In 1960 a high pressure electrical resistance cell was developed in this laboratory,[1] utilizing the supported taper principle previously applied to an optical apparatus.[2] The calibration of the electrical cell was tenuous as it was based on some not accurately located phase transitions at low and moderate pressure plus a gross extrapolation of Bridgman's electrical resistance data for platinum.[3] Since that time a number of transitions have been located more accurately and x-ray diffraction techniques utilizing the tapered piston cell[4] have become available. A new calibration is presented here, based largely on x-ray diffraction work. This piston diameter and internal geometry of the x-ray cell can be made identical to the electrical cell, but the x-ray cell contains a layer of lithium hydride and boron, as well as platinum collimation, in addition to pyrophyllite, while the electrical cell contains only pyrophyllite, nevertheless, this calibration represents a considerable advance over the previous one. Much of the calibration data were taken with Al or Ag powder using the shock data of Rice <u>et al</u>.[5] interpolated to room temperature.[6] The 111, 200, 220, and 311 lines were utilized. Above 250-300 kilobars the dishing of the pistons made it impossible to obtain the 200 and 311 lines clearly. Above 400 kilobars only a few points were obtained for the 111 line. Data were also obtained for NaCl to over 200 kilobars. Applying Decker's calculated p-v values for NaCl,[7] we checked the Al and Ag data closely. MgO[8] also gave consistent results to 300 kilobars. The calibration is established as follows: The pressure is a linear function of applied force to 100 kilobars (and