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SAFETY STANDARDS FOR LAUNCH AND RE-ENTRY OPERATIONS: OVERVIEW OF CURRENT
RISK MANAGEMENT POLICIES IN DIFFERENT COUNTRIES AND INDUSTRIES

Abstract

Space vehicles travel long distances during launch or re-entry before reaching their destination. To reduce the risk to noninvolved third parties in the case of a non-nominal event, current best practice is to assure large parts of the ascent or decent flight phase are above open water or at least over regions with low population density. Nevertheless, at some stage the vehicles trajectory, respectively its instantaneous impact point, may pass over other countries than the one the launch took place in. This may pose a risk to this country's population and infrastructure and it has to be assured, that their safety regulations are met. The need to consider multiple risk and safety policies of different states, complicates and enlengthens mission planning. International harmonization of handling launch and re-entry related space flight risk, would simplify the access to space and the required planning and certification processes. Against the background of an increasing frequency of space operations the required safety measures have to be evaluated regarding their impact on air and sea traffic. When considering the consequences caused by such measures, for example in the form of extended flight trajectories, these contrast with the goals of air traffic that is as efficient and ecologically sustainable as possible. To minimize these effects and at the same time ensuring the safety of operation, more refined risk determination methods are required to effectively protect air and sea operations by leaving less space for unnecessary safety margins. As different approaches may yield different results, an international accepted framework for such calculations would be beneficial. To consider the basis for a process of international harmonization, the first step is to collect and compare common risk management practices. As many states don't have a national standard for launch and re-entry safety, other industrial sectors, especially aviation, and their way of handling risks to the general public are presented in this paper, additionally to already existing safety requirements in space transportation. The aim is to establish a summary of how risk is managed in different industries and countries and the way of determining it, that may support the development of a future international standard to assure launch and re-entry missions are safe and efficient.