7.2.2.1 Out-of-Plane Maneuver (Continued)

Since the maneuver would in any case be cyclic (with the period of the orbit), the average power loss would only be half of the worst-case power loss quoted above.

7.2.2.2 In-Plane Manuever

For the in-plane maneuver, the Paxsat orbit is perturbed to be slightly different in eccentricity (though not in period) than the target orbit. This causes Paxsat to alternately assume a lower altitude and higher velocity than the target so passing underneath it, and a higher attitude and lower velocity than the target so passing over top of it, relative to the earth (i.e. if earth is considered down).

This maneuver is quite different from the out-of-plane maneuver in that Paxsat flies revolutions about the target rather than just swinging from side to side behind or in front of the target. A combination of these maneuvers can, of course, also be performed.

For the in-plane maneuver, the out-of-plane orientation allows the Paxsat body to rotate about the solar array axis to follow the target while maintaining the solar arrays themselves sun pointing.

The zenith orientation demands that the entire Paxsat, solar arrays included, revolve about the orbit normal. In a perfect dawn-dusk orbit, this would involve no reduction in power whatsoever. In nearly dawn-dusk orbits, however, some reductions would take place although they should not exceed 10% to 20%.

7.3 Paxsat Radar Systems

7.3.1. Introduction

This section of the final report is concerned with the role, performance and end-to-end system impacts of radars upon the Paxsat satellite-to-satellite reconnaissance requirements.

The prime role of the radars are limited to acquisition and track of the target satellite, whether from the ground or space segments. The tracking data is