

Program Commitment Agreement

Super Lightweight Tank (SLWT)

It is the responsibility of each of the signing parties to notify the other in the event that a commitment cannot be met, and to initiate the timely renegotiation of the terms of this agreement.

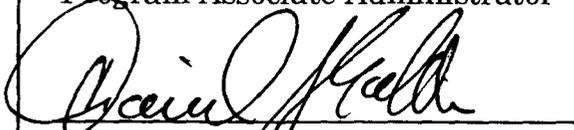
Agreements:



Program Associate Administrator

JUN 30 1994

Date


Administrator

Aug 23, 1994
Date

PROGRAM COMMITMENT AGREEMENT

SUPER LIGHTWEIGHT TANK (SLWT)

1. PROGRAM OBJECTIVES.

Additional Space Shuttle performance capability is required by 1997 to lift the Space Shuttle into the higher inclination orbit (51.6 degrees) necessary for the Space Station.

Benefits to the space program go beyond support of the Space Station. When launching with less than maximum payloads, the Space Shuttle can reach a Transatlantic Abort Landing capability sooner in the flight thus increasing crew safety. Should a performance increase not be required, weight can be added to the Orbiter to provide for improvements, such as extended orbital stay time.

The objective of this program will be to provide America's Space Shuttle with 8,000 pounds of additional performance or payload capability.

2. PROGRAM OVERVIEW.

The Super Lightweight Tank (SLWT) will achieve the 8,000 pound weight reduction by: Selective substitution of high strength, low density aluminum-lithium alloys for the current External Tank (ET) aluminum alloys; optimization of structural design weight (selected re-design of certain structural components); reduction of the as-manufactured finished product thermal protection thicknesses; and other selected weight savings options. The SLWT will physically and functionally replace the existing ET with minimum launch processing impacts and no detrimental effects to the other Shuttle system elements.

NASA has a contract with Martin Marietta Corporation for the fabrication of ET-61 through ET-120. The SLWT configuration change will be phased in for ET-96 through ET-120 and long lead for the follow-on contract commencing with ET-121.

3. TECHNICAL AND SCHEDULE COMMITMENTS.

Technical Capability:

The SLWT shall provide the Space Shuttle vehicle the ability to deliver nearly 8,000 pounds of payload over and above the current Shuttle capability. This will enable the Space Station to be assembled and

operated in a 51.6 degree orbit.

The development activities are as follows:

- A. The new aluminum lithium alloy and its design allowables will be developed and documented for the ET design range of uses, i.e. 2195 plate, extrusions, welded material, cryogenic temperatures.
- B. Manufacturing processes for the new aluminum lithium alloy, i.e. forming, welding, chemical mill, etc., must be fully developed.
- C. Duty cycle environments/loads for the SLWT must be fully developed to ensure that designs have adequate factors of safety and that hardware qualification, certification, and acceptance testing are performed at the proper levels.
- D. All design changes (including those driven by materials changes) to the flight hardware and all manufacturing process and tooling changes will be qualified and certified. Appropriate test articles required. Structural verification tests and tanking/detanking tests will be performed on the first flight article.

Key milestones:

Authority to Proceed	02/94
Project Requirements Review	06/94
Preliminary Design Review	12/94
Critical Design Review	06/95
Design Certification Review	06/97
SLWT-1 Delivery	09/97
First Flight	12/97*

* Indicates PCA controlled milestones.

4. RESOURCE COMMITMENTS.

See Figure 1.

5. PROGRAMMATIC RISK.

The SLWT, as defined and costed, can provide an 8,000 lb. weight savings

for a December 1997 launch with moderate technical risk. The SLWT imposes no additional safety decrement. The program cost and schedule have been reviewed and deemed adequate.

6. INTERNAL NASA AGREEMENTS.

The SLWT is handled completely within the Office of Space Flight.

7. EXTERNAL AGREEMENTS.

None.

8. PCA ACTIVITIES LOG.

Date	Event	Change	Addendum	Cancellation Review Req'd	PAA Signature	Administrator Signature

PROGRAM COST COMMITMENTS (PCC), \$M FOR SLWT (NOA)									
Cost Commitment Categories	FY94	FY95	FY96	FY97	FY98	FY99	BTC	EAC Totals	Responsible AA Signature
DEVELOPMENT	49.5	80.7	30.3	9.0	2.0	1.0	N/A	172.5	
OPERATIONS	10.5	27.7	25.5	32.0	30.0	36.9	N/A	162.6	
TOTAL (PCC)	60.0	108.4	55.8	41.0	32.0	37.9	N/A	335.1	

*Consistent with FY 95 president's Budget through Budget Envelope of FY 1999
 1ST Launch is Scheduled for 12/97



Figure 1