This program is currently specialized to small-body proximity operations, but the underlying method can be generalized to other applications.

This program was written by Behçet Açikmese, John Carson, and Linh Phan of Caltech for NASA’s Jet Propulsion Laboratory. This software is available for commercial licensing. Please contact Karina Edmonds of the California Institute of Technology at (626) 395-2322. Refer to NPO-44346.

**Replacing Sequence of Events Generator**

The soeWINDOW program automates the generation of an ITAR (International Traffic in Arms Regulations)-compliant sub-RSOE (Replacement Sequence of Events) by extracting a specified temporal window from an RSOE while maintaining page header information. RSOEs contain a significant amount of information that is not ITAR-compliant, yet that foreign partners need to see for command details to their instrument, as well as the surrounding commands that provide context for validation. soeWINDOW can serve as an example of how command support products can be made ITAR-compliant for future missions.

This software is a Perl script intended for use in the mission operations UNIX environment. It is designed for use to support the MRO (Mars Reconnaissance Orbiter) instrument team. The tool also provides automated DOM (Distributed Object Manager) storage into the special ITAR-okay DOM collection, and can be used for creating focused RSOEs for product review by any of the MRO teams.

This program was written by Forest Fisher, Daniel Wenkert Roy Gladden, and Terrepat Khanampanpan of Caltech for NASA’s Jet Propulsion Laboratory. This software is available for commercial licensing. Please contact Karina Edmonds of the California Institute of Technology at (626) 395-2322. Refer to NPO-44392.

**Force-Control Algorithm for Surface Sampling**

A G-FCON algorithm is designed for small-body surface sampling. It has a linearization component and a feedback component to enhance performance. The algorithm regulates the contact force between the tip of a robotic arm attached to a spacecraft and a surface during sampling. The control algorithm is insensitive to the surface properties, enabling it to maintain the right contact force for a wide range of surface compliance properties.

The objective of the algorithm is to bring the sampler in contact with the small body surface, and maintain a desired contact force for a prescribed duration of time for sampling. Once the sampling period is over, the control algorithm guides the spacecraft safely away from the surface.

This work was done by Behçet Açikmese, Marco B. Quadrelli, and Linh Phan of Caltech for NASA’s Jet Propulsion Laboratory. This software is available for commercial licensing. Please contact Karina Edmonds of the California Institute of Technology at (626) 395-2322. Refer to NPO-44582.