

Improved Orion Launch Vehicle (30.XXX)

General

The Improved Orion is a single stage, unguided, fin stabilized rocket system which uses a surplus Army rocket motor having a dual phase propellant. Three fins on the aft end of the motor provide forces for rolling up the vehicle in flight for stability. Figure F.3-1 shows the Improved Orion vehicle.



Figure F.3-1. Improved Orion Launch Vehicle
(Photo by Scott Neville)

Vehicle Performance

The Improved Orion is 14 inches in diameter and 110 inches long. The Improved Orion fins are nominally canted to provide a four revolutions per second spin rate at burnout. The rocket carries an 85 pound payload to 88 kilometers and a 150 pound payload to 71 kilometers when launched from sea level at an 85 degree launch angle.

Payloads

The standard payload for the Improved Orion has a principal diameter of 14 inches and utilizes many nose cone shapes. The normal payload length varies from 72 to 100 inches although this is not the

maximum envelope. Payload diameters as small as 4.5 inches are flown on the Orion and performance characteristics are most favorable for 85 to 150 pound payloads.

Standard hardware includes a separable clamshell nose cone and an Orion standard ignition system. Separation systems can be provided to separate the payload from the motor during ascent.

Performance Graph

The Improved Orion launch vehicle apogee altitude and impact range at various launch elevation angles and payload weights are presented in Figure F.3-2.

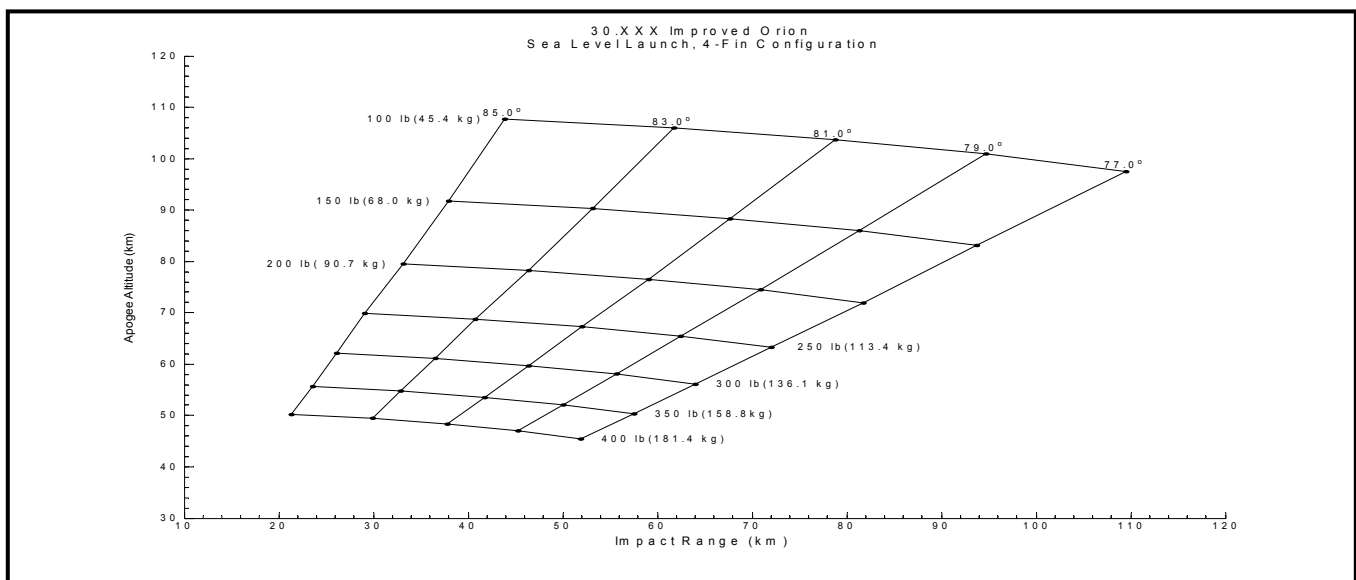


Figure F.3-2: Improved Orion Launch Vehicle Performance