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**Improved Temperature Controller System for Gas Gun Targets** S.M. BUCHOLTZ, R.J. GEHR, Honeywell FM&T, R.R. ALCON, R.L. GUSTAVSEN, Los Alamos National Laboratory — Since demonstrating a temperature controller system capable of cooling or heating a gas gun target over the range  $-75^{\circ}\text{C}$  to  $+120^{\circ}\text{C}$ , we have completed 14 gas gun shots with the system. Thirteen of the shots were on the high explosive PBX9502, all cooled to  $-55^{\circ}\text{C}$ . On typical experiments, the sample was successfully maintained at temperature for 30 minutes to an hour while other shot preparations occurred. Occasionally, it was necessary to maintain temperature for several hours before shooting. Data from the magnetic gauge used to detect the shock wave suggest that the sample tilts while cooling. Calculations yield tilt angles around 10 milliradians. An inexpensive optical system, using the camera already present to observe the system cover plate, has been designed to look for and measure this shift. In addition, improvements have been made to the plumbing for cooling experiments, and modifications have been introduced to improve temperature uniformity and to make the system capable of heating gas gun targets up to  $+250^{\circ}\text{C}$ . This work was supported by the NNSA Enhanced Surveillance Campaign through contract DE-ACO4-01AL66850.

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