

# Preliminary ACS Pointing Summary -- Using GPS Velocity Vectors

	<div style="border: 1px solid black; padding: 2px; margin-bottom: 5px;"><b>P</b></div> <b>Programmed Values</b>	<div style="border: 1px solid black; padding: 2px; margin-bottom: 5px;"><b>I</b></div> <b>Ideal Values</b>	<div style="border: 1px solid black; padding: 2px; margin-bottom: 5px;"><b>A</b></div> <b>Actual Values From GPS</b>
	Based upon experimeter supplied vectors, the ACS was programmed for these values and used a -40 sec gyro uncage time and MRR trajectory of 82.0/3.0		
	In hindsight, these would have been the ideal coordinates given the actual trajectory that was flown, and the -170 sec gyro uncage time.		
	From the GPS data, we derive the velocity vectors at time of separation and then compute the actual pointing of the ACS, referenced to the coordinate system at time of gyro uncage.		
<u>Aft Sub P/L Eject</u>			
Target-1 EL	<b>4.0</b>	<b>3.3</b>	<b>-5.3</b>
Target-1 AZ	<b>360.0</b>	<b>357.7</b>	<b>357.5</b>
<u>Fwd Sub P/L Eject</u>			
Target-2 EL	<b>2.6</b>	<b>2.7</b>	<b>9.5</b>
Target-2 AZ	<b>90.0</b>	<b>87.8</b>	<b>91.7</b>

	<div style="border: 1px solid black; padding: 2px; margin-bottom: 5px;"><b>ACS Pointing Accuracy</b></div> <b>A - P</b>	<div style="border: 1px solid black; padding: 2px; margin-bottom: 5px;"><b>Meaningful Accuracy</b></div> <b>A - I</b>
	The difference between the Actual and the Programmed	
	The difference between the Actual and the Ideal	
<u>Aft Sub P/L Eject</u>		
Target-1 EL Error	<b>-9.3</b>	<b>-8.6</b>
Target-1 AZ Error	<b>-2.5</b>	<b>-0.2</b>
<b>Target-1 Total Error</b>	<b>9.6</b>	<b>8.6</b>
<u>Fwd Sub P/L Eject</u>		
Target-2 EL Error	<b>6.9</b>	<b>6.8</b>
Target-2 AZ Error	<b>1.7</b>	<b>3.9</b>
<b>Target-2 Total Error</b>	<b>7.1</b>	<b>7.8</b>

**\*\* Important Notes \*\***

The final pointing accuracy may change (it could improve) after the attitude solution is performed using the gyro data.

These numbers should be treated as preliminary, and based solely on GPS data.

To my knowledge, this is the first time GPS has been used to verify ACS pointing, and all error sources may not have been accounted for.

Therefore, it is possible that the ACS performed better than what is presented here.