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PROGRAMMATIC SUSTAINABILITY IN HUMAN EXPLORATION PROGRAMS

Abstract

The vast majority of attention in the space community is focused on the technical factors of space systems or programs. Once we have optimized the technical merits, or perhaps even the cost, we focus on program initiation—selling the program. Government agencies search for budgets and programmatic approval. Aerospace firms seek competitive advantage to win the contract. Until recently at least, relatively little attention was devoted to how to sustain a program over the relatively long programmatic lifetime of most human spaceflight programs.

The truth is that in the United States at least, we have been relatively good at getting large programs initiated. However, our record of sustaining large scale programs over extended periods of time is abysmal. One well-distributed graphic shows that less than 10

This paper will seek to understand the root causes behind these early program terminations, and draw meaningful propositions on programmatic and political factors that appear to support long-term sustainability. The first step in the methodology will be to perform root cause analyses of the early terminations of 5-7 large-scale NASA human spaceflight programs. I will draw a limited number of root causes from these analyses which appear common across the programs analyzed. In the following step, I will apply those causes to a larger number of other early terminated programs (between 10-20) to refine the earlier analyses. This will yield a limited number of robust root causes which have a strong causal connection to early program termination. In the final section of this paper I will translate these root causes to propositions which might be considered in the development of level zero requirements for future large scale human spaceflight programs. While the scope of this paper will be limited to US programs within NASA, in conclusion I will consider extension of the research agenda to other agencies outside the US.