SPACE PROPULSION SYMPOSIUM (C4)
Poster Session (P)

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SOLID ROCKET MOTOR SEGMENT DISMANTLING, CAUSE ANALYSIS AND REASSEMBLY

Abstract

the solid rocket motors are the backbone in the area of chemical propulsion because of their simplicity, high thrust capability they have proved real workhorse in modern rocketry.Large solid rocket motors are made in segments due to the limitations in processing facilities. A typical solid rocket motor is made by vacuum casting homogeneously mixed propellant slurry into an insulated case and curing at an elevated temperature if any case there is any defect in propellant grain that particular segment can be taken care separately. The defects in the segment levels are very well identified by method of radiography at appropriate level of segment processing. Individual segments are assembled after qualification. During long storage process intermediate radiography will reveal the healthiness of the stored motor. In a typical case we found surface cracks on propellant of head end segment. After analyzing the defect, it was decided to replace the segment. The motive of the paper is to establish the method, detailing criticalities involved, for dismantling of segments. The paper also explains the scope for analysis after segment dismantling with much other critical information. Finally the paper details out the interchangeability of the segments.