Paper ID: 46492
oral
student

IAF SPACE TRANSPORTATION SOLUTIONS AND INNOVATIONS SYMPOSIUM (D2)
Safe Transportation Systems for Sustainable Commercial Human Spaceflight / Small Launchers: Concepts and Operations (Part II) (9-D6.2)

Author: Mrs. Sakineh Haghighattalab
Chinese Academy of Sciences, China

Prof. An Chen
Chinese Academy of Sciences, China
Mr. Mohammadreza Saghamanesh
Tsinghua University, China

IMPORTANCE OF ETHICAL CONTROLS IN SYSTEMIC ACCIDENT ANALYSIS MODELS: TWO CASE STUDIES OF SPACE MISSION FAILURES

Abstract

The development of technological systems such as aerospace systems is leading to new kinds of safety issues and accident types. Systemic accident analysis (SAA) models enable safety professionals to examine the root causes of accidents. The theoretical foundation of different SAA models is considering accidents as a consequence of uncontrolled interactions within the system. Furthermore, preventing and reducing accidents requires analyzing all the technical and non-technical aspects of control in the system. Ethical shortcomings as non-technical elements like mismanagement, conflict of interest, and inattention to safety play a crucial role in the system failures. In this paper, the Challenger and Columbia space shuttle disasters as two cases of system failures are discussed. These two space mission accidents are the result of both inadequate technical and ethical control in the system. Ethical control as a non-technical control and an aspect of human factors especially in management area is contributing to the prevention or the occurrence of many accidents. In addition, ethical control may surround all system components in order to influence the advancement of the system purpose and avoid failure. However, SAA models seldom address ethical control as a factor of the control structure in the accident analysis. This study investigates the control structure in several SAA models and suggests that it is necessary to expand adequately the concept of control in SAA models so that ethical control is considered as an essential component of the control structure in SAA models.