To: Chris Blades, Al Holm From: Lisa E. Walter, Rick White

Date: 8 Dec 89

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Subject: HSP Mode I Target Acquisition Test

CC: Peggy Stanley, Colin Cox, Olivia Lupie

Four Interactive (Mode I) Target Acquisition tests were performed for the HSP on 30 August 89. The results are shown below.

Name	Postitioned by Cursor or Centroid	_	ct Position (SIAS)	Slew (SICS)			
01	cursor	x =	13.6875	V2 =	-1.852		
		y =	3.375	V3 =	0.243		
	centroid	x =	13.1653	V2 =	-1.788		
		y =	3.02067	V 3 =	0.416		
04	centroid	x =	9.67537	V2 =	0.026		
		y =	8.60075	V3 =	-0.595		
07	cursor	x =	8.8125	V2 =	-2.788		
		y =	18.6875	V3 =	2.086		
0a	centroid	x =	18.1918	V2 =	0.148		
		y =	13.0154	V3 =	4.219		

The last test, 0a, was believed to have a problem with the slew or the orientation of the North arrow because the V2 slew looked too small. So the slews were checked by hand according to the following SIAS to SICS conversion:

$$x_c = -V2 = a_{00} + a_{10}^* (y_a - y_{ao}) + a_{11}^* (x_a - x_{ao})$$

$$y_c = -V3 = b_{00} + b_{10}^* (y_a - y_{ao}) + b_{11}^* (x_a - x_{ao})$$

where x_a, y_a are the SIAS coordinates and x_c, y_c are the SICS coordinates, or the sign opposites of the V2V3 slews.

Each of the slews obtained during the test agreed with the results obtained by hand. However, it is not clear that the images displayed during the test were oriented correctly. Of the four test cases, one (04) is difficult to make a visual judgement on because the target was so diffuse. Of the remaining three, the orientation of the North angle appears to be different than we expected based on the PDB beta angles, the angular relation between the SIAS and V2V3 axes (see Figure 1). Possibly we have not done this calculation correctly, though; we are still trying to understand the details of this problem. Still, our best guess is that the beta angles in the PDB are not consistent with the SIAS-to-SICS conversion coefficients in the PDB.

Below is a summary of the inconsistency that we find:

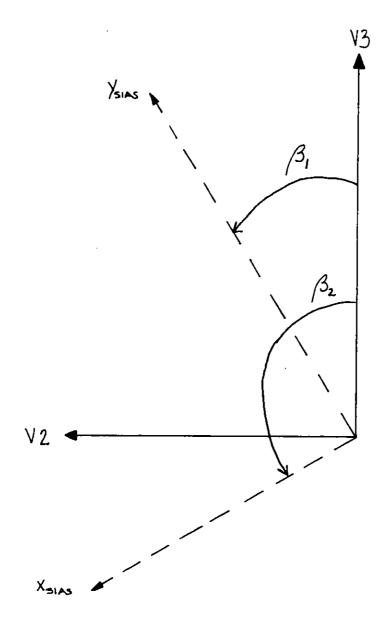
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Test	DET	V2	V3	v2	v3	ours < <	theirs	ours < <	theirs				
01	POL	-1.8	+ 0.4	+ 0.4	+ 1.8	v2 < <	V3	v3 < <	-V2				
07	VIS	-2.8	+ 2.1	+ 2.1	+ 2.8	v2 < <	V3	v3 < <	-V2				
0A	UV2	+ 0.15	+ 4.2	+ 4.2	+ 0.15	v2 < <	V3	v3 < <	+ V2				

Note that the last observation has a different mapping from our v2v3 to the OSS display values of V2V3. That explains why the last observation was noticeably inconsistent in the direction of its North arrow compared to the other tests.

Attached are diagrams illustrating 1) the definition of the beta angles, 2) the visual results obtained during the August 1989 test and, 3) the orientation that Rick and I think the images should have had.

We have been informed that the problems we discovered are probably due to the fact that the PDB is incorrect. Olivia Lupie is now updating the PDB for the HSP. We will re-run the target acquisition test when the update is officially completed.

FIGURE 1



BETA ANGLES ANGULAR RELATION BETWEEN V2V3 AND SIAS AXES

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	6	CENTROLD X =13.1653 V2= 1.788
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