

# **AISI1075 detention behaviors in high temperature environment**

**Thasin.S**

Operation Military Vehicle

Defense Technology Institute (Public Organization)

47/433 4th Chengwattana Road, Banmai, Nontaburi, Thailand

Thasin.s@dti.or.th

## **ABSTRACT**

The objective of this paper is to study behaviors of detention made by AISI1075 in high temperature environment. The detention is used to hold the rocket until the rocket launched. The rocket launched with salvo type. Therefore detentions get high temperature from exhaust gas at 1,200 Celsius blow from rockets. There are the criteria are selection and evaluation, the initial torque for tightening the detention arm. In addition to avoid the failure of material and initially-tightened torque, the understanding of the structural load on the detention is significant. As the initial investigation, this paper presents the experiment test of detention including load behavior on guide knob and on the detention arm. The initially-tightening torques for the detentions were varied from 25 - 40 N.M. The results showed that detention made by AISI1075 with initial-tightened torque 32 N.M. maintain the rocket with force greater than 17,500 N.

**Keyword:** AISI1075, Rocket, Initially-tightened torque.

## **1. Introduction**

The Defense Technology Institute (DTI) is initiating a number of research activities in defense industry. One of research projects is development of the rocket and the one important part of the rocket is "Detention". The detention is attached on the launch tube and the "Guide Knob" on the Rocket is inserted in the detention to hold the rocket until the holding force is sufficient to launch the missile. In this case, the holding forces greater than 17,500 N. To protect the unexpected situations, the process was developed, designed, and investigated using the design of experiment test compared to numerical validation. However in the proposed design process, the detention force is important. In this experiment test and numerical simulation, we selected the controllable parameter as the main factors, size of guide knob, speed of guide knob, and condition of annealed. In this present work, the materials of detention are made by AISI1075 and diameter of guide knob is 12 mm.