

Accepting the fact that, eventually, reusable spacecraft will be required, the argument is sometimes advanced that "if we have reusable spacecraft we should achieve reusability from the ground up, making the booster reusable as well." However, there is a fallacy in that argument; first, because the need for a reusable spacecraft is more urgent, it should have priority both in terms of engineering inputs and in terms of funding; then, because the financial commitment that would have to be made to achieve reusability for both the spacecraft and the booster at the same time would be prohibitive. While both of these advancements need to be made, they should be undertaken sequentially.

When reusable transportation is discussed, there is always disagreement about whether the vehicle should be designed to take off and land horizontally or take off vertically and land horizontally. No matter whether the horizontal or vertical takeoff system (figure 58) is eventually adopted as the standard configuration, it is clear that the horizontal takeoff vehicle cannot be operational until the end of the 20-year period that we are talking about today. Also, no matter when it is built, a horizontal takeoff/horizontal landing vehicle is going to be initially and operationally more expensive than one which takes off vertically and lands horizontally. The only rationale that could support the need for a horizontal takeoff/horizontal landing vehicle would be a requirement for a widely variable launch azimuth capability. If such a requirement were imposed, it would be necessary to fly in the atmosphere to reach the proper position for ejection into orbit. At this time, there is no reason to believe that this requirement exists. That kind of operational flexibility is a luxury that is difficult to afford; particularly since space destinations are known and launch sites have been established to match them.

HTOHL & VTOHL CONFIGURATIONS

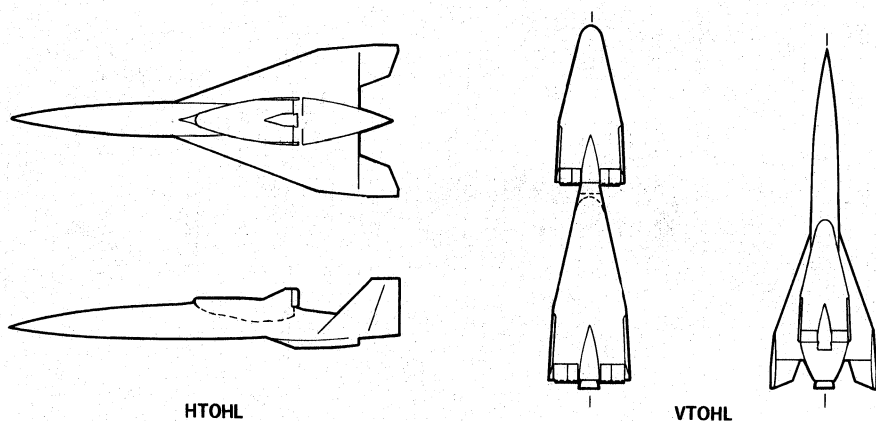


FIGURE 58