Directions on how to run WCS and/or normal AO with the WCS installed

Note: These instructions apply to the subaperture relay also known as the WCS (Well Corrected Subaperture) relay, or originally, as the FQPM experiment.

1. To run "normal" AO
    a. start AO system
        i. In /opt/ao, "ll bin" and verify that the link points to /home/aocm/ao3/bin
            1. If it doesn't, in /opt/ao
                a. "rm –f bin"
                b. "ln –s /home/aocm/ao3/bin"
        ii. From any directory, "start_ao -tcs"
    b. Once the system is booted then
        i. move fq_stim to 500,000 (this makes sure the relay stimulus is out)
        ii. move fq_relay to 0 (this makes sure the relay is out and we are looking at the full telescope)
    c. Use the AO system as normal
    d. DM Mask
       There should not be one installed. Note only AO team members are authorized to remove or install a DM mask.
    e. PHARO: run xpharo

2. To run "WCS" AO
    a. start AO system
        i. In /opt/ao
            1. "rm –f bin"
            2. "ln –s /home/aousr/fqpm/bin"
        ii. From any directory, "start_ao –tcs"
    b. Once the system is booted then
        i. move fq_stim to 500,000 (this makes sure the relay stimulus is out)
        ii. move fq_relay to 34,500 (this makes sure the relay is in)
    c. Load correct pixel gains file
       I think you want to use pixel_gains_no_obs, although you might also want to try pixel_gains_all.
       load wfp=ho, pixel_gains=aocp:/pixel_gains/pixel_gains_no_obs
    d. Faint light performance/optimization
       You can use play all the usual games as for the "normal" AO system, but if/when you try the optimal reconstructors use alphaxrxxxu.txt, the u is for no central obscuration for WCS.
    e. DM Mask
       The circular non-obscured mask should be installed on the DM if using WCS relay. Note only AO team members are authorized to remove or install a DM mask.
    f. PHARO: run xpharo_fqpm

It might make sense to make a file called DEFAULT_WCS so that once the AO system is booted this can easily be restored.

3. Switching between "normal" and "WCS" builds without restarting the whole AO system **NOT TESTED**
    a. Exit TAO (the AO GUI)
    b. cd to "/home/aocm/ao3/bin" or "/home/aousr/ao3/fqpm" as appropriate for the mode you are switching to
    c. "./tao –ch aocp –th tcs" to restart tao
    d. When TAO is exited PHARO will go into network simulation mode, once TAO is restarted the AO connection can be re-established by de-selecting simulate network from one of the XPHARO pulldown menus
    e. restore the appropriate AO file DEFAULT or DEFAULT_WCS
    f. **DM Mask: There should be no DM mask for normal AO and the ciricular non-obscured mask for "WCS" AO**. Note only AO team members are authorized to remove or install a DM mask.
    g. PHARO: exit PHARO GUI and re-start xpharo or xpharo_fqpm as appropriate.