of Applied Physics
ISAT 180H: Freshman Honors Projects
IA 200: Introduction to National Security Intelligence (Guest Lecturer)
ISAT 212: Energy Issues in Science and Technology
ISAT 241: Analytical Methods III (Course Lead)
ISAT 300: Instrumentation and Measurement
ISAT 491, 492, 493: Senior Thesis I, II, III

ISAT 499: Senior Honors Thesis
ISAT 515: Energy Systems (Guest Lecturer)
ISAT 560: Complex Systems and How They Fail (Course Developer, Lead)
ISAT 580: Nuclear Energy Technology and Issues
ISAT 680: Independent Study

Dr. Baker's industry experience includes roles as senior scientist at Northrop-Grumman, Chief Scientist at Defense Group, Inc., and consultant for multiple organizations. As a Northrop-Grumman senior scientist in Alexandria, VA, Dr. Baker provided SETA support to the Defense Threat Reduction Agency in areas of hard target assessment, RF weapon design, nuclear electromagnetic effects, information warfare, nuclear legacy programs, and critical infrastructure protection. His duties involved providing support for new program development, program implementation, and technical review/ critique of ongoing program results. He contributed to the development of test beds and functional defeat methodology for the hard target assessment program. He was Northrop's lead scientist for the initial development of DTRA's Virtual Underground Test (VUGT) program. He served as a member of the Advanced System Concept Office's High Altitude Effects on Low Earth Orbit Satellites (HALEOS) Working Group.

From March 1996 to February 1999 Dr. Baker served as Director of the Springfield Research Facility, the assessment arm of the Defense Threat Reduction Agency, Dulles, VA. In this role, Dr. Baker directed the activities of a 70-member research organization recognized as the U.S. center of excellence for hardened and underground facilities survivability/vulnerability and related technology. Dr. Baker's organization provided assessments and research for a broad customer base including the Office of the Secretary of Defense, Assistant Secretary of Defense for C3I, the Director for Central Intelligence (CIA), the National Security Council (NSC), the Defense Intelligence Agency (DIA), several Unified and Specified Commands, the Joint Chiefs of Staff (JCS), the White House, the Critical Infrastructure Assurance Office (CIAO), the Centers for Disease Control (CDC) and NATO. His R&D activities have provided new techniques and products for modeling/defeating hard targets, and leading edge sensors (including seismic, acoustic, optical, and electromagnetic) for intelligence, targeting and protection applications. His division developed the first Force Protection vulnerability assessment methodology for the Chairman of the Joint Chiefs of Staff and organized/deployed the first integrated vulnerability assessment teams. Dr. Baker deployed a sensor team to Iraq that successfully located nuclear weapon proliferation materials. Dr. Baker served as Steering Group Chairman and Session Chair for the 1999 National HPM Symposium. He was invited to participate in the National Academy of Sciences' initial workshop on U.S. infrastructure protection. During his tenure, Dr. Baker's program successes resulted in 25% overall budget growth due to additional outside customer funding. In 1998 he received the Agency Legacy Award for his achievements in organization effectiveness, mentoring, and technology innovation.

From March 1994 to February, 1996 Dr. Baker was Chief, Innovative Concepts Division, Defense Nuclear Agency, Alexandria, VA. He managed a division with a $30M annual budget involved in leading-edge technology development and applications. He managed

the Agency's university grants and Small Business Innovative Research (SBIR) programs. He published the Agency's semi-annual technology newsletter. He initiated the Agency's joint U.S.-Russian TOPAZ space nuclear power program and the U.S. thermionics research program, interacting directly with the Kirchatov Institute in Moscow and the U.S. partnership program at the University of New Mexico. He expanded the U.S. electric gun and electro-thermal-chemical (ETC) gun programs by successfully negotiating a cooperative research agreement with the U.S. Army. He led the development of the Undersecretary of Defense for Research and Engineering "Defense Technology Area Plan (DTAP)" governing DoD's entire nuclear weapon effects R&D program.

From March 1987 to February 1994 Dr. Baker served as Electromagnetics Group Leader, Defense Nuclear Agency, Alexandria, VA. He managed the efforts of group of eight scientists involved in high power electromagnetics source development and effects assessment. He developed the Agency's source region EMP program including the rationale and program for source region underground test which resulted in $99M Agency plus up. In coordination with the National and Military Service Laboratories, he founded the Agency's RF weapons program, developing and proving new RF weapons concepts using high power magneto-cumulative generators, magnetrons and relativistic klystrons. He developed national standards (MIL-STD-188-125, MIL-HBK-463, MIL-STD-2169B) and certification protocols for electromagnetic protection of backbone communications. He organized annual national and international symposia on electromagnetic effects. Dr. Baker's efforts tripled his group's annual budget during his tenure.

(a) Professional Preparation

Western Maryland College Westminster, MD	Physics	Bachelor of Arts, 1971
University of Virginia Charlottesville, VA	Physics	Master of Science, 1973
U.S. Air Force Institute of Technology Dayton, OH	Engineering Physics	Ph.D., 1987
Federal Executive Institute Charlottesville, VA	Executive Leadership	Diploma, 1991
U.S. Armed Forces Staff College	Military Operations	Diploma, 1980

(b) Appointments

Associate Professor, Integrated Science and Technology, James Madison University (1999-present).

Technical Director, Institute for Infrastructure and Information Assurance (IIIA), James Madison University (2002-present)

Chief Scientist, Defense Group Incorporated (2008 – Present)

Charter Member, National Defense Industry Association Homeland Security Executive Board (2004-present)

Principal Staff, Congressional Commission to Assess the Threat to the United States from Electromagnetic Pulse (EMP) Attack. (2002-2008)

Director, Springfield Research Facility, Defense Threat Reduction Agency, Dulles, VA (1996-1999).

Member, National Research Council (NRC) Committee to Assess the U.S. Bureau of Reclamation Security Program (2006-present)

Chief, Innovative Concepts Division, Defense Nuclear Agency, Alexandria, VA. (1994-1996).

Integrated Electromagnetics Group Leader, Electronic Effects Division, Defense Nuclear Agency, 1987-94.

(c) Publications (1992-Present) Also see http://works.bepress.com/george_h_baker/.

1. G. Baker, C. Mo, "Time-Domain Probabilistic Risk Assessment Method for Interdependent Infrastructure Failure and Recovery Modeling," Wiley Handbook of Science and Technology for Homeland Security, 2010.
2. G. Baker, C. Elliott, Homeland Security: Fostering Public-Private Partnerships, Proceedings of the JMU/NAS Homeland Security Symposium, May 2009.
3. G. Baker et al, Infrastructure Investments for the 21st Century, ASME-ITI, 2009.
4. G. Baker et al, Assessment of the U.S. Bureau of Reclamation's Security Program, National Research Council, January 2009, ISBN-13: 978-0-309-12527-7
5. G. Baker, C. Elliott, Cascading Infrastructure Failures: Avoidance and Response, Proceedings of the JMU/NAS Homeland Security Symposium, May 2008.
6. Congressional EMP Commission Report on Critical National Infrastructures, April 2008.
7. G. Baker, C. Elliott, Homeland Security: Engaging the Frontlines, Proceedings of the JMU/NAS Homeland Security Symposium, May 2007.
8. G. Baker, R. Little, "Enhancing Homeland Security: Development of a Course on Critical Infrastructure Systems," Journal of Homeland Security and Emergency Management, December 2006.

9. G. Baker, “A Vulnerability Assessment Methodology for Critical Infrastructure Facilities,” Proceedings of the Department of Homeland Security’s 2005 Research Symposium.
10. G. Baker, J. Rudmin, N. Olive, J. Darragh, “The Feasibility and Effectiveness of a Common Consumer Device as an Electromagnetic Interference (EMI) Source, International Conference on Electromagnetics in Advanced Applications 2005 Proceedings, ISBN 88-8202-094-0.
11. G. Baker, C. Mo, M. Carter, “Preliminary Peak Value Analysis of Conventional Explosives Radio Frequency (CERF) Signatures, Journal of Radiation Effects, 2005
12. G. Baker, S. Redwine et al, “Network Security Risk Assessment Modeling Tools for Critical Infrastructure Assessment,” Proceedings of the Critical Infrastructure Protection Project Workshop, George Mason University, 2003.
13. G. Baker, D. Linger, R. Little, “Applications of Underground Structures for the Physical Protection of Critical Infrastructure,” North American Tunneling 2002, ISBN 90 5809 376X.
14. G. Baker, T. Kennedy, "Nuclear Information Warfare," Journal of Radiation Effects, 2001.
15. G. Baker, K. Calahan, C. Mo, "Model for Characterizing the Effectiveness of Functional Defeat Strategies," Journal of Radiation Effects, 2000.
16. G. Baker, K. Calahan, C. Mo, “Functional Survivability Modeling Tool for Complex Facilities," EUROEM Conference Proceedings, Edinburgh, Scotland, May 2000.
17. G. Baker (organizer and moderator), Use of Underground Facilities to Protect Critical Infrastructures, Summary of a Workshop, National Research Council, 1998.
18. G. Baker, C. Mo, F. Tesche, “Calculational Models for Evaluating Electromagnetic Radiation from Buried Enclosures,” Journal of Radiation Effects, 1997.
19. G. Baker, “The Assessment of Critical Infrastructure Vulnerabilities,” Proceedings, American Public Works Association Symposium, 1997.
20. G. Baker (Chairman) et al, ELECTRA Program: Final Report, Defense Nuclear Agency, May 1995.
21. G. Baker et al, “The Defense Nuclear Agency Electromagnetic Safety Program,” Journal of Radiation Effects, 1994.
22. G. Baker et al, "A Comparison of the Predicted and Measured Electromagnetic Pulse Response for Two Test Objects," Proceedings of the Hardened Electronics and Radiation Technology Conference, 1994.
23. G. Baker, M. Weitekamp, M. Bell, "Radio Frequency Contact Weapon Concepts and Effects," Proceedings of the Seventh National Conference on High Power Microwave Technology, Monterey, CA, 1994.
24. G. Baker, C. Mo, M. Weitekamp, “A Case Study Using a Global Positioning Satellite Receiver: the Accuracy of System Electromagnetic Response
25. G. Baker, J. Castillo, E. Vance, “Potential for a Unified Topological Approach to Electromagnetic Protection,” IEEE Transactions on Electromagnetic Compatibility, August 1992.

(d) Synergistic Activities

Member, National Research Council Committee to Evaluate the Security Program of the U.S. Bureau of Reclamation, 2006-2008

Member, ASME-ITI Committee on Aging Infrastructure, 2008-2009

Chair, Homeland Security Symposium Planning Committee, in cooperation with the National Academy of Sciences' Federal Facilities Council, 2006/2007/2008/2009/2010

Executive Advisory Board (ex officio), James Madison Institute for Infrastructure and Information Assurance

Commonwealth of Virginia Critical Infrastructure Protection Working Group, 2003-2007

Founding member, Virginia Alliance for Secure Computing and Networking (VASCAN), 2003 – present

Co-Chair, Non-Proliferation and Arms Control (NPAC) Underground Focus Group, 1996-99

Chair, Underground Site Infrastructure Applications Working Group, 1998-99

U.S. Chair, International Tri-partite Technical Cooperation Program (TTCP) EMP Group, 1988-94

Session Chair, 1998 European Electromagnetics (EUROEM) Symposium, Tel Aviv, Israel.

Member, DoD Joint RF Coordinating and Technical Interchange Group (JRFCTIG), 1996-99

Member, Under Secretary of Defense for Research and Engineering Technology Panel on Directed Energy Weapons, 1995-99

Member, Nonlethal Weapon Steering Group (Chaired by Under Secretary of Defense for Acquisition and Technology), 1995-99

(e) Collaborators & Other Affiliations

Dr. John Noftsinger, Vice Provost, James Madison University (JMU)
Dr. Jerry Benson, Provost, JMU
Dr. Ron Carrier, President and Chancellor, James Madison University, Emeritus
The Honorable William R. Graham, Former Science Advisor to President Ronald Reagan; Chair, Congressional EMP Commission

The Honorable Robert P. Crouch, Jr., Assistant to the Governor for Commonwealth Preparedness, Commonwealth of Virginia
Dr. Sharon Lovell, Dean, College of Integrated Science and Technology, JMU
Dr. Eric Maslen, Chair, Department of Integrated Science and Technology, JMU
Dr. Polly Cushman, former Chair, Department of Integrated Science and Technology, JMU
Dr. Richard Roberds, former Chair, Department of Integrated Science and Technology, JMU
MGEN (ret'd) Gary Curtin, VP, Defense Group Inc.
Dr. Don Linger, former Director of Nuclear Underground Testing, Defense Nuclear Agency
Prof. Richard Little, former Director, National Academy of Sciences' Board on Infrastructure and the Constructed Environment; Director, Keston Institute, University of Southern California
Lt. Gen. Patrick M. Hughes, U.S. Army (Retired), former Director, DIA
MG Gary Curtin (Retired), former Director, Defense Nuclear Agency
Ms. Lynda Stanley, Director, National Research Council Board on Infrastructure and the Constructed Environment
Dr. Charles T. C. Mo, Northrop Grumman Corporation.
Dr. Malcolm G. Lane, Chair, Computer Science Department, JMU
Mr. Bill Austin, Director, Survivability Assessments Branch, DTRA
Dr. Joy Hughes, Chief Information Officer, George Mason University
Dr. Catherine Hubbs, Chief Information Officer, American University
Lt Gen Henry Hatch (Retired), former Director, US Army Corps of Engineers
Prof. John McCarthy, former Director, George Mason University Critical Infrastructure Program
Mr. William Yeakel, President/CEO, ORSA Corporation
Dr. Ruth David, President/CEO, ANSER Corporation
Ms. Patricia Ann Buckingham, Director of FEMA/DoD Liaison Office, DHS
Prof. Michael Deaton, Integrated Science and Technology, JMU
Dr. Mark Kirk, DHS Office of Toxicology
Prof. Peter Pham, Director, Nelson Institute of Public Policy, JMU
Prof. Anne Henriksen, Chair, S&T Foundations Committee, JMU
Dr. Albert Costantine, SAIC
Mr. R. C. Webb, SAIC
Mr. Michael Becraft, VP, CERCO International
Dr. Ira Kohlberg, Institute for Defense Analyses, Kohlberg Associates
Prof. Carl Baum, University of New Mexico
Dr. William Radasky, President, Metatech Corporation
Dr. William Crevier, L3 Corporation
Dr. Michael Bernardin, Los Alamos National Laboratories
Dr. Peter Pry, Congressional Staff, President/EMPACT America.
Mr. William Anderson, Director, The Infrastructure Security Partnership (TISP)
Mr. Charles Manto, President and CEO, Instant Access Networks.
Mr. George Anderson, President and CEO, EMPRIMUS LLC.