

## 7.9 Structure and Mass Properties (Continued)

vicinity of 4,500 kg. At this weight, the Paxsat spacecraft is easily accommodated by the STS launch vehicle of NASA offering the advantageous opportunity of acquiring a shared launch manifest. Paxsat could also be launched on an Ariane IV launch vehicle to be available in the late 1980's. Since the Soviets offered commercial launch services for the next generation of Inmarsat spacecraft, it may be possible to launch the Paxsat spacecraft utilizing a sufficiently rated Soviet vehicle. Design information on Soviet launch vehicles was unavailable for incorporation into the current Paxsat concept configuration and thus the spacecraft was only configured for Shuttle and Ariane IV launch vehicles.

The resource demands for the Paxsat spacecraft on the basis of weight are not prohibitive in terms of launch vehicles currently available or those to be made available in the near future. In this respect, Paxsat is a feasible mission.

## 7.10 Summary

A brief review of the salient features of the Paxsat spacecraft is presented forthwith.

The spacecraft configuration reflects the high fuel capacity requirement of the rendezvous mission scenario. A roughly cubic propulsion module carries 3,000 kg of bi-propellant fuel and also serves as the primary load carrying structure. The other support subsystems are in modules on five sides of the cube, leaving the sixth side open for the payload.

Large orbit maneuvers are performed using a high efficiency motor. A further 20 thrusters are used for fine maneuvers, and are positioned to minimize the possibility of accidental firing towards the target. Another safety feature is the independent back-up electronics system. It monitors the performance of the attitude and orbit control system which uses computerbased algorithms to guide Paxsat to the desired separation from the object under investigation. Should that computer fail for any reason, this back-up system takes over ensuring continuity of control.