PFS sequence of operations for observations

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1.0	*2012-10-23 Tue*	PHM	initial revision

This document is meant to capture "current thinking" from Caltech & JPL on the PFS sequence of operations in a variety of situations from instrument commissioning and maintenance to normal operations.

All sequences start with the closing of the spectrometer shutters.

1 Normal operations

We have envisioned a system in which the pointing is locked to the field before Cobra motion iterations begin. This would put a limit on how long a single MC exposure could be, based on the rotator angular velocity during tracking. We assume that the telescope (including InR) is always either slewing, settling, or tracking – never stationary.

1. Three operation commence in parallel

   a. Telescope slews (alt and az motions) and InR rotates to position for next observation. We DO NOT assume that the rotator angle is the same for all observations.

   b. Spectrometers read out science data from their detectors

   c. Cobras are sent to the ANTI-HOME position ($\theta = \theta_{\max}$, $\phi = \pi$) to prepare for locating the θ-axis by moving the fibers in a circle, or to

the HOME position ($\theta = \theta_{\mathrm{min}}$, $\phi = \phi_{\mathrm{max}}$: fiber near θ-axis), depending on how we will map the high order distortions.

2. When the telescope's main slew is complete, it needs time to settle. We assume that at this time, we can begin the measurements for the distortion map (θ-axis centers or science fiber home locations). This is also the time for the A&G cameras to lock onto the field.

   If the InR rotation will be too fast at this time to make the distortion map, then guider lock will have to wait until the θ-axis center data are taken before acquiring lock.

3. As soon as the MC shutter closes and MC begins its readout, we can make the first Cobra move. The distortion will be calculated by PFICS before the MC transfers the back-illuminated fiber centroid positions from the first move to PFICS.

4. Cobra moves and MC imaging of the fiber plane continues until some predefined percentage of the fibers are aligned with their target locations.

5. When an end condition is reached, PFICS informs SOSS that final configuration has been achieved and the next observation can commence.