



Mechanised Radiography Film Positioning System for SPROB

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Abstract

The cast segments of the first stage (PS-1/ GS-1) are radiographed to check for any casting defects before further processing for static testing/integration for launch. The segments are subjected to two types of radiography viz. radial and tangential depending upon the position of the radiography film cassette with respect to the source. In either case, the entire propellant mass has to be covered by a number of exposures. The process warrants loading the film cassette, positioning inside the port of the segment, exposure and taking out the cassette and reloading. All the above operations are being done manually including taking the cassette up and down. By positioning the operator on a high rise platform, loading and unloading is done by a winch.

The 'Mechanized film positioning system' is conceived and designed to make the operations easier and reduce human fatigue. The system comprises of a column which supports a radial arm, carriage, collapsible tubes, film cassettes holder and three drive systems. The film cassette is held in holder which can be raised or lowered through a motorized winch guided by a set of collapsible tubes. The cassette holding pipes are supported on a wheeled trolley which moves on the radial arm on a track. The drive is by means of a motorized screw. The radial arm is provided with swing drive to facilitate the loading and unloading of film cassettes outside the segment. The drives provided enable the positioning of cassette both for radial and tangential radiography.

All the above operations can be carried out from a convenient location at ground level. Necessary interlocks, cassette position display and accurate positioning of the cassette are planned to be achieved by suitable SERVO system.

This paper deals with the features of the mechanized radiography film positioning system.