

## **WFIRST Coronagraph TAC Report on Milestone #9 Second Review**

January 27, 2017

A second review of Milestone #9 for the WFIRST coronagraph technology program was held on January 27, 2017. Four of the five C-TAC members were able to participate in this second review. The first review of this Milestone on November 8, 2016 did not present test data showing the required high contrast performance with the SPC and HLC coronagraphs in the JPL HCIT in a dynamic environment, necessitating this second review. The team has now had enough time in the HCIT to demonstrate that the Milestone #9 requirements have been met for both the SPC and the HLC.

Milestone #9 was planned to demonstrate  $10^{-8}$  raw contrast with 10% broadband light at 550 nm in a dynamic environment. The new results presented showed that the SPC can achieve a mean contrast of about  $8 \times 10^{-9}$  with nominal flight levels of dynamic jitter, while the HLC can achieve a similar mean contrast with jitter. Clearly both the SPC and HLC coronagraphs have now successfully passed the Milestone #9 requirements. In addition, the static contrast results have improved from  $9.15 \times 10^{-9}$  to  $4.3 \times 10^{-9}$  for the SPC, and from  $1.16 \times 10^{-8}$  to  $1.6 \times 10^{-9}$  for the HLC, a spectacular improvement for the HLC, thanks to the changes made in the HCIT facility. These new results bode well indeed for the OMC instrument on WFIRST.

The project has now finished eight of the nine WFIRST coronagraph Key Milestones (only the PIAACMC Milestone #8 was not met), and we look forward to continuing to work with the project as the OMC instrument moves into the mission development phase.

We congratulate and thank all of the WFIRST-C team members for their presentations and comments during the review.

### **WFIRST Coronagraph TAC Members**

Alan Boss (Chair), Carnegie Institution

Rebecca Oppenheimer, American Museum of Natural History

Joe Pitman, The Sensing Company (absent)

Lisa Poyneer, Lawrence Livermore National Laboratory

Steve Ridgway, National Optical Astronomy Observatory

