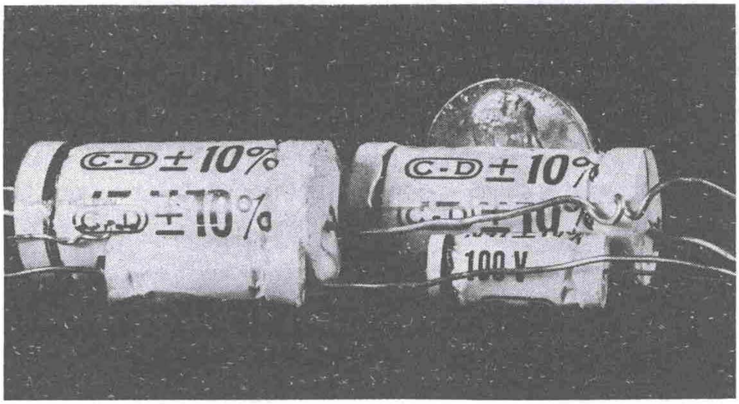

Fig. 2. Physical deformation of Mylar film capacitors due to hydrostatic pressure of 0.7 kb.

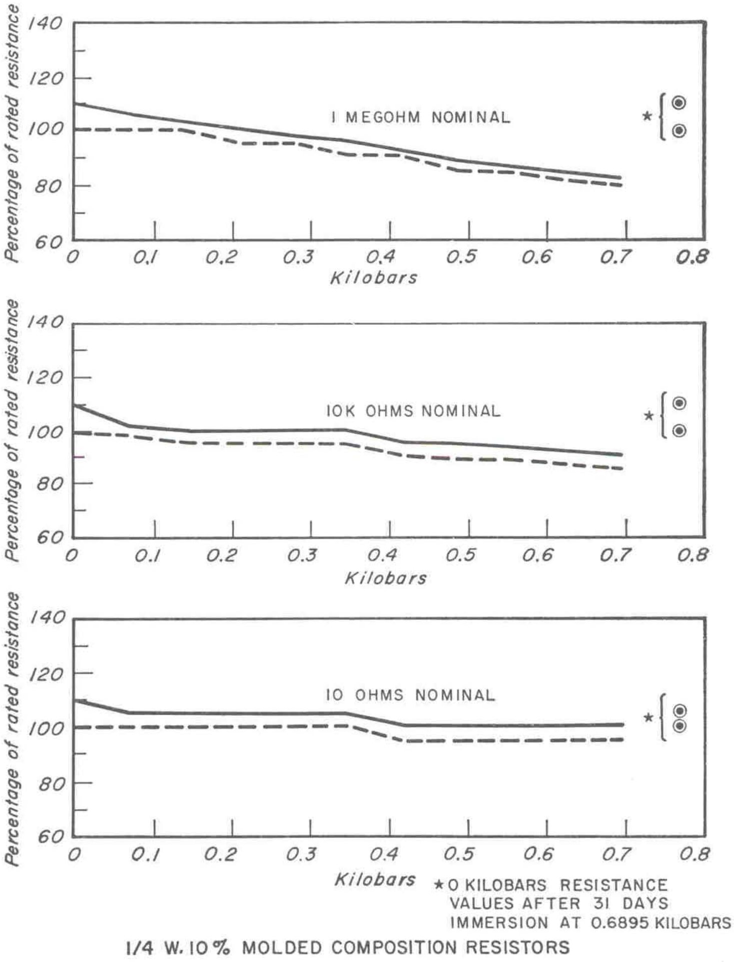

Fig. 3. Effect of hydrostatic pressure on the resistance of carbon resistors. [465]

molded composition resistors; 10-ohm, 10-kilohm, and 10-megohm units were tested.

No significant changes in capacity or leakage resistance were noted at any test pressure or following the 30-day immersion period in the case of the glass, ceramic, and tantalum capacitors.

The capacity of the Mylar film tubular capacitors increased nearly 50 per cent with increase in operating pressure (Figure 1). The asterisks in Figure 1 indicate that the capacity at the termination of the tests failed to return to the original capacitance values upon removal of pressure. The Mylar film tubular capacitors were the only components tested which sustained any permanent physical deformation. In the photograph (Figure 2) the physical collapse of the tubular shell just in from each end of the capacitors can be seen. In spite of the physical deformation and the large change in the capacity, electrical leakage resistance did not increase.

The effects of pressure on the resistance values of the six specimen carbon resistors is shown in Figure 3. The change in resistance as a function of pressure is greater in resistors of higher value, and all six resistors recovered fully to original resistance values after the high-pressure immersion. It is believed that this resistance change was responsible for the multivibrator frequency change described in test 2.

Although the data offered here represent a very small sampling, it is hoped that their publication will stimulate more thought and investigation into the feasibility of operating conventional electronic circuitry using standard, inexpensive, off-the-shelf components in an environment of high hydrostatic pressure.

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