Terrier-Malemute (29.XXX)

General

The Terrier-Malemute launch vehicle is a high performance two-stage vehicle used for payloads weighing less than 400 pounds. The first stage booster consists of a Terrier MK 12 Mod 1 rocket motor with four 340 square inch fin panels arranged in a cruciform configuration. The Terrier booster has an overall diameter of 18 inches. For a payload weight of 200 pounds, the longitudinal acceleration during the boost phase is 26g's. The second stage propulsion unit is a Thiokol Malemute TU-758 rocket motor which is designed especially for high altitude research rocket applications. The external diameter of the Malemute is 16 inches. Figure F.2-1 shows the Terrier-Malemute vehicle.

Figure F.2-1: Terrier-Malemute Vehicle

Vehicle Performance

The average thrust is 9,604 pounds. The maximum thrust level is approximately 14,200 pounds which results in a maximum longitudinal acceleration during second stage burning of 32g's for a 200 pound payload. Liftoff weight of the Terrier-Malemute launch vehicle, less payload, is approximately 3260 pounds. This vehicle is usually rail launched and can be accommodated at most established launch ranges.

Payload

The Terrier-Malemute vehicle is particularly suited for lower weight payloads; performance drops appreciably as payload weight increases. Bulbous diameter payloads can be accommodated on the

Terrier-Malemute; however, the high dynamic pressures encountered by this vehicle result in high aerodynamic heating rates and high vehicle structural loads Thus, payload design characteristics must be carefully considered. This vehicle is generally used for relatively lightweight plasma physics payloads.

Performance Graph

Performance parameters of the Terrier-Malemute vehicle are shown in Figure F.2-2. The payload configuration for reference data is a 16-inch diameter with a 3:1 ogive nose shape.

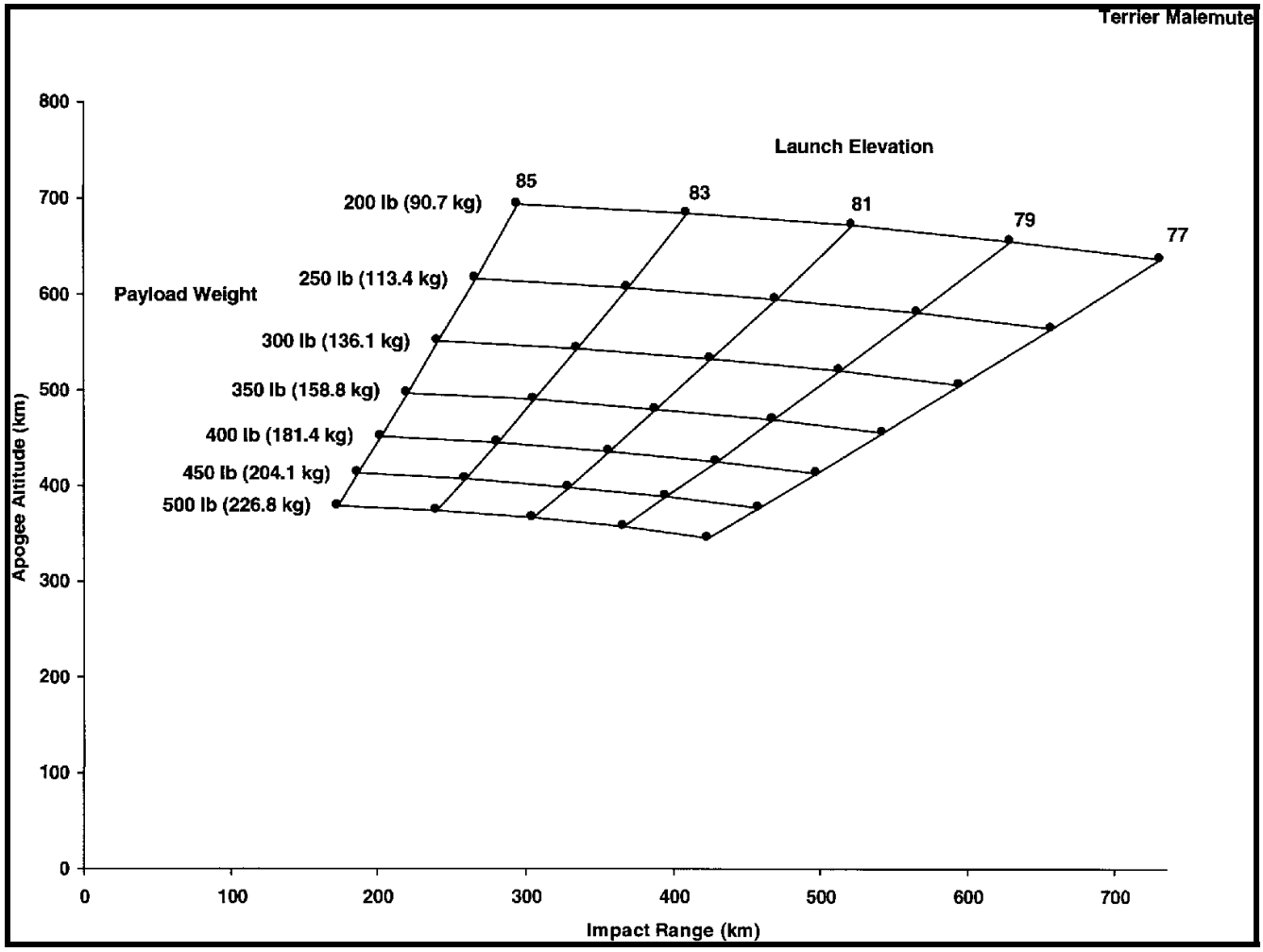

Figure F.2-2: Terrier-Malemute Launch Vehicle Performance