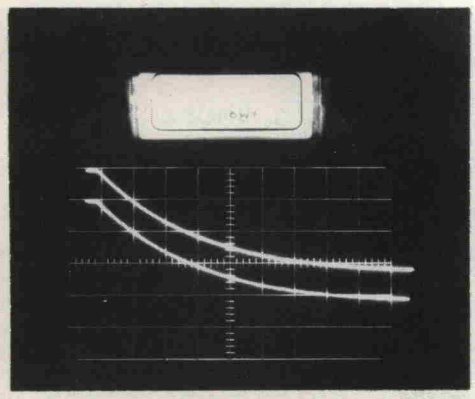
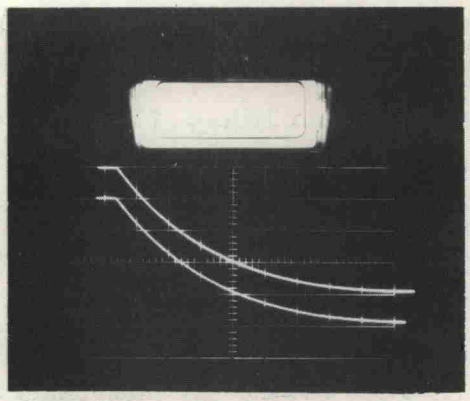
not casehardened, complete severage of the knock-off tube was not generally obtained. From these tests and, of course, the tests where pressure was not required, no data pertaining to the pressure-release time were acquired. In those tests where the test numbers are followed by the letters A or B, the sole objective was to determine the time constant. The test numbering system evolved from the manner in which the knock-off tubes were identified. Some of the numbered tubes were used in order to check instrumentation, experimental techniques and procedures, and replicability of the experimental results, while others were retained for future testing.

Typical pressure-time oscilloscope traces, obtained under various test conditions, for 0.062-inch, 0.125-inch, and 0.187-inch inside diameter knock-off tubes are shown in Figures 15, 16, and 17, respectively. Type 146-L Polaroid Land Film, used to record the voltage-time traces displayed on the oscilloscope, produced a positive transparency that was easily read and analyzed on a high-magnification Telereadex 29A film reader. The pressure-time traces were obtained by combining data from the voltage-time traces with the gain of the system and the pressure obtained from the pressure recording gage. That is, each voltage-time trace was converted directly to a pressure-time trace by multiplying the voltage by a constant factor.

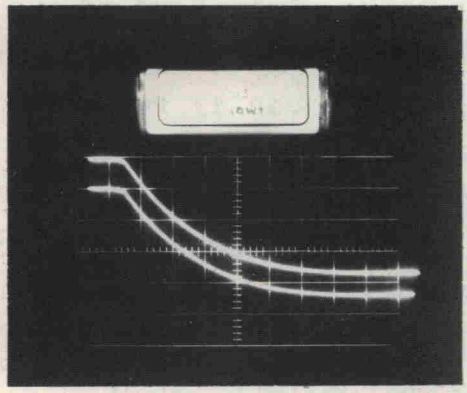
The effects of pressure and notch-wall thickness on the failure of 3/8-inch O.D. (1/8-inch I.D.) tubes, having zero, 0.005-inch, and 0.010-inch casehardened depths and subjected to static and dynamic loads, are illustrated in Figures 18, 19, and 20, respectively. As previously explained, the loads were applied to the end of the knock-off tubes. Since the notch was located 2 inches from the end of the tube, the effective moment arm between the notch and the line-of-action of the load was the same in all tests. The effects of pressure and



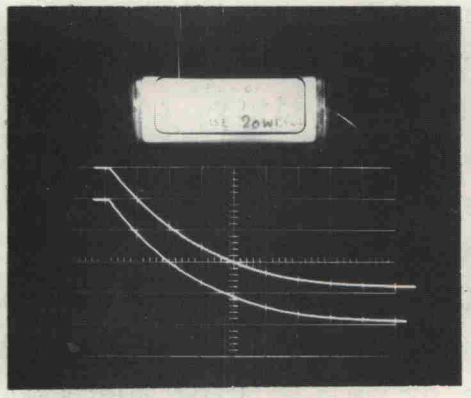
TEST NO. 1-A SAE 10 OIL
PEAK PRESSURE = 46,800 PSI
SWEEP RATE = 5 MSEC/CM



TEST NO. 4-A SAE 10 OIL
PEAK PRESSURE = 30,100 PSI
SWEEP RATE = 5 MSEC/CM



TEST NO. 7-A SAE 10 OIL
PEAK PRESSURE = 14,900 PSI
SWEEP RATE = 5 MSEC/CM



TEST NO. 4-B SAE 20 OIL
PEAK PRESSURE = 30,100 PSI
SWEEP RATE = 5 MSEC/CM

SPACING OF GRID-WORK ON OSCILLOSCOPE SCREEN IS 1 CM^2

FIG. 15 PRESSURE-TIME OSCILLOSCOPE TRACES FOR $1/16$" I.D. TUBES