AutoGen Version 5.0

Version 5.0 of the AutoGen software has been released. Previous versions, variously denoted “Autogen” and “auto- gen,” were reported in two articles: “Automated Sequence Generation Process and Software” (NPO-30746), Software Tech Briefs (Special Supplement to NASA Tech Briefs), September 2007, page 30, and “AutoGen Version 2.0” (NPO-41501), NASA Tech Briefs, Vol. 31, No. 10 (October 2007), page 58.

To recapitulate: AutoGen (now signifying “automatic sequence generation”) automates the generation of sequences of commands in a standard format for uplink to spacecraft. AutoGen requires fewer workers than are needed for older manual sequence-generation processes, and greatly reduces sequence-generation times.

The sequences are embodied in spacecraft activity sequence files (SASFs). AutoGen automates generation of SASFs by use of another previously reported program called “APGEN.” AutoGen encodes knowledge of different mission phases and of how the resultant commands must differ among the phases. AutoGen also provides means for customizing sequences through use of configuration files. The approach followed in developing AutoGen has involved encoding the behaviors of a system into a model and encoding algorithms for context-sensitive customizations of the modeled behaviors.

This version of AutoGen addressed the MRO (Mars Reconnaissance Orbiter) primary science phase (PSP) mission phase. On previous Mars missions this phase has more commonly been referred to as mapping phase. This version addressed the unique aspects of sequencing orbital operations and specifically the mission specific adaptation of orbital operations for MRO. This version also includes capabilities for MRO’s role in Mars relay support for UHF relay communications with the MER (Mars Exploration Rover) rovers and the Phoenix lander.

This program was written by Roy E. Gladen, Terapat Khanampron, and Forest W. Fisher 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-45984.

Time-Tag Generation Script

Time-Tag Generation Script (TTaGS) is an application program, written in the AWK scripting language, for generating commands for aiming one Ku-band antenna and two S-band antennas for communicating with spacecraft. TTaGS saves between 2 and 4 person-hours per every 24 hours by automating the repetitious process of building between 150 and 180 antenna-control commands. TTaGS reads a text database of communications-satellite schedules and a text database of satellite rise and set times and cross-references items in the two databases. It then compares the scheduled start and stop with the geometric rise and set to compute the times to execute antenna control commands. While so doing, TTaGS determines whether to generate commands for guidance, navigation,