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SUMMARY

I have 45 years experience in nondestructive testing. I have utilized almost all methods of NDT at all levels of equipment sophistication; in activities including nuclear weapons, nuclear submarine overhaul, pressure vessel fabrication, welding, electronics, building construction and plant maintenance. I have been responsible for NDT methods and procedure development; inspector training, examination and certification; and negotiating inspection requirements with customers for several manufacturing and testing companies. I have conducted successful projects to develop testing methods for new products and materials, and to advance new NDT technologies.

TECHNICAL SKILLS

- * Nondestructive testing. Developing and utilizing new methods and finding solutions for unusual testing problems.
- * Materials characterization. Determining how material properties can be characterized non-destructively; and how properties influence the choice of NDT method and evaluation of data.
- * Technical communication. In contract work for small companies, I have successfully negotiated with management and customers, including European and Asian customers, prepared clear written procedures and documentation, and worked with inspectors to provide on-the-job training. I have numerous published papers, written chapters of reference books, and have edited a reference work.

ACCOMPLISHMENTS

- * Developed a procedure for detecting “inaccessible” defects in a piston by using pulse tuning to vary an ultrasonic beam profile during the test.
- * Developed several successful dry coupled ultrasonic techniques for flaw detection where liquid couplant could damage the test object; and for characterization of porous materials where liquid intrusion would alter the properties to be measured.
- * Developed an on-line eddy current inspection procedure to replace off-line magnetic particle inspection; to reduce inspection time and dependence on inspector judgment, and to allow economical intermediate inspection of semi-finished parts to reduce scrap costs.
- * Developed a simple nondestructive test for dezincification of bronze castings aboard ships.
- * Editor and lead author of a substantial section of **NONDESTRUCTIVE TESTING HANDBOOK, Vol. 6, MAGNETIC PARTICLE INSPECTION.**
- * Monitored crack growth in an injection molding machine to schedule component replacement. Succeeded in eliminating unscheduled shutdowns due to component failure.
- * Received two U.S. Patents (as co-inventor) for ultrasonic inspection devices.

Honeywell FM&T EXPERIENCE

8/96-2/10. Investigated and developed potential applications for TV laser holography, and air-coupled ultrasonics. Developed a nondestructive test to quantify fatigue damage in 304 stainless steel tubing subject to periodic bending and straightening. Specified and selected new equipment for microfocus radiography and computed tomography, solid-state radiography, and for automated ultrasonic testing and evaluation of bar stock. Developed new nondestructive testing techniques for a wide variety of materials and products utilizing eddy current, magnetic, penetrant, radiographic, ultrasonic and leak testing methods. Prepare training material and train, examine and qualify inspectors in radiography, radiographic interpretation, ultrasonic, penetrant and magnetic particle testing. During a one-year residency at Lawrence Livermore National Laboratory developed a novel sonic test and worked with a team to incorporate this equipment into an automated testing system. Responsible for guidance and approval of suppliers' radiography and Penetrant testing of metal castings.

2/68-8/86 Carried out a wide variety of process development assignments in all methods of nondestructive testing. I developed NDT procedures for new products and materials, identified equipment needs, prepared purchase specifications, trained engineers, technicians, inspectors and field quality representatives. I utilized unusual and experimental methods such as air-transmitted ultrasound and microwave reflectometry for flaw detection and evaluation.

OTHER WORK EXPERIENCE

* I developed NDT procedures for nonstandard weld joints used in a major construction project (Kemper Arena expansion in Kansas City), 8/96-2/97. I negotiated test requirements with the construction contractor, welding contractor and owner's representative. I trained ultrasonic and magnetic particle inspectors, evaluated radiographs, and personally performed ultrasonic examinations with unusual requirements for Terracon Consultants, Inc. as their NDT Level III.

* Company NDT Level III for several manufacturing companies and testing organizations as a part-time consultant, 1980-present. Customer requirements include NAS410, ASME Boiler & Pressure Vessel Code, MIL-STD-271, Association of American Railroads, ASNT-TC-1A. Duties include preparing QA procedures, training material and examinations; negotiating with customers and auditors; and on-the-job training of inspectors. When one manufacturer was required by its German parent company to meet DIN specifications, I modified existing NDT procedures to meet the approval of the parent company with no new equipment cost and with only two days of inspector training.

* Conducted a small business development project funded by the state of Pennsylvania. I improved manufacturing procedures for dry coupled ultrasonic transducers and found successful applications for these and for air transmission transducers. Work was done at Ultrason Laboratories, State College, PA, 1986-87.

* Metallurgist, Honeywell Ordnance Div., Hopkins, MN, 1966-68. I assisted suppliers with metal forming and finishing problems; and directed technicians who performed mechanical and nondestructive tests.

* Metallurgist, U.S. Bureau of Mines Metallurgy Research Center, Minneapolis, MN, 1965-66. I developed a method for producing copper from low-sulfur ore without the addition of sulfur as required by existing commercial processes.

* Metallurgist, Pearl Harbor Naval Shipyard, 1962-65. I worked with foundry, forge and welding shops to resolve fabrication problems; and investigated corrosion problems. I learned nondestructive testing and was certified as an inspector and test supervisor. I developed and implemented improved NDT methods for reactor components, ship structures and piping systems.

EDUCATION AND TRAINING

B.S. in Metallurgical Engineering, University of Oklahoma, 1962.

Numerous short courses and training programs in NDT and related subjects.

Certified by The American Society for Nondestructive Testing as Level III in the Ultrasonic, Radiographic, Eddy Current, Magnetic Particle and Liquid Penetrant Methods. Certified as ACCP Level III in the Ultrasonic, Radiographic, Magnetic Particle and Liquid Penetrant Methods. Certified per NAS 410 in the Magnetic Particle and Liquid Penetrant Methods.