



<b>TANK TYPE</b> Simple PMD	<b>MOUNT</b> Bosses	<b>LOCATION</b> Polar	<b>PMD DEVICE</b> Sponge & Vane, note 5
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This Propellant tank is a lightweight spherical titanium bi-propellant fuel tank It contains a titanium vane-type Propellant Management Device mounted at the polar ports. The tank is supported by four (4) tapped bosses at the propellant port and by a flex plate attached to three (3) tapped bosses on the pressurant side.

**ATK Part Number 80481-1**

**SIZE: 13.33-inch ID Sphere**  
**SIZE: 338.58-MM ID**

**ISO 9001 & AS 9100 REGISTERED**

APPLICABLE DOCUMENTS	
Protoflight Test Procedure	50-000649
Bubble Point Test Procedure	50-000651
Fracture Analysis Plan	54-000226
PMD Analysis	54-000237
Design Verification	56-000221
Cleaning	CPP 3982

TANK CHARACTERISTICS			
Operating Pressure, psig	300	Total Volume, ci	1.232
Proof Pressure, psig	450	Prop Volume, ci	95% FF
Cryo Proof, psig	N/A	Minimum Wall, inch	0.018
Burst Pressure, psig, note	620	Max Design Wt, lbs	4.08
Actual Burst, psig	620	Flight Actual Wt, lbs	3.96
<b>120 sec. HOLD (see 80213-1) PMD Wt, lbs</b>			

PROTOFLIGHT ENVIRONMENTAL TESTS
Wet & Dry Sine & Random Vibration

DESIGN ANALYSIS
Stress (Wada 324)
Fracture Mechanics

QUALIFICATION TESTS
Qual was performed on 80213-1.

PROTOFLIGHT TESTS
Preliminary Inspection of Product
Pre-Proof Volumetric Capacity
Ambient Proof Pressure
Visual Inspection
Post-Proof Volumetric Capacity
Differential Pressure Test & Mass Flow Rate Test
External Leakage Test
Tank Assembly Bubble Point Test
Wet & Dry Sine & Random Vibration Test
Negative Pressure Capability
Tank Assembly Bubble Point Test
External Leakage Test
Radiographic Inspection
Dye Penetrant Inspection
Mass Measurement & Final Visual Inspection
Clean & Packaging
Data Review

**Notes:**

1. Tooling owned by ATK.
2. This tank is annealed
3. The PMD design is customer proprietary
4. Stress & Fracture mechanics Analysis 80213-5 used on ITALSAT is 239
5. Simple Vanes (Four Vanes)
6. Fracture Critical
7. Design Burst Pressure for 80213-1 adjusted for temperature of 120°F (650 psig for 70°F)

TANK CHARACTERISTICS (Metrics)			
Operating Pressure, Bar	20.68	Total Volume, l	20.2
Proof Pressure, Bar	31.03	Prop Volume, l	95% FF
Cryo Proof, Bar	N/A	Minimum Wall, MM	0.457
Design Burst, Bar	42.75	Max Design Wt, kg	1.85
Actual Burst, Bar	42.75	Flight Actual Wt, kg	1.80
<b>120 sec. HOLD (see 80213-1) PMD Wt, kg</b>			

FORGINGS		
HEMI P/N	SUPPLIER	Die No
80-213061-1 (2)		

TUBE TYPE AND SIZE		
TITANIUM		SIZE
80-481009-3, press (1)		.250 O.D. x .020 Wall
80-481009-3, outlet (2)		.250 O.D. x .020 Wall

TUBE SIZE (Metrics)		
80-481009-3, press (1)		6.350 O.D. x .508 MM Wall
80-481009-3, outlet (2)		6.350 O.D. x .508 MM Wall

VACUUM RATED
Yes

