



# NASA Marshall Space Flight Center



## RS-34 Phoenix

### Peacekeeper IV Stage In-Space Propulsion System

#### Problem:

**Low Cost Small Satellite Delivery**

#### Solution:

**Utilize an existing in-space propulsion system to launch multiple satellites to various orbits providing continuous coverage with fewer launches.**

#### PRODUCT

- RS-34 Phoenix
- Pressure-Fed
- In –space Propulsion System
- Prop Type: NTO/MMH
- Pressurant :He
- Volume: 92”d x 42” h
- Prop load :635kg
- Burn Time: ~165s



#### CAPABILITIES

Sat Mass	# of Sats	# of Orbits	$\Delta i$ Max	$\Delta t$ Max
7 kg	9	9	2.2 deg	6 min
50 kg	3	3	8.4 deg	28 min
150 kg	3	3	7.1 deg	23 min
200 kg	3	3	6.7 deg	21 min

#### DISCRIMINATORS

- Multiple Orbits, Single Boost reduces total number of launches for continuous coverage
- Cost Savings by Utilizing Existing Hardware

#### Milestones

- Pratt & Whitney Rocketdyne developed the RS-34 pressure fed in-space propulsion system to serve as the IV Stage on the Peacekeeper ICBM
- USAF Decommissioned the Peacekeeper Program and divided the remaining assets. The 1<sup>st</sup> 3 stages were integrated into the Minotaur IV Launch Vehicle. 44 IV Stage Motors remain in storage at Hill AFB located in Ogden, UT.
- NASA MSFC utilized RS-34 components in support of ARES I-X Roll Control System and has identified several uses for stage hardware, the most prominent of which is small satellite delivery.
- NASA MSFC is working to secure remaining assets before USAF proceeds with October 2012 demilitarization plans.

**Company:**  
NASA Marshall Space Flight Center

**Contact:**  
Elizabeth Esther

**Email:**  
Elizabeth.Esther@NASA.gov

**Phone:** 256-544-8848