

Dwain K. Butler

Contact Information

211 Grinders Place
Vicksburg, MS 39180
601-634-2655; 601-638-1090; 601-218-7295 (C)
E-Mail: agc.llc@bellsouth.net;
Web Site: www.agc-llc.net

May 2013

Positions Held

President, Applied Geophysics Consultancy LLC, 2009-Present.
Senior Principal Scientist, Alion Science and Technology Corp., Vicksburg, MS, 2002 – 2009.
Senior Research Geophysicist, US Army Engineer Research and Development Center, Geotechnical and Structures Laboratory, Vicksburg, MS, 1973-2002
National Technical Expert, Environmental and Hydrogeology, U.S. Army Corps of Engineers, 1995-2002.
Research Physicist, US Army Engineer Missouri River Division Laboratory, Omaha, NB, 1971-73,
Research Physicist, U.S. Naval Ordnance Laboratory, White Oak, MD, 1968-1971

Education

Ph.D., Geophysics (Geology), 1983, Texas A&M University
M.S., Physics (Solid State), 1971, University of Maryland (PhD coursework completed, ABD)
B.S., Physics (Geophysics and Math), Honors Program, 1968, Texas Tech University
Additional graduate work--University of Nebraska, Civil Engr.; Mississippi State University, Engr. Mechanics and Civil Engr. (coursework completed for M.S.); Louisiana State University, Civil Engr. (Water Resources).

Other Training: Professional Development

Science, Technology and Public Policy, Office of Personnel Management, 2 wks., Lancaster, PA, 1997.
Building and Managing Your Team, CareerTrack Seminar, Jackson, MS, 1992.
Executive Development Assignment, Directorate of Research and Development, Office of the Chief of Engineers, Washington, D.C., August 1987-January 1988.
Fundamentals of Management, Dept. of the Army, correspondence, 1981.
Introduction to Supervision, Office of Personnel Management, 1 wk, Vicksburg, MS, 1980.
Seminar on Teaching of College Physics, U. of MD, 1971.
Speed Reading, Vicore, Inc., 2 wk, White Oak, MD, 1969.

(Complete list of other/technical training available on request)

University Affiliations and Activities: teach courses in applied and solid earth geophysics; serve on M.S. and Ph.D. committees; serve on consulting and program review committees.

Professor, Adj. Faculty, Geology and Geophysics, Texas A&M University 1988-2004;
Adjunct Prof., Civil Engineering, Mississippi State University 1981-Present; *Adjunct Prof.*, Univ. of Mississippi, Geosciences, 1988; *Adjunct Prof.*, Univ. of Southern Mississippi, Geosciences, 1985;
Instructor, Hinds Community College, Calculus I, 1994; *Teacher*, Saint Aloysius High School, Physics, 1976. Accepted as National Science Foundation *Advisor* for Post-Doctoral Fellowship Recipients, 1993.

Committees:

- PhD committees, Texas A&M; MS committees, Mississippi State Univ.
- Advisory Committee on Near-Surface Geophysics Program development, Texas A&M
- Chair, Program Review Committee, Department of Geosciences, Mississippi State Univ., conducted by American Institute of Professional Geologists
- Technology Support to Education Committee, and *Point of Contact* for Vicksburg High School
- Founding Members Workshop of the Earth Resources Laboratory, Massachusetts Institute of Technology Earth Resources Laboratory, Program Review Committee.
- Advisory Board (2005-2009), Center for Environmental Sensing (EPA Sensor Project) and Hydrogeophysics Program, Boise State University

Courses Taught:

Applied Geophysics, USM; Advanced Geophysics, MSU; Engineering and Environmental Geophysics, UM; Electrical and Electromagnetic Methods of Geophysics, MSU; Physics of the Earth, MSU; Environmental Geophysics, MSU; General Physics (High School) and Calculus I (Junior College); Developed course syllabi for Earthquake Seismology and Potential Field Theory, Texas A&M

Sponsor/Host:

- Two university faculty members under the ARO Summer Faculty Program, 1996.
- Ph.D. student, Texas A&M University, supported field work in Greece at the University of Athens by loan of equipment, specialized computer programs, technical consultation, and research grant through the US Army European Research Office
- Professor Raymond Olivier, Director, Geophysical Institute, University of Lausanne, Switzerland, 6-week Sabbatical at Vicksburg Site, ERDC, 1999
- Ph.D. student, Geophysics, University of British Columbia, Canada, 2-week study and field work at the Vicksburg Site, ERDC, in support of dissertation work, 2000

Professional Affiliations: Soc. of Exploration Geophysicists (SEG); International Soc. of Rock Mechanics; Association of Engineering Geologists; American Geophysical Union; Engineering and Environmental Geophysics Society (EEGS); European Association of Geoscientists and Engineers; American Society of Civil Engineers; American Institute of Archaeology; SPIE; History of Science Society. **Honorary Societies:** Sigma Pi Sigma (Physics); Sigma Xi.

Professional Registration: Professional Geologist – North Carolina, No. 470 (inactive), and Arkansas, No. 1067 (active).

Professional Recognition and Honors: *Member*, DARPA Study Panel on Rapid Subsurface Excavation; *Outstanding Technical Presentation Award*, National Symposium on Reclamation of Abandoned Minelands, 1984. *Herbert D. Vogel Award*, Scientist, U.S. Army Corps of Engineers, 1985. *President*, American Institute of Professional Geologists, Mississippi Section, 1985-87. Nominated for Best Paper in *Geophysics*, 1984; *Member*, National Research Council Committee on Progress in Rock Mechanics, 1987; *Associate Editor*, *Geophysics*, SEG, 1990-1995; *Distinguished Alumnus Presentation*, Silver Anniversary Celebration, Dept. Of Geophysics, Texas A&M Univ., 1991; *Commander's Award for Civilian Service*, Chair, COE/Community Commemoration of Earth Day, U.S. Army Corps of Engineers, 1991; *President*, Near Surface Geophysics Section, SEG, 1995-97; *Member*, National Research Council Committee on Noninvasive Characterization of the Shallow Subsurface, 1996-99. *Boise State University Advisory Board*, Environmental Engineering and Hydrogeophysics, 1997-2002; Patent #6,028,670, 22 February 2000, "Noninvasive Mass Determinations of Stockpiled Materials;" *Distinguished Alumnus Award 2001*, Dept. of Physics, Texas Tech Univ.; *ERDC R&D Award*, U.S. Army Engineer Research and

Development Center, 2001; *Frank R. Frischknecht Award*, Near-Surface Geophysics, Society of Exploration Geophysicists, 2001; Meritorious Civilian Service Award, Dept. of the Army, 2002; Order of de Fluery Award, US Army Corps of Engineers, 2002; Board of Directors, Environmental and Engineering Geophysical Society, 2004-2008; *Technical Chair*, Symposium on Application of Geophysics to Environmental and Engineering Geophysics, 2009.

Broad Areas of Education and Experience: Geophysics, physics, geology, engineering mechanics, civil engineering, archaeology

Specific and Applications Areas of Experience: Engineering and environmental geophysics; solid earth geophysics; engineering geology; dynamic material properties; numerical modeling of dynamic processes; Underground rapid excavation and TBM detection; projectile penetration; rock mechanics; soil and rock testing; general site investigation/ characterization; karst geology and site characterization; cavity, tunnel, abandoned mine and UGF detection; *Leader*, Tunnel Detection Team; *Technical Special Agent*, U.S. Counterdrug Task Force; microgravimetry and gravity gradiometry; electrical and electromagnetic methods of geophysics; shallow seismic methods; seismic risk and liquefaction assessment; *Program Manager*, Military Water Supply; *Geophysics Team Leader*, DoD Water Detection Response Team (WDRT); ground water resources; ground water modeling; anomalous seepage assessment; unexploded ordnance (UXO) detection; landmine detection; archaeological geophysics—historic/prehistoric cemeteries, Wright Brother's Sites, Microgravity Survey of the Great Pyramid of Cheops (Giza, Egypt), invited presentations; inverse modeling. *Co-Developer of ERDC UXO Program and Countermine Phenomenology Programs*. *Expert Witness* for USACOE. *Consultant to NRC* on siting of nuclear facilities. *Consultant to USEPA* on geophysics for environmental cleanup. *Consultant to DARPA* on tunnel and underground facilities detection and characterization. *Expert Witness* in personal injury lawsuit involving wetlands regulations. *Consultant to private sector* on applications of geophysics for site characterization, including karst.

PUBLICATIONS (POST-1990)

Technical Journals and Books

Butler, D. K., and Llopis, J. L. 1990. "Assessment of Anomalous Seepage Conditions," *Geotechnical and Environmental Geophysics, Vol II*, 153-173, Society of Exploration Geophysicists, Tulsa, OK.

Butler, D. K., Llopis, J. L., Corwin, R. F., Dobecki, T. L., Wilt, M. J., and Olhoeft, G. R. 1990. "Comprehensive Geophysics Investigation of an Existing Dam Foundation, Part II, Geophysics Research and Development," *Geophysics: The Leading Edge of Exploration*, **9**, 44-53.

Butler, D.K. 1990. A Discussion of "Seismic Refraction Tests Above the Water Table," by Guy Bonnet and Michel Meyer (October, 1988, Vol. 114, No. 10), *Journal of Geotechnical Engineering*, **116**, 1434-1436.

Butler, D.K., and Kean, Thomas B. II. 1993. "Investigations of Magnetic Field Disturbances at an Air Force Base Compass Calibration Hardstand," *Geophysics*, Vol 58, 434-440.

Butler, D.K., Simms, Janet E. 1994. "Archaeological Geophysics Investigation of the Wright Brothers 1910 Hangar Site," *Geoarchaeology*, **9**, 437-466.

Butler, D.K. 1995. "Generalized Gravity Gradient Analysis for 2D Inversion," *Geophysics*, **60**, 1018-1028.

Butler, Dwain K. 1996. "Applications of Microgravity," *Near Surface Views*, Near Surface Geophysics Section of the Society of Exploration Geophysicists.

Butler, D.K. 1996. "Microgravity," *The Military Engineer*, Vol 88, No 579, 39-40.

Butler, Dwain K., Sjostrom, Keith J., and Llopis, Jose L. 1997. "Selected Short Stories of Novel Applications of Near-Surface Geophysics," *The Leading Edge*, **16**, 1593-1600.

Butler, Dwain K. 1997. "Round Table: Landmines and UXO," *The Leading Edge*, **16**, 1460.

Yule, Donald E., Sharp, Michael K., and Butler, Dwain K. 1998. "Microgravity investigations of foundation conditions," *Geophysics*, Vol 63, No 1, 95-103.

Sharp, Michael K., Butler, Dwain K., and Sjostrom, Keith J. 1999. "Integrated Geophysical Methods for Subsurface Geologic Mapping Utilizing High-Resolution Transient Electromagnetic Soundings," *Journal of Environmental and Engineering Geophysics*, Vol. 4, 57-70.

Cespedes, Ernesto O. and Butler, Dwain K. 1999. "UXO Detection," *The Military Engineer*, Vol. 91, No. 600, 32-33.

Butler, Dwain K. (NRC Committee Member) 2000. *Seeing Into the Earth: Noninvasive Characterization of the Shallow Subsurface for Environmental and Engineering Applications*, National Academy Press, Washington, D.C.

Butler, Dwain K. 2000. "Groundwater Resource Assessments," *International Journal of Sustainable Development and World Ecology*, Parthenon Publishing, **7**, 1-16.

Butler, Dwain K. 2001. "Potential Fields Methods for Location of Unexploded Ordnance," *The Leading Edge*, **20**, 890-895.

Butler, Dwain K., Wolfe, Paul J., and Hansen, Richard O. 2001. "Analytical Modeling of Gravity and Magnetic Signatures of Unexploded Ordnance," *Journal of Environmental and Engineering Geophysics*, **6**, 33-46.

Butler, Dwain K. 2002. "Flights of Fantasy: a Triumph of Ingenuity, Persistence, and the Scientific Method," *The Leading Edge*, **21**, 656-658.

Butler, Dwain K. 2003. "Information Devolution ?," *The Leading Edge*, V. 22, 746-748.

Butler, D. K. 2003. "Magnetic Backgrounds Implications for UXO Detection," *Journal of Applied Geophysics*, **54**, 111-125.

Butler, Dwain K. 2004. "A Workshop on Electromagnetic Induction Methods for UXO Detection and Discrimination: 4-5 February 2004," *FastTIMES*, **9**, 9-15

Butler, Dwain K. 2004. "Report on a workshop on electromagnetic induction methods for UXO detection and discrimination," *The Leading Edge*, **23**, 766-770.

Butler, Dwain K. 2005. "Millennium Turning," *The Leading Edge*, **24**, 690-692.

Butler, Dwain K. 2005. "Introduction to Special Issue on Unexploded Ordnance," Special Editor for Special Issue on UXO, *FastTIMES*, **10**(2), Environmental and Engineering Geophysical Society.

Butler, Dwain K. (Editor), 2005. *Near-Surface Geophysics*, Investigations in Geophysics Series No. 13, 732 p (peer-reviewed), Society of Exploration Geophysicists, Tulsa, OK..

Butler, Dwain K. 2005. "What is near-surface geophysics?" in *Near-Surface Geophysics*, Dwain K. Butler, Editor, Society of Exploration Geophysicists, Tulsa, OK.

Butler, Dwain K., Ballard, John H., and Bennett, Hollis H. 2006. "Overview of Multi-Method Geophysical System Development for Enhanced Near-Surface Target Detection, Discrimination and Characterization," *The Leading Edge*, **24**, 352-356.

Butler, Dwain K. 2006. "Emergence of a New Research and Development Paradigm: The Structured Contest," *The Leading Edge*, **24**, 428-432.

Butler, Dwain K. 2008. "Detection and Characterization of Subsurface Cavities, Tunnels and Abandoned Mines," *Near-Surface Geophysics and Human Activity*, 578-584, Science Press USA Inc.

Wright, David, Bennett, Hollis h., Ballard, John H., Fields, Morris P., Demoss, Tere A., and Butler, Dwain K. 2008. "Portable Magnetic/Frequency Domain Electromagnetic Induction Sensor System Development," *Journal of Environmental and Engineering Geophysics*, **13**, 237-245.

Furey, John S., and Butler, Dwain K. 2011. "The Physical Dipole Model and Polarizability for Magnetostatic Object Parameter Estimation," *Journal of Environmental and Engineering Geophysics*, **16**, 49-61.

Butler, Dwain K., Simms, Janet E., Furey, John S., and Bennett, Hollis H. 2012. "Review of Magnetic Modeling for UXO and Applications to Small Items and Close Distances," *Journal of Environmental and Engineering Geophysics*, **17**, 53-73.

Proceedings and Technical Reports

Butler, Dwain K. 1990. "Ground Water Detection Research," *Proceedings of the International Symposium on Geophysics for Water Exploration in Arid Regions*, Lausanne, Switzerland.

Butler, Dwain K. 1990. "Ground Water Resource Assessments:" *Proceedings of the Army Science Conference*, US Army, Durham, North Carolina, 237-251.

Butler, Dwain K., and Kean, Thomas B. 1990. "Investigations of Magnetic Field Disturbances at Little Rock Air Force Base Compass Calibration Hardstand," Technical Report GL-90-16, U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS.

Wilt, Michael J. and Butler, Dwain K. 1990. "Geotechnical Applications of the Self Potential (SP) Method, Report 4, Numerical Modeling of SP Anomalies: Technical Report REMR GT-6, U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS.

Yule, Donald E., Butler, Dwain K., and Sharp, Michael K. 1990. "Foundation Investigation of the Upstream Switchyard of Wilson Dam Powerplant: Microgravity Survey," Miscellaneous Paper GL-90-19, US Army Engineer Waterways Experiment Station, Vicksburg, MS.

Sharp, Michael K., Yule, Donald E., and Butler, Dwain K. 1990. "Geophysical Investigations of Burial Site 3-A, Defense Depot Ogden, Utah," Miscellaneous Paper GL-90-6, US Army Engineer Waterways Experiment Station, Vicksburg, Mississippi.

Butler, Dwain K., Llopis, Jose L., Yule, Donald E., Sharp, Michael K., and Dardeau, Elba A. 1990. "Water Detection Response Team Geophysics Element Case Histories," Technical Report GL-90-23, US Army Engineer Waterways Experiment Station, Vicksburg, MS.

Butler, Dwain K. 1991. "Engineering and Environmental Applications of Microgravimetry:" *Proceedings of the Symposium on the Application of Geophysics to Engineering and Environmental Problems*, Knoxville, Tennessee, 139-246.

Butler, Dwain K., and Kean, Thomas B. 1991. "Geophysical Surveys for Location of a Suspected Abandoned Mine Opening: Grays Landing Site:" Miscellaneous Paper GL-91-6, US Army Engineer Waterways Experiment Station, Vicksburg, MS.

Simms, Janet E., and Butler, Dwain K. 1992. "Subsurface Water Location: Assessment and Selection of an Automated Electrical Resistivity Interpretation Procedure:" Technical Report GL-92-12, US Army Engineer Waterways Experiment Station, Vicksburg, MS.

Butler, Dwain K., 1992. "Proceedings of the Government Users Workshop on Ground Penetrating Radar Applications and Equipment," Miscellaneous Paper GL-92-40, US Army Engineer Waterways Experiment Station, Vicksburg, MS.

Hadala, P.F., Butler, D.K., Cullinane, M.J., Holland, J.P., May, I., and McDaniel, T. 1993. "Army Ground Water Modeling Use and Needs Workshop," Technical Report IRRP-93-1, US Army Engineer Waterways Experiment Station, Vicksburg, MS.

Butler, Dwain K., Llopis, Jose L., and Briuer, Frederick L. 1993. "Geophysical and Archaeological Investigations for Location of a Historic Cemetery, Fort Stewart, Georgia," Miscellaneous Paper GL-93-6, US Army Engineer Waterways Experiment Station, Vicksburg, MS.

Sjostrom, Keith J., Butler, Dwain K., and Corwin, Robert F. 1993. "Assessment of Mississippi River Revetments Using the Self-Potential Method." *Proceedings of the Symposium on the Application of Geophysics to Engineering and Environmental Problems--SAGEEP '93*, pp 435-438, San Diego, California.

Yuhr, L., Butler, D., and Benson, R. 1993. "Characterization of Karst Features Using Electromagnetics and Microgravity: A Strategic Approach," *Proceedings of the Symposium on the Applications of Geophysics to Engineering and Environmental Problems--SAGEEP '93*, pp 209-228, San Diego, California.

Butler, Dwain K. 1994. "Tunnel Detection: History and Basic Concepts," in "Subsurface Site Characterization--Proceedings of Research Needs Workshop," compiled by M.K. Corcoran and T.H. Grau, Technical Report GL-94-40, 33-44, U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS.

Butler, Dwain K. 1994. "Tunnel Detection: History and Basic Concepts," in "Subsurface Site Characterization--Proceedings of Research Needs Workshop," compiled by M.K. Corcoran and T.H. Grau, Technical Report GL-94-40, 33-44, U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS.

Butler, Dwain K., Simms, Janet E., and Cook, Daryl S. 1994. "Archaeological Geophysics Investigation of the Wright Brothers 1910 Hangar Site, Wright-Patterson Air Force Base, Dayton, Ohio," Technical Report GL-94-13, U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS.

Butler, Dwain K. 1994. "Environmental Geophysics: The Best Kept Secret of Environmental Cleanup," Geotechnical Lecture Series, Illinois Section, American Society of Civil Engineers, 2:1-28.

Simms, Janet E., and Butler, Dwain K. 1995. "Full Waveform Inverse Modeling of Ground Penetrating Radar Data: An Initial Approach," Miscellaneous Paper GL-95-4, U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS.

Llopis, J.L., Sharp, M.K., Butler, D.K., and Yule, D.D. 1995. "Applied Geophysical Techniques to Evaluate Earth Dams and Foundations," in *Nondestructive Evaluation of Aging Infrastructure*, Soheil Nazarian, Larry D. Olson, Editors, Proc. SPIE 2457, 195-204.

Sjostrom, Keith J., and Butler, Dwain K. 1996. "Noninvasive Weight Determination of Stockpiled Ore Through Microgravity Measurements," Miscellaneous Paper GL-96-24, U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS.

Butler, Dwain K., Sharp, Michael K., Sjostrom, Keith J., Simms, Janet E., Llopis, Jose L., and Fitterman, David V. 1996. "Assessment of Geophysical Methods for Subsurface Geologic Mapping, Cluster 13, Edgewood Area, Aberdeen Proving Ground, Maryland," Technical Report GL-96-17, U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS.

Butler, Dwain K. 1996. "Multisensor Data Integration (Fusion) and UXO Detection," *Second Annual SERDP Symposium Abstracts*, p. Cleanup-16, Arlington, VA.

Hollyer, Greg, Racic, Louis, and Butler, Dwain. 1997. "Enhancing Geophysical Data for UXO Detection, Characterization and Discrimination," *Proceedings of the UXO Forum 97*, 28-30 May 1997, Nashville, Tennessee.

Cespedes, Ernesto R., and Butler, Dwain K. 1997. "Multisensor Methods for UXO Detection and Discrimination," *Third Annual SERDP Symposium*, Arlington, VA.

Butler, Dwain, Cespedes, Ernesto, O'Neill, Kevin, Arcone, Steven, Llopis, Jose, Curtis, John, Cullinane, John, and Meyer, Clemens. 1998. "Overview of Science and Technology Program for JPG Phase IV," *Proceedings of the UXO Forum '98*, Anaheim, CA.

Sjostrom, Keith J., Butler, Dwain K., and Ballard, Robert F. (1998). "Mapping Emplaced Articulated Concrete Mattress Using Geoelectrical and Electromagnetic Techniques," Technical Report GL-98-17, U.S. Army Engineer Waterways Experiment Station, Vicksburg, Mississippi.

Llopis, Jose L., Simms, Janet E., Butler, Dwain K., West, Harold W., and Cespedes, Ernesto R. 1998. "The Role of Site Characterization in UXO Test Site Selection and Results Assessment," *Proceedings of the UXO Forum 98*, Anaheim, CA.

Butler, Dwain K., Cespedes, Ernesto R., O'Neill, Kevin, Llopis, Jose L., Arcone, Stephen A., Simms, Janet E., and West, Wade H. 1998. "The U.S. Army Corps of Engineers Unexploded Ordnance Technology Development Program and Application to Assessment of the Jefferson Proving Ground Demonstrations." Poster Presentation, *Fourth Annual SERDP Symposium*, Arlington, VA.

Butler, Dwain, Cespedes, Ernesto, O'Neill, Kevin, Arcone, Steven, Llopis, Jose, Curtis, John, Cullinane, John, and Meyer, Clemens. 1998. "Overview of Science and Technology Program for JPG Phase IV," *Proceedings of the UXO Forum '98*, Anaheim, CA.

Llopis, Jose L., Simms, Janet E., Butler, Dwain K., Curtis, John O., West, Harold W., Arcone, Steven, A., and Yankielun, Norbert E. 1998. "Site Characterization Investigations in Support of UXO Technology Demonstrations, Jefferson Proving Ground, Indiana," Technical Report GL-98-20, U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS.

Butler, Dwain K., Cespedes, Ernesto R., Cox, Cary B., and Wolfe, Paul J. 1998. "Multisensor methods for Buried Unexploded Ordnance Detection, Discrimination and Identification," Technical Report SERDP-98-10, U.S. Army Engineer Waterways Experiment Station, Vicksburg, Mississippi.

Simms, Janet E., Llopis, Jose L., Butler, Dwain K., and Smith, Lawson M. 1998. "Geophysical Site Characterization for UXO Background Studies: Fort Carson, Colorado; Fort A.P. Hill, Virginia; and Jefferson Proving Ground, Indiana," Technical Report GL-98-16, U.S. Army Engineer Waterways Experiment Station, Vicksburg, Mississippi.

Cespedes, Ernesto R., Carin, Larry, and Butler, Dwain K. 1999. "Multi-Frequency EM Signatures of UXO: Modeling, Measurement, and Analysis," *Proceedings of the UXO Forum '99*, Atlanta, GA.

Butler, Dwain K. and Llopis, Jose L. 1999. "Geologic backgrounds investigations at the Jefferson Proving Ground UXO test sites: Implications for detection and discrimination," *Proceedings of the UXO Forum 1999*, Atlanta, GA.

Butler, Dwain K., Llopis, Jose L., and Simms, Janet E. 1999. "Phenomenological Investigations of the Jefferson Proving Ground UXO Technology Demonstrations," Technical Report GL-99-7, U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS.

Butler, Dwain K. 1999. "Plans for a New SEG Near-Surface Geophysics Publication," Near-Surface Views, June.

Butler, Dwain K. 2000. "Assessment of Microgravimetry for UXO Detection and Discrimination," Technical Report ERDC/GSL TR-00-5, Engineer Research and Development Center, Vicksburg, MS.

Simms, Janet E., Smithhart, Lewis B., and Butler, Dwain K. 2000. "Evaluation of Three-Component Magnetic Sensors for Delineation and Identification of UXO," Technical Report ERDC-TR-00-6, Engineer Research and Development Center, Vicksburg, MS.

Butler, Dwain K. 2001. "UXO Detection and Discrimination Technology: Geophysical Technology 101," *Proceedings of the Southern States Regional Environmental Conference*, Atlanta, GA.

Butler, Dwain K. 2001. "Detection of Caves, Tunnels and Underground Facilities," White Paper for Director, Research and Development, HQUSACE, Washington, DC.

Hargrave, Michael, Babson, David, Sever, Thomas, and Butler, Dwain. 2001. "From Wright Flyers to Aerial Thermography: The 1910 Wright Brothers' Hangar at Huffman Prairie," *Proceedings of the Wright Brothers Symposium: Following in the Footsteps of the Wright Brothers*, Dayton, OH.

Butler, Dwain K., Pasion, Leonard R., Billings, Stephen, Oldenburg, Douglas, and Yule, Don. 2003. "Model-based Inversion for Enhanced UXO Detection and Discrimination," *Detection and Remediation*

Technologies for Mines and Mine-like Targets VIII, Russell S. Harmon, John H. Holloway, Jr., J.T. Broach, Editors, Proceedings of SPIE Vol. 5089, 958-969.

Ostrouchov, G., Doll, W.E., Wolf, D.A., Morris, M., Butler, D.K., and Simms, J.E. 2003. "Spatial Statistical Model and Optimal Survey Design for Rapid Geophysical Characterization of UXO Sites," Final Report SERDP-CU-1201.

Simms, Janet E., Larson, Robert J., Murphy, William L., and Butler, Dwain K. 2004. "Guidelines for Planning Unexploded Ordnance (UXO) Detection Surveys," Technical Report ERDC-GSL TR-04-8, U.S. Army Engineer Research and Development Center, Vicksburg, MS.

Butler, Dwain K., Yule, Don E., and Bennett, Hollis H. 2004. "Employing Multiple Geophysical Sensor Systems to Enhance Buried UXO 'Target Recognition' Capability," *Proceedings of the 24th U. S. Army Science Conference*, Orlando, FL.

Llopis, Jose L., Dunbar, Joseph B., Wakeley, Lillian D., Corcoran, Maureen K., and Butler, Dwain K. 2005. "Tunnel Detection Along the Southwest U.S. Border." *Proceedings of the SAGEEP*, **18**, 430-443.

Butler, Dwain K., Bennett, Hollis H., and Ballard, John H. 2006. "Overview of Multimethod Geophysical System Development for Enhanced Near-Surface Target Detection, Discrimination, and Characterization." *The Leading Edge*, **24**, 352-356.

Butler, Dwain K., Billings, Stephen F., and Youmans, Clifton. 2006. "The Case for a Live Site UXO Demonstration Process," *Proceedings of the UXO/Countermining Forum 2006*, Las Vegas, NV.

Butler, Dwain K. 2007. "Reflections on the Environmental and Engineering Applications of the Potential Fields Methods of Geophysics," Pioneers of Near-Surface Geophysics Session, *Proceedings of the 2007 Symposium on Application of Geophysics to Environmental and Engineering Geophysics*, pp 310-322, Denver, CO.

Butler, Dwain K. 2007. "Gravity Gradients over a Simple Two-Dimensional Structure: Interval Gradients Redux," *Proceedings of the 2007 Symposium on Application of Geophysics to Environmental and Engineering Geophysics*, pp 1507-1516, Denver, CO.

Wright, David, Bennett, Hollis H., Butler, Dwain K., Dove, Linda Peyman, Ballard, John H., Fields, Morris P., and Demoss, Tere A. 2008. "Multi-Sensor Systems Development for UXO Detection and Discrimination: Man-Portable Dual Magnetic/Electromagnetic Induction Sensor," Technical Report ERDC/EL TR-08-9, US Army Engineer Research and Development Center, Vicksburg, MS.

Butler, Dwain K. 2008. "Detection and Characterization of Subsurface Cavities, Tunnels and Abandoned Mines," *Near-Surface Geophysics and Human Activity*, 578-584, Science Press USA Inc.

Goodson, Ricky A., Morgan, John Cliff, Butler, Dwain K., Fields, Morris P., Bennett, Hollis H., and DeMoss, Tere A. 2010. "Unexploded Ordnance (UXO) Data Analysis system (DAS)," ERDC/EL TR-09-16, US Army Corps of Engineers research and Development Center.

Simms, Janet E., Bennett, Hollis H., Goodson, Ricky A., DeMoss, Tere A., Fields, Morris P., Morgan, John C., Riggs, Lloyd, and Butler, Dwain K. 2010. "The Detection and Discrimination of Small Munitions using Giant Magnetoresistive (GMR) Sensors," SERDP MM-1639, US Army Engineer Research and Development Center.

(Complete Publications List and/or writing samples available on request)

Dwain K. Butler

GRADUATE COURSES BEYOND THE M.S.

(Including PhD Program)

Engineering

Soil Mechanics	Theory of Continuous Media
Advanced Structural Engineering (Finite Element Methods)	Wave Motion in Continuous Media
Physical Properties of Soils	Critical Path Methods in Engr. and Management
Design and Analysis of Earth Structures	Applied Complex Variables
Advanced Mechanics of Materials	Engineering Statistics
Theory of Vibrations	

Geology/Hydrogeology

Physical Processes in Geology	Ground Water
Special Topics in Mining Geology	Ground Water Hydrology
Tectonophysics Seminar	Adv. Subsurface Hydrology and Hydraulics
Geodynamics Seminar	Geomorphology (Quantitative)
Engineering Geology	Geographic Information Systems
Stratigraphy	
Structural Geology	

Geophysics

Seismic Wave Propagation	Applied Seismology Laboratory
Theoretical Seismology	
Potential Fields Theory	Analysis of Gravity and Magnetic Fields
Electromagnetic Properties of Geologic Materials	
Physics of the Earth	Planetary Interiors
Geophysical Data Processing	
Kinematic Aspects of Plate Tectonics	
Geophysics Seminar	
Meteorological Data Acquisition and Transmission	Meteorological Instrument Theory and Design

Major Graduate Research Papers--

- The Vertical Gradient of Gravity and Its Applications
- Global Gravity and Tectonic Relations
- Tectonic Classification of Gravity Anomalies:
 - Complexities Associated with Arc-Trench Systems and Seamounts
- Tectonic Associations of Chromium Ore Deposits
- Electromagnetic Probing in Solid Earth Geophysics
- The Problem of Deep Focus Earthquakes

Ph.D. Committee--Davis Fahlquist, Terry Spencer, Earl Hoskins, Brann Johnson, Richard Carlson
Dissertation (1983)—*Microgravimetry and the Theory, Measurement and Application of Gravity Gradients*