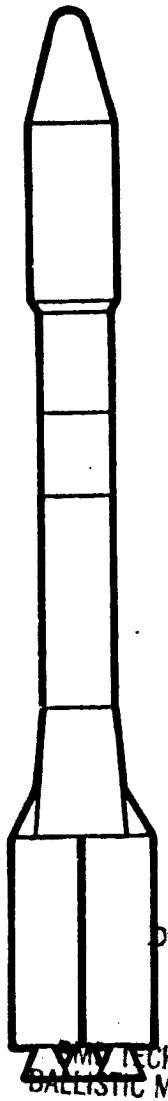
2.2.2

All Solid Motor Launch Vehicle

1 MAY 1987



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Abstract: The objective of the briefing was to provide a concept of Morton Thiokol's new launch vehicle.

Descriptors, Keywords: solid motor launch vehicle Peacekeeper rocket production modular launch configuration technology flight readiness payload cost

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All Solid Motor Launch Vehicle

G. W. Broman
Director, Peacekeeper Program

Objectives

- To provide you with an understanding of our concept for a new launch vehicle

- To illicit your response to this new concept and obtain your help in defining the solution

Product Line Plan

- Use the Stage I Peacekeeper to develop a reliable low-cost solid motor launch vehicle system
  - 1980's technology
  - Production line in-operation
- Provide family of launch configurations
  - Modular approach
  - Minimize payload-in-orbit cost
- Achieve lower cost launch vehicle system
  - Use demonstrated "off-the-shelf" technology for balance of system
- Support early flight readiness
  - 24 months to 1st flight

Perception of Need

- Backlog of satellite launches due to non availability of compatible launch systems
  - Expendable launch vehicles
  - Nonexpendable launch vehicles
- No priority available for commercial payloads
- Many payloads with no identified launch systems
- Requirement exits for reliable, lower cost launch system

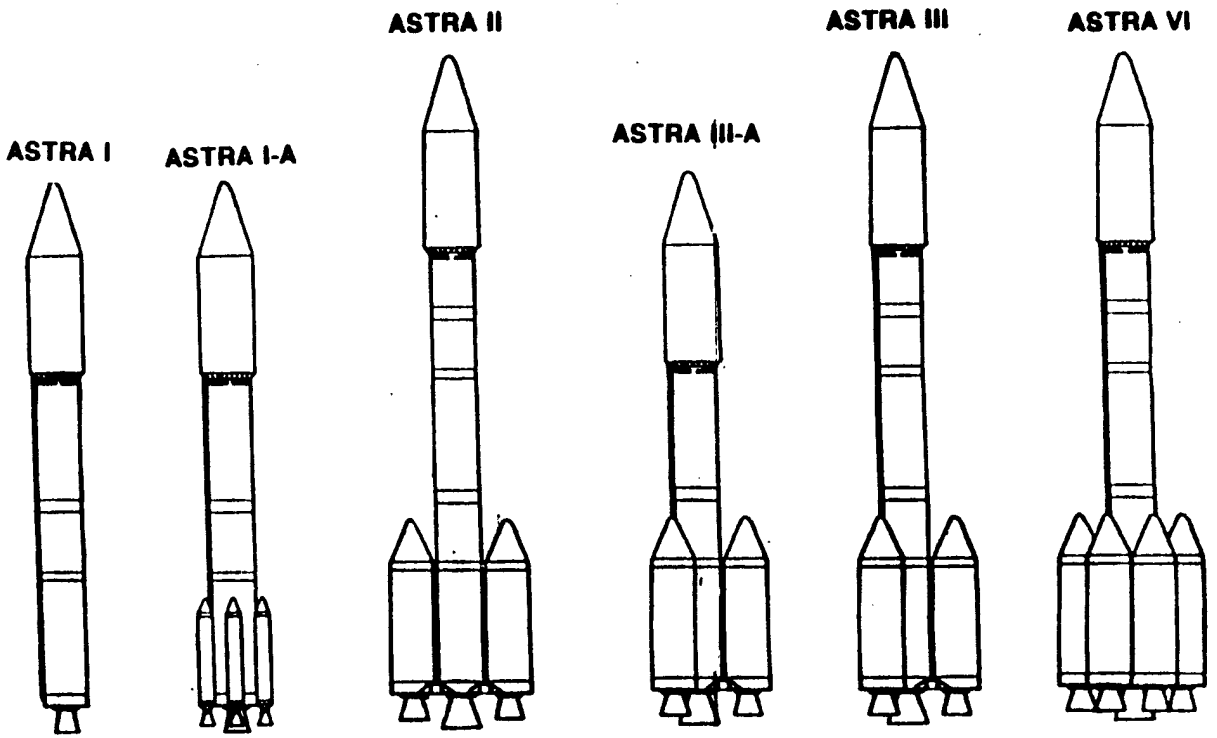
Product Line Advantages

- Majority of vehicle from "ongoing" MTI production
- Offers a family of vehicles which can provide broad range of capability at minimum user cost including
  - Launch-On Warning (LOW)
  - Launch-On Demand (LOD)
- Concept requires minimal launch permanent crew
- Can commit to firm launch dates without threat of preemption
- "Listens to needs of the users"

Design Options

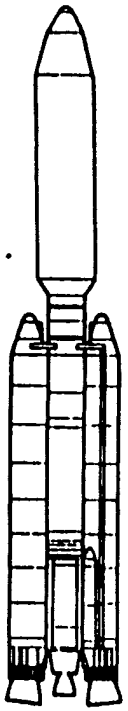
- All options based on use of Peacekeeper Stage I
- New third stage motor use
  - Star 75 or
  - Shorter Peacekeeper Stage I
- Combine motors to form "family" of launchers

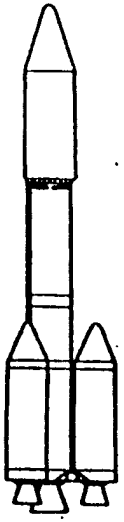
ASTRA Configurations



Stage	0	-	Castor II (5)	PK (2)	PK (3)	PK (3)	PK (6)
	I	PK	PK	PK	PK	PK	PK
	II	PK	PK	PK	PK	PK	PK
	III	Star 75	Star 75	SPK	Star 75	SPK	SPK
Payload to LEO (lb) 100 nm		3,500	4,500	13,100	11,200	15,500	22,000
Payload to GTO (lb)		1,345	1,730	5,040	4,300	5,960	8,460
Spacecraft to GEO (lb)		0	637	2,435	2,137	2,975	2/1,786 or 1/3,814

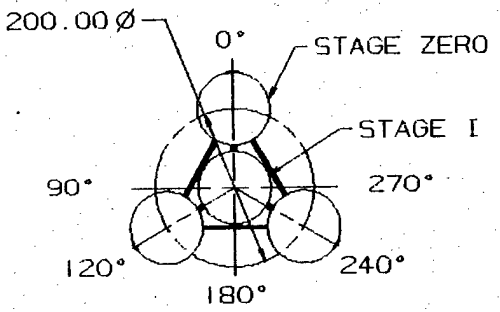
ELV Concept Comparison



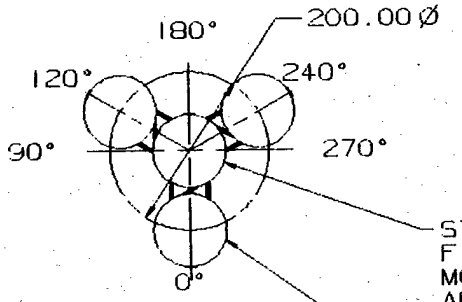


Orbit	Delta[1] McDonnell Douglas	Modified Delta[1] McDonnell Douglas	Atlas Centaur General Dynamics	Titan 34D Martin Marietta	ASTRA Morton Thiokol
LEO (100 nmi)	7,910 - 8,455	8,780 - 11,110	12,300	32,900	15,500
GEO	1,450	2,850	2,630	4,200	2,975

Vehicle Configuration



FWD LOOKING AFT



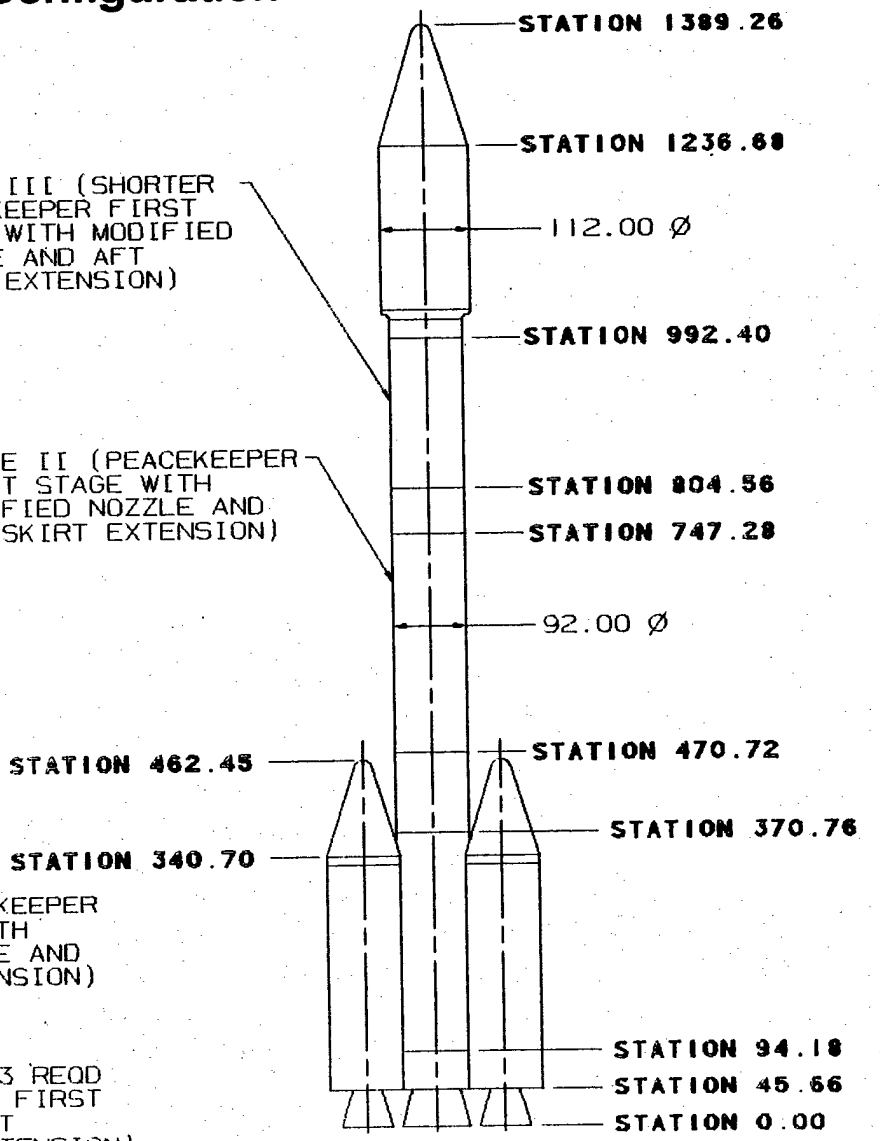
AFT LOOKING FWD

STAGE III (SHORTER PEACEKEEPER FIRST STAGE WITH MODIFIED NOZZLE AND AFT SKIRT EXTENSION)

STAGE II (PEACEKEEPER FIRST STAGE WITH MODIFIED NOZZLE AND AFT SKIRT EXTENSION)

STAGE I (PEACEKEEPER FIRST STAGE WITH MODIFIED NOZZLE AND AFT SKIRT EXTENSION)

STAGE ZERO: 3 REQD (PEACEKEEPER FIRST STAGE WITHOUT AFT SKIRT EXTENSION)



Customer Assessment

- Are you in need of such a launch vehicle?

- What do you need to better develop our joint understanding?