

The decision to uprate the Saturn IB does not have to be made until after specific payload requirements have been established. However, it is important to insure that funding is available for development options to meet increased payload requirements. Except that there are more options available, the Saturn V uprating would follow a pattern similar to Saturn I (fig. 50). There is an additional option because it is possible to use a higher pressure engine. Again, where the payload capabilities can be increased by a factor of 2 or more, the cost pattern (fig. 51) is similar to the one shown for Saturn I. Essentially, operating costs remain constant. As with Saturn I, the precise pattern of growth is not the major consideration. However, it is important to anticipate operating requirements so that they can be accommodated when specific payload requirements have been established.

Increased payload capabilities and uprated booster systems constitute the general growth pattern that we believe will be the most practical approach to improvement in the near term future. We believe that it is possible to increase transportation efficiency by a factor of 2 or 3, both in the Saturn I and Saturn V class of hardware. This kind of increase is the first step toward achieving the 50-fold improvement in system effectiveness which I have proposed can be achieved within the next 20 years.

Certainly, the uprating philosophy applies to the projected hardware for manned planetary systems. The same uprated transportation system, assembled as shown in figure 52, can be employed for manned planetary flyby missions. Accompanied by unmanned probes

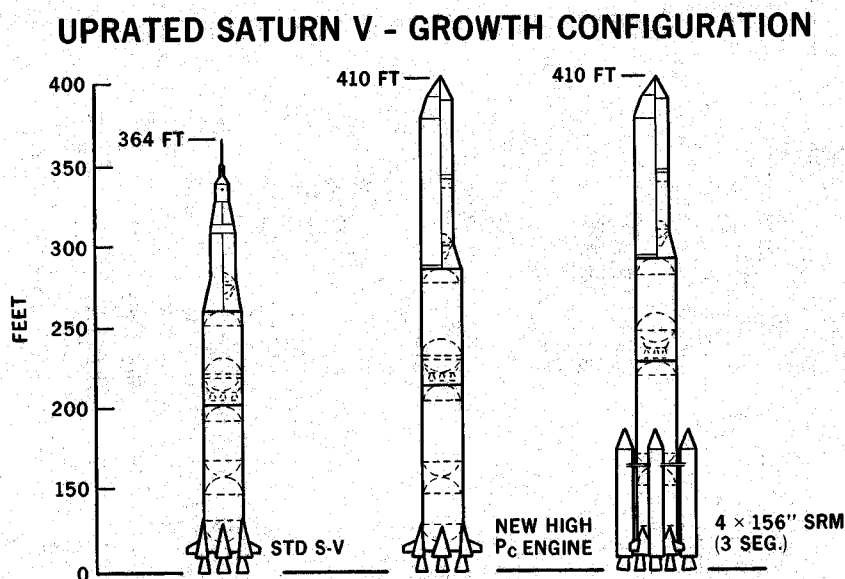


FIGURE 50