

TANK TYPE	MOUNT	LOCATION	PMD DEVICE
PMD	SKIRT	GIRTH	VANE & SPONGE

This propellant tank is a 40.5" (1030 mm) spherical pressure vessel constructed of 6AL-4V solution treated and aged (STA) titanium. An internally mounted sponge and vane titanium propellant management device (PMD) provides gas-free liquid propellant at the tank outlet throughout the mission. Mounting is accomplished by a skirt of 24 circumferential tabs with nut plates located near the girth weld. The tank is a derivative of Northrop Grumman tank P/N 80338-1 supplied for the GOES satellites.

Part Number 80430-1

SIZE: 40.5-inch Sphere

SIZE: 1030 mm

ISO 9001 & AS 9100 REGISTERED

APPLICABLE DOCUMENTS	
Acceptance Test Procedure	50-000558
Qual Test Procedure	50-000559
Qualification Test Report	56-000184
Bubble Point Test Procedure	50-000566
Stress Analysis (Wada)	# 282
Fracture Analysis Plan	54-000180
Materials List	54-000181
Processes List	54-000182
Cleaning (1)	CPP-3901
Cleaning (2)	CPP-3546

TANK CHARACTERISTICS			
Operating Pressure, psig	330	Total Volume, in ³	34,481
Proof Pressure, psig	413	Prop Volume, in ³	34,481
Cryo Proof, psig	N/A	Prop Volume, lbs	882
Burst Pressure, psig	495	Max Design Wt, lbs	48.0
Actual Burst, psig	691	Minimum Wall, inch	0.037

ACCEPTANCE TESTS
Preliminary Inspection of Product
Mass Measurement
Pre-Proof Volumetric Capacity, Ambient Proof Pressure
Visual Inspection
Post-Proof Volumetric Capacity
External Leakage Test
Tank Assembly Bubble Point Test
Sine and Random Vibration Test, and Visual Inspection
Volumetric Capacity & Expulsion Test
Tank Assembly Bubble Point Test
External Leakage Test
Radiographic Inspection
Dye Penetrant Inspection
Cleanliness Check & Visual Inspection
Data Review

TANK CHARACTERISTICS (Metrics)			
Operating Pressure, bar	22.75	Total Volume, l	565
Proof Pressure, bar	28.47	Prop Volume, l	565
Cryo Proof, bar	N/A	Prop Volume, kg	400.0
Burst Pressure, bar	34.13	Max Design Wt, kg	21.0
Actual Burst, bar	47.64	Minimum Wall, MM	0.940

Notes:

1. Tank Assy.
2. Parts / Subassemblies
3. Fracture Critical

HEMISPHERE FORGINGS			
HEMI P/N	QTY	SUPPLIER	Die No
80-430061-1	2		

RING P/N	QTY	RING SIZE
80-338063-1	1	41.2 in OD : 39.8 in ID X 3.87 in LONG

TUBE TYPE AND SIZE (in.)	
TRANS Ti to SS	SIZE
80-411001-1	0.25 OD x 0.020 Wall
80-411001-1	0.25 OD x 0.020 Wall

TUBE SIZE (mm)	
80-411001-1	6.350 OD x 0.508 Wall
80-411001-1	6.350 OD x 0.508 Wall

QUALIFICATION TESTS
Preliminary Inspection of Product
Volumetric Capacity
Proof Pressure
Post-Proof Pressure
Pressure Cycling Tests
External Leakage
Bubble Point Test
Vibration Tests
Tank Cleanliness
Volumetric Capacity
Expulsion Tests
Shock Tests
External Leakage
Bubble Point Test
Radiographic & Penetrant Inspections
Tank Cleanliness
Burst Pressure Test
Final Inspection of Product

