Appendix C

Quadrant Shutter Nomenclature

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A quadrant shutter assembly mounted between the HRMA and the detectors allowed individual quadrants of individual mirror pairs (shells) to be examined. The quadrant shutter assembly was mounted on the same ground support equipment (GSE) as the HRMA so the shutter assembly followed the pitch/yaw motions of the HMRA. The quadrant shutters consisted of a set of 16 separately controllable opaque blades which could be placed in the beam to block X-rays reflected by quadrants of the mirror. The shapes of the blades were designed so that by having all but one shutter blade in the beam allows rays from a single quadrant of a single mirror pair to pass. This allowed access to any quadrant/mirror pair combination. The shutter locations were named after the cardinal directions at the XRCF: N(orth), T(op), B(ottom), S(outh). Individual shutters were sometimes referred to by using letter-number combinations indicating mirror quadrant and shell (*e.g.*, 3N or N3 for the North quadrant of shell 3). To simplify specification of shutter combinations in the CMDB, a code consisting of a string of 16 letters was used; each letter was either o, indicating that the quadrant was open, or c, indicating that quadrant closed (*i.e.*, the beam was blocked). The code specified shutter configurations in groups of four, one group of four per mirror pair, in the order: mirror pair 1, 3, 4, 6. Within a group of four for an individual mirror pair, the letters indicated the state of individual quadrant shutters, in the order T, N, B, S. For ease of reading, the quad_shutter aperture raytrace module requires a character (typically a space or underscore) separating each group of four quadrants. Thus, the state with all quadrant shutters closed except for the Bottom quadrant of shell 3 could be indicated by 3B, B3, cccccocccccccccc (CMDB), or cccc_ccoc_cccc_cccc (raytrace quad_shutter module).

Table C.1: Quadrant Shutter Nomenclature

Quadrant	Direction			Code
T	$+Z_{XRCF}$	$-Z_{AXAF}$	$+Y_{raytrace}$	occc
N	$-Y_{XRCF}$	$+Y_{AXAF}$	$+X_{raytrace}$	cocc
B	$-Z_{XRCF}$	$+Z_{AXAF}$	$-Y_{raytrace}$	ccoc
S	$+Y_{XRCF}$	$-Y_{AXAF}$	$-X_{raytrace}$	ccco