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**Instrumentation and Controls
Division Progress Report for the
Period of July 1, 1994 to
December 31, 1997**

Publications, Presentations, Activities, and Awards

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INSTRUMENTATION AND CONTROLS DIVISION

Progress Report

for the Period of July 1, 1994, to December 31, 1997

PUBLICATIONS, PRESENTATIONS, ACTIVITIES, AND AWARDS

D. W. McDonald, Director

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ORNL-3191	Period Ending July 1, 1961
ORNL-3378	Period Ending September 1, 1962
ORNL-3578	Period Ending September 1, 1963
ORNL-3782	Period Ending September 1, 1964
ORNL-3875	Period Ending September 1, 1965
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ORNL-4990	Period Ending September 1, 1973
ORNL-5170	Period Ending September 1, 1973
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ORNL-5155	Period Ending September 1, 1974
ORNL-5196	Period Ending September 1, 1976
ORNL-5197	Period Ending September 1, 1976
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ORNL-5758	Period Ending September 1, 1980
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ORNL-5931/V2	Period Ending July 1, 1982
ORNL-6105/V1	Period Ending July 1, 1984
ORNL-6308	Period Ending July 1, 1986
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1. INTRODUCTION

About This Report

This report contains a record of publishing and other activities in the Oak Ridge National Laboratory (ORNL) Instrumentation and Controls (I&C) Division for the period of July 1, 1994, to December 31, 1997. It is a companion volume to *Working Together on New Horizons: Instrumentation and Controls Division Progress Report for the Period of July 1, 1994, to December 31, 1997* (ORNL/M-6530). *Working Together on New Horizons* contains illustrated summaries of some of the projects under way in I&C Division. Both books can be obtained by contacting C. R. Brittain (brittain@ornl.gov), P.O. Box 2008, Oak Ridge, TN 37831-6005.

I&C Division Mission and Vision

I&C Division develops and maintains techniques, instruments, and systems that lead to a better understanding of nature and harnessing of natural phenomena for the benefit of humankind. We have dedicated ourselves to accelerating the advancement of science and the transfer of those advancements into products and processes that benefit U.S. industry and enhance the security of our citizens.

Key Principles

As an organization, we have a set of key principles that we use to guide our decision making and our priorities:

- We dedicate ourselves to the assured mutual success of each other.
- We keep our technology portfolio at the leading edge.
- We keep our commitments to our customers and sponsors.
- We maintain a work environment that enhances the lives of all of our staff.
- We use our talent and skills to benefit the nation, its industry, and its citizenry.

I&C Contact

For more information about working with I&C Division, contact C. R. Brittain (brittain@ornl.gov), P.O. Box 2008, Oak Ridge, TN 37831-6005. You can also visit the I&C Division home page on the World Wide Web (<http://www.ic.ornl.gov>).

2. PUBLICATIONS AND PRESENTATIONS

- Allgood, G. O., C. W. Ayers, and B. W. VanHoy, "Detection of Gear Wear on the 757/767 Internal Drive Generator (IDG) Using Higher Order Spectral Analysis and Wavelets," 15th International Modal Analysis Conference, Orlando, Fla., Feb. 3-6, 1997.
- Allison, K. L., B. C. Davis, H. E. Smith, J. O. Hylton, and W. L. Robbins, *Instrument Calibration Plan of the Technical Support Section*, ORNL/TM-13456, June 1997.
- Anderson, R. L., D. N. Fry, and J. A. McEvers, *Advanced Turbine Systems Sensors and Controls Needs Assessment Study Final Report*, ORNL/TM-13335, Oak Ridge National Laboratory, Feb. 1997.
- Anderson, R. L., G. N. Miller, and H. R. Hegner, eds., *Proceedings of Workshop on NDE and Diagnostics Needs for Industrial Impact*, ISA96, Chicago, Oct. 7, 1996.
- Andrews, William H., Jr., J. H. Leckey, and M. D. Boeckmann, *Rapid Scanning Mass Spectrometer*, final report for DOE CRADA Y-1295-0394, Report #Y/AMT-410, Feb. 1997.
- Arai, Y., J. G. Arnold, J. W. Barkwell, B. Bevensee, B. Broomer, J. W. Chapman, M. Chiba, T. Collins, M. J. Corden, D. Craig, D. M. Davis, N. Dressnandt, A. Dunn, W. L. Dunn, T. Ekenberg, M. S. Emery, et al., "A Modular Straw Drift Tube Tracking System for the Solenoidal Detector Collaboration Experiment, Part I: Design," *Nuclear Instruments and Methods in Physics Research A* **381**, 355-71 (1996).
- Arai, Y., J. G. Arnold, J. W. Barkwell, B. Bevensee, B. Broomer, J. W. Chapman, M. Chiba, T. Collins, M. J. Corden, D. Craig, D. M. Davis, N. Dressnandt, A. Dunn, W. L. Dunn, T. Ekenberg, M. S. Emery, et al., "A Modular Straw Drift Tube Tracking System for the Solenoidal Detector Collaboration Experiment, Part II: Performance," *Nuclear Instruments and Methods in Physics Research A* **381**, 372-84 (1996).
- Armfield, J. S., T. S. Bigelow, C. S. Daw, R. L. Graves, J. B. Green, Jr., G. R. Hanson, J. H. Whealton, and J. B. Wilgen, "The Effect of Energy Fields on Combustion in a Real Engine Geometry," p. 231 in *1997 Technical Meeting of the Central States Section of the Combustion Institute*, Point Clear, Ala., 1997.
- Bair, R. A., C. E. Thomas, et al., *Energy Sciences Network Strategic Plan*, Final Draft, USDOE/ER/OCTR/MICS/ESSC (Energy Sciences Network Steering Committee), Aug. 1996.
- Ball, S. J., and D. J. Nypaver, "Interactive Simulations of Gas-Turbine Modular HTGR Transients and Heatup Accidents," ASME Annual Meeting, Chicago, Nov. 1994.
- Ball, S. J., and P. M. Williams, "Theories of Radiation Effects and Reactor Accident Analysis," ANS/ENS Meeting, Washington, D.C., Nov. 1996.
- Ball, S. J., D. J. Nypaver, and R. P. Wichner, "An ORNL Code for Gas-Cooled Reactor Simulations," 1997 International Meeting on Advanced Reactor Safety, Orlando, Fla., June 1-5, 1997.

- Ball, S. J., D. J. Nypaver, and T. L. Wilson**, "Simulation Comes Before Control," Saturday Academy of Computing and Mathematics (SACAM) Session, Nov. 23, 1996
- Ball, S. J., R. E. Battle, D. N. Fry, R. M. Harrington, and T. L. Wilson**, "Review of Ocone Digital ICS/NNI System Reliability—Phase 1," Aug. 11, 1997.
- Battle, R. E., G. W. Turner, R. I. Vandermolen, C. Vitalbo, and J. Naser**, "Test and Verification of a Reactor Protection System Application-Specific Integrated Circuit," Second International Conference on Advanced Reactor Safety, Orlando, Fla., June 1–4, 1997.
- Battle, R. E., R. I. Vandermolen, U. Jagadish, B. K. Swail, G. Rao, J. Naser, I. Rana, and C. Vitalbo**, "Design and Testing of Integrated Circuits for Reactor Protection Channels," presented at DOE/EPRI International Conference on Cost-Effective Instrumentation and Control Technology for Nuclear Power Plants, Nashville, Tenn., Mar. 22–24, 1995.
- Battle, R. E., R. I. Vandermolen, U. Jagadish, B. K. Swail, G. Rao, J. Naser, I. Rana, and C. Vitalbo**, "Design and Testing of Integrated Circuits for Reactor Protection Channels," in *Proceedings of the Ninth Power Plant Dynamics, Control, and Testing Symposium*, Knoxville, Tenn., May 24–26, 1995.
- Bell, M. G., K. M. McGuire, V. Arunasalam, G. R. Hanson, J. B. Wilgen, et al.**, "Overview of DT results from TFTR," *Nuclear Fusion* **35**, 1429 (1995).
- Bennett, C. A.**, "An Interactive Hypermedia Laboratory Plotting Application," presented at the fall meeting of the North Carolina Section of the American Association of Physics Teachers, High Point, N.C., Nov. 1–2, 1996.
- Bennett, C. A.**, "Database-Driven Web Courseware using 'Low-End' Databases," presented at the Spring meeting of the North Carolina Section of the American Association of Physics Teachers, UNC-Wilmington, Mar. 24–25, 1997.
- Bennett, C. A., D. P. Hutchinson, Marc L. Simpson, R. K. Richards, M. S. Emory, R. I. Crutcher, D. N. Sitter, E. A. Wachter, and M. A. Huston**, "Coherent Infrared Imaging Camera (CIRIC)," SPIE International Symposium on Optical Design and Engineering V, San Diego, July 9–15, 1995.
- Bennett, C. A., Marc L. Simpson, D. P. Hutchinson, and R. K. Richards**, "Application of Coherent 10 Micron Imaging Lidar," 9th Conference on Coherent Laser Radar, Linkoping, Sweden, June 23–27, 1997.
- Bennett, C. A., Marc L. Simpson, D. P. Hutchinson, D. N. Sitter, and R. K. Richards**, "The Antenna Properties of Optical Heterodyne Detector Arrays," pp. 240–3 in *OSA Coherent Laser Radar*, proceedings of topical meeting in Keystone, Colo., July 23–27, 1995.
- Bennett, C. A., Marc L. Simpson, E. B. Grann, D. P. Hutchinson, R. K. Richards, and D. S. Sitter**, "Coherent IR Laser Detection for Remote Sensing and Metrology," 30th International Symposium on Automotive Technology and Automation, Florence, Italy, June 16–19, 1997.
- Bently, C. L., M. Dunn, J. K. Mattingly, and D. A. Casada**, "Time-Frequency Analysis of Electric Motors," in *Proc. Winter Meet. Am. Nucl. Soc.*, San Francisco, Oct. 29–Nov. 2, 1995.

- Bernacki, B. E., A. C. Miller, and L. C. Maxey**, "Design and Fabrication of a Diamond-Turned Hybrid Diffractive/Refractive Singlet for Visible Applications at ORNL, *Proc. Conf. on Manufacturing Process Development in Photonics*, Redstone Arsenal, Huntsville, Ala., Nov. 1-2, 1994.
- Bernacki, B. E., A. C. Miller, Jr., L. C. Maxey, J. P. Cunningham, J. L. Nogues, and W. Moreshead**, "A Silica Glass Hybrid Singlet Produced by Sol-Gel Reproduction of a Single-Point Diamond-Turned Mold," *Annu. Meet. Opt. Soc. Am. Symp. on Diffractive Optics*, Portland, Oreg., Sept. 10-15, 1995.
- Bernacki, B. E., A. C. Miller, Jr., L. C. Maxey, J. P. Cunningham, W. V. Moreshead, and J. L. Nogues**, "Hybrid Optics for the Visible Produced by Bulk Casting of Sol-Gel Glass Using Diamond-Turned Molds," *Soc. Photo-Opt. Instrum. Eng. Conf. On Optical Manufacturing and Testing*, San Diego, Calif., July 9-11, 1995.
- Beshears, D. L., R. A. Abston, S. W. Allison, W. H. Andrews, M. R. Cates, E. B. Grann, W. W. Manges, T. J. McIntyre, M. B. Scudiere, M. L. Simpson, D. N. Sitter, J. Vehec, and L. Zhang**, *Application of Phosphor Thermometry to Galvanneal Processing*, ORNL/M-5923, May 1997.
- Beshears, D. L., R. A. Abston, S. W. Allison, W. H. Andrews, M. R. Cates, E. B. Grann, W. W. Manges, T. J. McIntyre, M. B. Scudiere, M. L. Simpson, D. N. Sitter, J. Vehec, and L. Zhang**, "Application of Phosphor Thermometry to Galvanneal Processing," in *Proceedings of 43rd International Instrumentation Symposium of the Instrument Society of America*, Orlando, Fla., May 4, 1997.
- Beshears, D. L., R. N. Nodine, J. D. Muhs, M. B. Scudiere, J. K. Jordan, G. J. Capps, J. R. Rickaway, J. V. LaForge, and C. P. White**, *Automated Vehicle Data Acquisition System (AVDAC)*, ORNL/TM-13210, Mar. 1996.
- Blakeman, E. D., and R. C. Kryter**, "Noninvasive Testing of Solenoid-Operated Valves Using Transient Current Signature Analysis," *International Conference on Maintenance and Reliability Marcon 97*, May 20-22, 1997.
- Breeding, J. E., and T. P. Karnowski**, "A Method for Efficient Fractional Sample Delay Generation for Real-Time Frequency-Domain Beamformers," *ICSPAT*, Boston, Oct. 24-26, 1995.
- Breeding, J. E., J. A. Mullens, G. Turner, J. A. Mcevers, M. C. Smith, T. E. Valentine, J. T. Mihalcz, and T. A. Gafford**, "New Processor for Fissile System Measurements for NMC&A," presented at The Institute of Nuclear Material Management 38th Annual Meeting, July 20-24, 1997.
- Britton, C. L., Jr., A. L. Wintenberg, G. R. Young, T. C. Awes, M. Womac, E. J. Kennedy, and R. S. Smith**, "Post-Radiation Memory Correction Using Differential Subtraction for PHENIX," pp. 622-26 in *1995 IEEE Nuclear Science Symposium Conference Record*, San Francisco, Oct. 1995.
- Britton, C. L., Jr., A. L. Wintenberg, G. R. Young, T. C. Awes, M. Womac, E. J. Kennedy, and R. S. Smith**, "Post-Radiation Memory Correction Using Differential Subtraction for PHENIX," *IEEE Trans. Nucl. Sci.* **43**(3), 1564-69 (June 1996).

- Britton, C. L., Jr., A. L. Wintenberg, K. F. Read, L. G. Clonts, E. J. Kennedy, R. S. Smith, B. K. Swann, and J. A. Musser, "An Analog Random Access Memory in the AVLSI-RA Process for an Interpolating Pad Chamber," *IEEE Trans. Nucl. Sci.* **42**(6), 2255-9 (Dec. 1995); and presented at Nuclear Science Symposium, 1994.
- Britton, C. L., Jr., A. L. Wintenberg, K. F. Read, L. G. Clonts, E. J. Kennedy, R. S. Smith, B. K. Swann, and J. A. Musser, "An Analog Random-Access Memory in the AVLSI-RA Process for an Interpolating Pad Chamber," pp. 261-65 in *1994 IEEE Nuclear Science Symposium Conference Record*, Norfolk, Va., Nov. 1994.
- Britton, C. L., Jr., A. L. Wintenberg, K. F. Read, M. L. Simpson, G. R. Young, L. G. Clonts, E. J. Kennedy, R. S. Smith, B. K. Swann, and J. A. Musser, "A Radiation-Hard Analog Memory in the AVLSI-RA Process," pp. 52-56 in *Proceedings of the First Workshop On Electronics for LHC Experiments*, Lisbon, Sept. 11-15, 1995.
- Britton, C. L., Jr., G. T. Alley, M. L. Simpson, A. L. Wintenberg, R. J. Yarema, T. Zimmerman, J. Bossevain, W. Collier, B. V. Jacak, J. Simon-Gillo, W. Sondheim, J. P. Sullivan, and N. Lockyer, "Design and Characterization of the BVX: An 8-Channel CMOS Preamplifier-Shaper for Silicon Strips," *IEEE Transactions on Nuclear Science* **41**, 352-55, 1994.
- Britton, C. L., Jr., M. N. Ericson, S. S. Frank, J. A. Moore, M. L. Simpson, G. R. Young, R. S. Smith, L. G. Clonts, T. Parakkat, J. Boissevain, S. Hahn, J. S. Kapustinsky, J. Simon-Gillo, J. P. Sullivan, and H. van Hecke, "TGV32: A 32-Channel Preamplifier Chip for the Multiplicity Vertex Detector at PHENIX," presented at the 1997 IEEE Nuclear Science Symposium, Albuquerque, N.M., Nov. 1997; and submitted to *IEEE Trans. Nucl. Sci.*
- Britton, C. L., Jr., R. J. Warmack, S. F. Smith, P. I. Oden, G. M. Brown, W. L. Bryan, L. G. Clonts, M. G. Duncan, M. S. Emery, M. N. Ericson, Z. Hu, R. L. Jones, M. R. Moore, J. A. Moore, J. M. Rochell, T. D. Threath, T. Thundat, G. W. Turner, and A. L. Wintenberg, "MEMS Sensors and wireless telemetry for Distributed Systems," presented at the International Symposium on Smart Materials and Structures, 1997.
- Britton, C. L., Jr., W. L. Bryan, M. S. Emery, M. N. Ericson, M. S. Musrock, M. L. Simpson, M. C. Smith, J. W. Walker, A. L. Wintenberg, G. R. Young, M. D. Allen, L. G. Clonts, R. L. Jones, E. J. Kennedy, R. S. Smith, J. Boissevain, B. V. Jacak, D. Jaffe, J. S. Kapustinsky, J. Simon-Gillo, J. P. Sullivan, H. Van Hecke, and N. Xu, "Design and Performance of Beam Test Electronics for the PHENIX Multiplicity Vertex Detector," *IEEE Trans. Nucl. Sci.* **44**(3), 283-88 (June 1997).
- Britton, C. L., Jr., W. L. Bryan, M. S. Emery, M. N. Ericson, M. S. Musrock, M. L. Simpson, M. C. Smith, J. W. Walker, A. L. Wintenberg, G. R. Young, M. D. Allen, L. G. Clonts, R. L. Jones, E. J. Kennedy, R. S. Smith, J. Boissevain, B. V. Jacak, J. S. Kapustinsky, J. Simon-Gillo, J. P. Sullivan, H. Van Hecke, and N. Xu, "Low Noise, Low Power Dissipation Analog LSI Electronics for Heavy Ion Detectors," presented at the 1996 IEEE International Symposium on Circuits and Systems, Atlanta, May 12-15, 1996.

- Britton, C. L., Jr., W. L. Bryan, M. S. Emery, M. N. Ericson, M. S. Musrock, M. L. Simpson, J. W. Walker, A. L. Wintenberg, F. Plasil, G. R. Young, M. D. Allen, L. G. Clonts, E. J. Kennedy, R. S. Smith, J. Bossevain, B. V. Jacak, J. Kapustinsky, J. Simon-Gillo, J. P. Sullivan, H. van Hecke, and N. Xu,** "Low Noise, Low Power Dissipation Analog LSI Electronics for Heavy Ion Detectors," pp. 133-6 in *Conference Record of the 1996 IEEE International Symposium on Circuits and Systems, Vol. 1*, Atlanta, May 12-15, 1996 (CD-ROM), ISBN 0-7803-3363-2.
- Britton, C. L., Jr., W. L. Bryan, M. S. Emery, M. N. Ericson, M. S. Musrock, M. L. Simpson, J. W. Walker, A. L. Wintenberg, F. Plasil, G. R. Young, M. D. Allen, L. G. Clonts, E. J. Kennedy, R. S. Smith, J. Boissevain, B. V. Jacak, J. Kapustinsky, J. Simon-Gillo, J. P. Sullivan, H. van Hecke, and N. Xu,** "Multiplicity-Vertex Detector Electronics for Heavy-Ion Detectors," pp. 84-87 in *Proceedings of the First Workshop on Electronics for LHC*, Lisbon, Sept. 1995.
- Britton, C. L., Jr., W. L. Bryan, M. S. Emery, M. N. Ericson, M. S. Musrock, M. L. Simpson, J. W. Walker, A. L. Wintenberg, F. Plasil, G. R. Young, M. D. Allen, L. G. Clonts, E. J. Kennedy, R. S. Smith, J. Boissevain, B. V. Jacak, J. S. Kapustinsky, J. Simon-Gillo, J. P. Sullivan, H. van Hecke, and N. Xu,** "Multiplicity-Vertex Detector Electronics Development for Heavy-Ion Detectors," presented at the First Workshop on Electronics for LHC, Lisbon, Sept. 11-15, 1995.
- Britton, C. L., W. L. Bryan, M. S. Emery, M. N. Ericson, M. S. Musrock, M. L. Simpson, J. W. Walker, A. L. Wintenberg, G. R. Young, M. D. Allen, L. G. Clonts, E. J. Kennedy, R. S. Smith, J. Boissevain, B. V. Jacak, J. S. Kapustinsky, J. Simon-Gillo, J. P. Sullivan, H. Van Hecke, and N. Xu,** "Design and Performance of Beam Test Electronics for the PHENIX Multiplicity Detector," pp. 6-10 in *Conference Record of the 1996 IEEE Nuclear Science Symposium, Vol. 1*.
- Bryan, W. L., U. Jagadish, C. L. Britton, S. S. Frank, M. N. Ericson, M. L. Simpson, G. R. Young, L. G. Clonts, R. G. Jackson, R. S. Smith, A. Oskarsson, T. Mark, and E. O'Brien,** "TGLD: A 16-Channel Charge Readout Chip for the PHENIX Pad Chamber Detector Subsystem at RHIC," *IEEE Transactions on Nuclear Science*, 1997.
- Buckner, M. A.,** "Advances in Electronic Personnel Dosimeters and Their Use for Remote Monitoring and Access Control," Weld. Test. Technol. Conf., WATTec, Knoxville, Tenn., Feb. 21-23, 1995.
- Buckner, M. A.,** "Monitoring Stored SNM with Fiber Optic and Scintillation Technology (FAST) Detector Systems," 35th Annu. Meet. of Inst. of Nuclear Materials Management, Naples, Fla., July 19, 1994.
- Buckner, M. L., M. A. Bauer, D. E. Holcomb, and M. L. Simpson,** "The Development of a Passive Fiber Optic Sensor System for Remote Monitoring in Low Energy Gamma Environments," in *Proc. 4th Conf. on Radiation Protection and Dosimetry*, Orlando, Fla., Oct. 23-27, 1994.
- Buckner, M.A., K. E. Meyer, and C. S. Dudley,** "New Field-Deployable Image Processing System for Same-Day Analysis of Nuclear Track Detectors," 4th Int. Symp. on Field Screening Methods for Hazardous Wastes and Toxic Chemicals, Las Vegas, Feb. 22-24, 1995.

- Bush, C. E., S. A. Sabbagh, S. J. Zweben, R. E. Bell, E. J. Synakowski, G. Taylor, S. Batha, M. Bell, M. Bitter, N. L. Bretz, R. Budny, Z. Chang, D. S. Darrow, P. C. Efthimion, D. Ernst, E. Fredrickson, G. R. Hanson, L. C. Johnson, J. Kesner, B. LeBlanc, F. M. Levington, D. Mansfield, M. E. Mauel, E. Mazzucato, D. McCune, M. Murakami, R. Nazikian, G. A. Navratil, H. Parks, S. F. Paul, C. K. Phillips, M. H. Redi, J. Schivell, S. D. Scott, C. H. Skinner, H. H. Towner, J. B. Wilgen, M. C. Zarnstorff, and the TFTR Group, "Deuterium-Tritium High Confinement (H-mode) Studies in the Tokamak Fusion Test Reactor," *Phys. Plasmas* 2, 2366 (1995).
- Byrne, T. E., L. F. Miller, R. Martin, D. Duckworth, M. Terzaghi-Howe, and G. W. Kabalka, "Determination of Uptake and Efficacy of Compounds for Boron Neutron Capture Therapy," Annu. Conf. Health Phys. Soc., San Antonio, Tex., June 29–July 3, 1997.
- Cao, Z., and L. F. Miller, "Evaluation of a Dynamic Bias Technique in Neutron-Photon Pulse Shape Discrimination by Using a Neural Network Classifier," in *Proceedings of the Health Physics Society 1997 Annual Meeting*, June 1997.
- Cao, Z., L. F. Miller, and M. A. Buckner, "Dynamic Bias for Neutron-Photon Pulse Shape Discrimination with Neural Network and Bayesian Classifiers," *Transactions of the American Nuclear Society*, Nov. 1997.
- Carnal, C. L., R. W. Wysor, R. F. Lind, and J. O. Hylton, "Simulation of the Coil Winder for the Superconducting Supercollider," in *Proc. Summer Computer Simulation Conf.*, San Diego, July 18–20, 1994.
- Carroll, R. M., and R. L. Shepard, *The Method of Construction of a Dual Johnson-Noise Power and Resistance Thermometer for 1375 K (1100°C) Service in a Vacuum Environment*, ORNL/TM-12696, Sept. 1994.
- Castleberry, K. N., *Distributed Monitoring System for Electric-Motor-Driven Compressors*, ORNL/TM-13127, Oak Ridge National Laboratory, Jan. 1996.
- Castleberry, K. N., G. S. Rao, and M. R. Lambert, *Functional Analysis of a Neutron Criticality Alarm Cluster at the Portsmouth Gaseous Diffusion Plant*, K/GPS/SAR-114, Lockheed Martin Energy Systems, Inc., May 1996.
- Castleberry, K. N., *High-Vibration Detection Using Motor Current Signature Analysis*, ORNL/TM-13266, Oak Ridge National Laboratory, July 1996.
- Castleberry, K. N., *Instrumentation for Motor-Current Signature Analysis Using Synchronous Sampling*, ORNL/TM-13255, Oak Ridge National Laboratory, July 1996.
- Chapman, J. A., D. C. Hensley, P. C. Womble, and L. F. Miller, "Detection Limits in Active-Neutron Devices for the Assay of Fissile Material," Annu. Meet. Health Phys. Soc., San Antonio, Tex., June 29–July 3, 1997.
- Chiaro, P. J., Jr., "Health Physics Instruments Tested at Oak Ridge National Laboratory," DOE DP (Defense Program) Focus Committee, Santa Fe, N.M., Oct. 2–4, 1995.
- Chiaro, P. J., Jr., "Instrument Testing and Evaluation Program at Oak Ridge National Laboratory," 20th Annu. TRADE Conf., Anaheim, Calif., Nov. 19–21, 1996.
- Chiaro, P. J., Jr., "Instrument Testing at Oak Ridge National Laboratory," Portal Technology Workshop, ORNL, Oak Ridge, Tenn., Aug. 2, 1995.

- Chiaro, P. J., Jr.**, "Monitoring Low Levels of Activity for Contamination Control," Portal Technology Workshop, ORNL, Oak Ridge, Tenn., Aug. 2, 1995.
- Chiaro, P. J., Jr.**, *Report of Foreign Travel Sept. 9-18, 1997*, ORNL/FTR-6323.
- Chiaro, P. J., Jr.**, *Report of Foreign Travel, Apr. 18-23, 1996*, ORNL/FTR-5771.
- Clark, R. L.**, *Effects of Aging and Severe Wear on Main Stream Isolation Valves Operators*, ORNL-6814, Jan. 1996.
- Crutcher, R. I., M. S. Emery, K. G. Falter, C. H. Nowlin, J. M. Rochelle, and L. G. Clonts**, "Micro-Miniature Radio-Frequency Transmitter for Communication and Tracking Applications," in *Proc. Symp. on Enabling Technologies for Law Enforcement and Security*, Boston, Nov. 19-21, 1996.
- D'Ippolito, D. A., J. R. Myra, A. C. England, G. R. Hanson, J. B. Wilgen, J. H. Rogers, R. Majeski, G. Schilling, J. R. Wilson, J. C. Hosea, and J. R. Wilson**, "Generalized Theory of ICRF Convection and Modeling of Observed Density Profile Modifications on TFTR," 11th Topical Conference on RF Power in Plasmas, Palm Springs, Calif., 1995 (American Institute of Physics, New York); p. 467 in AIP Conf. Proc. 355, 1996.
- Damiano, B.**, "Automated Detection and Location of Structural Degradation," Marcon •97, Knoxville, Tenn., May 20-22, 1997.
- Damiano, B., and L. Talarico**, "Investigation of a Non-Contact Strain Measurement Technique," Marcon 97, Knoxville, Tenn., May 20-22, 1997.
- Damiano, B., and L. Talarico**, *Investigation of a Noncontact Strain Measurement Technique*, ORNL/TM-13197, Mar. 1996.
- de la Luna, E., G. R. Hanson, J. B. Wilgen, J. Sanchez, V. Zhuravlev, and R. Kaita**, "First Results with AM Reflectometry on PBX-M Tokamak," *Rev. Sci. Instrum.* **66**, 403 (1995).
- de la Luna, E., G. R. Hanson, J. Sanchez, J. B. Wilgen, V. A. Zhuravlev, M. Ono, and R. Kaita**, "Edge Density Profile Measurements by Amplitude Modulation Reflectometry on PBX-M Tokamak," *Plasma Phys. Control. Fusion* **37**, 925 (1995).
- DeVore, J. R., and M. A. Buckner**, *Tritium Monitoring Techniques*, ORNL/TM-13132, 1996.
- DeVore, J. R., D. W. Ramey, and G. R. Hanson**, *Fuel Processing Cell Uranium Migration Investigation*, XOE-778, June 1996.
- Dress, W. B.**, "Applications of a Fast, Continuous Wavelet Transform," SPIE Wavelets Application Conference, Orlando, Fla., Apr. 20, 1997.
- Dress, W. B.**, "How Can We Design Intelligent Systems?" WATTec •95, Knoxville, Tenn., Feb. 23, 1995.
- Dress, W. B., and S. W. Kercel**, "Event Identification by Acoustic Signature Recognition," 11th Annual Security Technology Symposium, Virginia Beach, Va., June 19-22, 1995.
- Dress, W. B., R. M. Pack, and T. W. Hickerson**, "Extracting Heart Beats From Noisy Ballistocardiac Signals," Biometric Consortium, San Jose, Calif., Aug. 1996.
- Duan, H., S. Jones, K. Ley, J. Beach, and M. Simpson**, "Integrated CMOS Photodiode and Transimpedance Amplifier," pp. 315-7 in *Proceedings of the 1997 International Semiconductor Device Research Symposium*, Charlottesville, Va., Dec. 1997.

- Emery, M. S., M. N. Ericson, C. L. Britton, Jr., M. C. Smith, S. S. Frank, G. R. Young, M. D. Allen, and L. G. Clonts, "Timing and Control Requirements for a 32-Channel AMU-ADC ASIC for the PHENIX Detector," *IEEE Transactions on Nuclear Science* **44**(3), (June 1997).
- Emery, M. S., S. S. Frank, C. L. Britton, A. L. Wintenberg, M. L. Simpson, M. N. Ericson, and G. R. Young, "A Multi-Channel ADC for Use in the PHENIX Detector," pp. 417-20 in *Conference Record of the 1996 IEEE Nuclear Science Symposium, Vol. 1*.
- Emery, M. S., S. S. Frank, C. L. Britton, Jr., A. L. Wintenberg, M. L. Simpson, M. N. Ericson, G. R. Young, L. G. Clonts, and M. D. Allen, "A Multi-Channel ADC for Use in the PHENIX Detector," *IEEE Trans. Nucl. Sci.* **44**(3), 374-78 (June 1997).
- Ericson, M. N., D. K. Johnson, R. S. Berlage, T. L. Ferrell, D. E. McMillan, K. G. Falter, A. D. McMillan, S. F. Smith, G. E. Jellison, and C. L. Britton, Jr., "A Subdermal Physiological Monitoring System for Mass Screening Mice in Gene Expression Studies," 6th DOE Contractor and Grantee Workshop of the Human Genome Program, Santa Fe, N.M., Nov. 9-13, 1997.
- Ericson, M. N., M. D. Allen, M. S. Musrock, J. W. Walker, C. L. Britton, Jr., A. L. Wintenberg, and G. R. Young, "Development of a Front End Controller/Heap Manager for PHENIX," *IEEE Trans. Nucl. Sci.* **44**(3), 312-17 (June 1997).
- Ericson, M. N., M. L. Simpson, C. L. Britton, M. D. Allen, R. A. Kroeger, and S. E. Inderhees, "A Low-Power, CMOS Peak Detect and Hold Circuit for Nuclear Pulse Spectroscopy," pp. 44-48 in *Conference Record of the 1994 IEEE Nuclear Science Symposium, Vol. 1*.
- Ericson, M. N., M. L. Simpson, C. L. Britton, M. D. Allen, R. A. Kroeger, and S. E. Inderhees, "A Low-Power, CMOS Peak Detect and Hold Circuit for Nuclear Pulse Spectroscopy," *IEEE Trans. Nucl. Sci.* **42**(4), 724-28 (Aug. 1995).
- Ericson, M. N., M. S. Musrock, C. L. Britton, Jr., J. W. Walker, A. L. Wintenberg, and G. R. Young, "A Flexible Analog Memory Address List Manager for PHENIX," *IEEE Trans. Nucl. Sci.* **43**(3), 1629-33 (June 1996).
- Ericson, M. N., M. S. Musrock, C. L. Britton, Jr., J. W. Walker, A. L. Wintenberg, G. R. Young, and M. D. Allen, "A Flexible Analog Memory Address List Manager for PHENIX," pp. 5-9 in *1995 IEEE Nuclear Science Symposium Conference Record*, San Francisco, Oct. 1995.
- Ericson, M. N., S. S. Frank, A. L. Wintenberg, and J. S. Sam, "A Versatile Adjustable Range CMOS Voltage DAC for High Density Frontends," in *Proceedings of the 1997 IEEE Nuclear Science Symposium and Medical Imaging Conference*, 1997.
- Ewing, P. D., and D. E. Holcomb, *Relevance of U.S. Military with EMI/RFI in Microprocessor-Based Systems to Nuclear Power Applications*, ORNL/NRC/LTR-95/7, Mar. 1995.
- Ewing, P. D., and R. T. Wood, *Assessment of Electromagnetic Compatibility Guidance for Signal Leads*, ORNL/NRC/LTR-97/23, Oct. 1997.
- Ewing, P. D., and R. T. Wood, *Recommended Electromagnetic Operating Envelopes for Safety-Related I&C Systems in Nuclear Power Plants*, NUREG/CR-6431 (ORNL/TM-13158), Dec. 1997.

- Ewing, P. D., R. T. Wood, and C. E. Antonescu**, "Technical Basis for Guidance on Electromagnetic Interference and Power Surges in Nuclear Power Plants," IEEE Nuclear Science Symposium and Medical Imaging Conference, Albuquerque, N.M., Nov. 9–15, 1997.
- Falter, K. G., W. E. Wright, and E. W. Pritchard**, "Oak Ridge Calibration Recall Program," in *Proc. Natl. Conf. of Standards and Laboratories (NCSL)*, Monterey, Calif., Aug. 24–29, 1996.
- Ferrell, R. K., W. B. Jatko, and D. N. Sitter**, "An Asynchronous Modulation/Demodulation Technique for Robust Identification of a Target for 3-D Pose Determination," AeroSense '96 Symposium, Orlando, Fla., Apr. 8–12, 1996.
- Frank, S. S., C. L. Britton Jr., A. L. Wintenberg, and G. R. Young**, "Trigger Circuits for the PHENIX Electromagnetic Calorimeter," in *Proceedings of the 1997 IEEE Nuclear Science Symposium and Medical Imaging Conference*, 1997.
- Frank, S. S., M. N. Ericson, M. L. Simpson, R. A. Todd, and D. P. Hutchinson**, "A CMOS Integrated Circuit for Pulse-Shape Discrimination," pp. 297–301 in *Conference Record of the 1995 IEEE Nuclear Science Symposium, Vol. 1*.
- Fry, D. N., A. L. Wintenberg, and W. L. Bryan**, "Integrated Power Management for Microsystems," Prospector IX Workshop, Durham, N.C., Nov. 3–5, 1997.
- Fry, D. N.**, "Instrumentation and Controls Division Supports NRC," presentation to Terry Jackson (NRC), June 19, 1997.
- Fry, D. N.**, "ORNL Nuclear Plant I&C Technologies," presented to Southern Nuclear Company, Birmingham, Ala., Feb. 21, 1997.
- Fry, D. N.**, "ORNL Power Plant I&C Technologies," presentation to Duke Power, Charlotte, N.C., Mar. 20, 1997.
- Fry, D. N.**, "Some Highlights of Oak Ridge National Laboratory Instrumentation Development," presented to the Propulsion Instrumentation Working Group, Feb. 6, 1997.
- Fry, D. N., and S. J. Ball**, "Evaluation of the Impact of MOX Fuel on VVER-1000—Plant Protection and Control System Requirements," presented to John Baker, DOE, Mar. 13, 1997.
- Fry, D. N., D. E. Holcomb, J. K. Munro, L. C. Oakes, and M. J. Maston**, *Compact Portable Electric Power Sources*, ORNL/TM-13360, Oak Ridge National Laboratory, Feb. 1997.
- Fry, D. N., S. F. Smith, C. L. Britton, A. L. Wintenberg, M. S. Emery, G. W. Turner, and M. R. Moore**, "Wireless Sensors for Plant I&C Applications," EPRI International Conference On Instrumentation and Control Issues in Nuclear Power Plants Agenda, St. Petersburg, Fla., Dec. 10–12, 1997.
- Gee, T. F., R. Collier, K. R. Everman, E. B. Freer, G. R. Wetherington, Jr., K. Pepe (PSI), and G. Tarasek (NSWC)**, "Compensation for Missing Sensors in a Real-Time Measurement Beamformer System," MTS/IEEE Oceans '97, Oct. 6–9, 1997.
- Gee, T. F., R. Collier, K. R. Everman, E. B. Freer, G. R. Wetherington, Jr., G. Tarasek (CD/NSWC), and K. Pepe**, "Compensation for Missing Sensors in a Real-Time Measurement Beamformer System," Oceans 97 MTS/IEEE, Halifax, Nova Scotia, Canada, Oct. 6–9, 1997.

- Gleason, S. S., and K. W. Tobin, Jr.,** "Directional-Based Dilation for Connection of Piece-Wise Objects: A Semiconductor," 1996 IEEE International Conference on Image Processing, Sept. 16-19, 1996.
- Gleason, S. S., K. W. Tobin, Jr., and T. P. Karnowski,** "An Integrated Spatial Signature Analysis and Automatic Defect Classification Systems," 191st Meeting of the Electrochemical Society, Montreal, Canada, June 30, 1997.
- Gleason, S. S., K. W. Tobin, Jr., and T. P. Karnowski,** "Spatial Signature Analysis of Semiconductor Defects for Manufacturing Problem Diagnosis," submitted to *Solid State Technology*, Apr. 11, 1996.
- Grann, E. B., and M. G. Moharam,** "Comparison Between Continuous and Discrete Subwavelength Grating Structures for Antireflection Surfaces," *JOSSA A - Optics Image Science and Vision* **13**(5), 988-92 (May 1996).
- Grann, E. B., and M. G. Moharam,** "Effective Properties of Subwavelength Gratings," 1995 Annual Meeting of the Optical Society of America, Portland, Oreg., 1995.
- Grann, E. B., and M. G. Moharam,** "Hybrid 2-Dimensional Subwavelength Surface-Relief Grating-Mesh Structures," *Applied Optics* **35**(5), 795-800 (Feb. 1996).
- Grann, E. B., D. E. Holcomb, R. A. Zuhr, and M. G. Moharam,** "Subwavelength Structured Narrow-Band Integrated Optical Grating Filters," 1998 Diffractive Optic and Micro Optics, Kailua-Kona, Hawaii, June 8-12, 1998.
- Grann, E. B., M. G. Moharam, and D. A. Pomet,** "Artificial Uniaxial and Biaxial Dielectrics with Use of Two-Dimensional Subwavelength Binary Gratings" (Abstract), *JOSA A* **11**, 2695-2703 (Oct. 1994).
- Grann, E. B., M. G. Moharam, and D. A. Pomet,** "Optimal Design for Anti-Reflective Tapered Two-Dimensional Subwavelength Grating Structures" (Abstract), *JOSA A* **12**, 333-9 (Feb. 1995).
- Grann, E. B., M. G. Moharam, and D. A. Pomet,** "Tapered Subwavelength Grating Structures for Broadband Anti-Reflection Surfaces," 1994 Annual Meeting of the Optical Society of America, Dallas, 1994.
- Grann, E. B., M. G. Moharam, and D. A. Pomet,** "Two-Dimensional Subwavelength Gratings As Artificial Anisotropic Media," *Diffractive Optics: Design, Fabrication, and Applications Technical Digest*, 1994 **11**, 260-3, paper DWB3 (1994).
- Grann, E. B., M. G. Moharam, L. C. Maxey, and B. M. Evans,** "Dielectrically Coated Sinusoidal Subwavelength Resonant Grating Filters," Annual Conference of Optical Society of America, Long Beach, Calif., Oct. 12-17, 1997.
- Grann, E. B.,** *Subwavelength Grating Structures for Artificial Media Applications*, Ph.D. Dissertation, CREOL, University of Central Florida, Orlando, Fla., May 1995.
- Hanson, G. R., A. C. England, J. B. Wilgen, F. W. Baity, D. B. Batchelor, M. D. Carter, D. J. Hoffman, M. Murakami, D. A. Rasmussen, P. M. Ryan, D. W. Swain, J. H. Rogers, J. R. Wilson, R. P. Majeski, G. Schilling, E. J. Doyle, and K. W. Kim,** "Edge Density Modification with rf on TFTR and DIII-D," 11th Topical Conference on RF Power in Plasmas, Palm Springs, Calif., 1995 (American Institute of Physics, New York), p. 463 in AIP Conf. Proc. 355, 1996.

- Hanson, G. R., C. E. Bush, J. B. Wilgen, T. S. Bigelow, J. H. Rogers, and J. R. Wilson,** "Measurements of Edge Density Profile Modifications During IBW on TFTR," 12th Topical Conference on RF Power in Plasmas, Savannah, Ga., 1997 (American Institute of Physics, New York), p. 451 in AIP Conf. Proc. 403, 1997.
- Hanson, G. R., J. B. Wilgen, T. S. Bigelow, I. Collazo, A. C. England, M. Murakami, D. A. Rasmussen, C. E. Thomas, J. R. Wilson, and H. K. Park,** "Microwave Reflectometry for Edge Density Profile Measurements on TFTR," *Plasma Phys. Control. Fusion* **36**, 2073-82 (1995).
- Hanson, G. R., J. B. Wilgen, T. S. Bigelow, I. Collazo, A. C. England, M. Murakami, D. A. Rasmussen, and J. R. Wilson,** "Differential Phase Reflectometry for Edge Eensity Profile Measurements on TFTR," *Rev. Sci. Instrum.* **66**, 863 (1995).
- Hardy, J. E.,** "Accurate, Reliable Control of Process Gases by Mass Flow Controllers," TMS Annual Meeting, Orlando, Fla., Feb. 1997.
- Hardy, J. E.,** "Standardized Test Methods for Mass Flow Controllers," presented to Symposium on ULSI Ultra Clean Technology, Ultra Clean Society of Japan, Tokyo, Nov. 1994 (Invited presentation).
- Hardy, J. E.,** "The Semiconductor Industry Chase—Benefits to Tennessee," Tennessee's Science and Technology Advisory Council, June 1997.
- Hardy, J. E., and F. R. Ruppel,** "Measurement and Instrumentation of Flow," pp. 445-61 in *Encyclopedia of Applied Physics*, Vol. 9, 1994.
- Hardy, J. E., and T. E. McKnight,** "Accurate, Reliable Control of Process Gases by Mass Flow Controllers," in *Proc. 126th Ann. Meet. Min. Met. Mater. Soc.*, Orlando, Fla., Feb. 9-13, 1997.
- Hardy, J. E., R. A. Abston, J. O. Hylton, and T. E. McKnight,** *Exhaust Gas Flow Measurement System*, C/ORNL 93-0232, June 22, 1996.
- Harris, J. H., C. E. Thomas, J. T. Hogan, and G. R. Haste, et al.,** "Experimental Measurements of ICRF and Edge Plasma Interactions on Tore Supra," in *Proceedings of the 21st EPS Conference on Controlled Fusion and Plasma Physics*, June 27-July 1, 1994, Montpellier, France.
- Hastings, M. C., B. L. Anderson, B. Chiu, and D. E. Holcomb,** "Effects of Gamma Radiation on High-Power Infrared and Visible Laser Diodes," *IEEE Trans. on Nucl. Science* **43** (3), 2141-49 (June 1996).
- Hicks, J. S., and M. C. Wright,** "Closed-Loop Step Motor Control Using Absolute Encoders," Power Systems World International Conference & Exhibit, Baltimore, Sept. 6-12, 1997.
- Hitchcock, D. A., J. S. Cavallini, R. R. Oldehoeft, C. E. Thomas, G. Weigand, et al.,** "DOE 2000," Proposal from DOE/ER/OCTR/MICS to Undersecretary of Energy Charles Curtis, Aug. 1995.
- Hoffheins, B. S.,** "Solid State, Resistive Gas Sensors," pp. 371-97 in *Handbook of Chemical and Biological Sensors*, eds., R. F. Taylor and J. S. Schultz, Institute of Physics Publishing, Bristol and Philadelphia, 1996.
- Hoffheins, B. S., R. J. Lauf, and J. J. Felten,** "A Low Cost Sensor for the Detection of Hydrogen," *Sensors*, Sept. 1995.

- Hoffheins, B. S., R. J. Lauf, and J. J. Felten, "A Thick Film Hydrogen Sensor," in *Proc. Int. Symp. on Microelectronics*, Boston, Nov. 15-17, 1994.
- Hoffheins, B. S., R. J. Lauf, and J. J. Felten, "Thick-Film Hydrogen Sensor: Design and Materials," *Int. J. Microcircuits and Electronic Packaging*, Apr. 1995.
- Hoffheins, B. S., R. J. Lauf, T. E. McKnight, and R. R. Smith, "Design and Testing of Hydrogen Sensors for Industrial Applications," Meet. Am. Chem. Soc., Orlando, Fla., Aug. 25-30, 1996.
- Hoffheins, B. S., R. J. Lauf, T. E. McKnight, and R. R. Smith, "Design and Testing of Hydrogen Sensors for Industrial Applications," *J. of Ind. Eng. Chem. Res.* (May 1997).
- Hoffheins, B. S., T. E. McKnight, R. J. Lauf, R. E. James, and R. R. Smith, "Evaluation of a Hydrogen Sensor for Nuclear Reactor Containment Monitoring," in *Proc. Am. Nucl. Soc. Advanced Reactor Safety Meeting*, Orlando, Fla., June 1-5, 1997.
- Hoffheins, B. S., T. E. McKnight, R. J. Lauf, R. Smith, and A. D. McMillan, "Evaluation of a Prototype Hydrogen Sensor for Use in Safety Applications," *J. Energy and Fuels* (Sept. 1997).
- Hoffheins, B. S., T. E. McKnight, R. J. Lauf, R. Smith, and A. D. McMillan, "Evaluation of a Prototype Hydrogen Sensor for Use in Safety Applications," pp. 69-82 in *Proc. 1997 U.S. DOE Hydrogen Program Review*, May 21-25, 1997.
- Holcomb, D. E., and T. E. McKnight, "Transducers for Temperature, Pressure, and Flow," *Encyclopedia of Applied Physics*, Vol. 22, June 1997, VCH Publishers, Inc., Immergut, pp. 1-31.
- Holcomb, D. E., K. Korsah, and R. T. Wood, *Survey of Advanced Instrumentation with Potential Applicability to Safety-Related Systems at Nuclear Power Plants*, ORNL/NRC/LTR-95/23, June 1995.
- Hosea, J. C., R. E. Bell, K. Hill, B. LeBlanc, R. Majeski, N. Nazikian, M. Ono, C. K. Phillips, J. H. Rogers, G. Schilling, J. R. Wilson, D. A. D'Ippolito, J. R. Myra, C. E. Bush, and G. R. Hanson, "IBW and Fast Wave Launching and Damping on TFTR," 12th Topical Conference on RF Power in Plasmas, Savannah, Ga., 1997 (American Institute of Physics, New York), p. 77 in AIP Conf. Proc. 403, 1997.
- Hubbard, C. R., T. R. Watkins, K. J. Kozaczek, S. Spooner, X. L. Wang, M. C. Wright, E. A. Payzant, and X. Zhu, "X-Ray and Neutron Diffraction Strain Measurement Developments at ORNL," Int. Union of Crystallography Congress, Seattle, Wash., Aug. 9-15, 1996.
- Hubbard, C. R., E. A. Payzant, X. L. Wang, S. Spooner, and M. C. Wright, "Through Thickness Residual Stress Mapping Facility Development and Example User Projects," Annu. Automotive Technology Development Customers' Coordination Meet., Dearborn, Mich., Oct. 27-30, 1997.
- Hunt, M. A., D. N. Sitter, R. K. Ferrell, and J. E. Breeding, "Circumference Imaging for Optical Based Identification of Cylindrical and Conical Objects," SPIE •97 Electronic Imaging: Science And Technology, San Jose, Calif., Feb. 8-14, 1997.

- Hunt, M. A., J. S. Hicks, and S. S. Gleason, "Part Identification Using Robust Feature Extraction and Pattern Classification," IS&T/SPIE Symposium on Electronic Imaging: Science and Technology, SPIE paper number 2665 24, San Jose, Calif., Jan. 28-Feb. 2, 1996.
- Hunt, M. A., S. S. Gleason, J. S. Goddard, and T. P. Karnowski, *Sort Floor Optical Inspection Tool: A Feasibility Study*, ORNL/M-5302, Oak Ridge Natl. Lab., Sept. 1996.
- Hutchens, R. E., J. O. Hylton, T. E. McKnight, and C. J. Remenyik, "Gravimetric Gas Flow Calibrator," R&D 100 Award Entry, Feb. 1995.
- Hutchinson, D. P., "Infrared Laser Diagnostics for ITER," presented at the Workshop on Diagnostics for ITER, Varenna, Italy, Aug. 28-Sept. 1, 1995.
- Hutchinson, D. P., and R. K. Richards, *Report of Foreign Travel by D. P. Hutchinson and R. K. Richards, Dec. 8-13, 1996*, ORNL/FTR-6059, Oak Ridge National Laboratory.
- Hutchinson, D. P., M. L. Simpson, C. A. Bennett, R. K. Richards, M. S. Emery, R. I. Crutcher, D. N. Sitter, Jr., E. A. Wachter, and M. A. Huston, "Coherent Infrared Imaging Camera (CIRIC)," presented to SPIE International Symposium on Optical Design and Engineering V, San Diego, July 9-14, 1995.
- Hutchinson, D. P., Marc L. Simpson, and R. K. Richards, "Application of Lidar to Ion Measurements in Plasma Diagnostics," pp. 36-39 in *Proceedings of 9th Conference on Coherent Laser Radar*, Linköping, Sweden, June 23-27, 1997.
- Hutchinson, D. P., Marc L. Simpson, R. I. Crutcher, M. S. Emery, E. A. Wachter, M. A. Huston, D. N. Sitter, R. K. Richards, and C. A. Bennett, "Coherent Infrared Imaging Camera," pp. 204-9 in *Proceedings of SPIE's International Symposium on Optical Science, Engineering, and Instrumentation*, San Diego, July 9-14, 1995.
- Hutchinson, D. P., *Neutron Detectors Using Wavelength Shifting Fibers*, Schlumberger-Doll Research Laboratory, Ridgefield, Conn., Feb. 21, 1995.
- Hutchinson, D. P., R. K. Richards, and C. H. Ma, "Infrared Laser Diagnostics for ITER," in *Diagnostics for Experimental Thermonuclear Fusion Reactors*, eds., P. E. Stott, G. Gorini, and E. Sindoin, proceedings of the Workshop on Diagnostics for ITER, Varenna, Italy, Aug. 28-Sept. 1, 1995.
- Hutchinson, D. P., R. K. Richards, and Marc L. Simpson, "Coherent Lidar Development at the Oak Ridge National Laboratory," poster session presented at the 44th National Infrared Information Symposia, Applied Physics Lab, Johns Hopkins University, Laurel, Md., Nov. 11-13, 1997.
- Hutchinson, D. P., R. K. Richards, C. A. Bennett, and Marc L. Simpson, "Application of Coherent Lidar to Ion Measurements in Plasma Diagnostics," 9th Conference on Coherent Laser Radar, Linköping, Sweden, June 23-27, 1997.
- Hutchinson, D. P., *Report of Foreign Travel by D. P. Hutchinson, Aug. 23-29, 1996*, ORNL/FTR-5907, Oak Ridge National Laboratory.
- Hutchinson, D. P., *Report of Foreign Travel by D. P. Hutchinson, Nov. 30-Dec. 8, 1995*, ORNL/FTR-5676, Oak Ridge National Laboratory.
- Hutchinson, D. P., *Report of Foreign Travel by D. P. Hutchinson, Aug. 26-Sept. 9, 1995*, ORNL/FTR-5539, Oak Ridge National Laboratory.

- Hutchinson, D. P.**, *Report of Foreign Travel by D. P. Hutchinson, June 6-9, 1995*, ORNL/FTR-5415, Oak Ridge Natl. Lab.
- Hutchinson, D. P., V. C. Miller, and J. A. Ramsey**, "Neutron Scintillator Using Wavelength Shifting Fibers," in *Proceedings of the Workshop on New Tools for Neutron Instrumentation*, Les Houches, France, June 5-9, 1995.
- Hutchinson, D. P., V. C. Miller, and J. A. Ramsey**, "Passive Neutron/Fiber Optic Sensor for Storage Vault Applications," in *Proceedings of the Annual Meeting of the Institute of Nuclear Materials Management*, Palm Desert, Calif., July 10-14, 1995.
- Hylton, J. O., and C. J. Remenyik**, "An Instrument for Gravimetric Calibration of Flow Devices with Corrosive Gases," in *Proc. 41st Int. Instrumentation Symp.*, Aurora, Colo., May 7-11, 1995 (*J. of Ind. Eng. Chem. Res.*).
- Icenhour, A. S., H. W. Godbee, and L. F. Miller**, "Low-Level Radioactive Waste Performance Assessments: Source Term Modeling," Annu. Meet. Am. Nucl. Soc., Philadelphia, June 25-29, 1995.
- Icenhour, A. S., H. W. Godbee, and L. F. Miller**, "Radiolytic Gas Generation Estimates in Multiphase Systems," Annu. Meet. Am. Nucl. Soc., Orlando, Fla., June 1-5, 1997.
- Icenhour, A. S., H. W. Godbee, and L. F. Miller**, "Radiolytic Gas Generation Estimates in Multiphase Systems," *Transactions of the American Nuclear Society*, June 1997.
- Icenhour, A. S., M. L. Tharp, and L. F. Miller**, "Time-Dependent Sensitivity Analysis of the SOURCE1 Computer Code," Annu. Meet. Am. Nucl. Soc., Orlando, Fla., June 1-5, 1997.
- Icenhour, A. S., M. L. Tharp, and L. F. Miller**, "Time-Dependent Sensitivity Analysis of the SOURCE1 Computer Code," *Transactions of the American Nuclear Society* (June 1997).
- Jackson, R. G., T. V. Blalock, M. L. Simpson, A. L. Wintenberg, and G. R. Young**, "Integrated Constant-Fraction Discriminator Shaping Techniques for the PHENIX Lead-Scintillator Calorimeter," *IEEE Trans. Nucl. Sci.* **44**(3), 303-7 (June 1997).
- Jackson, R. G., T. V. Blalock, M. L. Simpson, A. L. Wintenberg, and G. R. Young**, "Integrated Constant-Fraction Discriminator Shaping Techniques for the PHENIX Calorimeters," pp. 51-55 in *Conference Record of the 1996 IEEE Nuclear Science Symposium, Vol. 1*.
- Jatko, W. B., S. S. Gleason, J. S. Goddard, J. S. Hicks, R. K. Ferrell, and V. K. Varma**, *Crusader Automated Docking System Phase III Report*, ORNL/TM-13177, Oak Ridge Natl. Lab., Mar. 1996.
- Johnson, Dabney, Monica Justice, Ken Beattie, Michelle Buchanan, Michael Ramsey, Rose Ramsey, Michael Paulus, Nance Ericson, David Allison, Reid Kress, Richard Mural, Ed Uberbacher, and Reinhold Mann**, "The Functional Genomics Initiative at Oak Ridge National Laboratory," presented at the DOE Human Genome Program Contractor-Grantee Workshop VI, Nov. 9-13, 1997, Santa Fe, N.M.
- Kercel, S. W., and W. B. Dress**, "A Hardware Implementation of Multi-Resolution Filtering for Broadband Instrumentation," SPIE 1995 International Symposium on Aerospace/Defense Sensing and Dual Use Photonics, Orlando Fla., Apr. 17-21, 1995.

- Kercel, S. W., and W. B. Dress**, "Feasibility of an Anticipatory Noncontact Precrash Restraint Actuation System," SPIE Photonics East •95 Symposium, Philadelphia, Oct. 25, 1995.
- Kercel, S. W., and W. B. Dress**, "Inductive Learning as a Fusion Engine for Mine Detection," 1997 IEEE International Conference on Systems, Man, and Cybernetics, Orlando, Fla., Oct. 12-15, 1997.
- Kercel, S. W., and W. B. Dress**, *Anticipatory Pre-Crash Restraint Sensor Feasibility Study*, ORNL/TM-13050, Oak Ridge Natl. Lab., Aug. 1995.
- Kercel, S. W., K. Korsah, and R. T. Wood**, "Susceptibility of Digital Instrumentation and Control Systems to Disruption by Electromagnetic Interference," 1997 International Meeting on Advance Reactor Safety, Orlando, Fla., June 1-5, 1997.
- Kercel, S. W., K. Korsah, R. T. Wood, and P. D. Ewing**, "Electromagnetic Compatibility of Digital Instrumentation and Control Systems in Nuclear Power Plants," in *Proceedings of the Fifth International Conference on Nuclear Engineering*, Nice, France, May 25-29, 1997, ICONE5-2702.
- Kercel, S. W., M. R. Moore, E. D. Blakeman, P. D. Ewing, and R. T. Wood**, *Survey of Ambient Electromagnetic and Radio-Frequency Interference Levels in Nuclear Power Plants*, NUREG/CR-6436 (ORNL/TM-13171), Nov. 1996.
- Kercel, S. W., V. M. Baylor (NSPO), and L. E. Labaj (NSPO)**, "Comparison of Enclosed Space Detection System with Conventional Methods," 13th Annual Security Technology Symposium, Virginia Beach, Va., June 11, 1997.
- Kercel, S. W., V. M. Baylor (NSPO), W. B. Jatko, L. E. Labaj (NSPO), J. D. Muhs, R. M. Pack, W. B. Dress, and T. W. Hickerson**, "Application of the Smart Portal in Transportation," SPIE Photonics East •96 Symposium, Boston, Nov. 20, 1996.
- Kleinhans, K., and L. F. Miller**, "A Comparison of Field Screening Measurements and Laboratory Analysis for Uranium Contaminated Soils at the Alba Croft Facility and Vicinity Properties," in *Proceedings of the Health Physics Society 1997 Annual Meeting*, June 1997.
- Koehler, P. E., and J. T. Mihalcz**, "ORNL Measurements at Hanford Waste Tank TX-118," ORNL/TM-12904, Lockheed Martin Energy Systems, Inc., Oak Ridge National Laboratory, 1995.
- Korsah, K.**, "HFIR I&C Aging," in *1995 Annual Review of ORNL Reactors*, ORNL/CF-96/08, The Reactor Operations Review Committee (RORC), Oak Ridge National Laboratory, Mar. 1, 1996.
- Korsah, K.**, "HFIR I&C Aging," in *1996 Annual Review of ORNL Reactors*, ORNL/CF-97/39, The Reactor Operations Review Committee (RORC), Oak Ridge National Laboratory, Nov. 21, 1997.
- Korsah, K., and C. Antonescu**, "Evaluating 'New' Instrumentation and Control Technologies for Safety-Related Applications in Nuclear Power Plants," *Nuclear Engineering and Design* **167**, 251-265 (1997).
- Korsah, K., G. W. Turner, and J. A. Mullens**, "Assessing Environmental Compatibility of New Technologies for Use in Nuclear Power Plants," Nuclear Science Symposium and Medical Imaging Conference, Norfolk, Va., Oct. 30-Nov. 5, 1994.

- Korsah, K., P. D. Ewing, S. W. Kerchel, R. T. Wood, M. Hassan, T. J. Tanaka, and C. E. Antonescu**, "Current Research Results on the Technical Basis for Environmental Qualification of Safety-Related Digital I&C Systems," *25th Water Reactor Safety Information Meeting*, Bethesda, Md., Oct. 20–22, 1997.
- Korsah, K., R. T. Wood, C. E. Antonescu, and T. J. Tanaka**, "Technical Basis for Environmental Qualification of Safety-Related Microprocessor-Based Instrumentation and Control Systems in Nuclear Power Plants," Fifth International Conference on Nuclear Engineering, Nice, France, May 25–29, 1997.
- Korsah, K., R. T. Wood, C. E. Antonescu, and T. J. Tanaka**, "Technical Basis for Environmental Qualification of Computer-Based Safety Systems in Nuclear Power Plants," 1997 International Meeting on Advanced Reactor Safety, Orlando, Fla., June 1–5, 1997.
- Korsah, K., R. T. Wood, C. E. Antonescu, and T. J. Tanaka**, "Technical Basis for Environmental Qualification of Safety-Related Microprocessor-Based Instrumentation and Control Systems in Nuclear Power Plants," in *Proceedings of the Fifth International Conference on Nuclear Engineering*, Nice, France, ICONE5-2703, May 25–29, 1997.
- Korsah, K., R. T. Wood, C. E. Antonescu, T. J. Tanaka, and M. Hassan**, "Effects of Environmental Stress on Microprocessor-Based I&C Systems," IEEE Nuclear Science Symposium and Medical Imaging Conference, Albuquerque, N. M., Nov. 9–15, 1997.
- Korsah, K., S. W. Kerchel, R. T. Wood, and P. D. Ewing**, "Electromagnetic Compatibility of Digital Instrumentation and Control Systems in Nuclear Power Plants," Fifth International Conference on Nuclear Engineering, Nice, France, May 25–29, 1997.
- Korsah, K., T. J. Tanaka, C. Antonescu, and R. T. Wood**, "Technical Basis for Environmental Qualification of Computer-Based Safety Systems in Nuclear Power Plants," pp. 754–758 in *Proc. Intl. Mgt. On Advanced Reactor Safety (ARS '97)*, Orlando, Fla., June 1–5, 1997, 2, 1997.
- Korsah, K., T. J. Tanaka, T. L. Wilson, Jr., and R. T. Wood**, *Environmental Testing of an Experimental Digital Safety Channel*, NUREG/CR-6406, Nuclear Regulatory Commission, Sept. 1996.
- Korsah, K., T. L. Wilson, Jr., and R. T. Wood**, "Environmental Effects Testing of an Experimental Safety Channel," pp. 1203–12 in *Proc. of the American Nuclear Society International Topical Meeting on Nuclear Plant Instrumentation, Control, and Human-Machine Interface Technologies*, State College, Penn., May 6–9, 1996, 2, 1996.
- Kress, R. L., S. M. Babcock, K. C. Bills, D. S. Kwon, and D. A. Schoenwald**, "Simulation of Robot Manipulators," Sixth American Nuclear Society Topical Meeting on Robotics and Remote Systems, Monterey, Calif., Feb. 1995.
- Kroeger, R. A., W. N. Johnson, R. L. Kinzer, J. D. Kurfess, S. Inderhees, M. D. Allen, G. T. Alley, C. L. Britton, L. C. Clonts, M. N. Ericson, and M. L. Simpson**, "Charge Sensitive Preamplifier and Pulse Shaper using CMOS Process for Germanium Spectroscopy," pp. 786–9 in *Conference Record of the 1994 IEEE Nuclear Science Symposium*, Vol. 2.

- Kroeger, R. A., W. N. Johnson, R. L. Kinzer, J. D. Kurfess, S. Inderhees, M. D. Allen, G. T. Iley, C. L. Britton, L. C. Clonts, M. N. Ericson, and M. L. Simpson, "Charge Sensitive Preamplifier and Pulse Shaper Using CMOS Process for Germanium Spectroscopy," *IEEE Trans. Nucl. Sci.* **42**(4), 921-24 (Aug. 1995).
- LeBlanc, B., R. E. Bell, C. E. Bush, R. Cesario, G. R. Hanson, J. Hosea, R. Majeski, M. Ono, F. Paoletti, C. K. Phillips, J. H. Rogers, G. Schilling, and J. R. Wilson, "Analysis of IBW Experiments on TFTR," 12th Topical Conference on RF Power in Plasmas, Savannah, Ga., 1997 (American Institute of Physics, New York), p. 81 in AIP Conf. Proc. 403, 1997.
- Lenarduzzi, R., and R. Nodine, "Sensor Bus Evolution for Modular Storage Vault Monitoring," WATtec 96 Conference and Exhibition, Knoxville, Tenn., Feb. 20-22, 1996.
- March-Leuba, J. A., J. A. Mullens, T. E. Valentine, J. T. Mihalcz, R. B. Perez, and J. K. Mattingly, "Methodology for Interpretation of Fissile Mass Flow Measurements at Uranium Blend-Down Facilities," INMM Annual Meeting, Phoenix, Ariz., July 20-24, 1997.
- March-Leuba, J. A., and D. G. Perio, "Sensitivity of BWR Stability Calculations to Numerical Integration Techniques," 25th Water Reactor Safety Information Meeting, Bethesda, Md., Oct. 20-22, 1997.
- Martin, R.C., T. E. Byrne, and L. F. Miller, "Biomedical Neutron Research at the Californium User Facility for Neutron Science," 4th Int. Conf. on Methods and Applications of Radioanalytical Chemistry, Kona, Hawaii, Apr. 6-11, 1997.
- Martin, R.C., T. E. Byrne, and L. F. Miller, "Biomedical Neutron Research at the Californium User Facility for Neutron Science," *Radioanal. Nucl. Chem.-Articles* (Apr. 8, 1997).
- Mattingly, J. K., and R. B. Perez, "Numerical Implementation of Gabor and Continuous Wavelet Analysis," p. 27 in *9th Power Plant Dynamics, Control and Testing Symposium*, Vol. 2, May 1, 1995, Knoxville U.S.B.R., ed., Upadhyaya.
- Mattingly, J. K., J. March-Leuba, T. E. Valentine, J. T. Mihalcz, and T. Uckan, "Physics Design of Fissile Mass Flow Monitoring System for Transparency in High-Enriched Uranium Blenddown," 38th Annu. Meet. of Inst. of Nuclear Materials Management, Phoenix, Ariz., July 20-24, 1997.
- Mattingly, J. K., T. E. Valentine, and J. T. Mihalcz, "Feasibility of Fissile Mass Assay of Spent Fuel Using ^{252}Cf -Source-Driven Frequency Analysis," Natl. Spent Fuel Program Non-Destructive Assay (NDA) Meet., Idaho Falls, Id., Feb. 7-8, 1996.
- Mattingly, J. K., T. E. Valentine, and J. T. Mihalcz, "Feasibility of Fissile Mass Assay of Spent Fuel Using ^{252}Cf -Source-Driven Frequency Analysis," in *Proc. 37th Annu. Meet. of Inst. of Nuclear Materials Management*, Naples, Fla., INMM, July 27-Aug. 1, 1996.
- Mattingly, J. K., T. E. Valentine, and J. T. Mihalcz, "Sensitivity of Calculations of the ^{252}Cf -Source-Driven Noise Analysis Measurements to Fission Product Content of Sandia Spent Fuel Experiment Assembly," Winter Meet. Am. Nucl. Soc., San Francisco, Oct. 29-Nov. 2, 1995.
- Mattingly, J. K., *Time-Frequency Analysis of Nonstationary Signals*, M.S. Thesis, University of Tennessee, Knoxville, 1995.

- Maxey, L. C., J. E. Rogers, and S. M. Arnold, *Diffraction Null Compensators for Aspheric Testing*, ORNL/M-4998, Feb. 1996.
- Maxey, L. C., W. Moreshead, and J. L. Nogues, *Diamond-Turned Master Molds for Bulk Casting of Sol-Gel Silica Diffraction Optical Elements*, ORNL/M-5928, May 1997.
- Maxey, L. C., W. Moreshead, and J. L. Nogues, *Novel Cost-Effective Process for the Replication of Hybrid Diffraction/Refractive Optical Elements in Silica Glass*, ORNL/M-5865, Mar. 1997.
- McGuire, K. M., H. Adler, P. Alling, G. R. Hanson, et al., "Review of Deuterium-Tritium Results from the Tokamak Fusion Test Reactor," *Phys. Plasmas* **2**, 2176 (1995).
- Menon, M. M., E. B. Grann, and A. Slotwinski, "Radiation Effects on Optical Components of a Laser Radar Sensor Designed for Remote Metrology in ITER," in IEEE Conference Proceedings, San Diego, Calif., Oct. 6–10, 1997.
- Mihalczo, J. T., "A Small Beryllium-Reflected UO_2 Critical Assembly," American Nuclear Society Meeting, Philadelphia, *Trans. Amer. Nucl. Soc.* **72**, 196–198 (1995).
- Mihalczo, J. T., "A Small Graphite-Reflected UO_2 Critical Assembly," pp. 6.11–6.17 in *Proceedings of the ICNC '95, The Fifth International Conference on Nuclear Criticality Safety*, Albuquerque, N. M., 1995.
- Mihalczo, J. T., "Heterogeneous Critical Assemblies of Enriched Uranium Metal Plates and Polyethylene," American Nuclear Society 1995 Winter Meeting, San Francisco, *Trans. Amer. Nucl. Soc.* **73**, 219–220 (1995).
- Mihalczo, J. T., "Interacting Delayed Critical 38.1-cm-diam Uranium (93.2) Metal Cylinders at Large Distance," American Nuclear Society Annual Meeting, Reno, Nev., *Trans. Amer. Nucl. Soc.* **74**, 195 (1996).
- Mihalczo, J. T., "Nuclear Weapons—Arms Control Verification Technologies at Oak Ridge," Showcase Lecture, Oct. 23, 1997.
- Mihalczo, J. T., "Oak Ridge Presentation to the Radiation Detector Panel (RDP) of DOE, D-NN-20, RDP Meeting, Los Alamos, N. M., Oct. 1995.
- Mihalczo, J. T., "Oak Ridge Presentation to the Radiation Detector Panel (RDP) of DOE, DP-NN-20, RDP Meeting, Richland, Wash., May 1996.
- Mihalczo, J. T., "Oak Ridge Presentation to the Radiation Detector Panel (RDP) of DOE, DP-NN-20, RDP Meeting, Washington, D.C., Sept. 1996.
- Mihalczo, J. T., "Prompt Neutron Decay Constants for a Delayed Critical Configuration of the Oak Ridge Unreflected and Unmoderated Uranium Metal Sphere," PHYSOR '96 Conference, Mito, Japan, Sept. 1996.
- Mihalczo, J. T., "Prompt Neutron Decay for Very Loosely Coupled Delayed Critical 38.1-cm-diam Uranium (93.2) Metal Cylinders," *Trans. Amer. Nucl. Soc.* **75**, 350–351 (1996).
- Mihalczo, J. T., "Pulsed Reactor Experiments at Oak Ridge," pp. 44–50 in *Proceedings of the Topical Meeting on Physics, Safety, and Applications of Pulse Reactors*, American Nuclear Society, Washington, D.C., Nov. 13–17, 1994.

- Mihalczo, J. T., A. W. Krass, T. E. Valentine, and E. P. Ficaro**, "Validation of Criticality Safety Calculations with Subcriticality Measurements by the ^{252}Cf -Source-Driven Noise Method," pp. 35–49 in *Proceedings of the First Annual Nuclear Criticality Safety Technology Project*, Gaithersburg, Md., May 12–14, 1992, LA-12556-C, Los Alamos National Laboratory, Sept. 1994.
- Mihalczo, J. T., and D. L. Bentzinger**, "Two Delayed Critical Uranium (93.2) Metal Cylindrical Annuli with Central BE Moderation," American Nuclear Society, 1997 Winter Meeting, Albuquerque, N. M., Nov. 16–20, 1997.
- Mihalczo, J. T., and M. S. Wyatt**, "Extrapolations To Critical For Systems With Large Inherent Sources," American Nuclear Society Meeting, Albuquerque, N. M., Nov. 16–20, 1997.
- Mihalczo, J. T., and M. S. Wyatt**, "Potassium Reactivity Worth in a ^{235}U Fission Spectrum Critical Assembly," American Nuclear Society 1997 Annual Meeting, Orlando, Fla., June 1–5, 1997.
- Mihalczo, J. T., and T. E. Valentine**, "Bias in Calculated k_{eff} from Subcritical Measurements by the ^{252}Cf -Source-Driven Noise Analysis Method," pp. 13.42–13.50 in *Proceedings of the ICNC '95, The Fifth International Conference on Nuclear Criticality Safety*, Albuquerque, N. M., 1995.
- Mihalczo, J. T., and T. E. Valentine**, "Calculational Verification and Process Control Applications Utilizing the High Sensitivity of Noise Measurement Parameters to Fissile System Configuration," *Nucl. Sci. Eng.* **121**, 286–300 (1995).
- Mihalczo, J. T., and T. E. Valentine**, "Nuclear Weapons Identification System," presentation to Nuclear Emergency Search Team Group at Diagnostics Working Group Meeting, Los Alamos, N. M., Sept. 9, 1996.
- Mihalczo, J. T., and T. E. Valentine**, "Nuclear Weapons Identification System," presentation to Nuclear Emergency Search Team Group at Los Alamos National Laboratory, Aug. 1996.
- Mihalczo, J. T., and V. K. Paré**, "Nuclear Weapons Identification System," pp. 24–26 in *Arms Control and Nonproliferation Technologies* (Third Quarter 1994).
- Mihalczo, J. T., and V. K. Paré**, "NWIS Signatures for Confirmatory Measurements with B33 Trainers," pp. 848–855 in *Proceedings of the 36th. Annual Meeting of Institute of Nuclear Materials Management*, Palm Desert, Calif., Vol. XXIV, 1995.
- Mihalczo, J. T., and V. K. Paré**, *NWIS Signatures for Confirmatory Measurements with B33 Trainers*, Y/WR-166, Lockheed Martin Energy Systems, Inc., Oak Ridge Y-12 Plant, Jan. 1995.
- Mihalczo, J. T., D. P. Hutchinson, J. A. Williams, and L. H. Thacker**, "Criticality Evacuation Alarms that Locate the Accident Site," American Nuclear Society/European Nuclear Society, 1996 International Conference, Washington, D.C., Nov. 10–15, 1996.
- Mihalczo, J. T., D. P. Hutchinson, J. A. Williams, and L. H. Thacker**, "Criticality Evacuation Detectors That Locate the Accident Site," *Trans. Amer. Nucl. Soc.* **75**, 184–186 (1996).
- Mihalczo, J. T., et al.**, " ^{252}Cf Use in Physics Measurements," Californium-252 Users Workshop, Oak Ridge, Tenn., Apr. 17–20, 1995.

- Mihalczo, J. T., J. A. Mullens, J. A. March-Leuba, T. E. Valentine, J. K. Mattingly, and R. A. Abston, "Source Modulation-Correlation Measurements for Fissile Mass Flow in Gas or Liquid Fissile Streams," accepted for publication at the Institute of Nuclear Materials Management 37th Annual Meeting, Naples, Fla., July 1996.
- Mihalczo, J. T., J. A. Mullens, J. E. Breeding, T. E. Valentine, V. K. Pare, D. E. McMillan, T. A. Gafford, R. R. Bentz, G. W. Turner, M. C. Smith, J. A. McEvers, J. K. Mattingly, R. I. Vandermolen, E. D. Blakeman, M. J. Paulus, and T. Uckan, "New Processor for Subcritical Fissile System Measurements for Nuclear Criticality Safety," *American Nuclear Society*, Nov. 10-15, 1996.
- Mihalczo, J. T., J. A. Mullens, J. E. Breeding, T. E. Valentine, V. K. Pare, D. E. McMillan, T. A. Gafford, R. R. Bentz, G. W. Turner, M. C. Smith, J. A. McEvers, J. K. Mattingly, R. I. Vandermolen, E. D. Blakeman, M. J. Paulus, and T. Uckan, "New Processor for Subcritical Fissile System Measurements for Nuclear Criticality Safety," *Trans. Amer. Nucl. Soc.* **75**, 178-179 (1996).
- Mihalczo, J. T., J. J. Lyon, and J. R. Taylor, "The Central Void Reactivity in the Oak Ridge Enriched Uranium (93.2) Metal Sphere," *Nucl. Sci. and Engr.* (1997 in press).
- Mihalczo, J. T., J. K. Mattingly, T. E. Valentine, "Evaluation of ^{252}Cf -Source-Driven Frequency Analysis, Measurements for NDA of Dry Spent-Fuel Storage Casks," *Trans. Amer. Nucl. Soc.* **75**, 98-100 (1996).
- Mihalczo, J. T., J. March-Leuba, J. A. Mullens, J. K. Mattingly, T. E. Valentine, R. A. Abston, R. B. Perez, T. Uckan, and R. M. Wyatt, "Source Modulation Correlation Measurements for Fissile Mass Flow in UF_6 Blenddown," presentation to Oak Ridge National Laboratory, Oct. 2-3, 1996.
- Mihalczo, J. T., J. March-Leuba, J. K. Mattingly, R. A. Abston, T. E. Valentine, R. B. Perez, J. A. Mullens, T. Uckan, and M. S. Wyatt, "Source Modulation Correlation Measurements for Fissile Mass Flow in UF_6 Blenddown," presentation to DOE Nuclear Energy, Germantown, Md., June 7, 1996.
- Mihalczo, J. T., J. March-Leuba, T. E. Valentine, R. A. Abston, J. K. Mattingly, T. Uckan, and M. S. Wyatt, " UF_6 Fissile Mass Flow Simulation at the Oak Ridge National Laboratory," Institute of Nuclear Materials Management Meeting, Phoenix, Ariz., July 20-24, 1997.
- Mihalczo, J. T., L. D. Phillips, G. D. Ellis, and T. E. Valentine, "Neutron Transmission Properties of Concrete for an HEU Storage Vault from TOF Transmission Measurements with a ^{252}Cf Source," 1994 Winter Meeting of the American Nuclear Society, Nov. 13-17, 1994, Washington, D.C., *Trans. Am. Nucl. Soc.* **71**, 275-75 (1994).
- Mihalczo, J. T., P. E. Koehler, T. E. Valentine, and L. D. Phillips, *Source Options for NWIS*, ORNL/TM-13025, Lockheed Martin Energy Systems, Inc., Oak Ridge National Laboratory, 1995.
- Mihalczo, J. T., *Report of Foreign Travel to Japan by J. T. Mihalczo, Sept. 16-20, 1996*, ORNL/FTR-5941, Lockheed Martin Energy Research Corp., Oak Ridge National Laboratory, 1996.

- Mihalczo, J. T., T. E. Valentine, and J. A. Mullens**, "Non Intrusive ^{252}Cf -Source-Driven Correlations For Verification of Nuclear Weapons Components in Storage," Russian International Conference on Nuclear Material Protection, Accounting, and Control, Obninsk, Russia, Mar. 9-14, 1997.
- Mihalczo, J. T., T. E. Valentine, and J. A. Mullens**, "Nonintrusive Nuclear Weapons/Component Identification System For International Inspections," 5th International Conference on Nuclear Engineering, Nice, France, May 26-30, 1997.
- Mihalczo, J. T., T. E. Valentine, and J. K. Mattingly**, "Feasibility of Fissile Mass Assay of Spent Fuel Using ^{252}Cf -Source-Driven Frequency Analysis," presented at the National Spent Fuel Program Non-Destructive Assay (NDA) Meeting, Idaho Falls, Id., Feb. 1996.
- Mihalczo, J. T., T. E. Valentine, and J. K. Mattingly**, "Feasibility of Subcriticality and NDA Measurements for Spent Fuel by Frequency Analysis Techniques with ^{252}Cf ," pp. 883-891 in *Proceedings of the Topical Meeting on Nuclear Plant Instrumentation, Control and Human-Machine Interface Technologies*, University Park, Penn., American Nuclear Society, ISBN: 0-89448-610-1; Vol. II, 1996.
- Mihalczo, J. T., T. E. Valentine, and J. K. Mattingly**, *NWIS Methodology*, Y/LB-15, 953, Oct. 17, 1997.
- Mihalczo, J. T., T. E. Valentine, and L. D. Phillips**, "Subcritical Measurements for Calculational Verification of HEU Tube Vault Storage at the Oak Ridge Y-12 Plant," pp. 11.109-11.112 in *Proceedings of the ICNC '95, The Fifth International Conference on Nuclear Criticality Safety*, Albuquerque, N. M., 1995.
- Mihalczo, J. T., T. E. Valentine, and L. D. Phillips**, "Subcritical Measurements for a HEU Storage Vault at the Y-12 Plant Using the ^{252}Cf -Source-Driven Frequency Analysis Method," *Nuclear Safety* (1997 in press).
- Mihalczo, J. T., T. E. Valentine, and L. D. Phillips**, *Subcritical Measurements for Calculational Verification of HEU Tube Vault Storage at the Y-12 Plant*, Y/DD-661, Oak Ridge Y-12 Plant, Sept. 1995.
- Mihalczo, J. T., T. E. Valentine, and L. D. Phillips**, *Subcritical Measurements for a HEU Storage Vault at the Y-12 Plant Using the ^{252}Cf -Source-Driven Frequency-Analysis Method*, Y/DD-730 R1, Oak Ridge Y-12 Plant, June 1997.
- Mihalczo, J. T., T. E. Valentine, E. D. Blakeman, and W. T. King**, " ^{252}Cf -Source-Driven Frequency Analysis Measurements with Subcritical Arrays of PWR Fuel Pins," PHYSOR '96 Conference, Mito, Japan, Sept. 1996.
- Mihalczo, J. T., T. E. Valentine, J. A. Mullens, and J. K. Mattingly**, " ^{252}Cf -Source-Driven Time and Frequency Analysis Methods For Nuclear Control and Accountability," American Nuclear Society 1997 Annual Meeting, Orlando, Fla., June 1-5, 1997.
- Mihalczo, J. T., T. E. Valentine, J. A. Mullens, and J. K. Mattingly**, "Nuclear Weapons Identification System (NWIS)," War Head Signatures PRG Meeting, Albuquerque, N. M., Aug. 5, 1997.
- Mihalczo, J. T., T. E. Valentine, J. A. Mullens, J. March-Leuba, and J. K. Mattingly**, "Source Modulation-Uranium Activation for Flow Measurement with UF_6 ," presented at the Central Region Chapter Annual Meeting of Institute of Nuclear Materials Management, Oak Ridge, Tenn., Oct. 1995.

- Mihalczo, J. T., T. E. Valentine, J. K. Mattingly, and R. B. Perez, "Subcriticality Measurements by ^{252}Cf -Source-Driven Frequency Analysis," 5th International Conference on Nuclear Engineering, Nice, France, May 26–30, 1997.
- Mihalczo, J. T., V. K. Paré, and G. W. Turner, "A New Processor for NDA and Confirmatory Measurements Based on NWIS Signatures," pp. 836–831 in *Proceedings of the 36th Annual Meeting of Institute of Nuclear Materials Management*, Palm Desert, Calif., Vol. XXIV, 1995.
- Mihalczo, J. T., V. K. Paré, E. D. Blakeman, and T. E. Valentine, "NWIS Signatures for Trainer Confirmation at the Oak Ridge Y-12 Plant," Institute of Nuclear Materials Management 37th. Annual Meeting, Naples, Fla., July 1996.
- Mihalczo, J. T., V. K. Paré, E. D. Blakeman, and T. E. Valentine, "Time and Frequency Analysis Measurements for a ^{242}Pu Metal Ring Using ^{252}Cf ," Institute of Nuclear Materials Management 37th. Annual Meeting, Naples, Fla., July 1996.
- Mihalczo, J. T., V. K. Paré, E. D. Blakeman, B. Damiano, T. E. Valentine, L. D. Phillips, R. B. Bonner, D. B. Bopp, T. R. Chilcoat, J. DeClue, E. P. Elliott, G. D. Hackett, N. W. Hill, D. J. Nypaver, L. H. Thacker, W. T. Thomas, J. A. Williams, and R. E. Zumstein, "NWIS Signatures for Confirmatory Measurements with B33 Trainers," *Journal of Nuclear Materials Management* 25(3), 64–80 (June 1997).
- Mihalczo, J. T., W. T. King, and T. E. Valentine, "Subcritical Measurements With a Cylindrical Tank of Pu-U Nitrate," American Nuclear Society, Chelan, Wash., Sept. 7–10, 1997.
- Miller, L. F., L. D. Weems, Z. Cao, S. Goluoglu, R. E. Pevy, and H. L. Dodds, "Placement of Criticality Alarms in the Paducah Gaseous Diffusion Plant Laboratory," *Transactions of the American Nuclear Society*, Nov. 1997.
- Moore, M. R., K. Korsah, and P. D. Ewing, *Regulatory Guide and Acceptance Criteria for Electromagnetic and Radio-Frequency Interference in Digital Systems*, ORNL/NRC-LTR-95/11, Oak Ridge National Laboratory, Apr. 1995.
- Moussa, H. M., and L. F. Miller, "Estimation of Uncertainty in Multigroup Diffusion Theory Results Using Functional Analysis," *Transactions of the American Nuclear Society*, Nov. 1997.
- Mudunuri, M. K., and D. A. Schoenwald, "Analysis of Sliding-Mode and PWM Control for a D.C. Motor," in *Proceedings of the 1996 IEEE Conference on Control Applications*, Dearborn, Mich., Sept. 1996.
- Mullens, J. A., "Pattern Recognition Algorithms for Comparing NWIS Signatures for Weapons Components," Institute of Nuclear Materials Management Meeting, July 20–24, 1997.
- Munro, J. K., *Application of MEMS and Microelectronics Technologies to Environmental Monitoring and Analysis of Biological Materials*, National Institute of Environmental Health Sciences, Research Triangle Park, N.C., Dec. 2, 1996.
- Munro, J. K., R. L. Fellows, D. Phifer, M. R. Carrick, and N. Tarlton, *Optimal Access to Large Databases via Networks*, C/ORNL-94-0289, July 1997.

- Munro, J. K., T. E. Valentine, R. B. Perez, J. K. Mattingly, J. A. March-Leuba, and J. T. Mihalcz, "Fission Product Range Effects on HEU Fissile Gas Monitoring for UF_6 Gas," 38th Annual Meeting of the Institute of Nuclear Materials Management, Phoenix, Ariz., July 20-24, 1997.
- Murakami, M., E. F. Jaeger, R. Majeski, C. K. Phillips, D. A. Rasmussen, J. H. Rogers, G., Schilling, J. E. Stevens, G. Taylor, C. Y. Wang, J. R. Wilson, D. B. Batchelor, M. G. Bell, R. V. Budny, C. E. Bush, N. L. Bretz, D. Darrow, A. C. England, E. Fredrickson, R. Goldfinger, G. Hammett, G. R. Hanson, J. C. Hosea, H. K. Park, S. D. Scott, E. Synakowski, R. M. Wieland, J. B. Wilgen, and M. C. Zarnstorff, "ICRF Heating and Transport of Deuterium-Tritium Plasmas in TFTR," *Transactions of Fusion Technology* 27, 131 (1995).
- Musrock, M. S., "Short- and Long-Term Hot Electron Effects in MOSFETs Available Through MOSIS," presented at the Southeaster Workshop on Mixed-Signal VLSI and Monolithic Sensors, Apr. 1997, Oak Ridge National Laboratory, Oak Ridge, Tenn.
- Nguyen, L. K., L. F. Miller, and D. J. Downing, *Measurements of Fission and Activation Products for Oak Ridge National Laboratory Transuranic Waste Characterization*, ORNL/TM-13292, June 23, 1997.
- Nguyen, L. K., and L. F. Miller, "Characterization of Radiochemical Engineering Development Center Transuranic Waste at Oak Ridge National Laboratory," in *Proceedings of the Health Physics Society 1997 Annual Meeting*, June 1997.
- Nodine, R. N., and R. Lenarduzzi, *Sensor Concentrator Unit for the Continuous Automated Vault Inventory System*, ORNL/TM-13411, Oak Ridge, Tenn., June 1997.
- Nodine, R. N., C. Sohns, Z. Bell, R. Lawson, R. Lenarduzzi, C. Long, B. Moran, C. Pickett, J. Rogers, J. Williams, L. Seiber, and D. Smith, "Shelf Monitoring of SNM Using an Integrated System of Oak Ridge Sensors for Enhancing Nuclear Safeguards," in *Proceedings of the 37th Annual Meeting of the Institute for Nuclear Materials Management*, Naples, Fla., July/Aug. 1996.
- Nodine, R. N., M. B. Scudierer, and J. K. Jordan, "Accurate and Portable Weigh-in-Motion System for Manifesting Air Cargo," pp. 62-73 in *Intelligent Systems and Advance Manufacturing Symposium Machine Tool: In-Line, and Robot Sensors and Controls*, The International Society for Optical Engineering (SPIE), Oct. 1995.
- Ono, M., C. E. Bush, R. Cesario, G. R. Hanson, J. C. Hosea, B. LeBlanc, R. Majeski, F. Paoletti, C. K. Phillips, J. H. Rogers, O. Sauter, G. Schilling, and J. R. Wilson, "Role of Plasma Edge in the Direct Launch Ion Bernstein Wave Experiment in TFTR," 12th Topical Conference on RF Power in Plasmas, Savannah, Ga., 1997 (American Institute of Physics, New York), p. 301 in AIP Conf. Proc. 403, 1997.
- Patek, D. R., and K. W. Tobin, Jr., "Machine Vision Inspection of Technical Ceramic Surfaces," IFPAC '96 Conference, Orlando, Fla., Jan. 21-24, 1996.
- Patek, D. R., K. W. Tobin, Jr., and L. Jachter (Coors Ceramics), "Machine Vision Inspection of Technical Ceramics," Machine Vision Applications in Industrial Inspection 1996 SPIE Symposium, Jan. 28-Feb. 2, 1996.

- Paulus, M. J., C. L. Britton, Jr., M. L. Simpson, M. N. Ericson, H. Sari-Sarraf, and S. S. Gleason**, "Very Large Area Strip Detector Arrays with Super-Resolution for Digital Mammography and Nuclear Medicine" (invited talk), presented at the Multi-Agency Consortium Workshop on Imaging Technologies to Improve Women's Health, May 1-2, 1997.
- Paulus, M. J., H. Sari-Sarraf, D. K. Johnson, D. H. Lowndes, M. L. Simpson, C. L. Britton, Jr., F. F. Knapp, Jr., and J. S. Hicks**, "A New Program to Develop a High-Resolution, High-Throughput Tomographic Imaging System for Mutagenized Mouse Phenotype Screening," presented at the DOE Human Genome Program Contractor-Grantee Workshop VI, Nov. 9-13, 1997, Santa Fe, N.M.
- Paulus, M. J., J. T. Mihalcz, T. E. Valentine, J. A. Mullens, J. E. Breeding, T. Uckan, J. Mattingly, G. Turner, M. C. Smith, and J. A. McEvers**, "A Novel Method for Determining Pulse Counting Circuitry Dead Time using the Nuclear Weapons Inspection System," *Conference Record of the 1997 Nuclear Science Symposium*, Nov. 9-15, 1997 Albuquerque, N. M.
- Paulus, M. J., J. T. Mihalcz, T. E. Valentine, J. A. Mullens, J. E. Breeding, T. Uckan, J. Mattingly, G. Turner, M. C. Smith, and J. A. McEvers**, "A Novel Method for Determining Pulse Counting Circuitry Dead Time Using the Nuclear Weapons Inspection System," *IEEE Transactions On Nuclear Science* **44**(3), (June 1997).
- Paulus, M. J., T. Uckan, R. Lenarduzzi, J. A. Mullens, K. N. Castleberry, D. E. McMillan, and J. T. Mihalcz**, "Detector and Front-End Electronics of a Fissile Mass Flow Monitoring System," in *Proceedings of the 38th Annual Meeting of Institute of Nuclear Materials Management*, Phoenix, Ariz., July 1997.
- Paulus, M. J., T. Uckan, R. Lenarduzzi, J. March-Leuba, K. Castleberry, J. K. Mattingly, J. T. Mihalcz, J. A. Mullens, T. E. Valentine, and J. A. McEvers**, "Detector System for Monitoring Fissile Mass Flow in Liquids and Gasses," in *Conference Record of the 1997 Nuclear Science Symposium*, Albuquerque, N.M.
- Pickett, C. A., J. J. Dunigan, M. A. Miller, D. L. Schmidt, J. E. Gaby, T. W. Hickerson, D. E. McMillan, and R. N. Nodine**, "Graphical Facility Information Center," poster presentation to Institute of Nuclear Materials Management Annual Meeting, July 20-24, 1997.
- Pickett, C. A., J. J. Dunigan, M. A. Miller, D. L. Schmidt, J. E. Gaby, T. W. Hickerson, D. E. McMillan, and R. N. Nodine**, *GRAFIC Software and Hardware Configuration Management Plan*, Y/DW-1637, July 25, 1997.
- Pickett, C. A., J. J. Dunigan, M. A. Miller, D. L. Schmidt, J. E. Gaby, T. W. Hickerson, D. E. McMillan, and R. N. Nodine**, *Functional System Design Document for Graphic Facility Information Center*, Y/DW-1636, Sept. 1996.
- Pickett, C. A., J. J. Dunigan, M. A. Miller, D. L. Schmidt, J. E. Gaby, T. W. Hickerson, J. K. Jordan, D. E. McMillan, and R. N. Nodine**, *Feasibility Study/Requirements Definition Document for Graphic Facility Information Center (GraFIC)*, Y/DW-1609, Apr. 1996.
- Pickett, C. A., L. E. Seiber, M. W. Sherrill, D. B. Smith, D. Earl, Z. W. Bell, R. L. Lawson, J. A. Williams, R. Lenarduzzi, R. N. Nodine, and C. W. Sohns**, *Field Test Results from Various Deployments of the Oak Ridge Sensors for Enhancing Nuclear Safeguards (ORSENS) Technologies*, Y/DW-1685, July 14, 1997.

- Pickett, C. A., M. A. Barham, Z. W. Bell, T. A. Gafford, D. P. Hutchinsin, J. K. Jordan, L. C. Maxey, R. N. Nodine, D. B. Smith, S. A. Wallace, and J. A. Williams, "Cost-Effective Technologies for Automated Material Safeguard Monitoring Systems," 36th Annu. Meet. of Inst. of Nuclear Materials Management, Palm Desert, Calif., July 9-12, 1995.
- Pickett, C. A., Marc L. Simpson, S. A. Wallace, T. A. Gafford, B. W. Moran, M. A. Barham, D. P. Hutchinson, L. C. Maxey, R. N. Nodine, J. A. Williams, J. K. Jordon, J. D. Muhs, and D. B. Smith, *A Continuous Automated Vault Inventory System (CAVIS) for Accountability Monitoring of Stored Nuclear Materials*, Martin Marietta Energy Systems, Y/DW-1351, Dec. 8, 1994.
- Ragan, G. E., J. T. Mihalczo, and R. C. Robinson, "Prompt Neutron Decay Constants at Delayed Criticality for the Oak Ridge Research Reactor with 20 and 93 wt % ^{235}U Enriched Fuel," *Annals of Nuclear Energy* 24(1), 21-31 (1997).
- Raine, D., P. M. Whaley, M. C. Wright, and C. R. Hubbard, "Designs for Neutron Radiography and Computed Tomography at Oak Ridge National Laboratory," 46th Annu. Denver X-Ray Conf. on Advances in X-Ray Analysis, Steamboat Springs, Colo., Aug. 4-8, 1997.
- Rao, G. S., S. R. Maddox, G. W. Turner, and R. I. Vandermolen, *The Automated Bicon Tester: Automated Electronic Instrument Diagnostic, Testing, and Alignment System with Records Generation*, ORNL/TM-13041, Oak Ridge National Laboratory.
- Remenyik, C. J., and J. O. Hylton, "An Instrument for Gravimetric Calibration of Flow Devices with Corrosive Gases," in *Proc. 41st Int. Instrumentation Symp.*, Aurora, Colo., May 7-11, 1995.
- Richards, N. W., D. J. Downing, J. R. Watts, L. F. Miller, G. R. Rao, and G. T. Mei, "Prediction of Compton Backgrounds in the Plutonium and Americium Regions of Phoswich Lung Count Spectra," 40th Annu. Meet. Health Phys. Soc., Boston, July 23-27, 1995.
- Richards, R. K., D. P. Hutchinson, and C. H. Ma, "CO₂ Laser Thomson Scattering for Alpha Particle Measurements on ITER," 7th International Symposium of Laser-Aided Plasma Diagnostics, Fukuoka, Japan, Dec. 5-8, 1995.
- Richards, R. K., D. P. Hutchinson, and C. H. Ma, "Design of a CO₂-Laser Thomson Scattering Ion-Tail Diagnostic for Alcator C-MOD, *Rev. Sci. Instrum* 66(1), (Jan. 1995).
- Richards, R. K., D. P. Hutchinson, and C. H. Ma, "The Measurement of High-Energy Confined Alpha Particles in ITER by CO₂ Laser Collective Thomson Scattering," International Workshop on Diagnostics for Experimental Fusion Reactors, Varenna, Italy, Sept. 4-12, 1997.
- Richards, R. K., D. P. Hutchinson, and C. H. Ma., "Tritium to Deuterium Ration Measurement by Collective Thomson Scattering," *Review of Scientific Instruments* (Jan. 1997).
- Richards, R. K., D. P. Hutchinson, C. H. Ma, and Y. Takase, "A CO₂-Laser Thomson Scattering Diagnostic for Ion-Tail Measurements," *Bull. Am. Phys. Soc.* (Oct. 3, 1995).

- Rogers, J. H., R. E. Bell, S. Bernabei, J. Hosea, B. LeBlanc, R. Majeski, R. Nazikian, M. Ono, C. K. Phillips, G. Schilling, J. R. Wilson, C. E. Bush, D. A. D'Ippolito, G. R. Hanson, and J. R. Myra**, "Recent Radio Frequency Experiments in TFTR," 12th Topical Conference on RF Power in Plasmas, Savannah, Ga., 1997 (American Institute of Physics, New York), p. 13 in AIP Conf. Proc. 403, 1997.
- Ryan, P. M., M. D. Carter, R. H. Goulding, G. R. Hanson, et al.**, "Integrated Design and Analysis of RF Heating and Current Drive Systems," 11th Topical Conference on RF Power in Plasmas, Palm Springs, Calif., 1995 (American Institute of Physics, New York), p. 355 in AIP Conf. Proc. 355, 1996.
- Sari-Sarraf, H., and J. S. Goddard**, "On-Line Optical Measurement and Monitoring of Yarn Density in Woven Fabrics," SPIE Photonics China '96, Beijing, China, Nov. 3-7, 1996.
- Sari-Sarraf, H., and J. S. Goddard**, *Four-Dimensional Characterization of Paper Web at the Wet End*, ORNL/TM-13528, Oak Ridge Natl. Lab., Oct. 1997.
- Sari-Sarraf, H., J. S. Goddard, and E. W. Walker**, "On-Line Monitoring of Yarn Density in Woven Fabrics," Applied Machine Vision '96, Cincinnati, June 3-6, 1996.
- Sari-Sarraf, H., S. S. Gleason, C. G. Redmon (U. T.), K. T. Hudson (U.T. Medical Ctr.), and K. F. Hubner (U.T. Medical Ctr.)**, "Reducing Data and False Detection in Computer-Aided Diagnosis of Microcalcifications," Radiological Society of North America (RSNA) 82nd Scientific Assembly and Annual Meeting, Chicago, Dec. 1-6, 1996.
- Sari-Sarraf, H., S. S. Gleason, K. T. Hudson (U.T. Medical Ctr.), and K. F. Hubner (U.T. Medical Ctr.)**, "A Novel Approach to Computer-Aided Diagnosis of Mammographic Images," Third IEEE Workshop on Applications of Computer Vision, Sarasota, Fla., Dec. 2-4, 1996.
- Sari-Sarraf, H., S. S. Gleason, K. T. Hudson (M.D., U.T), and K. F. Hubner (M.D., U.T.)**, "Higher Accuracy and Throughput in Computer-Aided Screening of Mammographic Microcalcifications," *Radiology*, Nov. 6, 1996.
- Schoenwald, D. A.**, "Active Control of Fossil Fuel Burners," Bosnian Coal-Fired Utility Managers Delegation, Oak Ridge, Tenn., Oct. 7, 1997.
- Schoenwald, D. A.**, "Modeling and Real-Time Control of Plasma-Based Wafer Etching," 29th IEEE Southeastern Symposium on System Theory, Cookeville, Tenn., Mar. 1997.
- Schoenwald, D. A.**, "Rapid Prototyping of Control Systems," WATtec '96 seminar, Knoxville, Tenn., Feb. 10, 1996.
- Schoenwald, D. A.**, "Small Motors for Commercial Sewing Machines," Small Motors Manufacturers Association Fall Meeting, Minneapolis, Oct. 24, 1997.
- Schoenwald, D. A.**, "The Usage of Economic Models in Measurement and Controls," 1997 Annual Meeting of the International Society of Measurement and Control, Anaheim, Calif., Oct. 1997.
- Schoenwald, D. A., and U. Ozguner**, "Control of Flexible Manipulators via Singular Perturbations and Distributed Vibration Damping," *Dynamics and Control* 6(1), 5-32 (Jan. 1996).

- Schoenwald, D. A., and U. Ozguner**, "Robust Stabilization of Nonlinear Systems with Parametric Uncertainty," pp. 1751-55 in *IEEE Transactions on Automatic Control* 39(8), (Aug. 1994).
- Schoenwald, D. A., and U. Ozguner**, "Stabilization of Nonlinear Systems with Parametric Uncertainty Using Variable Structure Techniques," pp. 518-523 in *Third IFAC Symposium on Nonlinear Control Systems Design*, Tahoe City, Calif., June 1995.
- Schoenwald, D. A., and U. Ozguner**, "The Relative Degree Enhancement Problem for MIMO Nonlinear Systems," pp. 309-313 in *Third IFAC Symposium on Nonlinear Control Systems Design*, Tahoe City, Calif., June 1995.
- Seiber, L. E., Z. Bell, D. Hutchinson, R. Lawson, R. Nodine, R. Lenarduzzi, C. Long, B. Moran, C. Pickett, J. Rogers, and J. Williams**, "A Storage Tray Monitoring System Using Oak Ridge Sensors for Enhancing Nuclear Safeguards," in *Proceedings of the 37th Annual Meeting of the Institute for Nuclear Materials Management*, Naples, Fla., July/Aug. 1996.
- Shats, M. G., J. H. Harris, K. M. Likin, J. B. Wilgen, L. R. Baylor, J. D. Bell, C. H. Ma, M. Murakami, K. A. Sarkisyan, S. C. Aceto, T. S. Bigelow, G. L. Bell, R. J. Colchin, R. A. Dory, J. L. Dunlap, G. R. Dyer, A. C. England, R. C. Goldfinger, G. R. Hanson, D. P. Hutchinson, R. C. Isler, T. C. Jernigan, R. A. Langley, D. K. Lee, J. F. Lyon, A. L. Qualls, D. A. Rasmussen, R. K. Richards, M. J. Saltmarsh, J. E. Simpkins, K. L. Vander Sluis, and J. J. Zielinski**, "Drift-Wave-Like Density-Fluctuations in the Advanced Toroidal Facility (ATF) Torsatron," *Physics of Plasmas* 2(2), 398-413 (Feb. 1995).
- Shepard, R. L., J. M. Weiss, and D. E. Holcomb**, "Advanced Thermometrics for Fossil Power Plant Process Improvement," in *Proc. 6th Int. Joint ISA POWID/EPRI Controls and Instrumentation Conf.*, Baltimore, June 17-19, 1996.
- Shepard, R. L., T. V. Blalock, and M. J. Roberts**, *Accomplishments and Status of Development of a High-Temperature Resistance Thermometer for Fossil Power Plant Temperature Measurements*, ORNL/M-3978, Nov. 1994.
- Shick, D., R. Lenarduzzi, B. Elliott, G. Ludtka, et al.**, "Development of a Carburizing and Quenching Simulation Tool: Determination of Heat transfer Boundary Conditions in Salt," in *Proceedings of the 2nd ASM International Conference on Quenching and Control of Distortion*, Cleveland, Ohio, Nov. 1996.
- Simpson, M. L.**, "Analog Integrated Circuit Research at the Oak Ridge National Laboratory" (invited talk), University of New Hampshire, Nov. 1995.
- Simpson, M. L.**, "Integrated Electronics for Collider Detectors" (invited talk), Georgia Institute of Technology, Apr. 1996.
- Simpson, M. L.**, "Integrated Electronics for Nuclear Physics Detectors" (invited talk), Low/Medium Energy Gamma-Ray Astrophysics Mission Workshop, Lansdown, Va., Nov. 1996.
- Simpson, M. L.**, "Integrated Time-Interval Measurements Systems" (invited talk), University of New Hampshire, June 1997.
- Simpson, M. L.**, "Microelectronics in the UT/ORNL Joint Program in Mixed-Signal VLSI and Monolithic Sensors" (invited talk), IBM Research Triangle Park, Aug. 5, 1997.

- Simpson, M. L., C. L. Britton, A. L. Wintenberg, and G. R. Young, "An Integrated CMOS Time Interval Measurement System with Sub-Nanosecond Resolution for the WA-98 Calorimeter," *IEEE Journal of Solid-State Circuits* 32(2), 198–205 (Feb. 1997).
- Simpson, M. L., C. L. Britton, A. L. Wintenberg, and G. R. Young, "An Integrated, CMOS, Constant-Fraction Timing Discriminator for Multichannel Detector Systems," pp. 320–24 in *Conference Record of the 1994 IEEE Nuclear Science Symposium, Vol. 1*.
- Simpson, M. L., C. L. Britton, A. L. Wintenberg, and G. R. Young, "An Integrated, CMOS, Constant-Fraction Timing Discriminator for Multichannel Detector Systems," *IEEE Trans. Nucl. Sci.* 42(4), 762–66 (Aug. 1995).
- Simpson, M. L., G. R. Young, R. G. Jackson, and M. Xu, "A CMOS Constant-Fraction Discriminator Using R-C Distributed Delay Line Shaping," *IEEE Trans. Nucl. Sci.* NS-43(4), 1695–9 (June 1996).
- Simpson, M. L., G. R. Young, R. G. Jackson, and M. Xu, "A CMOS Constant-Fraction Discriminator Using R-C Distributed Delay Line Shaping," pp. 292–296 in *Conference Record of the 1995 IEEE Nuclear Science Symposium, Vol. 1*.
- Simpson, M. L., G. T. Alley, T. Awes, C. L. Britton, W. Bryan, M. S. Emery, M. N. Ericson, F. Plasil, P. Stankus, A. L. Wintenberg, G. R. Young, R. G. Jackson, M. Xu, V. Manko, Yu. Sibiryak, A. Tsvetkov, and A. Vinogradov, "Integrated Readout Electronics for the PbWO₄ Photon Spectrometer," pp. 288–92 in *Proceedings of the First Workshop on Electronics for LHC*, Lisbon, Sept. 1995.
- Simpson, M. L., G. T. Alley, T. Awes, C. L. Britton, W. Bryan, M. S. Emery, M. N. Ericson, F. Plasil, P. Stankus, A. L. Wintenberg, G. R. Young, R. G. Jackson, M. Xu, V. Manko, Yu. Sibiryak, A. Tsetkov, and A. Vinogradov, "Integrated Readout Electronics for the PbWO₄ Photon Spectrometer," presented at the First Workshop on Electronics for LHC, Lisbon, Sept. 11–15, 1995.
- Simpson, M. L., G. T. Alley, T. Awes, C. L. Britton, W. Bryan, M. S. Emery, M. N. Ericson, F. Plasil, P. Stankus, A. L. Wintenberg, G. R. Young, S. Manko, Yu. Sibiryak, A. Tsvetkov, and A. Vinogradov, "Integrated Readout Electronics for the PbWO₄ Calorimeter," pp. 288–292 in *Proceedings of the First Workshop on Electronics for LHC Experiments*, Lisbon, Sept. 11–15, 1995.
- Simpson, M. L., J. M. Rochelle, G. T. Alley, T. V. Blalock, C. L. Britton, D. W. Bouldin, W. L. Bryan, R. C. Gonzalez, M. N. Ericson, M. J. Paulus, E. J. Kennedy, S. F. Smith, M. J. Roberts, and A. L. Wintenberg, "The University of Tennessee/Oak Ridge National Laboratory Joint Program in Mixed-Signal VLSI and Monolithic Sensors," pp. 34–35 in *Conference Record of the 1997 IEEE Computer Society International Conference on Microelectronic Systems Education*, July 21–23, 1997 Arlington, Va.
- Simpson, M. L., M. N. Ericson, G. E. Jellison, and W. B. Dress, "Application Specific Spectral Response with CMOS Compatible Photodiodes," in *Proceedings of the Southeastern Workshop on Mixed-Signal VLSI and Monolithic Sensors*, Apr. 3, 1997.
- Simpson, Marc L., and D. P. Hutchinson, *Foreign Trip Report to Italy & Sweden*, ORNL/FTR-6248, July 25, 1997.

- Simpson, Marc L., C. A. Bennett, E. B. Grann, D. P. Hutchinson, R. K. Richards, and D. N. Sitter, "Coherent IR Laser Detection for Remote Sensing and Metrology," in *Proceedings 30th International Symposium on Automotive Technology and Automation*, Florence, Italy, June 16–19, 1997.
- Simpson, Marc L., C. A. Bennett, M. S. Emery, D. P. Hutchinson, G. H. Miller, R. K. Richards, and D. N. Sitter, "Coherent Imaging Using Two-dimensional Focal-Plane Arrays: Design and Applications," *Applied Optics* **36**(27), 6913–20 (Sept. 20 1997)
- Simpson, Marc L., D. P. Hutchinson, R. K. Richards, and C. A. Bennett, "Application of Coherent 10 Micron Imaging Lidar," in *Proc. 9th Conf. on Coherent Laser Radar*, Linköping, Sweden, June 23–27, 1997.
- Simpson, Marc L., J. C. Miller, and D. H. Lowndes, "Laser Technology at the Oak Ridge National Laboratory," pp. 540–49 in *Proceedings of ICALEO '94, Vol. 79*, Orlando, Fla., Oct. 17–20, 1994.
- Simpson, Marc L., J. C. Miller, and D. H. Lowndes, "Laser Technology at the Oak Ridge National Laboratory," *Journal of Laser Applications* **8**, 55–60 (1996).
- Simpson, Marc L., Mark A. Buckner, M. L. Bauer, David E. Holcomb, Don P. Hutchinson, David E. McMillan, V. Clint Miller, James A. Ramsey, Richard A. Todd, and Roy I. Vandermolen, "Optimal Configurations for Passive Monitoring in Low Gamma and Neutron Environments," in *Proc. of 35th Annual Meeting of the Institute of Nuclear Materials Management*, Naples, Fla., July 17–20, 1994.
- Smith, D. E., *Portsmouth X300 Remote Assay Monitor System*, ORNL/TM-13238, Oak Ridge National Laboratory, July 1996.
- Smith, D. E., *Withdrawal Assay Monitoring at U.S. Enrichment Facilities*, ORNL/TM-13138, Oak Ridge National Laboratory, Jan. 1996.
- Smith, M. C., *Development of a Client/Server Communication Application using ICASE Tools*, M.S.E.E. Thesis, Florida State University, 1994.
- Smith, R. S., E. J. Kennedy, M. L. Simpson, C. L. Britton, W. L. Bryan, U. Jagadish, G. R. Young, B. V. Jacak, J. Kapustinsky, and A. Oskarsson, "A Discriminator with a Current-Sum Multiplicity Output for the PHENIX Multiplicity Vertex Detector," pp. 439–42 in *Conference Record of the 1996 IEEE Nuclear Science Symposium, Vol. 1*.
- Smith, R. S., E. J. Kennedy, M. L. Simpson, C. L. Britton, W. L. Bryan, U. Jagadish, G. R. Young, B. V. Jacak, J. Kapustinsky, and A. Oskarsson, "A Discriminator with a Current-Sum Multiplicity Output for the PHENIX Multiplicity Vertex Detector," *IEEE Trans. Nucl. Sci.* **44**(3), 389–92 (June 1997).
- Swain, D. W., R. I. Pinsker, F. W. Baity, M. D. Carter, J. S. deGrassie, E. J. Doyle, G. R. Hanson, K. W. Kim, R. A. Moyer, and C. C. Petty, "Measurements of ICRF loading on DIII-D With and Without a Faraday Shield," *Nuclear Fusion* **37**, 211 (1997).
- Swindeman, C. J., R. D. Seals, R. L. White, W. P. Murray, and M. H. Cooper, "An Investigation of the Electrical Behavior of Thermally-Sprayed Aluminum Oxide," *Natl. Thermal Spray Conf.*, Cincinnati, Oct. 5–11, 1996.
- Tanaka, T. J., K. Korsah, and C. Antonescu, "Preliminary Studies of the Impact of Smoke on Digital Equipment," pp. 85–102 in *Proc. of 23rd Water Reactor Safety Information Meeting*, NUREG/CP-0149, Mar. 1996.

- Tanaka, T. J., K. Korsah, and R. T. Wood**, "Preliminary Studies on the Impact of Smoke on Digital Equipment," 23rd Water Reactor Safety Information Meeting, Oct. 23–25, 1995.
- Tarvainen, M., F. Levai, T. Valentine, M. Abhold, and B. Moran**, *NDA Techniques for Spent Fuel Verification and Radiation Monitoring*, Finnish Support Programme to IAEA Safeguards, STUK-YTO-TR 133, July 1997.
- Taylor, G., B. LeBlanc, M. Murakami, C. K. Phillips, J. R. Wilson, M. G. Bell, R. V. Budny, C. E. Bush, Z. Chang, D. Darrow, D. R. Ernst, E. Fredrickson, G. R. Hanson, A. Janos, L. C. Johnson, R. Majeski, H. K. Park, D. A. Rasmussen, J. H. Rogers, G. Schilling, E. Synakowski, and J. Wilgen**, "ICRF Heating of TFTR Plasmas Fueled by Deuterium-Tritium Neutral Beam Injection," *Plasma Phys. Control. Fusion* **38**, 723 (1996).
- Thomas, C. E.**, "Electronic Notebooks: Different Visions, Similar Requirements" (invited presentation), IEEE Fifth Workshops on Enabling Technologies: Infrastructure for Collaborative Enterprises, Stanford University, June 19, 1996.
- Thomas, C. E.**, "National Collaboratories: A View from DOE, Distributed Collaborative Technologies and Facilities on Line" (invited presentation), West Virginia University, Collaborative Technologies Conference, Mar. 1996.
- Thomas, C. E.**, "Real Time Working Group Proposal," Energy Sciences Network Coordinating Committee/Distributed Computing Coordinating Committee, General Atomics, San Diego, Calif., Feb. 16, 1995.
- Thomas, C. E.**, "Research at the DOE/ER Office of Scientific Computing: Distributed and Collaborative Computing," ORNL, Instrumentation & Controls Division Technical Forum, Feb. 24, 1995.
- Thomas, C. E., and S. Hackman**, "Desktop Video Plan," DOE Televideo Services Users Group, Jan. 1995.
- Thomas, C. E., J. Berry, W. Adair, H. Clark, K. Kippenhan, E. Monsour, A. Ollikainen, and G. Seweryniak**, "Achieving Our Vision: A Long Range Plan," USDOE/ER, DOE Televideo Services Users Group (DTSUG), May 1996.
- Thomas, C. E., J. H. Harris, G. R. Haste, C. C. Klepper, J. T. Hogan, S. Tobin, F. W. Baity, M. D. Carter, D. J. Hoffman, P. M. Ryan, B. Saoutic, B. Beaumont, A. Becoulet, H. Kuus, D. Fraboulet, A. Grossman, D. Guilhem, J. Walter, T. Loarer, and M. Chatelier**, "First Measurements of ICRF and Edge/SOL Plasma Interactions on TORE SUPRA," *J. Nucl. Mat.* **220–222**, 531–5 (Spring 1995).
- Thomas, C. E., J. H. Harris, G. R. Haste, C. C. Klepper, J. T. Hogan, S. Tobin, F. W. Baity, R. C. Isler, T. Uckan, D. B. Batchelor, M. D. Carter, P. H. Ryan, D. J. Hoffman, B. Saoutic, B. Beaumont, A. Becoulet, H. Kuus, D. Fraboulet, A. Grossman, D. Guilhem, W. Hess, H. Walter, T. Loarer, and M. Chatelier**, "ICRF/Edge Interaction Guidelines for ICRF Antenna Design, and Initial ICRF/Edge Interaction Experiments on the TORE SUPRA Tokamak," *Fusion Technology* **30**(1), 1–39 (Sept. 1996).
- Thomas, C. E., J. S. Cavallini, G. R. Seweryniak, B. S. Aiken, D. A. Hitchcock, T. A. Kitchens, and M. A. Scott**, "Virtual Laboratories: A View from MICS," presented to the Energy Sciences Network Steering Committee, Austin, Tex., Apr. 25, 1995.

- Thomas, C. E., J. S. Cavallini, G. R. Seweryniak, T. A. Kitchens, D. A. Hitchcock, M. A. Scott, L. C. Welch, R. L. Stevens, and R. J. Aiken, "Virtual Laboratories: Collaborative Environments and Facilities-on-Line," in *Proceedings of the IEEE Real-Time '95 Conference*, Dec. 1995.
- Thomas, C. E., J. S. Cavallini, G. R. Seweryniak, T. A. Kitchens, D. A. Hitchcock, M. A. Scott, L. C. Welch, R. L. Stevens, and R. J. Aiken, "Virtual Laboratories: Collaborative Environments and Facilities-on-Line," Real Time '95, IEEE Computer Applications in Nuclear and Plasma Sciences Conference, Michigan State University, May 1995.
- Thomas, C. E., J. S. Cavallini, L. Welch, G. R. Seweryniak, M. A. Scott, R. R. Oldehoeft, A. Martin, T. A. Kitchens, D. A. Hitchcock, and R. S. Aiken, "MICS Office of the Future," USDOE/ER/OCTR/MICS, Nov. 1995, DRAFT 4.
- Thomas, C. E., Jr., J. H. Harris, G. R. Haste, M. Kwon, R. H. Goulding, D. J. Hoffman, et al., "The TORE SUPRA Fast Reciprocating RF Probe," *Rev. Sci. Instr.* **66**(2), 1210-1215 (Feb. 1995).
- Tobin, K. W., Jr., S. S. Gleason, T. P. Karnowski, H. Sari-Sarraf, and M. H. Bennett (Sematech), "An Image Paradigm for Semiconductor Defect Data Reduction," Micro '96 Symposium, Santa Clara, Calif., Mar. 10-15, 1996.
- Tobin, K. W., Jr., D. B. Allen, J. S. Goddard, D. N. Sitter, J. P. Jones, Jr., E. R. Tapp, and J. C. Turner, *RGB Field System Data Collection and Testing for Textile Print Finishing*, ORNL/TM 13097, Oak Ridge Natl. Lab., Sept. 1995.
- Tobin, K. W., Jr., S. S. Gleason, and T. P. Karnowski, "Feature Analysis and Classification of Manufacturing Signatures Based on Semiconductor Wafermaps," SPIE's 9th Annual Electronic Imaging: Science and Technology Symposium, San Jose, Calif., Feb. 8-14, 1997.
- Tobin, K. W., Jr., S. S. Gleason, T. P. Karnowski, and H. Sari-Sarraf, "Semiconductor Defect Data Reduction for Process Automation and Characterization," IFPAC '96 Conference, Orlando, Fla., Jan. 21-24, 1996.
- Tobin, K. W., Jr., S. S. Gleason, T. P. Karnowski, and M. H. Bennett (Sematech), "Semiconductor Defect Data Reduction of Process Automation and Characterization," Tenth International Forum, Process Analytical Chemistry, Orlando, Fla., June 1996.
- Tobin, K. W., Jr., S. S. Gleason, T. P. Karnowski, and S. L. Cohen (Sematech), "Automatic Classification of Spatial Signatures of Semiconductor Wafermaps," SPIE's 22nd Annual International Symposium on Microlithography, Santa Clara, Calif., Mar. 9-14, 1997.
- Tobin, K. W., Jr., S. S. Gleason, T. P. Karnowski, H. Sari-Sarraf, and M. H. Bennett (Sematech), "An Image Paradigm for Semiconductor Defect Data Reduction," SPIE's 1996 International Symposium on Microlithography, Santa Clara, Calif., May 1996.
- Todd, R. A., E. J. Kennedy, C. L. Britton, Jr., S. C. Berridge, W. M. Bugg, Y. C. Du, G. T. Alley, H. R. Brashear, M. L. Bauer, M. S. Emery, and A. L. Wintenberg, "Monolithic Systems Design for the Silicon Electromagnetic Calorimetry Collaboration," *IEEE Trans. Nucl. Sci.* **41**(4), 1212-16 (Aug. 1994).
- Valentine, T. E., "Reactor Dynamics from Monte Carlo Calculations," chapter in *Advances in Nuclear Science and Technology*, **25**, 1997.

- Valentine, T. E., and J. T. Mihalcz,** "Bias in Calculated k_{eff} from Subcritical Measurements by the ^{252}Cf -Source-Driven Noise Analysis Method," in *Proc. 5th International Conference on Nuclear Criticality Safety*, Albuquerque, N. M., 1995.
- Valentine, T. E., and J. T. Mihalcz,** "Enrichment of Uranium Metal from NWIS Signatures," *Proc. 36th Annual Meeting of Inst. of Nuclear Materials Management*, Palm Desert, Calif., 1995.
- Valentine, T. E., and J. T. Mihalcz,** "Evaluation of Plutonium Oxidation Analysis Using Pulsed Neutron Measurements With ^{252}Cf ," Institute of Nuclear Materials Management Meeting, Phoenix, Ariz., July 20–24, 1997.
- Valentine, T. E., and J. T. Mihalcz,** "MCNP-DSP Calculations of the ^{252}Cf -Source-Driven Noise Analysis Measurements of High-Enriched Uranium Metal Cylinders," in *Proc. 5th International Conference on Nuclear Criticality Safety*, Albuquerque, N. M., 1995.
- Valentine, T. E., and J. T. Mihalcz,** "MCNP-DSP: A Neutron and Gamma Ray Monte Carlo Calculation of Source-Driven Noise-Measured Parameters," *Ann. of Nucl. Eng.* **23**(16), 1271 (1996).
- Valentine, T. E., and J. T. Mihalcz,** "Monte Carlo Simulation of Source-Driven Measurements," invited presentation at the Russian Federal Nuclear Center Institute of Experimental Physics, Chelyabinsk, Russia, Mar. 1996.
- Valentine, T. E., and J. T. Mihalcz,** "Monte Carlo Simulation of Source-Driven Measurements," invited presentation at the Russian Federal Nuclear Center Institute of Technical Physics, Sarov, Russia, Mar. 1997.
- Valentine, T. E., and J. T. Mihalcz,** "Monte Carlo Verification of Point Kinetics for Safety Analysis of Nuclear Reactors," in *Proc. 7th Symposium on Nucl. Reactor Surveillance and Diagnostics*, Avignon, France, June 1995.
- Valentine, T. E., and J. T. Mihalcz,** "The MCNP-DSP Code for Calculations of Time and Frequency Analysis Parameters for Subcritical Systems," *Trans. Am. Nucl. Soc.* **72**, 164–65 (June 1995).
- Valentine, T. E., and J. T. Mihalcz,** "Time Delays Between Core Power Production and External Detector Response from Monte Carlo Calculations," in *Proc. of International Con. on the Phys. of Reactors*, Mito, Ibaraki, Japan, Sept. 16–20, 1996.
- Valentine, T. E., and J. T. Mihalcz,** "Validation Bias and Uncertainty from Subcritical Experiments with an HEU Storage Vault," *Trans. Am. Nucl. Soc.* **73**, 227–228 (Oct. 1995).
- Valentine, T. E., and J. T. Mihalcz,** "Validation of the MCNP-DSP Monte Carlo Code for Calculating Source-Driven Noise Parameters of Subcritical Systems," *Trans. Am. Nucl. Soc.* **72**, 165–67 (June 1995).
- Valentine, T. E., and J. T. Mihalcz,** "Validation of the Monte Carlo Code MCNP-DSP," *Ann. of Nucl. Eng.* **24**(2), 79 (1996).
- Valentine, T. E., and J. T. Mihalcz,** *Report of Foreign Travel of Timothy E. Valentine and J. T. Mihalcz*, Mar. 10–15, 1996, ORNL/FTR-5734, Lockheed Martin Energy Systems, Inc., Oak Ridge National Laboratory, Mar. 27, 1996.

- Valentine, T. E., and J. T. Mihalcz,** *Report of Foreign Travel of Timothy E. Valentine and J. T. Mihalcz, Dec. 9–14, 1996*, ORNL/FTR-6040, Lockheed Martin Energy Systems, Inc., Oak Ridge National Laboratory, Dec. 1996.
- Valentine, T. E., and J. T. Mihalcz,** *Report of Foreign Travel of Timothy E. Valentine and J. T. Mihalcz, Mar. 3–22, 1997*, K/NSP-483, Lockheed Martin Energy Systems, Inc., Oak Ridge National Laboratory, Mar. 1997.
- Valentine, T. E., J. K. Mattingly, and J. T. Mihalcz,** “Dry Spent Fuel Cask Monitoring by ^{252}Cf -Source-Driven Frequency Analysis Measurements,” in *Proc. of Institute of Nucl. Materials Management Annual Meeting*, Naples, Fla., July 1996.
- Valentine, T. E., J. T. Mihalcz, and J. A. Mullens,** “NWIS Signatures for Identification of Weapons Components at the Oak Ridge Y-12 Plant,” Institute of Nuclear Materials Management Meeting, Phoenix, Ariz., July 20–24, 1997.
- Valentine, T. E., J. T. Mihalcz, and J. K. Mattingly,** “ ^{252}Cf -Source-Driven Frequency Analysis, Measurements for NDA of Dry Spent-Fuel Storage Casks,” presentation at the DOE Spent Nuclear Fuel Program Committee, Albuquerque, N. M., Jan. 1997.
- Valentine, T. E., J. T. Mihalcz, and R. B. Perez,** *Report of Foreign Travel of Timothy E. Valentine, J. T. Mihalcz, and R. B. Perez, May 17–23, 1997*, ORNL/FTR-6198, Lockheed Martin Energy Systems, Inc., Oak Ridge National Laboratory, May 1997.
- Valentine, T. E., J. T. Mihalcz, J. K. Mattingly, and R. B. Perez,** “Analysis of ^{252}Cf -Source-Driven Noise Analysis Measurements,” invited presentation at the Centro de Investigaciones Energeticas y Medio Ambientales, Madrid, Spain, May 19, 1997.
- Valentine, T. E., J. T. Mihalcz, J. K. Mattingly, and R. B. Perez,** “Analysis of ^{252}Cf -Source-Driven Noise Analysis Measurements,” invited presentation at the Universitat Politecnica de Valencia, Valencia, Spain, May 22, 1997.
- Valentine, T. E., J. T. Mihalcz, R. B. Perez, and J. K. Mattingly,** “Physics of the ^{252}Cf -Source-Driven Noise Analysis Measurement,” American Nuclear Society Annual Meeting, Orlando, Fla., June 1–5, 1997.
- Valentine, T. E., J. T. Mihalcz, W. T. King, and E. D. Blakeman,** “Neutron Multiplication Factor and Calculational Bias from ^{252}Cf -Source-Driven Frequency Analysis Measurements with Subcritical Arrays of PWR Fuel Pins,” *Trans. Am. Nucl. Soc.* **74**, 192–194 (June 1996).
- Valentine, T. E.,** *MCNP-DSP Users Manual*, ORNL/TM-13334, Oak Ridge National Laboratory, 1997.
- Valentine, T. E.,** *MCNP-DSP: A Neutron and Gamma Ray Monte Carlo Calculation of Source-Driven Noise Measured Parameters*, Ph.D. Dissertation, Univ. of Tennessee, 1995.
- Valentine, T. E.,** *Report of Foreign Travel of Timothy E. Valentine, June 18–23, 1995*, ORNL/FTR-5432, Lockheed Martin Energy Systems, Inc., Oak Ridge National Laboratory, July 7, 1995.
- Valentine, T. E.,** *Report of Foreign Travel of Timothy E. Valentine, Feb. 20 – Mar. 2, 1997*, K/NSP-468, Lockheed Martin Energy Systems, Inc., Oak Ridge National Laboratory, Feb. 1997.
- Vandermolen, R. I.,** *Guide to Technical Presentations for TSU Engineering Students*, Tennessee State University, 1994.
- Vandermolen, R. I.,** *Laboratory Manual for Design of Digital Logic Systems (EE-310L)*, Tennessee State University, 1997.

- Walter, J., E. Fairstein, F. W. Garber, C. L. Britton, and M. L. Simpson, "A CMOS Signal Conditioning ASIC for Large Silicon Pixels," pp. 509-11 in *Conference Record of the 1996 IEEE Nuclear Science Symposium, Vol. 1*.
- Wetherington, G. R., Jr., W. H. Andrews, and J. Tarasek (CDNSW), "A High Gain Array Measurement System (Measuring the Undetectable)," Johns Hopkins University, Applied Physics Laboratory, Laurel, Md., Submarine Technology Symposium 1996, Naval Submarine League, May 15-17, 1996.
- Whealton, J. H., G. R. Hanson, J. M. Storey, R. J. Raridon, J. S. Armfield, T. S. Bigelow, and R. L. Graves, "Non-Thermal Plasma Exhaust Aftertreatment: A Fast Rise-Time Concept," 1997 International Spring Fuels & Lubricants Meeting of the Society of Automotive Engineers, Dearborn, Mich., 1997 (SAE Paper No. 971718).
- White, T. L., W. D. Bostick, C. T. Wilson, and C. R. Schaich, "Design of Microwave Vitrification Systems for Radioactive Waste," in *Proc. Spring Meet. Mater. Res. Soc.*, San Francisco, Apr. 9-11, 1996.
- Wichner, R. P., and S. J. Ball, *Potential Damage to Dual-Purpose Graphite Reactors Due to Severe Accidents (Draft)*, K/NSP-385, June 1996.
- Williams, J. A., "Applicability of Solid-State Gamma-Ray Detectors for Monitoring Nuclear Materials," Annu. Meet. of Inst. of Nuclear Materials Management, Naples, Fla., July 17-21, 1994.
- Williams, J. A., and R. J. Fox, "Evaluation of Silicon PIN Photodiode and Cadmium-Zinc-Telluride Gamma Ray Detectors for Monitoring Special Nuclear Materials," 36th Annu. Meet. of Inst. of Nuclear Materials Management, Palm Desert, Calif., July 9-12, 1995.
- Williams, J. A., R. L. Clark, D. P. Hutchinson, V. C. Miller, J. A. Ramsey, Z. W. Bell, J. M. Hiller, and S. A. Wallace, "Summary Report on Four Oak Ridge Sensors for Enhancing Nuclear Safeguards (ORSENS) Neutron Detectors," in *Proc. 38th Annu. Meet. of Inst. of Nuclear Materials Management*, Phoenix, Ariz., July 20-24, 1997.
- Williams, J. A., R. L. Clark, R. N. Nodine, G. S. Rao, C. W. Sohns, and Z. W. Bell, "Design and Fabrication of a Low-Cost Hand-Held Portable Uranium Enrichment Meter," 38th Annu. Meet. of Inst. of Nuclear Materials Management, Phoenix, Ariz., July 20-24, 1997.
- Wilson, T. L., "A Three-Region, Moving Boundary Model of a Furnace Flame," Society for Computer Simulation International Meeting, Atlanta, Apr. 6-10, 1997.
- Wilson, T. L., Jr., "A Three-Region, Moving Boundary Model of a Furnace Flame," Gas Turbine System Research Combustion Workshop IV, Washington, D.C., Mar. 7, 1997.
- Wilson, T. L., Jr., "A Three-Region, Moving Boundary Model of a Furnace Flame," pp. 70-75 in *Simulators International XIV 29(3)*, The Society for Computer Simulation International, Atlanta, Apr. 6-10, 1997.
- Wilson, T. L., Jr., and D. N. Fry, "Supervisory Control for Artificially Intelligent Load Dispatch," *CADDET Energy Efficiency Newsletter No. 2*, June 1996.
- Wilson, T. L., Jr., and D. N. Fry, "Supervisory Control for Artificially Intelligent Load Allocation," presented at the DCS Retrofit Workshop, Knoxville, Tenn., Nov. 7, 1995.

- Wilson, T. L., Jr., and J. A. March-Leuba**, *Review of Request for License Amendment for Irradiation of Tritium Producing Burnable Absorber Rod Lead Test Assembly at Watts Bar Nuclear Plant*, ORNL/NRC/LTR-97/17, Oak Ridge National Laboratory, Aug. 1997.
- Wilson, T. L., Jr., and R. T. Wood**, *Investigation of Information Resources on Qualification and Reliability of Digital Instrumentation and Control Systems in Non-Nuclear Industries*, ORNL/NRC/LTR-96/4, Oak Ridge National Laboratory, Jan. 1996.
- Wilson, T. L.**, *Report on the Evaluation of Tritium Producing Burnable Absorber Rod Lead Test Assembly*, ORNL/NRC/LTR-97/08, Oak Ridge National Laboratory, Mar. 1997.
- Wilson, T.L., and R. T. Wood**, *Evaluation of Vendor Test Programs for Instrumentation and Control Systems*, ORNL/NRC/LTR-95/27, Oak Ridge National Laboratory, Sept. 1995.
- Wintenberg, A. L., M. L. Simpson, C. L. Britton, Jr., R. L. Palmer, and R. G. Jackson**, "Integrating Amplifiers for PHENIX Lead-Glass and Lead-Scintillator Calorimeters," pp. 557-61 in *Conference Record of the 1995 IEEE Nuclear Science Symposium*, Vol. 1, San Francisco, Oct. 1995.
- Wintenberg, A. L., M. L. Simpson, G. R. Young, R. L. Palmer, and R. G. Jackson**, "A CMOS Variable Gain Amplifier for PHENIX Electromagnetic Calorimeter and RICH Energy Measurements," *IEEE Trans. Nucl. Sci.* NS-44(3), 326-30 (June 1997).
- Wintenberg, A. L., M. L. Simpson, G. R. Young, R. L. Palmer, and R. G. Jackson**, "A CMOS Variable Gain Amplifier for PHENIX Electromagnetic Calorimeter and RICH Energy Measurements," pp. 102-106 in *Conference Record of the 1996 IEEE Nuclear Science Symposium*, Vol. 1.
- Wintenberg, A. L., T. C. Awes, C. L. Britton, Jr., L. G. Clonts, M. S. Emery, M. N. Ericson, F. Plasil, M. L. Simpson, J. Walker, and G. R. Young**, "Monolithic Circuits for the WA98 Lead Glass Calorimeter," pp. 493-7 in *1994 IEEE Nuclear Science Symposium Conference Record*, Norfolk, Va., Nov. 1994.
- Wintenberg, A. L., T. C. Awes, C. L. Britton, Jr., L. G. Clonts, M. S. Emery, M. N. Ericson, F. Plasil, M. L. Simpson, J. Walker, and G. R. Young**, "Monolithic Circuits for Lead-Glass Calorimetry," in *Proceedings of the 1994 IEEE LeCroy Conference*, July 1994.
- Wintenberg, A. L., T. C. Awes, C. L. Britton, Jr., M. S. Emery, M. N. Ericson, F. Plasil, M. L. Simpson, J. W. Walker, and G. R. Young**, "Monolithic Circuits for the WA98 Lead Glass Calorimeter," presented at the 1994 Nuclear Science Symposium, Norfolk, Va., Nov. 1994.
- Wood, R. T., J. A. Mullens, and J. A. Naser**, "The Plant-Window System: A Framework for an Integrated Computing Environment at Advanced Nuclear Power Plants," pp. 779-86 in *Proceedings of the 1997 International Meeting on Advanced Reactor Safety*, 2, Orlando, Fla., June 1-5, 1997.
- Wood, R. T., J. A. Mullens, and J. A. Naser**, "The Plant-Window System: A Flexible, Expandable Computing Environment for the Integration of Nuclear Power Plant Activities," in *Proceedings of the Fifth International Conference on Nuclear Engineering*, Nice, France, ICONE5-2705, May 25-29, 1997.
- Wood, R. T., J. A. Mullens, and J. A. Naser**, "The Plant-Window System," in *Proceedings of the 9th Power Plant Dynamics, Control, and Testing Symposium*, Knoxville, Tenn., May 24-26, 1995.

- Wood, R. T., J. A. Mullens, and J. A. Naser**, "The Plant-Window System: A Flexible, Expandable Computing Environment for the Integration of Power Plant Activities," *Proceedings of the EPRI Workshop on Distributed Digital Systems, Plant Process Computers, and Networks*, Charlotte, N. C., Aug. 16-18, 1994.
- Wood, R. T., J. A. Mullens, H. E. Knee, J. K. Munro, B. K. Swail, and P. A. Tapp**, *Plant-Wide Integrated Environment Distributed on Workstations (Plant-Window) System Functional Requirements*, EPRI TR-104756, Electric Power Research Institute, Palo Alto, Calif., Aug. 1996.
- Wright, M. C.**, "Overview of Neutron Based Instrumentation Activities at the High Flux Isotope Reactor and the Oak Ridge National Laboratory," Inst. Max von Laue, Paul Langevin, Grenoble, France, May 16, 1995.
- Wright, M. C.**, "Overview of Neutron Based Instrumentation Activities at the High Flux Isotope Reactor and the Oak Ridge National Laboratory," Laboratoire Leon Brillouin, CE-Saclay, France, May 12, 1995.
- Wright, M. C.**, "The Secure On-Line Facilities Working Group at ORNL," DOE Distributed Computing Coordinating Committee Meeting, Berkeley, Calif., May 9-10, 1996.
- Wright, M. C., D. P. Hutchinson, and C. R. Hubbard**, "A New 2-D Position Sensitive Neutron Detector," 17th Int. Union of Crystallography Congress, Satellite Meet. on Neutron Scattering, Gaithersburg, Md., Aug. 5-7, 1996.
- Wright, M. C., S. Spooner, X. Zhu, E. A. Payzant, X. L. Wang, and C. R. Hubbard**, "Implementation of a New Array of Seven Position Sensitive Detectors for Neutron Residual Stress Measurements," 17th Int. Union of Crystallography Congress, Satellite Meet. on Neutron Scattering, Gaithersburg, Md., Aug. 5-7, 1996.
- Wysor, R. W.**, "Future Applications of Simulators in Process Control," *Intech Magazine*, ISA, Sept. 1997.
- Wysor, R. W.**, "Future Applications of Simulators in Process Control," presented to ISA 97, Anaheim, Calif., Oct. 1997.
- Wysor, R. W.**, "Guidelines for Simulator-Based Control System Testing," 97023237A-TR, SEMATECH, Austin, Tex., May 31, 1997.
- Wysor, R. W.**, "Parallel DSP's in Open System Improve Machining Accuracy," *PowerConversion and Intelligent Motion Magazine*, Feb. 1995.
- Wysor, R. W.**, "Potential Benefits of Using Simulators to Test Control Systems," SEMI/IEEE.
- Wysor, R. W.**, "Simulator-Based Control System Testing," Advanced Equipment & Process Control Workshop, Santa Fe, N.M., Oct. 27-30, 1996.
- Wysor, R. W.**, "Trends in Sensor/Actuator Bus Technology," presented to WATtec '95, Knoxville, Tenn., Feb. 22, 1995.
- Wysor, R. W.**, "Using Simulators to Test Control Systems" (invited talk), SEMATECH Software Process Improvements Workshop, San José, Calif., Jan. 23, 1997.
- Wysor, R. W.**, Advanced Semiconductor Manufacturing Conference & Workshop (ASMC), Cambridge, Mass., Sept. 10-12, 1997.

Wysor, R. W., *Final Report for Cooperative Research and Development Agreement Y1293-0207 with DSP Control Group, Inc. for Advanced MachineTool Accuracy Compensation*, Y-12 internal report YDX-2267, July 1994.

Wysor, R. W., *Parallel DSP's in Open System Improve Machining Accuracy*, Y-12 internal report YDX-2267/R1, Jan. 17, 1995.

3. PATENTS

Instrumentation and Controls Division Patents Issued and Patent Applications Filed, July 1, 1994, to December 31, 1997

ESID/ERID Number	Name	Description	Patent number and date
Patents Issued			
1052-X	M. N. Ericson J. M. Rochelle	Logarithmic Current Measurement Circuit with Improved Accuracy and Temperature Stability and Associated Method	5,327,029 July 5, 1994
967-X	R. J. Lauf S. A. McElhaney J. B. Bates	Scintillator Assembly for Alpha Radiation Detection and an Associated Method of Making	5,332,906 July 26, 1994
1154-X	J. O. Hylton C. J. Remenyik	Device for Accurately Measuring Mass Flow of Gases	5,335,552 Aug. 9, 1994
1064-X	L. H. Thacker	Gamma Radiation Field Intensity Meter	5,338,938 Aug. 16, 1994
938-X-1	J. T. Mihalcz Marc L. Simpson S. A. McElhaney	Dual Neutron Flux-Temperature Measurement Sensor	5,352,040 Oct. 4, 1994
1159-X	T. J. McIntyre	System and Method for Generating a Displacement with Ultra-High Accuracy Using a Fabry-Perot Interferometer	5,353,115 Oct. 4, 1994
786-X	R. J. Lauf B. S. Hoffheins P. H. Fleming	Thin-Film Hydrogen Sensor	5,367,283 Nov. 22, 1994
769-X-1	L. C. Maxey Marc L. Simpson	Optical Wet Steam Monitor	5,383,024 Jan. 17, 1995
1015-X	D. W. Bible R. I. Cruthcher C. W. Sohns S. R. Maddox	Portable Microwave Instrument For Nondestructive Evaluation of Structural Characteristics	5,384,543 Jan. 24, 1995
867-X-1	T. G. Kollie L. H. Thacker H. A. Fine	Instrument for Measurement of Vacuum in Sealed Thin Wall Packets	5,406,831 Apr. 18, 1995

985-X-1	C. S. Daw J. A. Hawk	Fluidization Quality Analyzer for Fluidized Beds	5,435,972 July 25, 1995
1260-X	B. S. Hoffheins R. J. Lauf	Thick Film Hydrogen Sensor	5,451,920 Sept. 19, 1995
1064-X-1	L. H. Thacker	Gamma Radiation Field Intensity Meter	5,459,366 Oct. 17, 1995
1457-X	D. W. Bible R. J. Lauf A. C. Johnson R. J. Markunas	Apparatus and Method for Microwave Processing of Materials	5,521,360 May 28, 1996
1307-X	K. N. Castleberry S. F. Smith	Method and Apparatus for Monitoring Machine Performance	5,523,701 June 4, 1996
1545-X	C. L. Britton, Jr.	A Method of Pedestal and Common-Mode Noise Correction for Switched-Capacitor Analog Memories	5,590,104 Dec. 31, 1996
1263-X-1	B. Damiano R. T. Wood	Automated Method for the Systematic Interpretation of Resonance Peaks In Spectrum Data	5,623,579 Apr. 22, 1997
1399-X	T. L. White T. S. Bigelow C. R. Schaich D. Foster, Jr.	Mobile System for Microwave Removal of Concrete Surfaces	5,635,143 June 3, 1997
1255-X-1	B. S. Hoffheins R. J. Lauf	Motor Vehicle Fuel Analyzer	5,654,497 Aug. 5, 1997
1545-X-1	C. L. Britton, Jr.	A Method of Pedestal and Common-Mode Noise Correction for Switched-Capacitor Analog Memories	5,671,172 Sept. 23, 1997
1368-X	D. N. Sitter, Jr. Marc L. Simpson	Miniature Hybrid Optical Imaging Lens	5,680,252 Oct. 21, 1997
1405-X	B. E. Bernacki	Optical Caliper with Compensation for Specimen Deflection and Method	5,696,589 Dec. 9, 1997

Patent Applications Filed

0022	R. S. Burlage D. R. Patek K. R. Everman	Method for Detection of Buried Explosives Using a Biosensor	Jan. 31, 1997
0027	M. J. Paulus J. T. Mihalcz	Method and Apparatus for Digital Delays without Dead Time	Aug. 7, 1997

0170c	C. L. Britton M. N. Ericson	Temperature Measurement Method Using Temperature Coefficient Timing for Resistive or Capacitive Sensors	Nov. 6, 1996
0249	C. J. Remenyik R. P. Woychik D. R. Patek J. A. Hawk J. C. Turner	Microinjector for Blastocysts	July 22, 1997
0271	T. Vo-Dinh A. L. Wintenberg M. N. Ericson	Integrated Circuit Biochip Microsystem	Nov. 26, 1997
0282	R. A. Kisner	Lighting System of Encapsulated Luminous Material	Dec. 3, 1997
0284	L. R. Baylor C. E. Thomas Edgar Voelkl J. A. Moore M. L. Simpson M. J. Paulus	Digital Direct Write Electron Beam Lithography	Feb. 5, 1997
0289	D. E. Holcomb S. Viswanathan C. A. Blue J. B. Wilgen	Material Forming Using a Directed Droplet Stream	July 28, 1997
0300	E. B. Grann D. N. Sitter	Integrated Narrowband Optical Filter Based on Embedded Subwavelength Resonant Grating	June 11, 1997
0307	M. L. Simpson W. B. Dress M. N. Ericson G. E. Jellison D. N. Sitter A. L. Wintenberg	Photospectrometers, Methods of Use and Manufacture	Sept. 17, 1997
0346c	C. E. Thomas L. R. Baylor G. R. Hanson D. A. Rasmussen E. E. Voelkl J. J. Castracane M. Conerty L. Clow	Direct-to-Digital Holography, Holographic Interferometry, and Holography	Aug. 11, 1997
0370	M. L. Simpson G. S. Saylor M. J. Paulus	Bioluminescent Bioreporter Integrated Circuit (BBIC)	Nov. 25, 1997
0396	D. E. Holcomb T. E. McKnight	Method for Facilitating the Transport of Material into Cells or Structures	Dec. 1, 1997

0725-X-1	S. F. Smith K. N. Castleberry	Detector for Flow Abnormalities in Gaseous Diffusion Plant Compressors	Nov. 2, 1995
1459-Xc-1	D. W. Bible R. J. Lauf A. C. Johnson L. T. Thigpen	Variable Frequency Microwave Heating Apparatus	Sept. 29, 1994
1464-X	D. P. Hutchinson	Method and Apparatus for Coherent Imaging of Infrared Energy (as Amended)	May 24, 1995
1726-X	R. J. Lauf B. S. Hoffheins	Electrical Resistance Type Hydrogen Sensor Having Hermetically Sealed Passive Metallization (as Amended)	May 19, 1995
1734-X	J. B. Davidson	Microscope System for DNA Sequence Determination Using Raman Shifted Light	Sept. 8, 1997
1788-Xc	H. Sari-Sarraf J. S. Goddard, Jr. E. W. Walker, Jr.	Vision-Based, On-Loom Fabric Inspection System	Sept. 26, 1997
1790-Yc	D. K. Mee G. O. Allgood L. R. Mooney M. G. Duncan J. C. Turner D. A. Treece	Structure and Yarn Sensor for Fabric	Mar. 14, 1997
1816-X	M. L. Simpson M. N. Ericson A. L. Wintenberg	IC-Compatible Photodiode Spectral Selectivity/Enhancement Method Using Multiple PN Junctions	Sept. 17, 1997
1847-X	M. L. Simpson M. N. Ericson A. L. Wintenberg	Method to Determine Light Spectrum Using Optical Detectors with Controllable Spectral Response	Sept. 17, 1997
1856-Xc	K. W. Tobin S. S. Gleason T. P. Karnowski H. Sari-Sarraf	Automated Defect Spatial Signature Analysis for Semiconductor Manufacturing Process	Jan. 8, 1997
1878-Xc	B. E. Bernacki A. C. Miller, Jr. R. J. Nuspliger	Catadioptric Zoom Scattering Collector	Sept. 17, 1997
1880-X	J. T. Mihalcz J. A. Mullens J. A. March-Leuba	Neutron Modulation-Activation for Fissile Material Flow Velocity and Fissile Content Measurement (as Amended)	June 13, 1997
1907-X	C. W. Sohns S. A. Wallace R. N. Nodine	Electrostatic Load Cell	Aug. 29, 1997

1923-Y	D. C. Krehnke K. D. Streetman M. E. Krehnke M. R. Moore E. R. Tapp	Workstation Lock and Alarm System	Feb. 28, 1997
0221	W. H. Andrews	Automated On-Line Temperature Measuring System Using Thermographic Phosphors	1996
0404	R. J. Lauf D. W. Bible C. W. Sohns	Temperature Measuring Device	
0142 1775-X	D. L. Beshears G. L. Capps J. K. Jordan J. V. LaForge J. D. Muhs R. N. Nodine M. B. Scudiere C. P. White	A System and Method for Accurately Weighing and Characterizing Moving Vehicles	
0307	M. L. Simpson W. B. Dress M. N. Ericson	Photo-Spectrometer Realized in a Standard CMOS IC Process	
0381 1944-Y	S. W. Kercel R. T. Jubin A.J. Mattus P. L. Goranson R. N. Morris	Low-Velocity Thermite Canister Projectiles for the Defeat/Destruction of Surface or Subsurface Antipersonnel and Antitank Mines	

4. SCIENTIFIC AND PROFESSIONAL ACTIVITIES, ACHIEVEMENTS, AND AWARDS

Alley, G. T.

Member, Institute of Electrical and Electronics Engineers
Chairman, Continuing Education and Member Development Committee, IEEE Nuclear and Plasma Sciences Society
Short Course Program Chairman, IEEE Nuclear Sciences Symposium
Elected AdCom member of the IEEE Nuclear and Plasma Sciences Society

Allgood, G. O.

Team member, Significant Event Award for Amtex Cafe on Loom

Anderson, R. L.

ISA Activities:

Theme Chairman: *Future Technologies for Measurement and Control* at ISA/TECH97 and ISA/EXPO98
Department Advisory Board, Industry and Sciences
Metrology Chair, Test Measurement Division
Member, ISA Task Force to study new Technology Development consortium
Board of Directors of American Creativity Association
Helped facilitate a roadmap workshop at [TC]2
Helped organize NDE/Diagnostics workshop at ISA-96 in Chicago
ISA-96--held roadmap sessions for Textile, Power, and Analysis Divisions
Presented results of NDE/Diagnostics Workshop at OIT Expo in Washington
Presented talk on roadmapping at WATTec

Andrews, W. H., Jr.

Member, Instrumentation and Measurement Society, IEEE
Member, Institute of Environmental Sciences
Member, National Defense Industrial Association
Significant Event Award for Acoustic Measurements Facilities Improvement Program Telemetry Effort, 1995
Team member, American Museum of Science and Energy Award for marketing technology of manufactured processing and measurement for the world's most advanced underwater acoustical measurement system

Ball, S. J.

Chief Scientific Investigator for U.S. on IAEA Coordinated Research Program, "Heat Transport and Afterheat Removal for Gas-Cooled Reactors Under Accident Conditions," 1993-1997
Japan Atomic Energy Research Institute, Foreign Researcher Inviting Program, Oarai, Japan, Aug.-Sept. 1997

Bentz, R. R.

Most Value-Able Player Award

Breeding, J. E.

Team member, American Museum of Science and Energy Award for marketing technology of manufactured processing and measurement for the world's most advanced underwater acoustical measurement system
Team member, Significant Event Award for Nuclear Weapon Identification System

Brock, M. A.

Team member, DOE Award of Excellence for Portable Uranium Monitor, 1994

Buckner, M. A.

Member, Health Physics Society
Member, East Tennessee Chapter of the Health Physics Society
Lead Assessor, DOE Laboratory Accreditation Program
Reviewer, *Health Physics Journal*
Member, Bubble Dosimeter Working Group, 1992–1994

Chiaro, P. J., Jr.

U.S. Delegate, International Electrotechnical Commission Technical Committee 45
U.S. Delegate, International Electrotechnical Commission Technical Committee 104
Member, ORNL Health Physics Instrument Committee
Member, National Health Physics Instrument Committee (GOCO-HPIC)
Member, DOE-DP

Clayton, D. A.

Member, Institute of Electrical and Electronics Engineers
Appreciation Dinner for the successful completion of Sonar Signal Analysis System, 1995

Collier, R.

Team member, American Museum of Science and Energy Award for marketing technology of manufactured processing and measurement for the world's most advanced underwater acoustical measurement system

DePorter, P.

Team member, American Museum of Science and Energy Award for marketing technology of manufactured processing and measurement for the world's most advanced underwater acoustical measurement system

Dress, W. B.

Team member, R&D 100 Award for Enclosed Space Detection System
Team member, R&D Technical Achievement Award for the developing of the first photospectrometer using only the materials, masks and fabrication steps inherent in standard integrated circuit processes, thus redefining the state of the art for miniature photospectrometers
Team member, R&D 100 Award for The Magnetic Spectral Receiver

Ericson, M. N.

Team member, R&D Technical Achievement Award for the developing of the first photospectrometer using only the materials, masks and fabrication steps inherent in standard integrated circuit processes, thus redefining the state of the art for miniature photospectrometers
Team member, DOE Award of Excellence for Portable Uranium Monitor, 1994

Everman, K. R.

Team member, American Museum of Science and Energy Award for marketing technology of manufactured processing and measurement for the world's most advanced underwater acoustical measurement system

Falter, K. G.

Member, Institute of Electrical and Electronics Engineers
Member, Sigma Pi Sigma
Member Delegate, National Conference of Standards Laboratories
1997 Awards Night Operations and Support Award

Freer, E. B.

Team member, American Museum of Science and Energy Award for marketing technology of manufactured processing and measurement for the world's most advanced underwater acoustical measurement system

Gee, T. F.

Team member, American Museum of Science and Energy Award for marketing technology of manufactured processing and measurement for the world's most advanced underwater acoustical measurement system John Halliwell

Gleason, S. S.

Team member, Significant Event Award for Spatial Signature Analyzer
Federal Laboratory Consortium Award
Team member, Significant Event Award for KLA Instruments CRADA

Halliwell, J.

Team member, American Museum of Science and Energy Award for marketing technology of manufactured processing and measurement for the world's most advanced underwater acoustical measurement system

Hardy, J. E.

Member, Semiconductor Equipment and Materials International Mass Flow Controller Standards Task Force
Reviewer, *IEEE Spectrum*, 1997
Reviewer, American Nuclear Society, *Nuclear Technology*, 1996
Reviewer, DOE SBIR proposals, 1997

Hess, R. A.

Senior Member, Certified National Association of Radio and Telecommunications Engineers (NARTE)
EMC Engineer
Member, Engineering Society for Advancing Mobility Land Sea Air and Space (SAE)
Senior Member, The Institute of Electrical and Electronics Engineers (IEEE)

Hileman, M. S.

Team member, American Museum of Science and Energy Award for marketing technology of manufactured processing and measurement for the world's most advanced underwater acoustical measurement system

Hoffheins, B. S.

Technical Achievement Award
DOE Award of Excellence
Team member, DOE Award of Excellence for Portable Uranium Monitor, 1994

Holcomb, D. E.

Member, American Society for Testing and Measurement (ASTM)
Chairman, ASTM Subcommittee on Fundamentals of Temperature Measurement
Member, American Nuclear Society
Chair of Sensor Technology Session at 1996 American Nuclear Society International Topical Meeting on Nuclear Plant Instrumentation, Control, Human Machine Interface Technologies
Adjunct Assistant Professor, University of Tennessee, Nuclear Engineering Department

Humphrey, R. D.

Most Value-Able Player Award

Hunt, M. A.

Team member, Significant Event Award for KLA Instruments CRADA

Hutchinson, D. P.

Member, American Physical Society
Member, Society of Photo Instrumentation Engineers
Member, Optical Society of America

Hylton, J. O.

Member, Instrument Society of America
IR-100 Award for Gravimetric Gas Flow Calibrator, 1995

Jagadish, Usha

Significant Event Award for Reactor Protection System ASIC development, 1995
Significant Event Award for design work on the Central Tracker Pads subsystem in PHENIX, 1997

Jansen, J. M.

Member, Institute of Electrical and Electronics Engineers (IEEE)
Member, IEEE Computer Society
Member, IEEE Ocean Engineering Society
Member, IEEE Signal Processing Society

Karnowski, T. P.

Federal Laboratory Consortium Award
Team member, Significant Event Award for Spatial Signature Analyzer

Kercel, S. W.

Team member, R&D 100 Award for The Magnetic Spectral Receiver
Team member, R&D 100 Award for Enclosed Space Detection System

Kisner, R. A.

Registered Professional Engineer
Chairman, American Museum of Science and Energy Awards, Consumer Electronics
Chairman, DOE National Laboratory Sensors and Controls Group

Korsah, K.

Senior Member, Institute of Electrical and Electronics Engineers

McDonald, D. W.

Member, Institute of Electrical and Electronics Engineers
Member, Eta Kappa Nu, Honorary Electrical Engineering Fraternity
Member, American Association for the Advancement of Science
Member, AMTEX Laboratory Operations Board
Member, ORNL Operating Committee
Chair, ORNL R&D Directors' Caucus
Chair, P&E Research Support Services Process Reengineering Team
Board of Directors, National Management Association, Oak Ridge Chapter
Member, ORNL Reengineering Steering Committee
Member, ORNL Strategic Planning Committee
Member, Human Resources Reengineering Change Team
Member, ORNL Diversity Leadership Team
Vice Chair, Oak Ridge Leadership Action Consortium
Member, Leadership ORNL Coordinating Committee
Significant Event Award – Division Leadership
Significant Event Award – Reengineering Leadership

Maldonado, S. L.

Significant Event Award for assuming extra duties in National Program Office

Maples, R. A.

Team member, DOE Award of Excellence for Portable Uranium Monitor, 1994

March-Leuba, J. A.

Fellow, the American Nuclear Society
Team member, Significant Event Award for work on the HEU/LEU Blenddown Program

Maxey, L. C.

Member, Institute of Electrical and Electronics Engineers
 Member, Instrument Society of America
 Member, Society of Photo-Optical Instrumentation Engineers
 Member, Eta Kappa Nu
 Member, Tau Beta Pi
 Member, Phi Kappa Phi
 Member, ANSI IT-11 Interferometric Standards Committee
 Member, Center for Optics Manufacturing Technical Advisory Committee

McEvers, J. A.

Team member, Significant Event Award for Nuclear Weapon Identification System

McMillan, D. E.

Team member, DOE Award of Excellence for Portable Uranium Monitor, 1994

Mihalczo, J. T.

Fellow, American Nuclear Society
 Professor, Nuclear Engineering Department, The University of Tennessee, Knoxville
 Member, Radiation Detection Review Panel, Office of Arms Control, DOE
 Team member, Significant Event Award for work on the HEU/LEU Blenddown Program

Miles, R. H.

Team member, DOE Award of Excellence for Portable Uranium Monitor, 1994

Miller, G. N.

Member, Institute of Electrical and Electronics Engineers
 Fellow, Instrument Society of America
 Director, Test Measurement Division
 Associate Director, Aerospace Industries Division; Vice President, Local
 Section Member, Executive Board for Instrument Society of America
 Member, Eta Kappa Nu
 Member, Omicron Delta Kappa
 Member, Pi Mu Epsilon
 Member, Tau Beta Pi
 Member, Engineer's Council
 Registered Professional Engineer
 General Chairman for the 41st International Instrument Symposium, Denver
 Team member, American Museum of Science and Energy Award for marketing technology of
 manufactured processing and measurement for the world's most advanced underwater acoustical
 measurement system

Moore, M. R.

Team member, R&D 100 Award for The Magnetic Spectral Receiver

Mullens, J. A.

Team member, Significant Event Award for Nuclear Weapon Identification System
 Team member, Significant Event Award for work on the HEU/LEU Blenddown Program

Munro, J. K., Jr.

President's Award for Continuous Improvement, 1995

Musrock, M. S.

Team member, American Museum of Science and Energy Award for marketing technology of
 manufactured processing and measurement for the world's most advanced underwater acoustical
 measurement system
 Significant Event Award as a telemetry team member for successful installation of Acoustic
 Measurements Facilities Improvement Program system on Navy ship, *USNS Hayes*, 1995

Nodine, R. N.

Team member, American Museum of Science and Energy Award for marketing technology of manufactured processing and measurement for the world's most advanced underwater acoustical measurement system

Overton, J. M.

Team member, DOE Award of Excellence for Portable Uranium Monitor, 1994

Paulus, M. J.

Member, Institute of Electrical and Electronics Engineers
Research Assistant Professor, Electrical Engineering Department, University of Tennessee, Knoxville

Potter, J. P.

Most Value-Able Player Award

Rao, Ganesh S.

Significant Event Award for Reactor Protection System
Appreciation Dinner for Continuous Automated Vault Inventory System tests

Remenyik, C. J.

Member, Sigma Xi
IR-100 Award for Gravimetric Gas Flow Calibrator, 1995

Rochelle, R. W.

Team member, R&D 100 Award for The Magnetic Spectral Receiver

Sari-Sarraf, H.

Team member, Significant Event Award for KLA Instruments CRADA

Schoenwald, D. A.

Associate Editor, IEEE Control Systems Magazine, 1996-present
Associate Editor, IEEE Control Systems Soc. Conf. Editorial Board, 1993-present
Publicity Chair, 1998 IEEE Conference on Decision and Control
Finance Chair, 1999 American Control Conference
Program Committee Member, 1996 IEEE Conference on Decision and Control
Program Committee Member, 1996 IEEE Conference on Control Applications
Principal Investigator on two U.S. Navy Best Manufacturing Practices, 1996
1995 Martin Marietta Energy Systems Achievement Award
1996 Industrial Computing Society Courageous User Award
Program Committee Member, 1997 American Control Conference

Simpson, Marc L.

Member, Institute of Electrical and Electronics Engineers
Member, Optical Society of America
Adjunct Professor, Department of Electrical Engineering, University of Tennessee

Simpson, Michael L.

Assistant Program Chairman, 1996 IEEE Nuclear Science Symposium
Instructor for the short course, "Designing Integrated Circuits for Mixed Analog/Digital Signal Processing Systems," 1996 IEEE Nuclear Science Symposium
Senior Member, Institute of Electrical and Electronics Engineers
Organizer and lead instructor of the short course, "Precision Timing Measurements: Fundamentals and Instrumentation," 1995 IEEE Nuclear Science Symposium
Member, Program Committee for the 1994 IEEE Nuclear Science Symposium
Team member, R&D Technical Achievement Award for the developing of the first photospectrometer using only the materials, masks and fabrication steps inherent in standard integrated circuit processes, thus redefining the state of the art for miniature photospectrometers

Smith, D. E.

Lockheed Martin Awards Night 1997, Operations and Support Award for Oak Ridge Complex
Rebadging Program, Access Control Hardware Team

Smith, M. C.

Team member, Significant Event Award for Nuclear Weapon Identification System

Tate, R. M.

Team member, American Museum of Science and Energy Award for marketing technology of
manufactured processing and measurement for the world's most advanced underwater acoustical
measurement system

Tobin, K. W.

Federal Laboratory Consortium Award
Team member, Significant Event Award for Spatial Signature Analyzer

Treece, D. A.

Team member, Significant Event Award for Amtex Cafe on Loom

Tucker, R. W.

Team member, American Museum of Science and Energy Award for marketing technology of
manufactured processing and measurement for the world's most advanced underwater acoustical
measurement system

Turner, G. W.

Significant Event Award for design of the fast digital nuclear pulse correlation integrated circuit that
operates at 1000 Mhz using gallium/arsenide gate array technology, 1995
Team member, DOE Award of Excellence for Portable Uranium Monitor, 1994

Turner, J. C.

Team member, DOE Award of Excellence for Portable Uranium Monitor, 1994

Valentine, T. E.

Member, American Nuclear Society
Member, Institute of Nuclear Materials Management
Adjunct Professor, University of Tennessee
Member, International Working Group on Subcritical Benchmarks
Team member, Significant Event Award for work on the HEU/LEU Blend Down Program

Vandermolen, R. I.

Student mentoring, guest lecturing, and project advising at Tennessee State University

Weaver, K. S.

Significant Event Award for work on the Telemetry part of Acoustic Measurements Facilities
Improvement Program II, 1995
Member, Tropical Western Pacific Program Team that received an award from DOE Atmospheric
Radiation Measurement Program for ARCS-1.
Team member, American Museum of Science and Energy Award for marketing technology of
manufactured processing and measurement for the world's most advanced underwater acoustical
measurement system

Wetherington, G. R., Jr.

Manager of the Year Award, 1996
Team member, American Museum of Science and Energy Award for marketing technology of
manufactured processing and measurement for the world's most advanced underwater acoustical
measurement system

White, J. D.

ChairPerson, Computerized Reactor Protection and Safety Related Systems in Nuclear Power Plants, Budapest, Hungary
Member, Digital Instrumentation and Control Systems in Nuclear Power Plants; Safety and Reliability Issues, National Research Council, Washington, D.C.
Member, American Nuclear Society
President's Council of Advisors on Science and Technology concerning future of nuclear power technologies in the United States, Washington, D.C.
Invited presentation, Joint DOE/NRC Panel on I&C Research Capabilities at ORNL, Bethesda, MD
Invited speaker, IFPAC '95 Forum (9th International Forum Process Analytical Chemistry)

Whitus, B. R.

Team member, American Museum of Science and Energy Award for marketing technology of manufactured processing and measurement for the world's most advanced underwater acoustical measurement system

Wintenberg, A. L.

Session Chair, 1995, 1996, and 1997 Nuclear Science Symposium
SBIR reviewer, 1996 and 1997, DOE
Team member, R&D Technical Achievement Award for the developing of the first photospectrometer using only the materials, masks and fabrication steps inherent in standard integrated circuit processes, thus redefining the state of the art for miniature photospectrometers

Wysor, K.

Most Value-Able Player Award

Young, K. D.

Team member, Significant Event Award for Amtex Cafe on Loom

Zuehsow, W. D.

Team member, American Museum of Science and Energy Award for marketing technology of manufactured processing and measurement for the world's most advanced underwater acoustical measurement system

5. SEMINARS

- "Application of ^{252}Cf Noise Measurements to Naval Reactor Spent Fuel,"** J. T. Mihalcz, seminar at Bettis Atomic Power Laboratory, Pittsburgh, Penn., June 25–26, 1996.
- "Assessment of the Impact of Improved Harsh Environment Sensing on U.S. Industrial Energy Usage and Waste Production,"** D. E. Holcomb, 2nd Industrial Energy Efficiency Symposium & Expo, Arlington, Va., Feb. 26, 1997.
- "Data Compression and Correlation Pipeline Processor,"** G. W. Turner, presentation to I&C Division staff, May 1995.
- "Diffractive Optics: Analysis, Design, and Application,"** Dr. M. G. "Jim" Moharam, Center for Research and Education in Optics and Lasers, University of Central Florida, Orlando, Fla., Feb. 24, 1995.
- "Fair Evaluation of Search and Diagnostic Methods,"** Dr. Kenneth E. Sale, Lawrence Livermore National Laboratory, Jan. 30, 1996.
- "Fundamental Physics with Neutrons at the Institut Laue–Langevin (ILL) and Recent Results with Microstrip and Multiwire Proportional Counters,"** Dr. Peter Geltenbort, Institut Laue–Langevin, Grenoble, France, Sept. 13, 1995.
- "The HARC Experience,"** Dr. David Norton, Director R&D, Houston Advanced Research Center, June 30, 1995.
- "High Speed Digital ASIC Design,"** G. W. Turner, presentation to I&C Division staff, Nov. 1994.
- "The Leary–Mikhailov Agreement: Status and Prospects,"** Dr. Chris Frankle, Los Alamos National Laboratory, June 1, 1995.
- "Modal Noise,"** Shanalyn Kemme, Ph.D. Candidate, University of Arizona, Dec. 10, 1997.
- "Needs of the Deep Look Program,"** Ed Witterholt, BP Exploration, Sept. 13, 1995.
- "NEST Search Algorithm Evaluation,"** Dr. Kenneth Hull, EG&G Energy Measurements, Inc., Goleta, Calif., Feb. 20, 1995.
- "A New Look at Guardband Considerations in Optical Resonator Numerical Simulations" and "Astigmatism effects in a CO_2 Unstable Ring Resonator,"** Dr. Phillip A. Slaymaker, Optics and Applied Technology Laboratory, Nov. 16, 1994.
- "New Sensors for Glass Manufacturing Processes,"** D. W. Bible, J. E. Hardy, D. E. Holcomb, D. P. Hutchinson, J. O. Hylton, W. B. Snyder, PPG Glass Technology Center, Nov. 18, 1997.
- "Novel Electronics for Temperature Measurement within Operating Oilfield Drill Bits,"** D. E. Holcomb, American Society for Testing and Materials Committee E320.06 – New Thermometers and Techniques, San Diego, Calif., Nov. 10, 1997.
- "Nuclear Weapons—Arms Control Verification Technologies at Oak Ridge,"** Showcase Lecture by J. T. Mihalcz, Oct. 23, 1997.

"Partnering for a Safe America," Bureau of Alcohol, Tobacco, and Firearms, U.S. Customs, U.S. Secret Service, et al., Oak Ridge National Laboratory, Sept. 16-17, 1997.

"Relativistic Heavy Ions to Neutrons: Detector Development Projects at LLNL," Dr. John Luke, Lawrence Livermore National Laboratory, Dec. 14, 1995.

Russian Delegation Visit to ORNL and Y-12, Transparency Technology Demonstration, Oct. 23-24, 1996.

"Strategic Directions for Improving Energy Efficiency Within the Manufacturing Sector Through Improved Harsh Environment Process Measurements," D. E. Holcomb, National Academy of Sciences, National Research Council's Panel on Manufacturing Process Controls, Washington, D.C., May 30, 1997.

"Trends and Opportunities in DOE Energy Efficiency and Renewable Energy," Dr. Anthony Schaffhauser, ORNL, Feb. 22, 1995.

"Variational Monte Carlo for Neutron Transport and Reliability Studies," Dr. Jeffery Lewins, Cambridge University, England, Apr. 24, 1997.

6. TECHNOLOGY TRANSFER

LICENSES

Crutcher, R. I., M. S. Emery, K. G. Falter, C. H. Nowlin, J. M. Rochelle, and L. T. Clonts

Licensed Technology: RF Transmitter (Turtle Mountain Communications)

Falter, K. G., and W. E. Wright

Licensed Technology: Oak Ridge Calibration Recall Program (Norfax Software Co)

Hoffheins, B. S., R. J. Lauf, and P. H. Fleming

Licensed Technology: Hydrogen Sensor (DCH Technology, Inc.), 1966

Schoenwald, D. A.

Center Manager, Oak Ridge Centers for Manufacturing Technology, 1995–1997

Technical Lead, Quick Rotan, Inc., Sewing Machine Motor CRADA, 1994–1995

Simpson, Marc L., and D. N. Sitter, Jr.

Licensed Technology: Miniature Hybrid Optical Imaging Lens (Turtle Mountain Communications)

Tobin, K. W., T. P. Karnowski, and S. S. Gleason, Licenses Through Sematech for Spatial Signal Analysis Software

Texas Instruments, Jan. 1997

Motorola, Jan. 1997

IBM, May 1996

Advanced Micro Devices, June 1997

Hewlett Packard, June 1997

Intel, Mar. 1997

National Semiconductor, Apr. 1997

Lucent Technologies, Dec. 1997

Knights Technology, Inc., Dec. 1997

ADE, Inc., 1996

Defect and Yield Management, Inc., Dec. 1997

KLA-Tencor, Jan. 1998

Applied Materials, Inc., Nov. 1997

Tobin, K. W., S. S. Gleason and T. P. Karnowski, Licenses Through ORNL for Flat Panel Display Spatial Signal Analysis Software

Knights Technology, Inc.

Turner, G. W.

CRADA Involvement: Portable Uranium Monitor transfer to Chemtek, 1994

Wintenberg, A. L.

CRADA with Merritt Systems, Inc., resulting in Mask Work License of Sensornode, version 4c proximity sensor, 1995

Wysor, R. W.

CRADA A-207 with DSP Control Group, Inc., for Advanced Machine Tool Accuracy Compensation

COOPERATIVE RESEARCH AND DEVELOPMENT AGREEMENTS (CRADAS)

CRADA Summary		
CRADA Number	Sponsor	Total Funds FY 1993–March 1998 (\$ in thousands)
1994		
ORNL 940253	AMTEX CAFÉ	2780
ORNL 940308	GELTECH, Inc.	74
ORNL 940309	GELTECH, Inc.	46
ORNL 940320	Hughes Christianson	254
ORNL 940322	AMTEX OP-CON	924
1995		
ORNL 950352	GELTECH, Inc.	49
1996		
ORNL 960404	GELTECH, Inc.	220
ORNL 960424	GELTECH, Inc.	51
ORNL 960437	GELTECH, Inc.	37
ORNL 960454	GELTECH, Inc.	83
1997		
ORNL 940322	Hughes Christianson	980

WORK FOR OTHERS PROJECTS BY SPONSOR

Work for Others Project Summary	
Sponsor Name	Cost FY 1993–March 1998 (\$ in thousands)
Electric Power Research Institute	2,164
Intra Spec, Incorporated	23
National Safe Skies Alliance	3
SEMATECH, Inc.	1,219
Corning, Inc.	35
American Iron & Steel Institute	1,785
Infrared Limited	254
Lublum Measurements, Inc.	5
MKS Instruments, Inc.	43
American Telephone & Telegraph	10
Texas Instruments	40
Eberline Instruments	7
LAM Research Corporation	15
Electroglas, Inc.	188
Westinghouse Electric Corporation	23
GELTECH, Inc.	257
Computational Systems, Inc.	10
Unit Instrument	18
AERA Corporation	22
Royalty Fund	47
DOD/National Institute of Standards Technology	
DOD/Dept. of the Army-Armament Munitions and Chemical Command	8
DOD/Dept. of the Army	2,376
DOD/Dept. of the Army-Test, Measurement, and Diagnostic Equipment Activity 336	
DOD/Dept. of the Army-Walter Reed Army Institute of Research	79
DOD/Dept. of the Army-Chemical & Biological Defense	777
DOD/Dept. of the Army-Soldier Systems Command	140
DOD/Dept. of the Army-Edgewood Research, Development and Engineering Center	24
DOD/Dept. of the Navy-Naval Surface Warfare Center	19,679
DOD/Dept. of the Navy-Office of Naval Research	431
DOD/Dept. of the Navy-Naval Air Systems Command	138
DOD/Dept. of the Navy-Naval Sea Systems Command	1,029
DOD/Dept. of the Navy	2
DOD/Dept. of the Navy-Naval Research Laboratory	141
DOD/Dept. of the Navy-Naval Coastal Systems Center	40
DOD/Dept. of the Navy-Naval Medical Research Institute	27
DOD/Department of Defense	2

Work for Others Project Summary (continued)

Sponsor Name	Cost
	FY 1993-March
	1998 (\$ in thousands)
DOD/Strategic Defense Initiative Organization	633
DOT/Department of Transportation	95
Federal Emergency Management Agency	3
DOE-ORO Martin Marietta Energy Systems, Inc.	7,265
DOE-ORO/Oak Ridge Associated Universities	4
DOE-ERMAC/Fernald Environmental Restoration Management Corporation	17
DOE/Brookhaven National Laboratory	5,307
DOE/Sandia National Laboratories	1,963
DOE/Westinghouse Hanford Company	68
DOE/Knolls Atomic Power Laboratory	58
DOE/Lawrence Livermore National Laboratory	69
DOE/Los Alamos National Laboratory	23
DOE/Superconducting Super Collider Laboratory	5,82
DOE/Battelle Pacific Northwest Laboratories	1,342
DOE/Lockheed Martin Technologies Company	22
DOE/Albuquerque Operations Office	1796
DOE/Idaho Operations Office	295
DOE/Oak Ridge Operations Office	848
NRC/Office of Nuclear Reactor Regulation	302
National Aeronautics and Space Administration	449
Federal Bureau of Investigation	1,885
GELTECH	341
United States Enrichment Corporation	1,123

7. SUPPLEMENTARY ACTIVITIES

SUPPLEMENTARY DIVISION ACTIVITIES

I&C Division maintains liaison with industry and the academic community through its Advisory Committee and consultants and through student and faculty research and training programs carried on within the Division.

Advisory Committee (May 1998)

Dr. Reinhold Mann, Oak Ridge National Laboratory, Life Sciences Division, Post Office Box 2008, Oak Ridge, TN 37831-6124

Dr. Barbara Kay McQuiston, YSI Incorporated, 1700/1725 Brannum Lane, Post Office Box 279, Yellow Springs, OH 45387

Mr. Ron Moore, The RM Group, Inc., 12024 Broadwood Drive, Knoxville, TN 37922

Dr. David Norton, Fondren Telemedicine Technology Laboratory, Houston Advanced Research Center, 4800 Research Forest Drive, The Woodlands, TX 77381

Dr. Gay M. Samuelson, Intel Corporation, CH5-14, 5000 W. Chandler Blvd., Chandler, AZ 85226

Dr. Maurice M. Sevik, Carderock Division, Naval Surface Warfare Center, Code 70, Bethesda, MD 20084-5000

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