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Development of a Water Recovery System Resource Tracking Model

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A simulation model has been developed to track water resources in an exploration vehicle using regenerative life support (RLS) systems. The model integrates the functions of all the vehicle components that affect the processing and recovery of water during simulated missions. The approach used in developing the model results in the RTM being a part of a complete vehicle simulation that can be used in real time mission studies. Performance data for the variety of components in the RTM is focused on water processing and has been defined based on the most recent information available for the technology of the component. This paper will describe the process of defining the RLS system to be modeled and then the way the modeling environment was selected and how the model has been implemented. Results showing how the variety of RLS components exchange water are provided in a set of test cases.

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