Autonomous Vehicle Simulation (AVS) Laboratory, University of Colorado

Basilisk Technical Memorandum

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TESTING EPHEMERIS CONVERSION

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Status: Initial document draft
Scope/Contents
This unit test the ephemeris conversion module by comparing the messages before and after the module has acted on them, and assuring that the desired results are obtained

Rev:	**Change Description**	**By**
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1 Introduction

This test set's up an appropriate simulation by creating a Spice Object, which will write messages containing ephemerides. A ephemeris converter object is also created with the map between the message names. This test guarantees that the data is properly copied.

2 test_test_ephemerisconvert Test Description

This test is located in SimCode/environment/ephemeris_converter/_UnitTest/test_ephemerisconvert.py.

3 Test Setup

The spice object was set on the following date: 2015 February 10, 00:00:00.0 TDB, and the planets that were loaded where the Earth, Mars Barycenter, and the Sun.

Successful link test

A boolean variable is added for logging and is verified to have successfully linked the desired messages.

Successful copy test

For each of the celestial bodies who get a message output, we log the two messages that contain their position and velocities in the inertial frames. For mars the first message is the Spice message is mars_planet_data and the second message is the ephemeris converted data mars_ephemeris_data. If the norm of their difference (including the time component of the vector), at any time, is greater than our error tolerance $\epsilon = 10^{-10}$, then the test fails.

4 Test Results

4.1 Pass/Fail results

Both components of the test pass. The copy is therefore a properly executed.