

REFERENCES

- [1] Nardoni, G., M. Certo, P. Nardoni, M. Feroldi, D. Nardoni, L. Possenti, A. Filosi, S. Quetti, and S. Riva. Experimental determination of discrimination criteria between volumetric and planar defects by means of ultrasonic pulse-echo/phased array technique based on the ratio of diffracted echoes in welding examination. *Insight-Northampton*, Vol. 54, No. 4, 2012, p. 221.
- [2] Moran, T., P. Ramuhalli, A. Pardini, M. Anderson, and S. Doctor. Replacement of Radiography with Ultrasonics for the Nondestructive Inspection of Welds-Evaluation of Technical Gaps-An Interim Report. *PNNL-19086, Richland, Washington: Pacific Northwest National Laboratory*, 2010.
- [3] Bullen, D., and M. Apted. *Analysis of Weld Fabrication Flaws in High-Level Radioactive Waste Disposal Containers: Experiences from the US Programme*. Statens kärnkraftinspektion, 2004.
- [4] Hyde, T., W. Sun, and J. Williams. Creep behaviour of parent, weld and HAZ materials of new, service-aged and repaired 1/2Cr1/2Mo1/4V: 2 1/4Cr1Mo pipe welds at 640 C. *Materials at high temperatures*, Vol. 16, No. 3, 1999, pp. 117-129.
- [5] Maddox, S. Assessing the significance of flaws in welds subject to fatigue. *Welding Journal*, Vol. 53, No. 9, 1974.
- [6] Boulton, C. Acceptance levels of weld defects for fatigue service. *Welding Journal*, 1977.
- [7] Minnick, W. H. *Gas tungsten arc welding handbook*. Goodheart-Willcox (Tinley Park, IL), 2000.
- [8] IAEA. Guidebook for the Fabrication of Non-Destructive Testing (NDT) Test Specimens. In *Industrial Applications and Chemistry Section*, International Atomic Energy Agency (IAEA), A-1400 Vienna, Austria, 2001.
- [9] Nasser, S. Inspection and Testing Welds. In, Southern Polytechnic State University (University System of Georgia).
- [10] Professional Services Industries, I. Sherman Minton Bridge - NDT Investigation of Arch Tie Details. In, 2011.
- [11] Fish, P. Sherman Minton Bridge - Nondestructive Testing Procedures. In, 2011.
- [12] Liao, T., D.-M. Li, and Y.-M. Li. Detection of welding flaws from radiographic images with fuzzy clustering methods. *Fuzzy sets and Systems*, Vol. 108, No. 2, 1999, pp. 145-158.

- [13] Førli, O. New Nordtest guidelines for comparison and replacement of NDE techniques. *Insight*, Vol. 38, No. 9, 1996, pp. 647-649.
- [14] AASHTO, L. Bridge Design Specifications, 2012. *American Association of State Highway and Transportation Officials, Washington DC*, 2012.
- [15] Connor, R. J., R. J. Dexter, and H. Mahmoud. *Inspection and management of bridges with fracture-critical details*. 2005.
- [16] Gorriall, G. W. Bridge Inspection Report - Sherman Minton Bridge I-64 Over the Ohio River Spans 1, 2, A, B and C.In, Michael Baker JR., INC., 2011.
- [17] Davey, L., S. Jozefiak, J. Lau, J. Abruzzo, and G. F. Panariello. Structural Investigation of the Sherman Minton Bridge Closure. *Bridges*, Vol. 10, 2014, p. 9780784412640.9780784412012.
- [18] Rearick, A. Sherman-Minton Bridge Structure Retrofit. 2012.
- [19] Nedavnii, O., and V. Udod. Digital radiographic systems today—state of the art (a review). *Russian journal of nondestructive testing*, Vol. 37, No. 8, 2001, pp. 576-591.
- [20] Halmshaw, R. *Introduction to the non-destructive testing of welded joints*. Elsevier, 1997.
- [21] Ewert, U., U. ZSCHERPEL, and K. Bavendiek. Strategies for film replacement in radiography-films and digital detectors in comparison.In *Proceedings of 17th World Conference on Nondestructive Testing, Shanghai, China*, 2008.
- [22] ASTM. Standard Test Method for Radiographic Examination of Weldments.In *Scope*, ASTM, 100 Barr Harbor Drive, PO Box C700, West Conshohocken, PA 19428-2959, United States, 2001.
- [23] Meyer, R., P. Ramuhalli, T. Moran, C. Nove, and A. Pardini. UNDERSTANDING THE CHALLENGES IN THE TRANSITION FROM FILM TO DIGITAL RADIOGRAPHY IN THE NUCLEAR POWER INDUSTRY.
- [24] Moy, J.-P. Recent developments in X-ray imaging detectors. *Nuclear Instruments and Methods in Physics Research Section A: Accelerators, Spectrometers, Detectors and Associated Equipment*, Vol. 442, No. 1, 2000, pp. 26-37.
- [25] MARINHO, C. A., J. M. A. REBELLO, and R. T. LOPES. FILM REPLACEMENT BY DIGITAL TECHNIQUES APPLIED TO WELD INSPECTION.

- [26] da Silva, R. R., and D. Mery. State-of-the-Art of weld seam inspection by radiographic testing: part i—image processing. *E-Journal of Nondestructive Testing and Ultrasonics*, Vol. 12, 2007, pp. 1-9.
- [27] Deprins, E. Computed radiography in NDT applications. *Insight-Non-Destructive Testing and Condition Monitoring*, Vol. 46, No. 10, 2004, pp. 590-593.
- [28] Nacereddine, N., M. Zelmat, S. Belaifa, and M. Tridi. Weld defect detection in industrial radiography based digital image processing. In *Proceeding of World Academy of Science, Engineering and Technology*, No. 2, 2005.
- [29] Jaenisch, G. R., C. Bellon, and U. Ewert. Reliability Assessment by Simulation for High Energy Radiography. In *Review of Progress in Quantitative Nondestructive Evaluation*, No. 894, AIP Publishing, 2007. pp. 1831-1838.
- [30] Ditchburn, R., S. Burke, and C. Scala. NDT of welds: state of the art. *NDT & E International*, Vol. 29, No. 2, 1996, pp. 111-117.
- [31] Hardt, D., and J. Katz. Ultrasonic measurement of weld penetration. *Welding Journal*, Vol. 63, No. 9, 1984, pp. 273s-281s.
- [32] IOlympus, N. Ultrasonic transducers technical notes. *Technical brochure: Olympus NDT, Waltham, MA*, 2006.
- [33] Code, B. W. American Welding Society. *D1*, Vol. 1, 1985, p. D1.
- [34] Washer, G., R. Connor, and D. Looten. Performance Testing of Inspectors Implementing NDT Technologies. In *Transportation Research Board 93rd Annual Meeting*, 2014.
- [35] Førli, O. Guidelines for NDE reliability determination and description. *Nordtest NT TECHN report*, Vol. 394, 1998.
- [36] Anderson, M. T., S. L. Crawford, S. E. Cumblidge, K. M. Denslow, A. A. Diaz, and S. R. Doctor. Assessment of crack detection in heavy-walled cast stainless steel piping welds using advanced low-frequency ultrasonic methods. In, Pacific Northwest National Laboratory (PNNL), Richland, WA (US), 2007.
- [37] Fücsök, F. Experiences and Problems of a Manual Ultrasonic Round - Robin Test. *NDT.net*, Vol. Vol 3, No 10, 1998.

- [38] Green, E. Worst-case defects affecting ultrasonic inspection reliability. *Materials evaluation*, Vol. 47, No. 12, 1989, pp. 1401-1407.
- [39] Carvalho, A., J. Rebello, R. Silva, and L. Sagrilo. Reliability of the manual and automatic ultrasonic technique in the detection of pipe weld defects. *Insight-Non-Destructive Testing and Condition Monitoring*, Vol. 48, No. 11, 2006, pp. 649-654.
- [40] Heasler, P. G., and S. R. Doctor. *A Comparison of Three Round Robin Studies on ISI Reliability of Wrought Stainless Steel Piping*. Division of Engineering Technology, Office of Nuclear Regulatory Research, US Nuclear Regulatory Commission, 2003.
- [41] Jiles, D. Review of magnetic methods for nondestructive evaluation (Part 2). *NDT International*, Vol. 23, No. 2, 1990, pp. 83-92.
- [42] NDT_Resource_Center. *Introduction to Magnetic Particle Inspection*. NDT Education Resource Center, The Collaboration for NDT Education, Iowa State University <http://www.ndt-ed.org/EducationResources/CommunityCollege/MagParticle/Introduction/introduction.htm>.
- [43] International, A. Magnetic Particle Inspection. *Advanced Materials & Processes*, 2008.
- [44] Bainbridge, H. Best Practice for the Procurement and Conduct of Non-destructive Testing-Part 2: Magnetic Particle and Dye Penetrant Inspection. *Gas and process safety, technology division*. HSE, 2002.
- [45] Lovejoy, D. *Magnetic Particle Inspection: A Practical Guide*. David Lovejoy. Springer, 1993.
- [46] Schoefs, F., A. Clément, and A. Nouy. Assessment of ROC curves for inspection of random fields. *Structural Safety*, Vol. 31, No. 5, 2009, pp. 409-419.
- [47] Georgiou, G. A. Probability of Detection (POD) curves: derivation, applications and limitations. *Jacobi Consulting Limited Health and Safety Executive Research Report*, Vol. 454, 2006.
- [48] Babcock, M. HSE-Science and research-RR301-Replacement of Radiography. 2004.
- [49] Munns, I., and C. Schneider. The reliability of radiography of thick section welds. In *AIP CONFERENCE PROCEEDINGS*, IOP INSTITUTE OF PHYSICS PUBLISHING LTD, 2000. pp. 2151-2158.

- [50] Rana, M. D., O. Hedden, D. Cowfer, and R. Boyce. Technical basis for ASME Section VIII Code Case 2235 on ultrasonic examination of welds in lieu of radiography. *Journal of pressure vessel technology*, Vol. 123, No. 3, 2001, pp. 338-345.
- [51] Rezai, A., M. Moore, T. Green, and G. Washer. Laboratory and Field Testing of Automated Ultrasonic Testing (AUT) Systems for Steel Highway Bridges. In, 2005.
- [52] Jendrzewski, J. P., C. Mullin, and J. E. Bennett. Metallurgical Evaluation of Flaw Indications in Tie Chord Transition Butt Weld Cores from the I-64 Sherman Minton Bridge. In, Louisville, Kentucky, 2012.
- [53] Fücsök, F., C. Müller, and M. Scharmach. Measuring of the Reliability of NDE. In *8th International Conference of the Slovenian Society for Non-Destructive Testing „Application of Contemporary Non-Destructive Testing in Engineering*, Citeseer, 2005.
- [54] Eng, J. Receiver Operating Characteristic Analysis: A Primer. *Academic radiology*, Vol. 12, No. 7, 2005, pp. 909-916.
- [55] ---. ROC analysis: web-based calculator for ROC curves. *Baltimore: Johns Hopkins University*, 2006.
- [56] Volker, A., F. Dijkstra, S. Terpstra, H. Heerings, and M. Lont. Modeling of NDE Reliability: Development of a POD-Generator. In *16th World Conference of NDT, Montreal, Canada*, 2004.
- [57] Annis, C. Statistical best-practices for building Probability of Detection (POD) models. R package mh1823, version 4.0.1. In, 2013.
- [58] Knopp, J., R. Grandhi, L. Zeng, and J. Aldrin. Considerations for Statistical Analysis of Nondestructive Evaluation Data: Hit/Miss Analysis. *E-Journal of Advanced Maintenance, Japan Society of Maintenology*, Vol. 4, No. 3, 2012, pp. 105-115.
- [59] Generazio, E. Validating Design of Experiments for Determining Probability of Detection Capability for Fracture Critical Applications. *National Aeronautics and Space Administration*, 2011.
- [60] Thavasimuthu, M., R. Hemamalini, C. Subramanian, T. Jayakumar, P. Kalyanasundaram, and B. Raj. Detectability of mis-oriented defects by ultrasonic examinations: a few observations. *Insight*, Vol. 40, No. 11, 1998, pp. 766-768.
- [61] Walters, J. D. Microchemical Analysis of Non-Metallic Inclusions in C-Mn Steel Shielded Metal Arc Welds by Analytical Transmission Electron Microscopy. In, DTIC Document, 1998.