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Threats of Nuclear Terrorism in India: A Case Study of Naxalites

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Abstract

The threat of nuclear terrorism is as old as the existence of nuclear weapons on the face of the earth. Nonetheless, this earned popularity in the 1980s when the international community was aware of the attempts made by terrorist organizations to acquire this lethal technology for destructive purposes. As of today, not a single act of nuclear terrorism has been marked. But the motivation and attempts to acquire one of the radioactive materials are on the board. Out of all these efforts made by terrorists or individuals, there is a significant portion of illicit activities which happened in India. Being one of the largest states in the region, India seems more vulnerable to the threats of nuclear terrorism as compared to any other nuclear-weapon state. It is because of the threats and challenges posed by the separatists or terrorist organizations prevalent in India. The presence of Nuclear facilities in areas inhibiting separatists and terrorist movements is not only alarming for India but the whole world. In this context, this research would look into the threats of nuclear terrorism posed by the Naxalites in India.

Key Words: Nuclear Terrorism, Naxalites, India, South Asia, Security

Introduction

In this contemporary world, the concept of terrorism is changing, now terrorism moves towards mass casualty terrorism, in which most terrorist organizations are seeking and have the capabilities to inflict maximum carnage on adversaries to achieve their goals. The world is facing a threat of nuclear terrorism which remains very real. To reduce this risk it is essential to take measures for the protection of nuclear weapons and materials to avoid chemical, biological, nuclear, and radiological (CBRN) terrorism. One may assume that with the rise of new terrorist organizations and non-state actors the risk of nuclear terrorism is higher than it was in past. To make a crude nuclear bomb or improvised nuclear device (IND) would not be easy for common terrorist groups but technically sophisticated terrorist groups have capabilities and intend to use

crude nuclear devices as weapons of mass disruption (WMD). The main hurdle for a terrorist is getting nuclear material and there are multiple incidents in which a small quantity of highly enriched uranium (HEU), crude uranium, and plutonium have been stolen and misplaced. It is very difficult to detect nuclear smuggling at a very small level, but if this small nuclear material is used by terrorists it would have severe consequences.

Concept and Types of Nuclear Terrorism:

Nuclear Terrorism refers to the actual use or threat of nuclear device (or improvised nuclear device - IND or radiological dispersal device - RDD) detonation by terrorist organizations to cause massive carnage to achieve their goals.

There are three types of nuclear and radiological terrorism

1. To detonate an actual nuclear device, either developed by a terrorist organization or to acquire a nuclear device from Nuclear Weapon State (NWS) arsenal, or to buy stolen nuclear material from the black market and then convert it into an improvised nuclear device (IND)
2. Sabotage of a military nuclear facility or nuclear-powered military platforms (like SSBNs), with aim of causing the large release of radioactivity
3. To develop a radiological dispersal device (RDD) or dirty bomb to spread radioactivity and radioactive material in the environment to cause panic and disruption.

The use of the actual nuclear device is highly impossible, but terrorists may attack nuclear facilities, or constructing RDD is more likely. (Bunn, 2016) According to the Incident and Trafficking Database (ITDB) 2017 report, 189 incidents of unauthorized nuclear activities were reported in 2016 by 34 states to ITDB. As of December 2016, there are 3068 confirmed nuclear-related incidents reported by participating countries in ITDB since 1993. (ITDB, 2017)

Recorded Nuclear related Incident in India

South Asia is facing a lot of terrorist activities. From 2010 to 2015 South Asia witnessed 22,077 terrorist incidents which are 36 % of global terrorist incidents during this duration. In 2015, nearly half of all terrorist incidents occurred in Afghanistan, Iraq, India, and Pakistan. In South Asia, more than one non-state violent actor has shown interest in nuclear material. India's lack of an independent nuclear regulatory agency and lack of comprehensive safeguard agreement of its

declared civilian nuclear facility are more vulnerable to terrorist acts. It is estimated that India has 57,443 medical x-ray units and 12,000+ devices that use radioactive material for civilian purposes (industrial and medical)(Haegeland & Verma, 2017).

Indian paramilitary "Central Industrial Security Force (CISF)" under the Ministry of Home Affairs (MHA) is responsible for protecting nuclear material in India except for military nuclear assets. It has a strength of 144,000+ and a budget of 1.3 billion USD. In April 2017, the Indian government decided to raise its strength from 145,000 to 180,000 personnel. But this force lack training and equipment to effectively guard nuclear sites. According to HMA 2013 report on CISF, "Weapons supply is down by 40 percent and training equipment by more than 45 percent".

These poor safeguards increase the insider threat. The visitor's badges lack photographs which means they are easy to replicate. The guards at the check post of nuclear sites are equipped with shotguns and semi-automatic rifles. It is also reported that in India, the nuclear material has been transported on unmarked trucks that "look like milk tankers" which Indians called the "Urban Camouflage" to avoid mishaps. This nuclear transportation in civilian trucks makes nuclear material more vulnerable because most nuclear-related incidents in India were due to insider help.

According to International Panel on Fissile Material, India has 4.0±1.4 Tonesof 30% highly enriched uranium (HEU), and 0.58±0.15 tons of weapon-grade plutonium (WGP), and 6.4±3.5 tons of reactor-grade plutonium. India is the 5th largest country in the world in terms of nuclear stockpiles. India continues to produce more fissile material. It operates a plutonium production reactor, Dhruva, Mumbai, and uranium enriched facilities that are not under IAEA safeguards. (IPFM, 2018) Indian weak security practices increase concerns about nuclear terrorism in India.

Moreover, Nuclear Threat Initiative in its 2014 report, ranked India 23rdout of 25 countries for poor security measures for nuclear safety (Nuclear Threat Initiatives, Nuclear Material Security Index, 2014).

According to a 1996 IAEA report, Indian nuclear facilities faces 130 instances of security and safety-related issues, of which 95 required urgent actions.

1. In 1994, Indian law enforcement agencies reported that several kilograms of semi-processed uranium were stolen from a uranium mine in Meghalaya, Northeast India by criminals (Adrian & Jeffrey, 2015).
2. In 1998, Indian Police arrested an opposition leader in West Bengal (Marxist area of influence) who was carrying more than 100 kg of unrefined Uranium (BBC, 1998)
3. In 1998, the Indian Central Bureau of Investigation recovered 8 kg of nuclear material (6 kg of Uranium-239 and U-235 Weapon Grade unenriched Uranium) from Chennai, Tamil Nadu (a coastal city of India, border with Red Corridor). The sample showed that the nuclear material was 2.2 % enriched which indicated that it had come from an atomic research reactor (NTI 2010, Man Found with 1 Kg of Uranium in India).
4. On May 1, 2000, Mumbai police recovered 8.3 kg of Uranium from scrap dealers. According to the Indian authority, this material was depleted but radioactive.
5. In November 2000, IAEA reported two incidents of uranium theft in India, the Indian police seized three rods of uranium and in the second incident, the Indian police recovered 57 pounds of uranium from two individuals.
6. In November 2000, Indian intelligence again seized 25 kg of highly radioactive uranium from Bibi Cancer Hospital.
7. In August 2001, Indian Police arrested two men with more than 200 grams of semi-processed uranium in West Bengal. Indian Police believed that there might be a gang that was involved in uranium smuggling (Uranium Smuggler Caught in India, 2001).
8. A member of Jamaat-ul-Mujahideen Bangladesh – JMB (now in 2018 they also have an Indian offshoot named as Jamaat-ul-Mujahideen India or – JMI) was arrested by Indian forces on the Bangladesh border with 225 grams of milled uranium in 2003. This uranium was allegedly purchased from a mining employee of the uranium mining complex at Jadugoda, Jharkhand. According to the arrested person they wanted to wrap this material with conventional explosives (i.e. RDD) and to use this in their attack(Levy & Smith, 2015).
9. In December 2006, a container of radioactive material was stolen from Indian research atomic facility near Mumbai.

10. Then in 2008, a criminal gang was caught while attempting to smuggle low-grade uranium to Nepal. This material was enough to use as a Dirty Bomb. In the same year, another criminal group was caught during uranium smuggling to Bangladesh, this gang was assisted by the son of an employee of the Indian Atomic Minerals Directorate.
11. Indian nuclear reactor employee in Kaiga Atomic Power Station, Bangalore Southwest India mixed tritium in water on 25 November 2009. Due to this 55 employees were exposed to a high dosage of radiation (Ramana & Kumar, 2010).
12. In 2013, a leftist guerrilla in Northeast India not only obtained uranium from a government-run milling complex but also wrapped it with high explosives to make a dirty bomb but likely they were captured by Police before the detonation of a crude nuclear device (Adrian & Jeffrey, 2015).
13. In October 2014, a person from Central Industrial Security Forces (CISF) which is responsible for nuclear facilities' security and safety opened fire and killed several people in the nuclear facility where he was assigned to protect.
14. In 2016, it is reported that the Indian smuggling group was involved in the smuggling of Beryl (an atomic mineral of Beryllium) to China. In this report, Rajasthan police recovered 32 tons of beryl. It is also believed that 20 tons of beryl possibly been smuggled to Hong Kong from Kandla Port, Gujarat in October 2015(Abbasi, 2016).
15. There have been media reports for at least 25 intrusions in BARC from 2014-to 16.
16. There are also reports that India is also building a nuclear city in Southern Karnataka to construct a thermonuclear weapon.

According to Adrian Levy's article in the Center for Public Integrity (CPI), the Indian nuclear industry in Jadugoda, Eastern state of Jharkhand is dumping nuclear waste in the Subarnarekha River, which is causing serious problems for nuclear workers, nearby residents especially children living near to uranium mines. There are anti-nuclear protects in Tamil Nadu under the leadership of S.P. Udayakumar. He established the People's Movement against Nuclear Energy (PMANE) and protested against the Kudankulam Nuclear Power plant project. According to Levy, Kalpakkam nuclear power plant, Tamil Nadu is highly unsafe from the security point of view as there are great chances to steal nuclear material from an insider. Levy believed that the international community is well aware of India's poor condition in nuclear safety but it is silent because of the potential of the Indian market(Nanda, 2015).

In 1992, nuclear scientists in Bhabha Atomic Research Center (BARC) were involved in exporting artificially created black diamonds. Indian scientists use the APSARA reactor to irradiate natural diamonds, making them harder and more radioactive. These artificially created black diamonds have high levels of radioactivity but despite this, Indian nuclear scientists exported them.

Demand and Supply of Nuclear Material in India

It is estimated that several terrorist groups in India have interests in nuclear material. In India, the possible scenario of nuclear terrorism is nuclear sabotage and the use of radiological devices. Some groups which have an interest in acts of nuclear terrorism are as below;

1. Naxalites
2. Al Qaeda and its affiliated groups
3. Indian Mujahideen (IM)
4. IS and its affiliated groups
5. Leftist Groups (Naxalite and its offshoots)
6. Jamaat-ul- Mujahideen (i.e. Jamaat-ul-Mujahideen Bangladesh and India)

On the supply side, there are lots of opportunities for a terrorist to buy or steal nuclear material from nuclear facilities, due to corruption, general political instability, lack of solid transport mechanism, insufficient material control, and lack of measures to counter insider threats. Some possible supply lines are

1. Due to insider help (i.e. through buying or by stealing or insider help during the commando-type attack on nuclear facility)
2. To direct sabotage nuclear facility i.e. civilian or military
3. To attack nuclear transportation convey
4. To buy nuclear material from criminal gangs or the Black market
5. To steal natural uranium from government-owned mineral mines
6. Use of Nuclear Waste (India has both above and underground facilities but their security is weak as compared to the security of nuclear sites.
7. To hire Indian retired nuclear scientists to develop Improvised nuclear devices (It is reported that Dr. Parsad, Head of Nuclear Corporation of India, and nuclear scientist

Narinder Singh worked in Iranian nuclear power generation plant Bushehr after his retirement. Indian nuclear scientist Dr. Surendar former Chairman of Nuclear Power Corporation of India also helps Iran in its nuclear program) (Jalil, 2016).

Naxalite Movement

Naxalites are a member of the Communist Party of India (Maoist) – CPI (M). The Naxalite movement originated in a small village located in Indian Bengal named Naxalbari in 1967. They believed in the ideology of Communism or Maoism. In 1967, the Indian Communist Party was divided into many groups and the Communist Party of India (Leninists-Marxist)emerged. The CPI (L-M) was vocal for the rights of local farmers and laborers in West Bengal and soon its area of influence increases to all of Central India and Eastern India especially in the Indian states of Andhra Pradesh, Chattisgarh, Orissa, Bihar, and Jharkhand which became its main hub. According to former Indian Prime Minister Manmohan Singh, the Naxalite movement is the biggest internal threat to India. It is fact that this movement has strong connections in 20 of the 29 provinces of India. The current insurgency was reemerged in 2004 when the Communist Party of India (Leninists-Marxist) People War and Maoist Communist Group[1] merge under the leadership of MuppallaLakshmanaRao (known as Ganapathy) in their struggle against India. Naxalite movement is run by Central Committee and they also have political fronts like Labor, women, and youth organization. CPI (M) is a designated terrorist organization under the Indian Unlawful Activities Prevention Act of 1967 (Shad, 2011).

The objective of the Naxalite Movement:

There are two types of opinion about the objectives of the Naxalite movement, these are

1. Most believed that this move is aimed to ensure land reforms, i.e. redistribution of agricultural land equally among landlords and common laborers rather than separatist aims
2. Policymakers of the Maoist movement multiple times stated that establishing an independent Maoist state by 2050 is their objective. Maoists are struggling to overthrow the current regime and establish a one-party political system through armed insurgency.

[1]MCC was one of the two largest communist armed group in India which are engage in Maoist insurgency against Indian state, it is also known as Maoist Communist Center of India (MCCI).

In the 1990s, MuppallaLakshmanaRao (Ganapathy) leader of the People War Group (PWG) while giving an interview to a private website stated that they have twofold agenda, i.e. fight for agrarian revolution and nationality (Verma, 2011).

Area of Influence

According to analysts, the Naxalite guerrillas influence over 40 percent of India; they have full control over the "Red Corridor" which consists of 92,000 square kilometers. The Naxalite movement has a stronghold in 13 states and 104 districts out of 712 total districts (as of 2018) of India are affected by the Naxalite-Maoist insurgency (SATP, 2018).

Naxalite controls pockets and territories throughout Bihar, Jharkhand, and Andhra Pradesh states and they have created their administrative tax and court systems. This group also influences the other 13 states of India. (UCDP)According to some other reports, 20 states of India and 223 districts of India are affected by the Naxalite insurgency. Chhattisgarh is the most affected state by the Naxalite insurgency. Naxal cadres also influence Haryana and Delhi (Current Situation Of Naxalism, 2013).

In 2018, the Indian Ministry of Home Affairs (MHA) categorized 106 districts in 10 states as Left Wing Extremist (LWE) affected states. Indian central government is also providing 1,000 crore rupees to 35 LWE-affected districts under the Integrated Action Plan (IAP) (Maoist's area of influence shrinks; 44 districts removed from the affected list: Union Home Secy, 2018). This movement has created huge tension in the Indian government because it is most intense in those areas which are rich in natural resources and necessary for industrial development. This area also has a history of mass protests against colonial policies. The most important feature of this movement is that it tends to mobilize socially marginalized people (Shodhganga, 2009).

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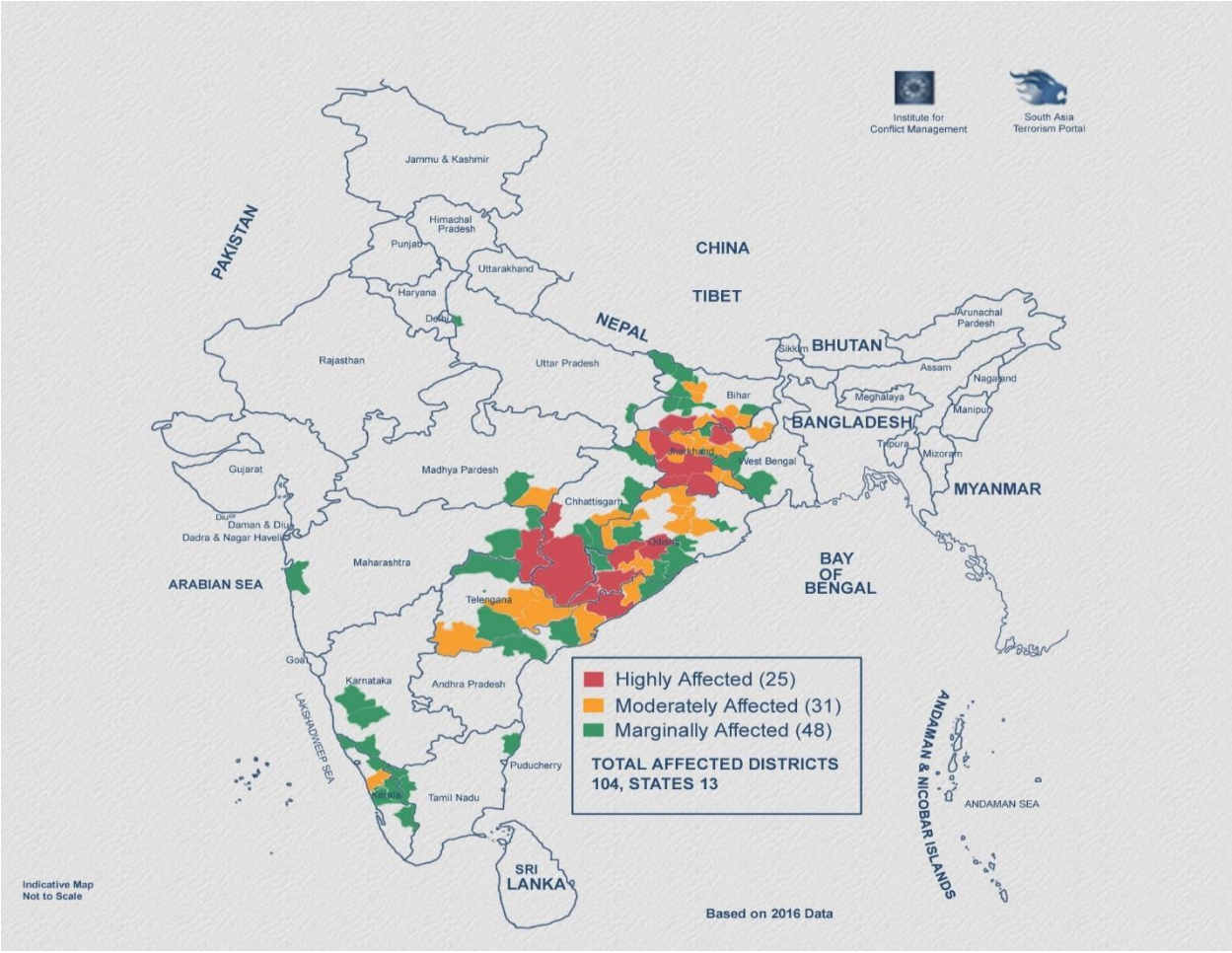

Map I. Naxalite Area of influence. Source: South Asia Terrorism Portal (SATP)

Strengths of Naxalites

According to the Indian intelligence agency (RAW) 2006 report, Naxalite insurgents have 20,000 armed cadres Naxalite, and 50,000 additional regular cadres. Naxalite recruits cadres by paying 3,000 Indian rupees per month, and they have 1,500 crores per year of revenue which they get through criminal acts (Shodhganga, 2009). According to the Chhattisgarh Director General of Police, the extortion money of CPI-M is 2,000 crores per year (Verma, 2011) The armed wing of the Naxalite movement is the Peoples Liberation Guerrilla Army (PLGA), PLGA has 6,000 to 9,500 carders which are equipped with small arms. However other small communist armed factions have strength in thousands.

Operational Strategies of the Group

Naxalites or Maoist stated that they have adopted a strategy of rural rebellion derived from the People's War against the Indian government. People War Strategy also known as the Protracted People War strategy is a political-military strategy that was developed by Mao Zedong. The basic concept of this strategy is to maintain people's support and to destroy enemies in the countryside by using mobile or guerrilla tactics. Communists use this strategy for a long armed struggle in India. Because protracted war is a strategic aim for them. According to the Communist Party of Turkey (Marxist-Leninist), Protracted People War is "Such an armed struggle, which involve armed struggle, then peaceful struggle, then again armed struggle, again renewed peaceful struggle and this continue (Asumir)."The main tactics used by the Naxalite insurgency are group armed siege and killing by using small arms and light weapons, mine usage against vehicles, use of rockets in the countryside, and guerrilla warfare. Naxalites also use landmines as a "first shock" before engaging enemies in a gun battle. The use of landmines means they have a well-established intelligence system (Verma, 2011).

Weapons used by Naxalite

At the start of their movement, the Naxalites mostly used traditional equipment and then developed some crude bombs. Now they are using common and sophisticated weapons such as Self-loading Rifles (SLRs), AK family rifles, and Indian INSAS Light Machine Guns.[2]They also

[2]Ibid

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have developed some crude rocket launchers. In May 2004, Maoist manufactures 25 rockets and a few launchers which cost about 950 rupees per rocket. They also started a two-phase rocket launcher development program. In Rocket Launcher phase II they developed shoulder-launched rockets and it is believed that these rockets were tested in 2006. Maoist also ordered one member of the Central Committee to manufacture 1,600 rockets and 40 rocket launchers at a cost of 35 lakhs. However, most of these rockets were captured during Indian forces raids in 2006. (Ramana, 2007)Naxalite is also using land mines e.g. pressure mines (anti-personnel mines) and anti-vehicle mines to surprise Indian forces before engaging them in a gun battle. They have developed indigenously and ingeniously fabricating weapons like a crude rockets, teachers, and different mines (Ramana P. V., Maoists Deploying Pressure Mines, 2018).

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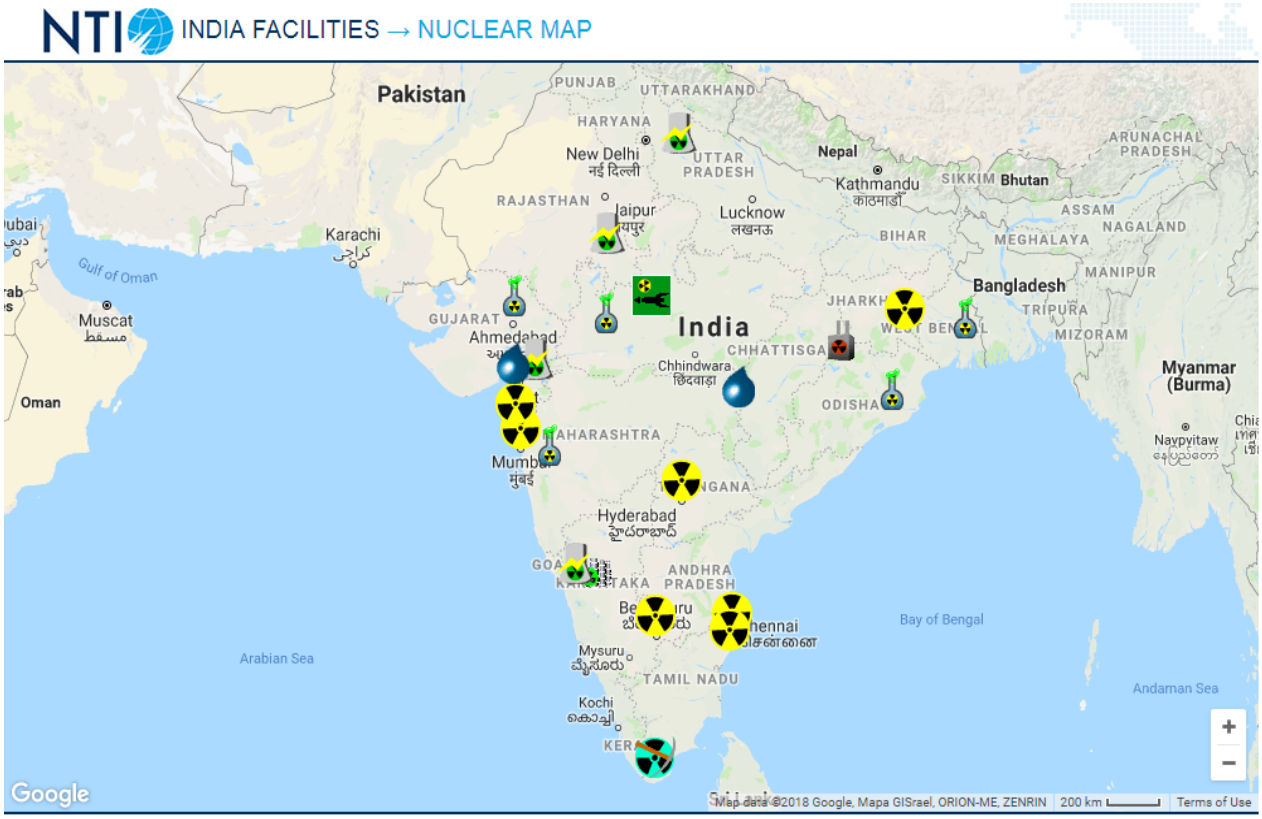
Nuclear site in Naxalite area of influence

According to the Nuclear Threat Initiative map of Indian nuclear, biological and chemical facilities, it is clear India has a lot of chemical, biological and nuclear facilities in the Naxalite area of influence.



Map II: Indian Nuclear Facilities. Source NTI.

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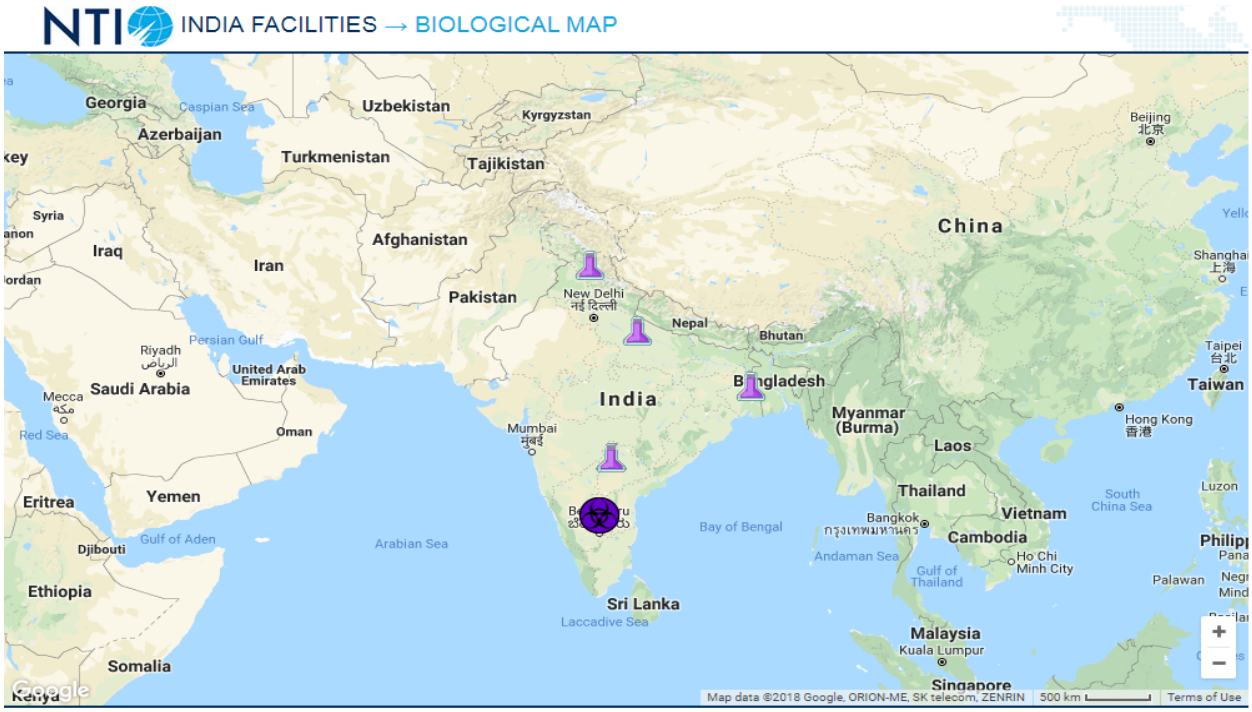
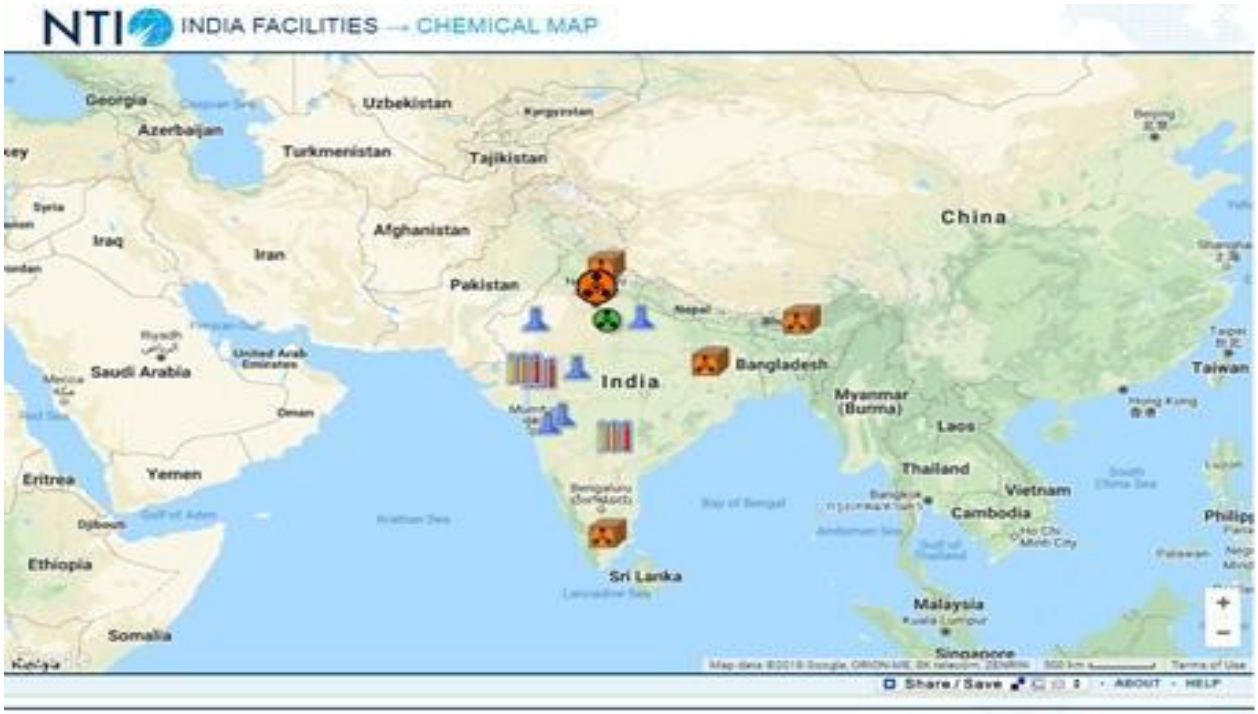


Map III. Biological sites in India, Source: NTI



Map IV. Chemical facilities of India, Source: NTI

State	Nuclear	Missile	Chemical	Biological
Maharashtra **	Located in Mumbai, Pune, and in Tarapur.	Situated in Mumbai, Nashik, and in Oune.	Chemical R&D center sited at Pune and Ahmednagar.	Nil.
Karnataka	Situated in Bangalore, Rattehalli and in Uttar Kannada.	Located in Bangalore.	Nil.	Biological Research and development center is situated at Bangalore.
Kerala	Nil.	Missiles facilities sited at Palakkad and Thiruvananthapuram.	Nil.	Nil.
Tamil Nadu	Nuclear facilities are located in Manavalakurichi, Kalpakkam and in Chennai.	Missile facilities situated in Avadi and in Chennai.	Nil.	Nil.
Telemgana	Located in Hyderabad.	Situated in Hyderabad.	Chemical production and Research and Development center located in Hyderabad.	Biological R&D situated in Hyderabad.
Andhra Pradesh	Nuclear facilities located in Manuguru.	Missile facilities situated at Sriharikota Island.	Nil.	Nil.
Orissa	Located in Bhubaneswar.	Sited in Balasore.	Nil.	Nil.
Jharkhand	Nuclear facilities sited in Jaduguda and East Singhbum District.	Missile facilities located in Ranchi.	Unidentified chemical weapons storage site located in Ranchi.	
West Bengal	Nuclear facilities located in Calcutta.	Nil.	Nil.	Biological Research and Development center located in Calcutta.
Assam	Nil.	Nil.	Unidentified chemical weapons storage sit at Assam.	Nil.

Nuclear, biological, Chemical and Missile facilities of India in Naxal area of influence

India has two reactors for the production of weapons-grade plutonium (WGP), CIRUS and Dhruva, both located in the Bhabha Atomic Research Center (BARC) complex near Mumbai. CIRUS was shut down in 2010, but India has plans to build a new one in Vuzag, Andhra Pradesh.

Other facilities:

Besides these nuclear, biological, chemical, and missile facilities, some Indian naval bases for submarines are located in the Naxalite area of influence. These are

1. **Indian Western Naval Command**

INS Vajrabahu is located near Mumbai in Maharashtra. This base operates conventional (diesel-electric SSK) Indian Sindhughosh-class (Russian Kilo Class Submarine) and Shishumar-class (German Type 209 Submarine).

2. **Indian Southern Naval Command**

INS Satavahana is located in Visakhapatnam, Andhra Pradesh. This base has a Submarine School (SMS), Escape Training School (ETS), and School of Advanced Undersea Warfare (SAUW). SAUW was established in 2006, to train the crew of nuclear submarines (Arihant class and Russian Akula II – INS Chakra). There is also a training facility for conventionalKalvari class (French Scorpene Class submarine) which is equipped with Air Independent Propulsion System (AIP).

3. **Indian Eastern Naval Command**

INS Varsha is located in Andhra Pradesh. This base will be the home of 8-12 nuclear-powered ballistic missiles and attack submarines. This is designed solely as a nuclear submarine support base. Due to its location close to Bhabha Atomic Research Center (BARC), it will have modern nuclear support facilities.INS Kattabomman, located in Tamil Nadu, is a Very low frequency (VLF) and Extremely low frequency (ELF) communication center which is used to communicate with Indian submarines.

Possible scenario:

The possibility of acquiring Chemical, biological, radiological, and nuclear weapons by terrorist actors is only 1 to 2 percent, but it is a more realistic threat now than in past. Terrorist organizations are more likely to get or construct Chemical, Biological, Radiological, and Nuclear (CBRN) weapons if

1. They have a well-developed alliance
2. They have large support or membership
3. They have strong economic connections

In the case of the Naxalite insurgency, it is clear that they have an alliance with the Communist Party of Nepal – Maoist (CPN-M), Tamil insurgents, United Liberation Front of Assam (ULFA)

and Kashmiri insurgent groups as well as Indian Mujahideen. It is also reported that some extremist Muslim groups like Jamaat-ul-Mujahideen Bangladesh (JMB) and its Indian (JMI)branch have plans to cooperate with Maoists in the anti-India struggle. JMB members were involved in nuclear smuggling in past and have intentions to detonate nuclear material for their goals.

Maoists are also working under the Maoist umbrella organization named "Coordination Committee of Maoist Parties and Organizations of South Asia" (CCOMPOSA) which influences membership in India, Sri Lanka, Nepal, Bhutan, and Bangladesh. CCOMPOSA was established on July 1, 2001, and it aimed to coordinate Maoist organization activities throughout the world and especially in South Asia.

It was also reported that CPN-M conducted joint operations and training with the Communist Party of India- Maoist. In 2010, CPN-M leaders Barshaman Pun Ananta and HaribolGajurel signed a secret agreement with CPI-M for providing political and military to each other. CPN-M agreed to send more trainers to India for the training of CPI-M. Indian Ministry of Home Affairs (MHA) multiple times stated that both countries provided logistics support including arms, shelter, and manpower to each other (Ramana P. V., Linkages between Indian and Nepalese Maoists, 2010) Maoist has 20,000 guerrillas, 50,000 common cadres and they enjoyed strong support in not only 9 to 13 states of India but in Indian neighboring countries. They also have 1,500 to 2,000 crore per year revenue, so there are chances that Maoists may think to use weapons of mass disruption (WMD) under severe circumstances.

Despite the reality that Maoist enjoyed a lot of plus points, it is highly unlikely for Maoist to detonate real nuclear devices or construct real ones. Conversely, there are more chances of using the improvised nuclear device – IND (as they try it in 2013 but likely they are unsuccessful) or radiological dispersal device (RDD) by using stolen nuclear material or through purchasing from criminal gangs or insider and sabotage on nuclear facilities with insider help by Maoist guerrilla with other anti-India movements.

There are possible ways in which Maoist may use nuclear terrorism

1. It is possible and more likely that Maoists may steal nuclear material during its transportation due to insider help as it is their best strategy to attack convey by first giving

them a shock by the use of mines and then gun firing. Then they may detonate stealing nuclear or radiological material in a congested area or industrial sectors like in Mumbai (Mumbai is chosen because it have the largest number of nuclear facilities and there is some incident of smuggling of nuclear material from Bhabha Atomic Research Center –BARC) which have a population of more than 10 million.

2. It is also possible and likely that somehow Maoists may sabotage nuclear facilities such as in Kalpakkam nuclear power plant, Tamil Nadu which is considered a highly unsafe nuclear site by British journalists. Kalpakkam has only 20,000 population, but an attack on Kalpakkam nuclear power plant resulted not only in immediate deaths of the nearby population but also affects the whole Tamil Nadu state, Sri Lanka, and a wide area of the Indian Ocean but its radiations. We have an example of sabotage on the South African nuclear facility in 2007 when two armed groups attack the Pelindaba nuclear facility (Birch & Smith, 2015).
3. The Maoist helper may likely join some of the Indian nuclear power plants as an employee and then detonate conventional explosives inside the nuclear power plant. Because in one of the Indian nuclear facilities, the Indian policeman which was assigned to protect the nuclear site, killed many of its seniors in 2014. Similarly, this happened in the Koeberb nuclear power plant in South Africa in 1982, where an insider placed explosives near a nuclear reactor and then detonated them. However, the South African nuclear plant was not active at that time (Birch & Smith, 2015).
4. Indian Mujahideen, Islamic State has an interest in a nuclear explosion, these may join Maoist in their struggle of anti-India and may buy or steal enough nuclear (e.g. 200 kg) and after making crude nuclear bomb they may explode it on Mumbai.

It is clear from the calculation of 200 kg crude detonation may cause 20 thousand immediate deaths and 91 thousand plus deaths in 24 hours after the explosion.

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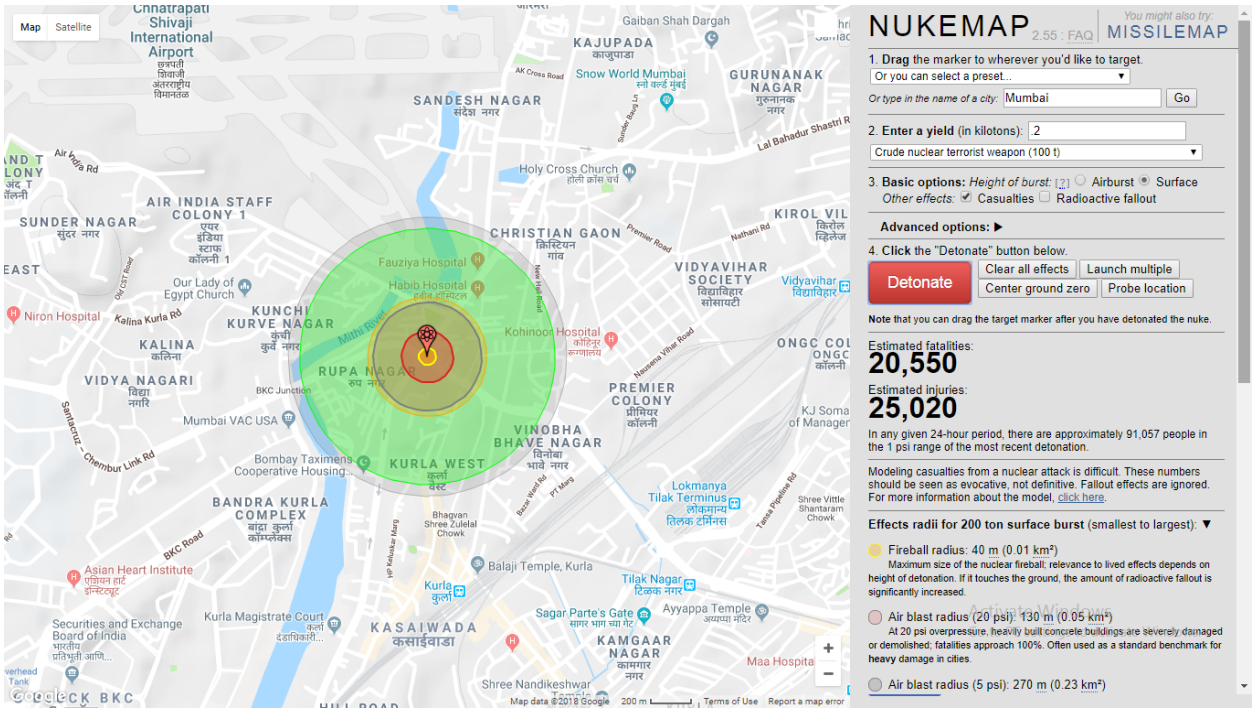
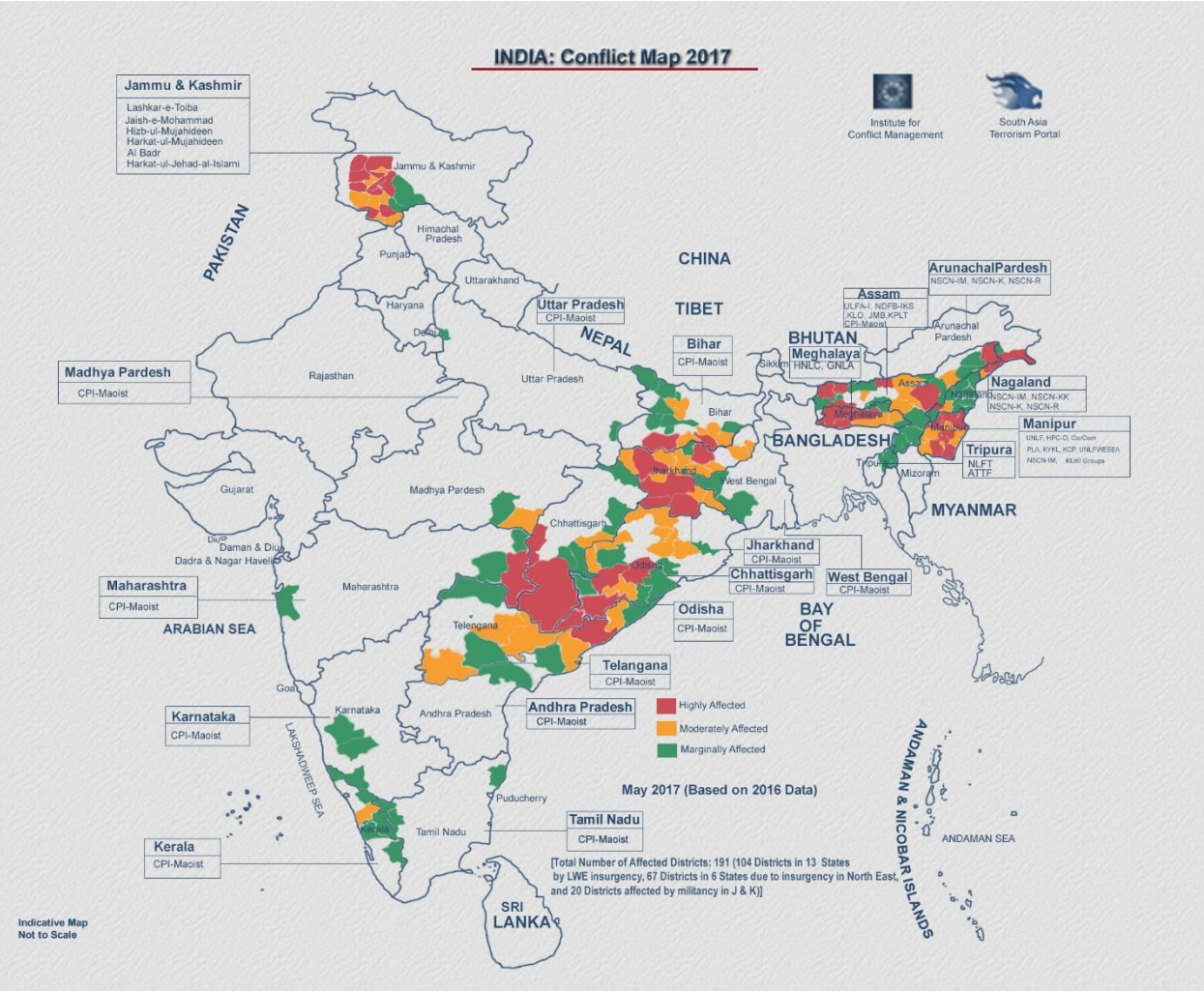


Calculation of 200 kg (.2 tons crude nuclear bomb) explosion in Mumbai

5. Naxalite attacks change in recent years. Now they attack large scale, for example in May 2010, they attack civilian buses by using an improvised explosive device, and in April 2010, a group of Maoist guerrilla sieged Indian Central Reserve Police Force (CRPF) and killed 76 personnel in Chhattisgarh. Similarly, in 2013, a group of Maoist insurgents attack Darbha valley and killed around 24 National congress leaders state minister Mahendra Karma and Chhattisgarh Congress chief Nand Kumar Patel. It is clear from the Naxalite strategy that they have expertise in guerrilla-type operations and this gives them benefits as they may enter into nuclear facilities or Indian Naval Submarine bases and within 2 or 3 hours they can construct mobile improvised nuclear device (IND) or Dirty Bomb (RDD) and to explore it on Indian civilian or military installment.

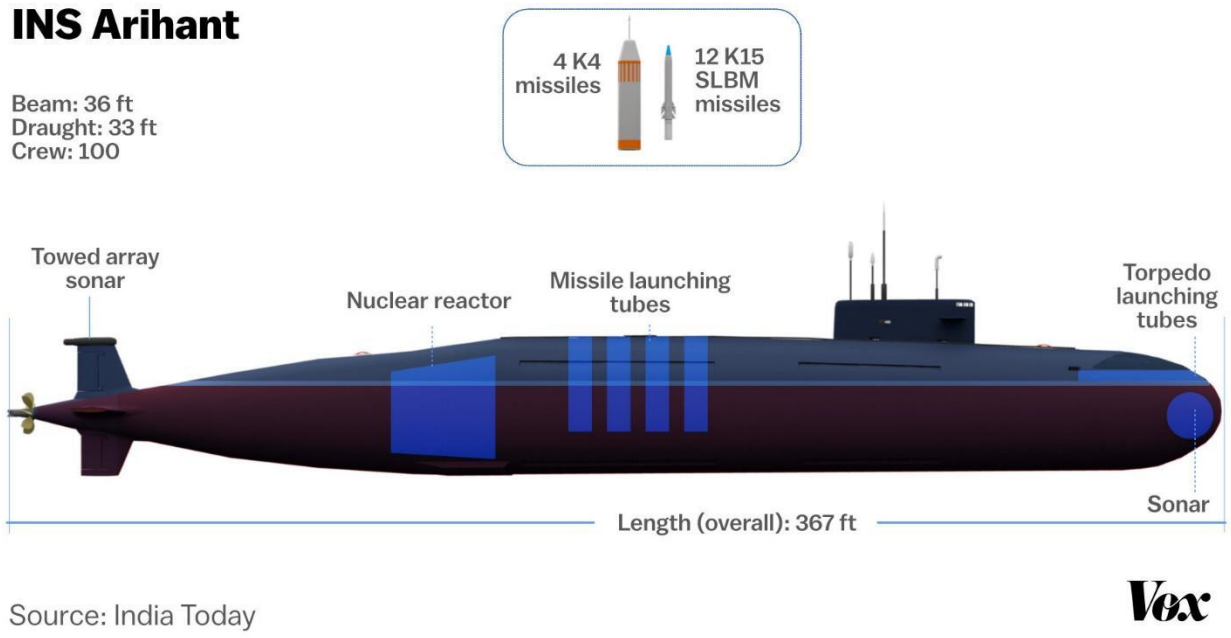


Source: SATP 2017

Despite these scenarios, the Indian Navy Submarine bases are more vulnerable and attractive to terrorists. Eastern, North Eastern, and South-Eastern parts are facing terrorism and somehow alliance between these terrorist groups may result in the sabotage of Indian Naval nuclear submarine bases. However, the lack of professionalism in the Indian Navy resulted in an incident in Indian Nuclear submarines. In 2017, the Indian nuclear submarine Arihant suffered major damage and has not sailed now for more than 10 months (Peri & Joseph, 2018).

Arihant (S2) SSBN is capable of carrying four K-4 missiles and twelve K-15 Sagarika Submarine Launched Ballistic Missile (SLBM). Similarly, the Indian nuclear submarine INS Chaka (Russian Nerpa K-152 class submarine) an Akula class submarine on loan for 10 years from Russia for training purposes is on the dry dock due to an undisclosed incident. (Hundley,

2018) So, any detonation in a nuclear submarine by an insider or insurgent sympathizer may result in huge human and economic loss to India.



Conclusion

Maoist had 20,000 guerrillas, and 50,000 common cadres, and enjoyed strong support in not only 9 to 13 states of India but in Indian neighboring countries. They also have 1,500 to 2,000 crore per year revenue. This study concludes that chances for Maoist to detonate real nuclear devices or to construct real ones are highly unlikely. However, the chances of using the improvised nuclear device – IND cannot be refuted owing to poor security mechanisms by using stolen nuclear material or through purchasing from criminal gangs or insiders and sabotage on nuclear facilities. Naxalite'sexpertise in guerrilla warfare will endow its foot soldiers to enter the nuclear facility or Indian Naval Submarine bases to transport IND and detonate a dirty bomb.

Notes: