

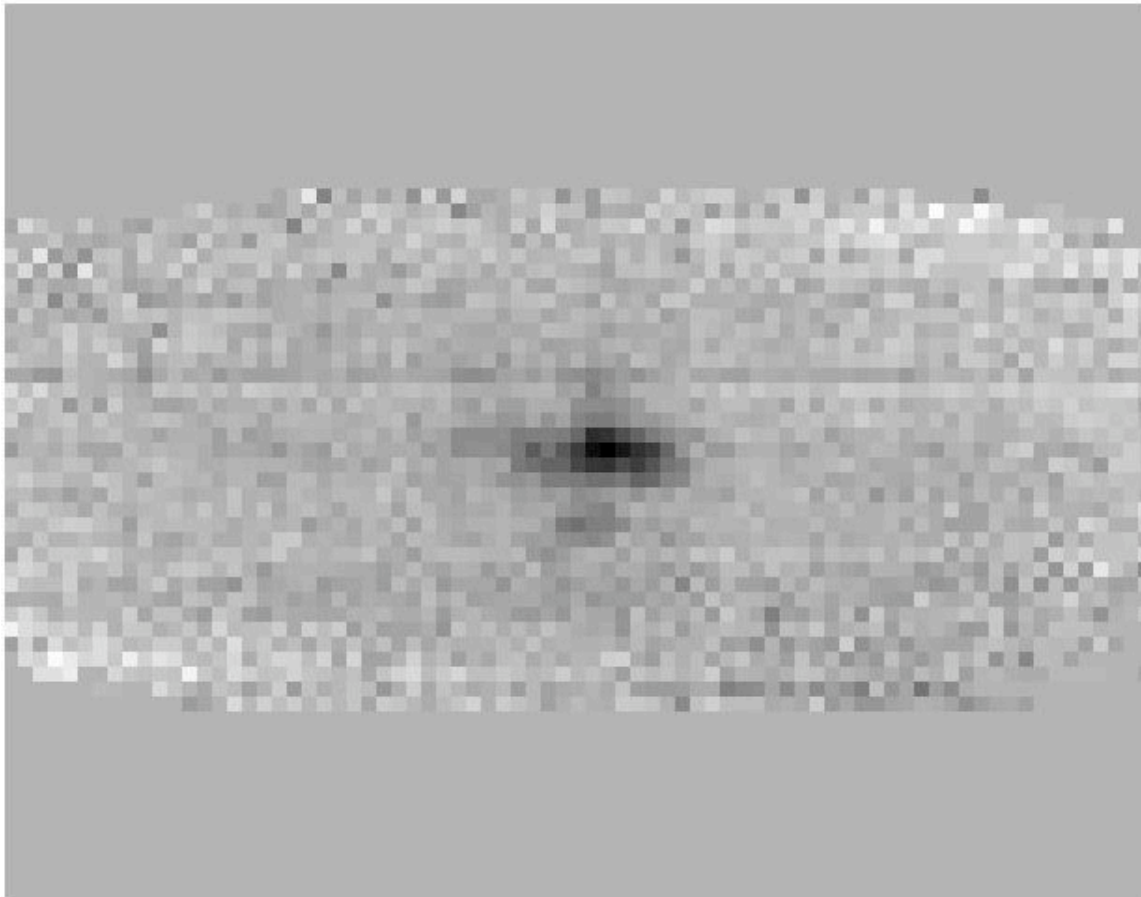
Date: May 5, 2003

To: Tom Phillips  
From: Melanie Leong

Subject: Dish Surface Optimization System (DSOS) Status Memo

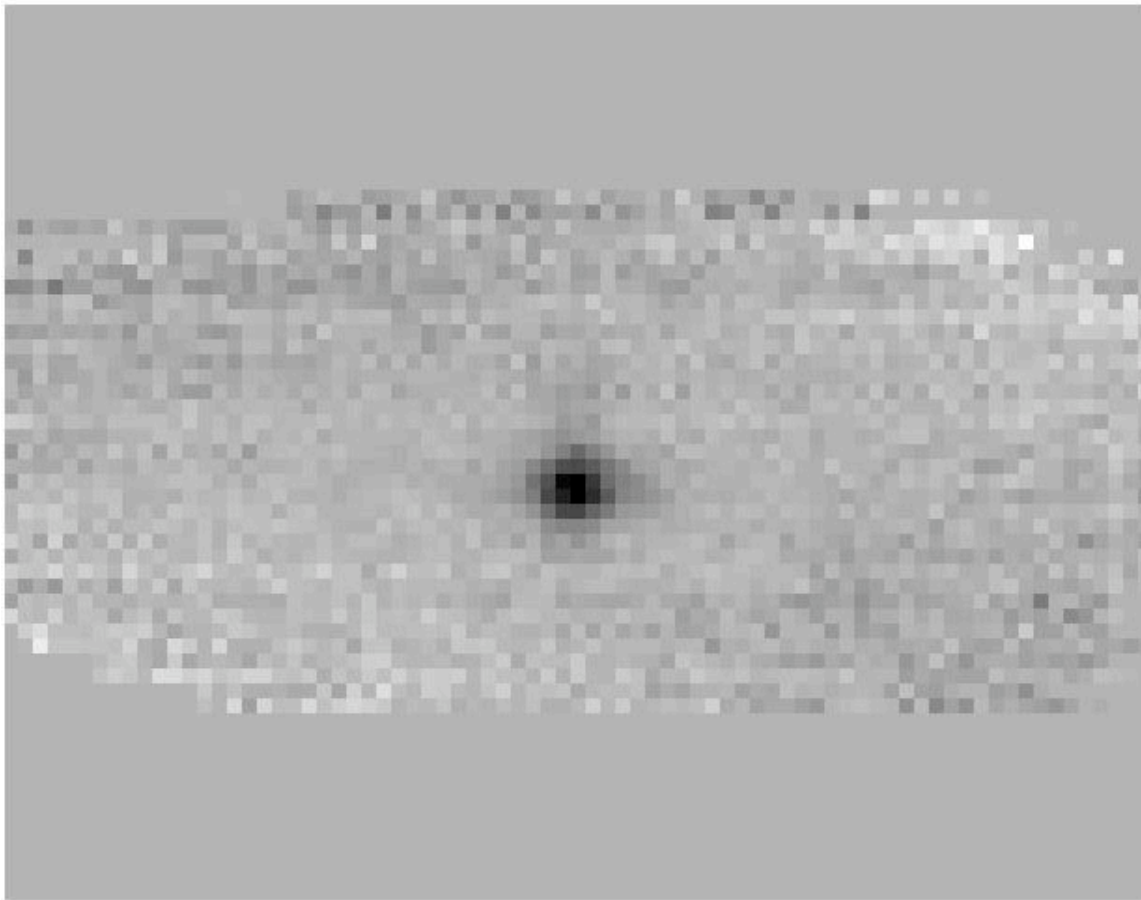
I am pleased to document recent results of the Dish Surface Optimization System (DSOS). The pictures were made by Darren Dowell on April 2, 2003 with the SHARCII and the DSOS.

In the past the SHARCII has usually observed a smeared clover leaf pattern of a point source at small zenith angles. This is demonstrated in the first picture of Ganymede with the DSOS off.



Picture 1: Ganymede. The DSOS is OFF. The zenith angle is 5°.

For the second picture of Ganymede there were 52 calibrated toothpicks activated when this data was taken.



Picture 2: Ganymede. The DSOS is ON. The zenith angle is 15°.

The pictures show that there is a significant improvement with the DSOS on. Ganymede changed from a clover leaf to appearing more like the spherical moon that it is. The average improvement in peak signal power is 45%. If the original efficiency of the dish, uncorrected, is 33%, the estimated improvements to the aperture efficiency at 350  $\mu\text{m}$  is 14.8%. The improved aperture efficiency is then 47.8%.

As of this date the number of calibrated toothpick assemblies is 76. The perimeter toothpicks are the last to be calibrated. Their corrections hold a great potential in further efficiency improvements. In the future more data needs to be taken to verify how much the Dish Surface Optimization System improves the surface of the dish at 350  $\mu\text{m}$ .