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## Evolution of explosion techniques used by Maoists: A case study from Chhattisgarh state, India

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### Abstract

This case study is premised around the scene of land mine explosion triggered by the Maoists in the Narayanpur, Chhattisgarh state on 24.03.2021 in which 05 Police personnel were killed and 13 were critically injured. The explosion site was inspected by the team of Forensic Scientists from Regional Forensic Science Laboratory, Jagdalpur, Chhattisgarh. The Forensic team carried out a thorough inspection and instructed the Investigation officer to collect the physical evidence and directed him to send these samples to Regional Forensic Science Laboratory, Jagdalpur, Chhattisgarh for chemical analysis. The Physical evidence related to this case were examined by standard methods. This study highlights the rapid improvisation in the blasting techniques by Maoists and importance of training of concerned security personnel for precise sample collection and identification of explosive materials.

**Keywords:** Improvised explosive devices (IED), ammonium nitrate, black gun powder, landmines, maoists

### Introduction

The Left-wing extremism, known as Naxalism, or Maoism has been holding its ground since the late 60s. Even after 60 years of constant efforts the movement could not be entirely eradicated. The movement of Maoist can be enumerated in one of the greatest inner security dangers to the country. In the past few years, the government has been proactive in coping with the Maoist violence which resulted right in a widespread decline in Maoist violence since 2014. The dominated area of Naxalism has extensively contracted from 90 districts to 34 districts in 5 years<sup>[3]</sup>. The Maoists extensively used home-made improvised explosive devices (IEDs) and incendiary devices like land mine, hand grenades, grenade launcher, Molotov cocktail and petrol bombs in ambush incidents in the country including Bastar, Chhattisgarh state. The materials used to make these IEDs are metal pipes, milk cans, tiffin boxes, pressure cookers, household utensils, plastic buckets, drums, mud pots, electrical wires, switches and batteries which are easily available in the local market, easily concealed and effectively mislead the police personals, security forces and the public. The aim of this paper is to highlight the new arena of explosion through this case triggered by the Maoist and the type of explosive used by them.

Upon the information about the meeting of the villagers with Maoists dated 21.03.2021 around the village Gobel and Mugdi, a joint team of security forces from Narayanpur, Chhattisgarh had launched an anti-Naxal operation on that area on the same day. A group of 27 Police personnel belonging to the DRG unit of the district headquarter proceeded in a bus No. C.G. 03-5861. The Maoist triggered the land mine with the intention of harming the Police personnel and looting their weapons at the village Bukintore between the Kadenar Police camp and Kanhargaon. As a result, the bus full of police personnel jumped above the road collided with the High-tension electric wire passing by the side of the culvert and fell into the deep drain. In this incident 05 Policemen were killed and 13 were seriously injured.

### Sample collection

The Forensic scientific team comprising of one Joint Director of Regional Forensic Science Laboratory (RFSL), Jagdalpur, District- Bastar and one scientific officer of Scene of Crime Unit, District- Kanker, State- Chhattisgarh reached the scene of explosion on dated 24.03.2021.

The Forensic team carefully inspected the whole scene of explosion and directed the Investigation officer to the collection of available clue materials such as post blast explosives residues like soil sample from the crater, which is formed due to explosion, control soil sample and the broken pieces of bus, which was damaged due to explosion. The Forensic Scientists advised the Investigation officer to send all the physical evidence collected by him in the presence of Forensic team to RFSL, Jagdalpur for the chemical examination of post-blast explosive residues.

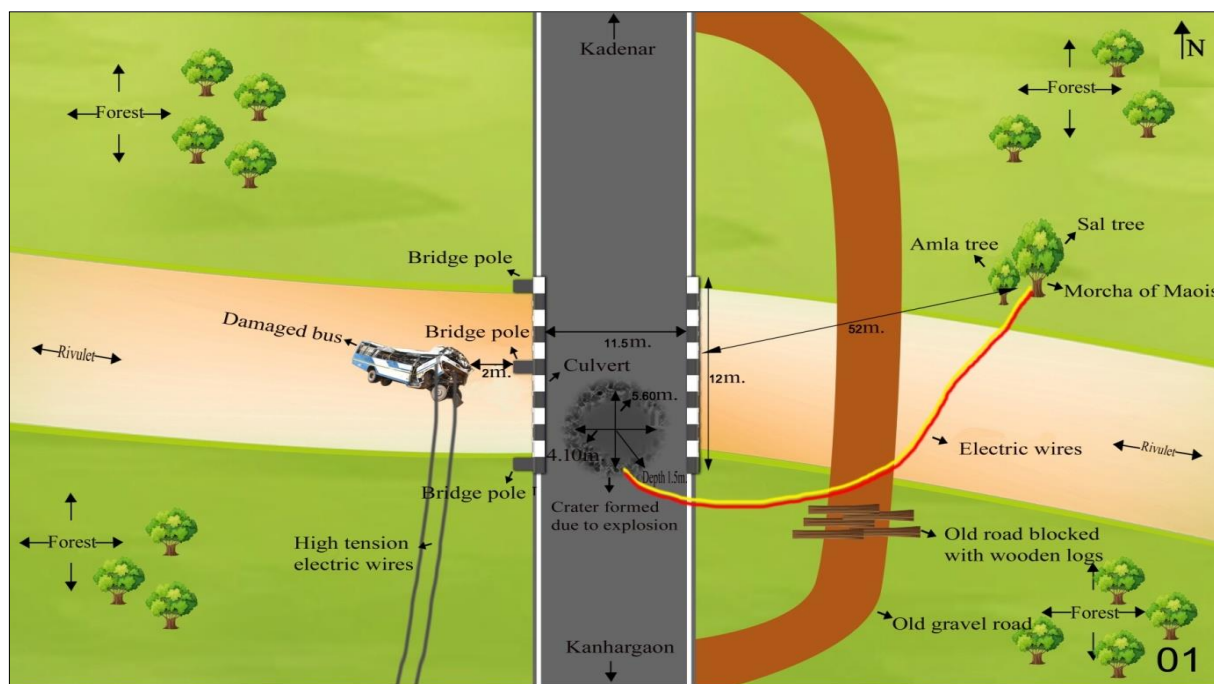
### Materials and Methods

In the Chemistry division of RFSL, Jagdalpur all the post-blast samples related to this case were systematically

examined for confirmation of the presence of explosive residues. For extraction of explosive constituents, the samples were sequentially treated with acetone, water, alkali and lastly with pyridine. Both water and alkali extracts were first concentrated and then various chemical tests were performed on those extracts for the detection of inorganic explosive constituents. The pyridine extracts of the samples were used for the analysis of elemental sulphur. The acetone extracts of the samples were utilized for the analysis of organic constituents of explosive by using specific chemical test and Thin Layer Chromatography (TLC) analysis.

### Results and Discussions

#### Inspection of the Scene of Explosion



**Fig 1:** Schematic representation of Explosion site

Firstly, the Forensic team reached the crime scene at culvert which is situated between the Kadenar Police camp and Kanhargaon in Narayanpur, Chhattisgarh State along with Investigation officer and other police personnels on 24.03.2021 at 13.30 hrs and carefully examined the whole scene of crime for the presence of physical evidences like blood stains, explosive substance, explosive devices, post-blast explosives residues, electrical wire, power sources like battery and camera flash gun.

As shown in Figure 1, the length and width of this culvert were found to be 12 meter and 11.50 meter, respectively. A crater was found on the road located on the south side of this culvert. The size of the crater was found to be 5.60 meter from north to south, 4.10 meter from east to west and the maximum depth was found to be 1.50 meter. This crater was found at 4.10 meters from the east side of the culvert. At 25 meters from this Culvert, old gravel road was found in the culvert towards the west. In front of the first big pillar of the culvert, wood from the trees cut down was found on gravel road. Thus, the Maoists seem to have blocked the old gravel road by cutting trees and putting them on this road (Photograph 1).



**Fig 2:** Blocked old road with wooden logs.

The dead body of Constable No. 1193 Shri Sewak Salam was found at 8.50 meters towards the west direction from the first big pillar located in the south direction of the bridge and the dead body of the driver Constable No. 661 Shri Dewkaran Dehari was found at a distance of 13.60 meter between the plants in the ground. A small crater was found under the Amla tree next to a big Sal tree in a small hill on the west side of the road, having diameter of 40 cm and maximum depth of 20 cm. In this crater, a bundle of electric wire was found and at one end male plug was attached to it. The stem of this Amla tree on the morcha of Maoist divided into two branches in 'V' shape at a height of 80 cm from the

ground and when viewed from the middle of two branches the location of the crater found in the culvert is clearly visible. This Amla tree was found at 52 m from the big pillar in the middle of the culvert. The damaged bus was found at 02 meters from the middle pillar in the east side of the culvert, the front side of bus was in east direction and the back side was in west direction (Photograph 2).



**Fig 3:** Damaged bus of security forces

All the tyres of this bus were found in intact condition. The front part of the bus was bent from the middle and the plastic cover was not found in front of the engine. Plastic pieces of the bus were found scattered on the ground in front of the bus (Photograph 3) and broken electrical high-tension wire was found over the bus.



**Fig 4:** Scattered parts of damaged bus

Many blue coloured KORES brand Sapphire model pencil carbon papers were found scattered on this explosion scene including the crater. Electric wires wrapped with the same blue coloured carbon papers were also found on the site. It is assumed that these pencil carbon papers were used to conceal the electrical wires, explosives container and devices. Chandra *et al.* in 2013 [2] observed that the electrical wires which were found on the explosion crater, were concealed 4 to 6 cm beneath the earth surface. While the current study shows that the morcha of Maoist are using blue coloured carbon paper for better concealing of electrical wires.

#### Examination of the Post-blast samples

The investigation officer collected 05 kg soil sample from the crater, which was formed due to explosion, 500 gm control soil from the road away from the crater and the few pieces of bus, which was badly damaged due to explosion. The physical evidence collected from scene of crime were sent to the RFSL, Jagdalpur through proper channel for the chemical analysis to identify the explosives constituents. All these post blast samples were systematically examined in the Chemistry division of the RFSL, Jagdalpur by the

Scientific officer for the presence of Inorganic explosives including pyrotechnic composition and organic explosives. Sharma and Gupta (1990) [8] reported that in 1982 terrorists of Punjab state, India used Chlorate mixture in home-made bombs and by the end of 1983 the same authors stated the terrorists used Picric acid, Aluminium powder, and Ammonium nitrate mixture as explosive charge. These authors further stated that from 1986 onwards the terrorists of Punjab used high explosives like Dynamite, Tetryl and Nitro Glycerine in their IEDs and from 1987 onwards they started using RDX, PETN, Semtex, C3 and C4 in land mines, rockets and in mortars. Jain (2006) stated that the terrorists of Jammu and Kashmir, India were used Acetone Peroxide (A.P.), Ammonium Nitrate Fuel Oil (ANFO), Methyl Ethyl Ketone Peroxide (MEKP), Nitro Glycerine (NG) and Nitro Cellulose (NC) in their IEDs. Chandra and Suri Babu (2013) [2] reported that Maoists used Ammonium Nitrate Fuel Oil and Gun powder as main charge in the ambush incident in Darbha, District- Bastar (C.G.). Kumar. *et al.* (2016) [5] reported that Gun powder was found in explosion incident in the fortress of village Jasaana, Rajasthan State, India. Bajaj *et al.* (2016) [1] reported the presence of high explosive TNT in the residues of the blast occurred in a Village near Chandigarh, India. In our present study, the laboratory test results confirmed the presence of traces of Ammonium Nitrate and Black gun powder from the soil sample of crater and from the damaged pieces of bus.

#### Conclusions

Maoists, over the years, have executed series of attacks utilising land mine and improvised explosive devices (IEDs) in multiple regions of the country. Previous reports have confirmed that these terror groups have been using different main charge materials for their IEDs which is characteristic of their respective regions. In the southern part of Chhattisgarh state, these terror groups have been using Ammonium nitrate and black gunpowder as main charge for years which can be confirmed through the current study. Additionally, this study reports the use of blue coloured carbon paper for concealing electrical wires which is assumed to have obstructed its detection by Deep Search Metal Detector (DSMD). Through this study the authors are trying to shed light on the necessity of the elementary training to the police and security personnel for identification of basic explosive materials. So, that they can conduct regular search operations in the Maoists dominated areas for explosive dumps. Also, the potential use of blue coloured carbon papers to conceal the electrical wires, explosives materials and devices should be further investigated in near future.

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#### Authors contribution

BSB inspected the crime scene and supervised the drafting of this case study. SD examined the crime case samples and

drafting of this case study and overall supervision was done by RM.

#### **Disclosure statement**

No potential conflict of interest was reported by the authors.

#### **References**

1. Bajaj A, John C, Singh M. Explosive Post Blast Analysis: A Case Study. *Eur J Forensic Sci.* 2016;3(2):50-54.
2. Chandra TL, Suri Babu B. A Case Study of the Post Blast Ambush Scene Triggered by Maoist-Naxalites. *State Forensic Science Conference Souvenir; c2013.* p. 39-42.
3. Gupta A. Left Wing Extremism: The Way Ahead VIF Task Force report, Vivekananda International Foundation, New Delhi; c2020.
4. Jain A. IED Blast: Trend analysis and recommendation for setup of post blast investigation teams. *The Indian Police Journal, L III.* 2006;(4):71-76.
5. Kumar S, Jain P, Sharma M. Importance of Forensic Investigation in Explosion: A Case Study. *Journal of Forensic research.* 2016;7(5):4.
6. Working Procedure Manual: Explosive by Directorate of Forensic Science Services, Ministry of Home Affairs, Govt. Of India, New Delhi; c2021.
7. Yinon J, Zitrin S. *Modern Methods and Applications in Analysis of Explosives.* John Wiley and Sons, London, UK; c1993.
8. Sharma YC, Gupta GS, Prasad G, Rupainwar DC. Use of wollastonite in the removal of Ni (II) from aqueous solutions. *Water, Air, and Soil Pollution.* 1990 Jan;49:69-79.