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**Cylinder Tests with LX-17 and PBX 9502 as a Function of Temperature**[1] LISA M. LAUDERBACH, P. CLARK SOUERS, Lawrence Livermore National Laboratory — Recent 125°C cylinder test (CYLEX) data on PBX 9502 and LX-17 shows a larger change from ambient than can be obtained from the usual -55° to 75°C range. Also, the large thermal expansion of the explosive relative to the copper closes the air gap and reduces the error. Comparison errors of detonation energy densities can be as low as +1/3% as long as differences between samples of the same lot are considered. The measured energy density difference from ambient agrees with 1) the thermal energy of the explosive less that of the gaseous products is added or subtracted, and 2) this thermal energy difference and the original chemical energy are modified by the thermal expansion or contraction of the explosive. Also, the data at a relative volume of 2.4 and above is extrapolated back to C-J and the analysis shows that the detonation velocity is not expected to change by much, which is also seen. The C-J volume is also expected to remain almost constant. The results all depend on accurate corrections for the air gap in the test, and the most recent results, which vary with relative volume, are shown.

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