OAK RIDGE NATIONAL LABORATORY
MANAGED BY UT-BATTELLE FOR THE DEPARTMENT OF ENERGY

Letter ELC-2000.11.01

1 Bethel Valley Road, Bldg. 4515 MS-6069
Oak Ridge, TN 37831-6069
Tel. (865) 574-1749
Fax (865) 574-6098
E-mail: laracurzioe@ornl.gov
http://www.ms.ornl.gov/htmlhome/mcauc/edgar.htm

Date: November 2, 2000

To: Gus A. Aramayo
Computational Materials Sciences Group
Building: 6025, Room: 011W
Mail Stop: 6359

From: Chris O. Stevens

Subject: Mechanical Evaluation of Bumper Piston

This is a brief report of results from the compressive evaluation of the Audi bumper piston. To facilitate its evaluation, a stainless steel tube was machined as illustrated in Figure 1. The tube was supported using a plate that was fixed to the cross-head of the mechanical testing machine (Figures 2 and 3). The test was performed at a constant cross-head displacement rate of 0.005 inches/min (0.127 mm/min) and was stopped after a sudden load drop that was indicative of the failure of the component. Figure 4 shows the load versus cross-head displacement record and indicates that the peak load was 13.63 kN (3055 lb) .

Please do not hesitate to call me if you have any questions.

Figure 1. Parts before test.

Figure 2. Experimental set-up before test.

Figure 3. Experimental set-up during test.

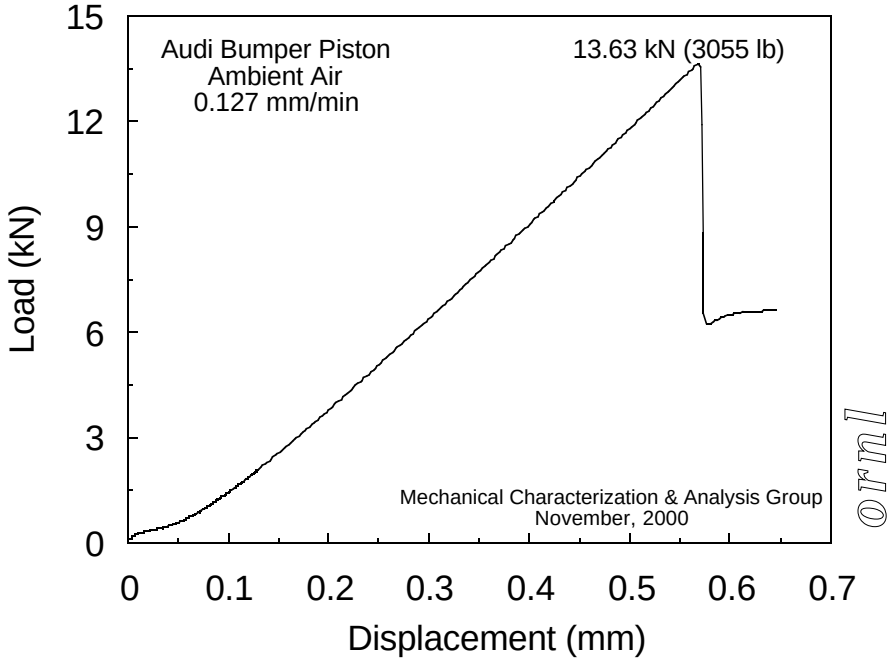

Figure 4. Record of load versus cross-head displacement.