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Role of Visual Inspection in the Qualification of Solid Rocket Motors

V. Venkateswaran, S. Mastan Saheb, V. Someswara Rao and K. Viswanathan

SPROB, SHAR Centre, Sriharikota

Abstract

Visual inspection is the essential part of Non-destructive Evaluation for all engineering components and solid rocket motors (SRMs) are no exception. In fact, the SRMs are not qualified until thorough visual inspection is carried out. Unlike in the metallic components, the crack like defects are generally open up to the surfaces due to the visco-elastic nature of rocket propellant systems. Only visual inspection can ensure the detection of planar defects like cracks. In case of rocket motors, the radiographic limitations for detection of planar defects are compounded by their complex shapes and large sizes. Besides routine visual inspection tools like magnifying glass, lens, special instruments based on fiber optics like boroscopes, fibrescope are also used to reach narrow openings and cover large surface areas. Standard visual inspection techniques applied to SRMs are described and a few typical case studies are outlined in this paper.