APPENDIX A-11

TNT-IRON OXIDE

INSENSITIVE POWDER TEST

(See § 39.6, subd. [h].)

Ingredients

TNT—refined TNT. Melting point not less than 80 degrees Centigrade. Iron oxide. Red iron oxide containing 95 per cent to 98 per cent FE_2O_3 with a yellowish tone on reduction. Moisture content less than 0.1 per cent.

Preparing Insensitive Powder

Before mixing, the ingredients are sieved through a 30 mesh screen to remove lumps and coarse particles. For mixing, the desired proportion of each ingredient is weighed and they are sieved together through a 30 mesh screen 10 times. Sufficient mixture of a given ratio of TNT and iron oxide should be prepared in one batch to test all the caps which are to be fired in that mixture. The mixed powder is tamped uniformly by hand into one and one-quarter inch by four inch paraffin-sprayed shells to a density such that the finished cartridges weigh approximately 70 grams each.

Testing Procedure

In carrying out the test, a cap is inserted in the hand-crimped end of the cartridge as in priming a stick of dynamite. Blasting caps are inserted so that the top of the shell is even with the end of the cartridge, while electric blasting caps are embedded in the powder up to the bead. The assembly of cartridge and cap is fired in a vertical position. If the insensitive powder completely detonates, there is no residue; but if it fails, a stub or butt crimp of the cartridge remains after the shot.

Interpretation of Results

Iron oxide desensitizes TNT, and the greater the proportion of iron oxide in that mixture, the less sensitive that mixture becomes, and the stronger the cap must be in order to detonate the mixture. A comparison of the strength of caps is therefore possible by determining the percentage of detonations and failures with a given insensitive mixture or by comparing the caps with several insensitive mixtures of varying degree of sensitiveness.