

Lecture W17
**Detonation of PETN during
Destruction of Waste**

C Conradie

Waste PETN Detonation

AEL Modderfontein 2000



Background

- The Detonators burning Ground was used for the daily destruction of waste from Dets-Priming, Connector Plant, Shock-Tube and Electric Detonators.
- Approximately 1kg PETN waste is generated daily in the detonator Press Houses.
- The waste was destroyed on a daily basis by placing it in a steel pan with sawdust and paraffin.
- This process has been in operation for 40 years without incident.



What happened ?

- At approximately 10H10 on Saturday the 15 January 2000 an explosion occurred in PETN destruction pan on the Detonators Burning Ground.
- Due to overcast conditions the explosion was heard 3 - 4 km from Modderfontein
- Pieces of the PETN destruction pan were recovered over 400m from the site of detonation.
- A crater of 3,5m wide and 0,6m deep was formed.
- No injuries, but extensive damage was caused to surrounding buildings.
- Approximately 50kg of PETN detonated.



What happened ?



What happened ?



Why did it happen ?

- No PETN waste was sent to the Burning Grounds for a couple of days before the explosion. PETN waste therefore accumulated in a magazine.
- No scale was available for the operator to weigh the waste and he claims only 1kg was placed in the steel pan.
- The Operator that prepared the PETN waste for destruction and the rest of the Burning Ground was doing this without the knowledge of his Supervisor.
- He exceeded his authority by igniting the waste which he was not trained to do.
- Improper control of waste magazine
- The burning of such large quantity (>50 kg) of PETN resulted in a burn to detonation.



What did we learn ?

- Control over Burning Ground personnel and their access to these facilities needs to be improved.
- The accumulation of explosives waste must be prevented. Regular audits of waste storage facilities needs to be carried out.
- Regular audits by management to ensure that personnel are not allowed to perform tasks that they are not authorised to do.
- The preferred destruction method for PETN is to mix the PETN with sawdust and to burn it directly on the ground.
- Centralize the responsibility of destroying explosive waste.

