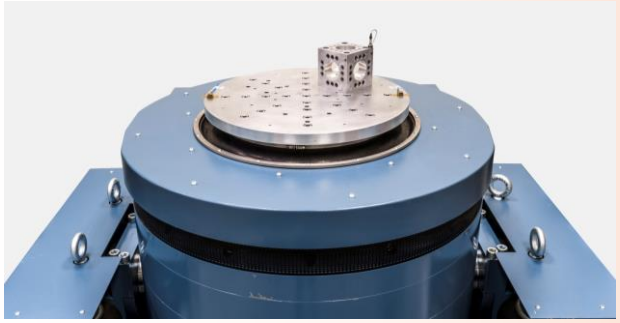
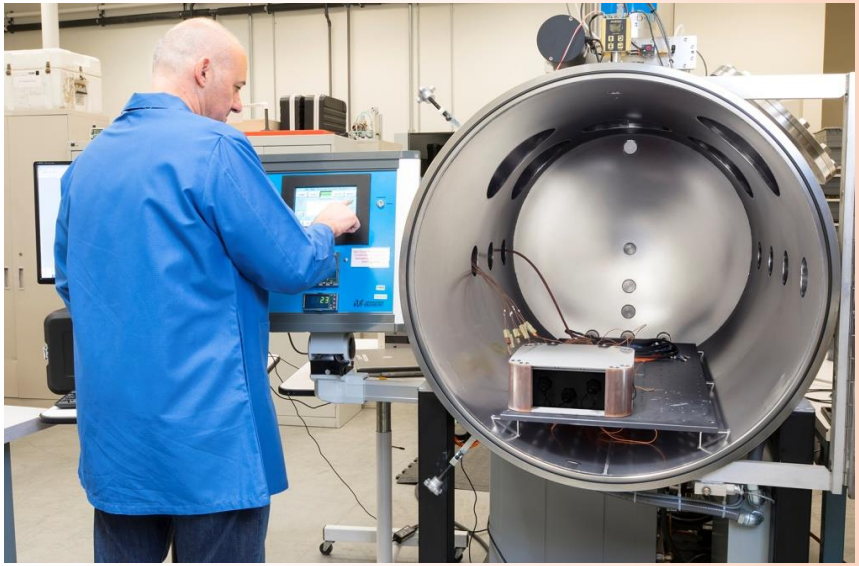
Propulsion Component Qualification and Acceptance Testing

- Southern California based, third-party test laboratory
- Independent design verification and qualification testing services to:
  - Component and system manufacturers
  - Military contractors, integrators and system providers

- Sine and random vibration
- Vibration at temperature
- SRS and classical shock
- Thermal vacuum
- Thermal cycling
- Thermal shock
- Altitude
- Humidity



- 42,000sf facility in three buildings
- Project management by experts
- Consistent on-time delivery
- End-to-end accountability



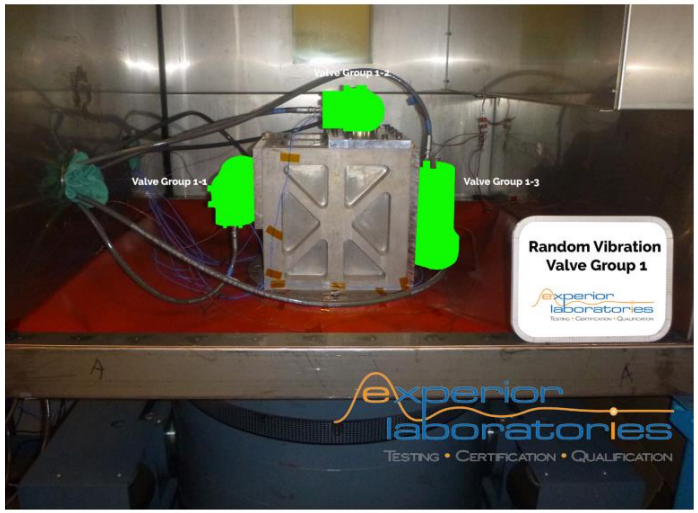
Component Qualification Program Overview

- Flight Terminations Systems Commonality Standard RCC 319-14
- FAA Title 14
- MIL-STD-461
- MIL-PRF-27401

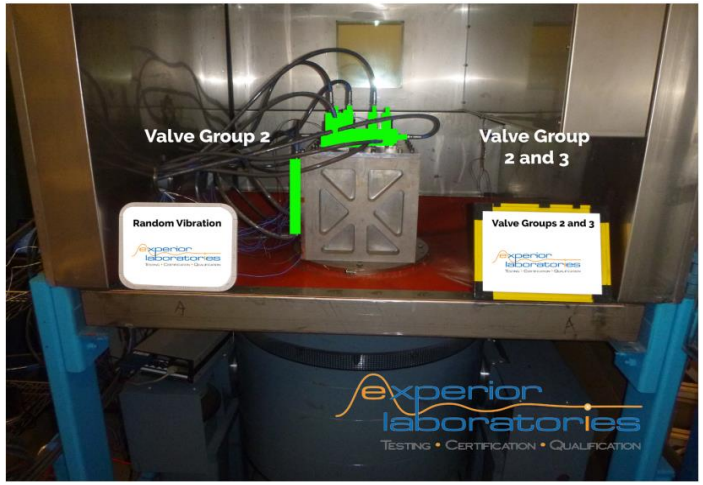
	TEST	RCC	FAA	Group 1	Group 2	Group 3
1	Bench Handling Shock	4.14.6	E417.9(e)	X	X	X
2	Transportation Shock	4.14.5	E417.9(d)	X	X	X
3	Transportation Vibration	4.14.4	E417.9(f)	X	X	X
4	**Random Vibration**	**4.15.9**	**E417.11(c)**	**X**	**X**	**X**
5	**Shock**	**4.15.11**	**E417.11(e)**	**X**	**X**	**X**
6	**Thermal Vacuum**	**4.15.3**	**E417.11(i)**		**X**	
7	Thermal Cycling	4.15.2	E417.11(h)	X		X
7	EMI/EMC	4.15.12	E417.11(j)		X	
8	**Actuation Cycle Life**	**4.20.13**	**n/a**	**X**	**X**	**X**
9	Extended Stall	4.20.10	n/a		X	

Random Vibration at Temperature

Minimum Qualification Random Vibration Profile	
Frequency (Hz)	Power Spectral Density
20	2.0 m^2/s^2 (0.021 G^2/Hz)
20-150	3 dB/Octive slope
150-600	15.4 m^2/s^2 (0.16 G^2/Hz)
600-2000	-6 dB/Octive slope
2000	1.3 m^2/s^2 (0.014 G^2/Hz)
Overall RMS Acceleration	**120 m/s^2 (12.2 G_{rms})**
Temperature	**70°C and -34°C**
Duration	1 hr/axis, 3 axis

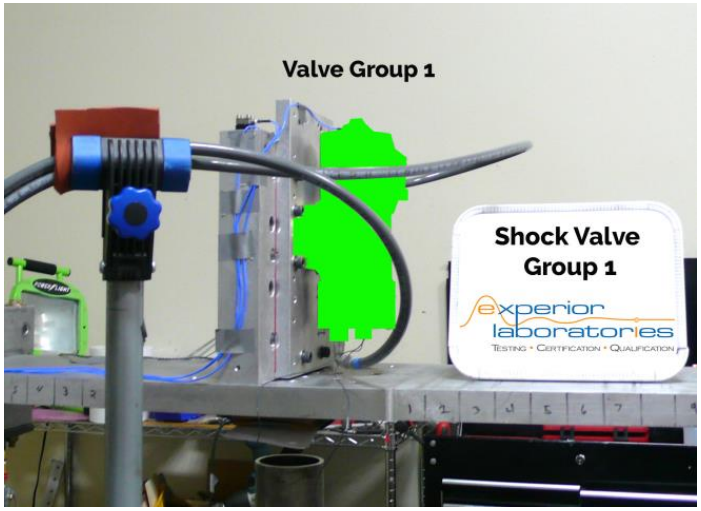


Experior Laboratories Vibration Testing Capabilities	
Max Combined Force	80,000lbf
Sine Sweep Vibration Testing	>220 G_{pk}
Random Vibration Testing	**>175 G_{rms}**
Combined Environment Testing	**-67° to 170° C**
Time History Data Recording	Up To 200kHz
Vibration Testing Data Recording	Up To 128 Channels
Cleanroom Options	Class 100,000



Shock

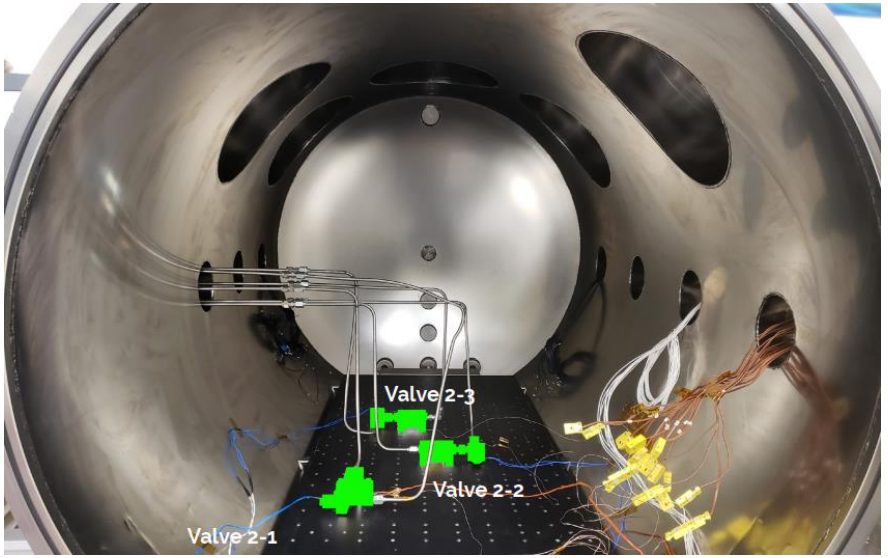
Minimum Breakup Qualification Shock Profile	
Frequency (Hz)	Peak Acceleration
100	980 m/s^2 (**100G**)
2000	12.75 km/s^2 (**1300G**)
10000	12.75 km/s^2 (**1300G**)
Number of Shocks	3 shocks/axis, 3 axis
Note: These are the corner points for the shock response profile.	
Note: Q (Resonant Amplification Factor) = 10.	



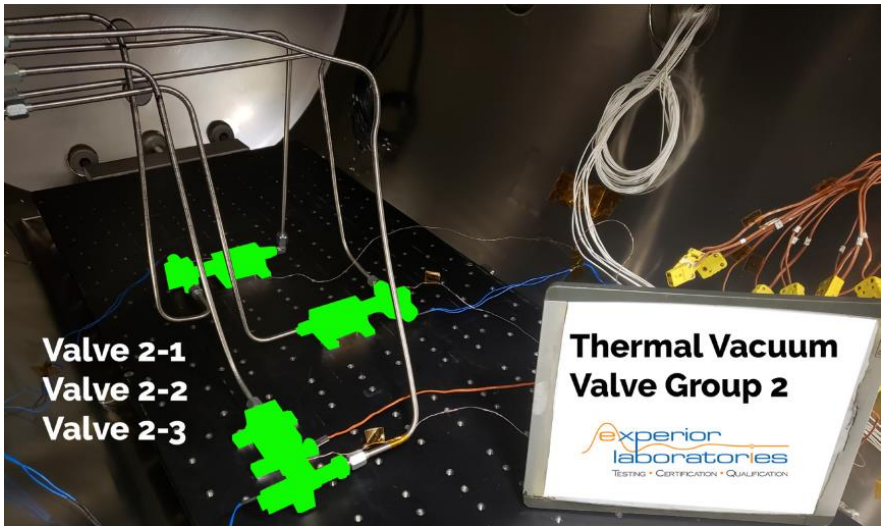
Experior Laboratories SRS Shock Testing Capabilities	
SRS Shaker Shock (100Hz – 10kHz)	**>5,000G**
SRS Pyroshock (100Hz – 10KHz)	**>30,000G**
SRS Horizontal Pyroshock	>175 G_{rms} >5,000 G on parts over 500lb
Combined Environment Testing	-67° to 170° C

Thermal Vacuum

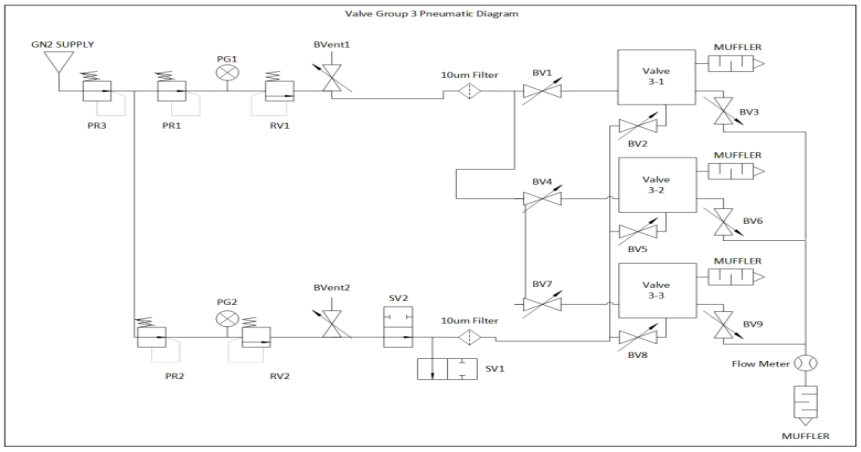
Minimum Qualification Thermal Vacuum	
Pressure	10^{-4} Torr
Cycles	3
Temperature Cycling	+60/-34°C
Performance Tests Required at the Upper and Lower MPE Temperatures	

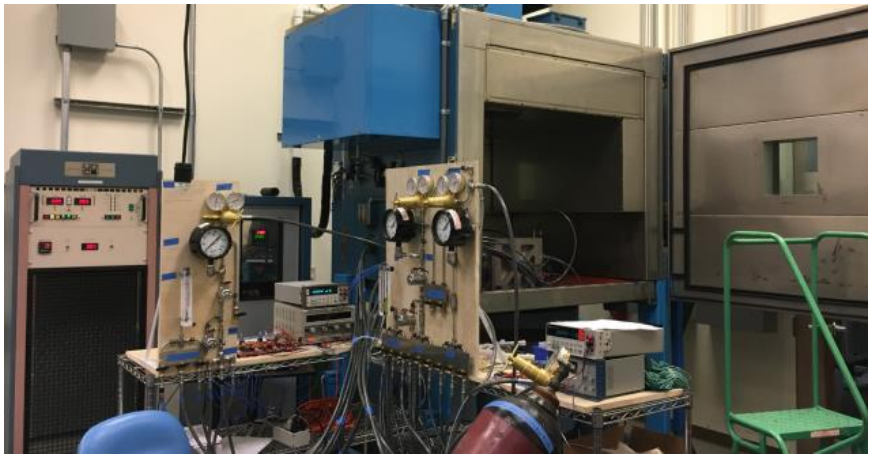


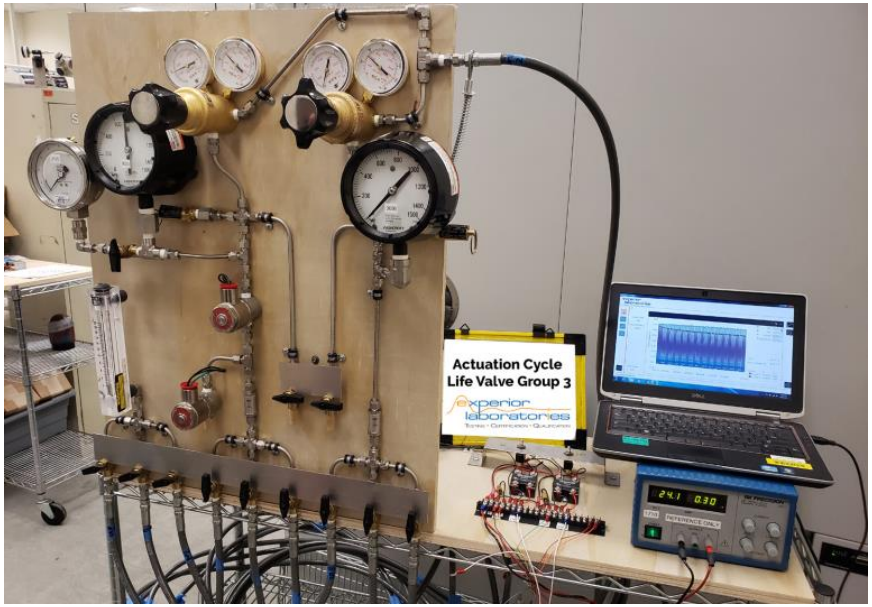
Experior Laboratories Thermal Vacuum Testing Capabilities	
Pressure	10^{-7} Torr
Temperature Cycling	+/- 150°C
Volume	36“ Inner diameter X 54" depth



Actuation Cycle Life







Thank You

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https://experiorlabs.com/propulsion-white-paper-sign-up