

## LARGE DIAMETER HIGH PERFORMANCES BLAST SIMULATOR

CROSNIER,J.R.;MONZAC,J.B.G.

On the purpose of tactical military material blast-hardening, a large diameter simulator is currently under construction at Gramat proving ground. This simulator features, in its useful blast tunnel, the following dimensions:

- Maximum inside width: 12 m
- Maximum inside height; 7.1 m

The cross section of this tunnel is approximately half circular, with a plane floor and two 1 meter high vertical walls underneath the arch. It is made of prestressed reinforced concrete. This tunnel is only 105 m long, nevertheless, it will yield high blast-simulation performances, such as:

- Simulated Yields: adjustable from 10 to 100 kT at optimum altitude of burst (60 W 1/3m)
- Maximum peak static overpressure: 3 bars
- Flow duration: adjustable from 0.5 to 1.3 second, according to the characteristics of the required simulated explosion.

As described in a paper presented at the 4th MABS (paper B3) these high performances are got through the use of:

- Progressive modulated gas generators, working with compressed air, either cold or pre heated by hydrogen volume combustion (in the stronger overpressure range).
- And the so-called "Active reflection eliminator". This one is placed at the downstream end of the tunnel.

It is provided with 124 rotating steel flaps supported by a welded steel frame. These flaps are positioned at the suitable angle prior to the shot; they rotate during the flow duration and become closed near the end of the positive phase. Such a device has been used very successfully for two years on a 2.4m diameter short blast simulator built at the Gramat proving ground. It is planned that the calibration trials of the facility will begin by the end of the year 1977. It should be open to military testing near the middle of 1978.