1172-62-72   **Victoria RC Sieck*** (`victoria.sieck@afit.edu`) and **Fletcher GW Christensen**. *Efficient operational testing with Bayesian adaptive design.*

When developing a system, it is important to consider system performance from a user perspective. This can be done through operational testing—assessing the ability of representative users to satisfactorily accomplish tasks or missions with the system in operationally-representative environments. This process can be expensive and time-consuming, but is critical for evaluating a system. We show how an existing design of experiments (DOE) process for operational testing can be leveraged to construct a Bayesian adaptive design. This method, nested within the larger design created by the DOE process, allows interim analyses using predictive probabilities to stop testing early for success or futility. Furthermore, operational environments with varying probabilities of encountering are directly used in product evaluation. Representative simulations demonstrate how these interim analyses can be used in an operational test setting, and reductions in necessary test events are shown. This method will allow future testing to be conducted in less time and at less expense, on average, without compromising the ability of the existing process to verify the system meets the user's needs. (Received August 17, 2021)