1056-J5-583 **Richard D Jarvinen*** (RJarvinen@winona.edu), Department of Mathematics and Statistics, Winona State University, Winona, MN 55987. *Probability in Solutions for Assembly in Earth Orbit of a NASA Spacecraft for Travel to Mars.*

In this presentation the author provides his solution to a problem he solved during an interval while a Faculty Fellow at the NASA Johnson Space Center. In the terminology of operations research, feasible and optimal solutions are provided within a probably model dealing with the sequential assembly in earth orbit of six modules that combine to form the spacecraft for a manned round trip to Mars. A) The minimum number of launch rockets, and B) the minimum number of duplicates of each module to have on hand in order to achieve NASA reliability standards for a successful spacecraft construction need to be determined. The reliability of the launch rocket used to launch each module is an input variable in this analysis. (Received September 13, 2009)