

# **ASTM International Subcommittee E07.02 on Reference Radiological Images: A brief history and update of recent work**

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Radiographic interpretation is a combination of art and science. The radiograph interpreter must be well versed in x-ray physics, the conditions of the exposure, the characteristics of the source and image detector, the design of the part, its specifications, and potential flaws. But there is also an art to interpretation that is gained over years of looking at many radiographs taken in many different conditions. As an aid to interpretation, reference radiographs have been developed and well accepted as means of identifying different types of indications and grading those indications for accept/reject decisions. Industrial radiography began in 1925 under the direction of HH Lester at the US Army Watertown Arsenal. The first radiography standards and reference radiographs appeared in the 1930s. ASTM International Committee E07 on Nondestructive Testing was formed out of Committee E04 on Metallography X-ray Methods subcommittee in 1938 when ASTM was the American Society for Testing and Materials. Subcommittee E07.02 on Reference Radiographs was formed in 1950 and immediately adopted some of these first reference films as consensus standards. Since those first reference radiograph standards work has progressed to both film and digital radiograph standards for 11 types of castings and 3 types of welds, several radiographic parameter demonstration films, a standard film for measuring film digitization performance, and films for evaluating visual acuity of radiograph interpreters. This paper discusses the history of reference films and the recent development of digital reference images, film digitizer performance film, and the visual acuity standard. The just-approved ASTM E3168 Standard Practice for Determining Low-Contrast Visual Acuity of Radiographic Interpreters is the first standard containing actual radiographic images of varying sharpness, contrast, and noise that can be used to evaluate interpreters and/or interpretation environments. This paper documents the statistical study performed on the visual acuity standard films.