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EXPLORING THE DIFFERENCES IN RISK SCORING APPROACHES BETWEEN ROBOTIC
VERSUS HUMAN-SPACE FLIGHT PROGRAMS

Abstract

Robotic and scientific space flight missions have helped to characterize low Earth orbit, lunar, and planetary environments and have served as precursors to human space flight missions since the late 1950s. NASA's integrated risk reduction approach utilized the Explorer, Pioneer, Ranger, Mariner, Viking, Mars Exploration Rovers programs, to name a few, and continues today with additional robotic missions being developed for launch to Mars as a forerunner to human exploration missions. Increasingly robotics are used in conjunction with human-tended missions which leads to the question: are we assessing risks across these two types of programs in the same or similar manner to allow an adequate comparison of their respective residual risk levels as well as assessing the integrated risks, particularly those dealing with crew member safety? This study is intended to compare the differences in human space flight versus robotic/scientific space flight programs' risk scoring schemes. The intent is to determine the differences in approaches and allow a translation of risk scores as well as to stimulate meaningful discussions across the two space flight communities.