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Los Alamos NATIONAL LABORATORY

Engineering in 5

B61 Systems Engineering: Aircraft Compatibility

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W-1

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Problem: System Integration

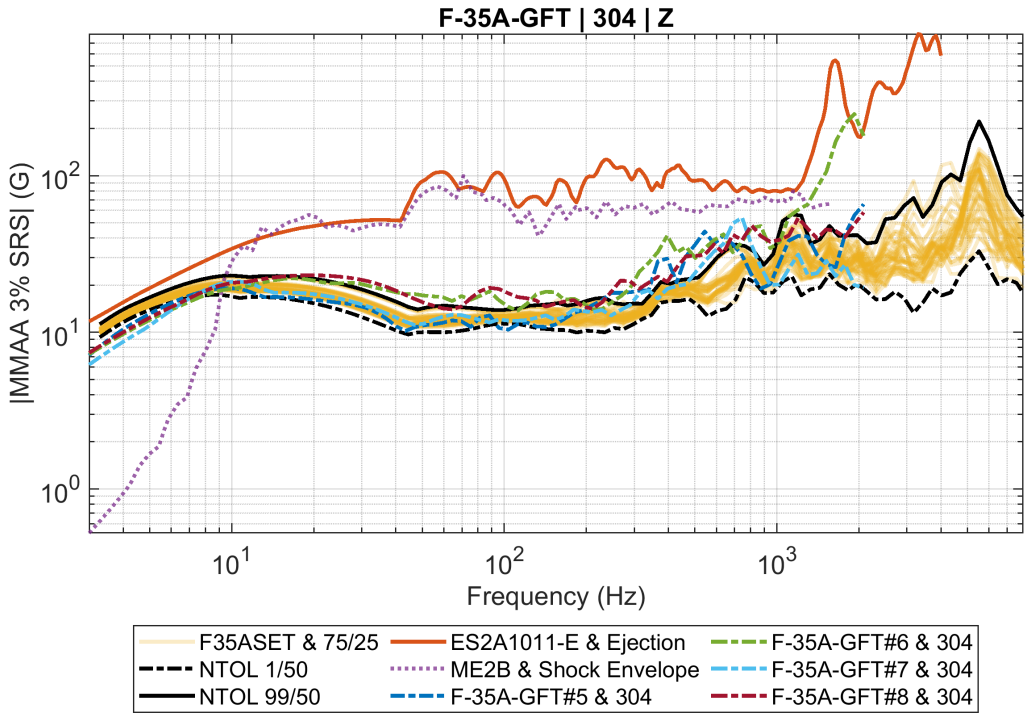
- B61 (bomb) is designed and tested to be qualified to meet requirements defined by the Department of Defense and Department of Energy.
- The weapon needs to be integrated on United States Air Force aircraft intended for deployment.
- Deployment of the weapon on aircraft encompasses carriage and release.

Approach: Systems Engineering

- Create representative assemblies.
- Collect information for the system using accelerometers and thermocouples in assemblies.
- Collect environmental data from specified testing.
- Assess with analytical methods/testing whether environments are enveloped by the bomb's technical basis.

Example:

- Flight test data
- Shock
- Random Vibration
- Maxi-max Absolute Acceleration Shock Response Spectra



LANL Impact:

- LANL establishes the compatibility of the aircraft with the LANL-owned nuclear deterrent subassemblies.
- A Certified system is one that has been evaluated and found to meet the necessary requirements.
- When platforms update from the pre-established certified configuration, the Systems Group must evaluate this change to ensure that compatibility is maintained
  - If a change impacts the compatibility of a weapon system, then that change must be investigated further.
- Current integration platforms: F-15, F-16, PA-200, F-35, B-2, B-21