

**PROTOFLIGHT ENVIRONMENTS**  
**FOR**  
**INTELSAT VIIA BIPROPELLANT TANK ASSEMBLY**  
**ATK P/N 80367-11**

80367-11 was subjected to the following protoflight tests:

<u>Test Sequence</u>	<u>Test Description</u>	<u>F</u>
1	Preliminary Inspection of Product	
2	Mass Measurement	
3	Pre-Proof Volumetric Capacity, Ambient Proof Pressure, Visual Inspection, and Post-Proof Volumetric Capacity	
4	Cryogenic Proof Pressure, Visual Inspection, and Post-Proof Volumetric Capacity	
5*	External Leakage Test	
6*	Tank Assembly Bubble Point Test	
7	Sine and Random Vibration Test and Visual Inspection	
8	Ambient Proof Pressure Test	
9	Expulsion Test	
10 **	Tank Assembly Bubble Point Test	
11 **	External Leakage Test	
12 +	Radiographic Inspection	
13 +	Dye Penetrant Inspection	
14	Cleanliness Check and Visual Inspection	
15	Data Review	

## Sine Vibration (Wet)

### Protoflight Sine Vibration Levels (Wet)

<u>Axis</u>	<u>Frequency (HZ)</u>	<u>Acceleration(G)</u> <u>(0-PEAK)</u>
Lateral	5-10.8	.24 inch SA
(X & Y)	10.8-45	2.88
	45-100	1.92
Axial	5-16.3	.24 inch SA
(Z)	16.3-20	6.5
	20-65	2.5
	65-100	1.25

The tank is filled with 3837 lbs of Freon and pressurized to 250 psig.

The vibration sweep is applied at a sweep rate of 3 octaves/minute minimum in each of the three orthogonal axes.

### Acceleration Load Limits

<u>Axis</u>	<u>Frequency (HZ)</u>	<u>Limit Acceleration(G)</u> <u>(0-PEAK)</u>
Lateral	5.0-100	2.88
(X & Y)		
Axial	5.0-20	6.5
(Z)	20-65	4.33
	65-100	2.5

## Random Vibration (Wet)

### Random Vibration Levels

<u>Frequency (HZ)</u>	<u>Levels</u>
90-100	+30dB/Octave
100-800	.043G <sup>2</sup> /HZ
800-2000	-3dB/Octave
Overall G-rms	7.8

The 7.8 G-rms random vibration spectrum may be split into two bands, if necessary, to meet vibration shaker equipment limitations.

The tank is filled with 3837 lbs of Freon and pressurized to 250 psig.

The vibration spectrum is applied in each of the three orthogonal axes for 1.5 minutes each.