this final configuration and the one in the figure 6 are that the thrusters were rotated out of the base plane of the capsule, elliviating thruster interaction and they were moved outward to a wider location so as to allow thrust direction to cross the pitch plane ahead of the CG. The value of this aspect is discussed in the following sections.

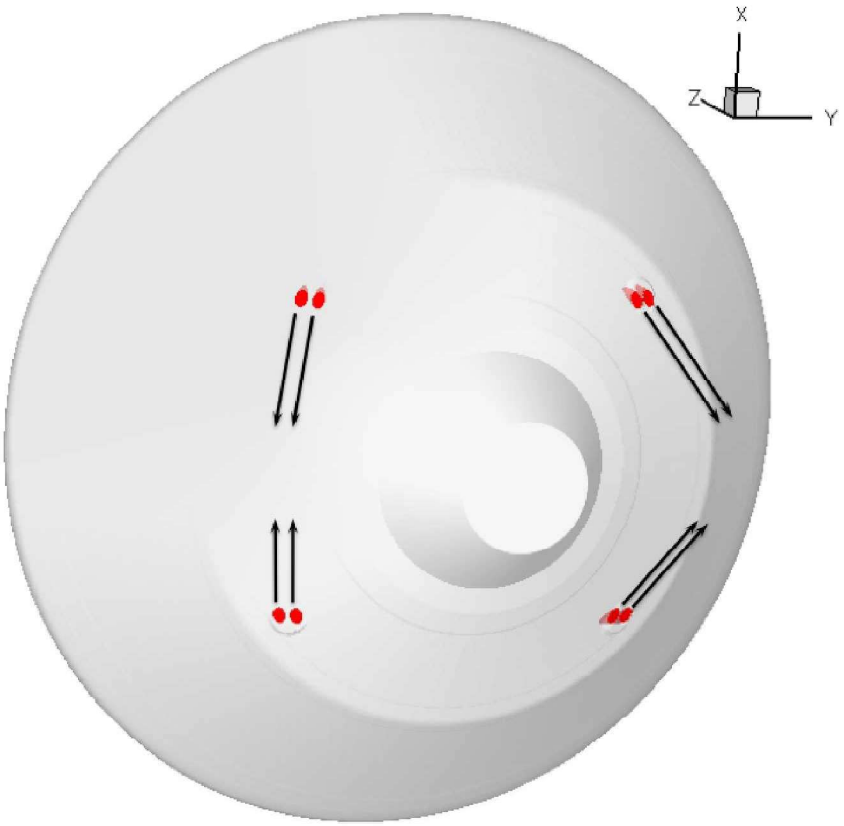

Figure 10. Final thruster arrangement of MSL RCS

VI. Aero-RCS Interference in Flight

A. Sources of RCS interference

There are two main sources of RCS-Aero interaction. First, the under-expanded jet produces a change in near-exit flowfield, causing entrainment and reduction in pressure in he nearfield. If this jet impinges onto the surface, or collides with another jet, a local increase in surface pressure may result. This type of a near field interaction is relatively invarient with the trajectory condition, and is fairly easy to analyse. Second type of RCS interaction occurs due to the jet influencing the rest of the capsule wake flowfield, causing global changes in the capsule pressure field. This change is much more complex and it depends on the flight condition. Figure 11 shows the pressure distribution and a plume outline for one of screened RCS systems for MSL. In this system pairs of jets were mounted as shown (although only the thrusters of the right side are included in the figure) and the four right jets would be fired as shown to achieve yaw torque. The four jets formed a complex interaction flowfield with an impingement footprint in the near field that ws invarient with free-stream conditions. The four jets formed a larger plume that proceeded laterally to the side, which is near the bottom in the figure and interacted with the capsule's shear layer. The result was additional pressurization of the backshell surface near the shoulder. Large added pressure forces over broad acreage produced a moment that countered the intended yaw authority. Most of the interaction torque came from the pressurization near the shoulder. In this case all of the yaw authority was negated by the aerodynamic torques. Figure 12 shows the distribution over the aftshell of the yaw-axis moment arm. This gives an insight into the areas of hight sensitivity to local changes in pressure. Because some RCS activity produces