Research Report

Leiden Model United Nations 2017
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Forum: *Security Council*
Issue: *The vulnerability of nuclear power plants to terrorist attacks*

Position: *President*

Introduction

In the aftermath the terrorist attacks on 9/11 on the World Trade Center in New York, the *National Commission on Terrorist Attacks Upon the United States* of the United States congress has warned the Congress that there is a serious danger that terrorists and/or criminals will attack nuclear power plants in order to obtain nuclear waste.[1] The biggest threat is terrorist getting their hands on these materials, or by getting it themselves or by buying it from criminals. Terrorist can use these materials to make a dirty bomb.

Definition of Key Terms

Nuclear power plants / facilities
According to the UN: Any nuclear reactor, including reactors installed on vessels, vehicles, aircraft or space objects for use as an energy source in order to propel such vessels, vehicles, aircraft or space objects or for any other purpose or any plant or conveyance being used for the production, storage, processing or transport of radioactive material.[2]

Nuclear waste
The waste generated while producing nuclear energy. This waste is highly radio-active and therefor very dangerous and toxic.

Radioactivity
When a certain substance contains radioactive isotopes. These isotopes are dangerous for the environment and human life. It can take thousands of years for these product to lose their radioactivity. There are multiple classifications of radioactivity. The radioactivity created in nuclear reactors is the High-Level Waste (HLW), consisting of High Enriched Uranium (HEU)

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[1] https://www.newyorker.com/magazine/2011/03/28/the-nuclear-risk

[2] https://treaties.un.org/doc/db/terrorism/english-18-15.pdf

Dirty bomb
This is a device that has never been used, as far as we know, but it is feared that it will be used one day. It is a bomb/explosive that uses a combination of nuclear waste and conventional explosives. It is a nuclear device, but doesn't use nuclear fusion to explode, therefore it requires an explosive and nuclear waste. It will spread nuclear waste in the direct environment of the explosion, but will not cause as many victims as a nuclear bomb. Most likely it will cause basically no lethal victims, but it will cause huge panic and will probably result in a very costly cleanup. [3]The dirty bomb however is the most likely device to be used by criminals or terrorists, due to the relative low technical expertise needed in the creation.

General Overview

The use of nuclear power plants has been a cause of concern since the first usage. The main concern has always been a technical or human failure resulting in the environment being exposed to the direct environment and living creatures in the surrounding area. There are a lot of rules and laws specifying how this can be prevented, however these are not sufficient in all cases, for instance in the case of a massive earthquake and/or tsunami.[4] These are of course very rare cases and not due to any human mistake. The fear since the terrorist attacks on 9/11 is that terrorists will acquire nuclear waste in order to create a dirty bomb. This concern only emerged after 9/11 because there was a commission put in place in order to estimate the risks of possible terrorist attacks on American soil. Nuclear facilities can be attacked in multiple ways, by a ground attack, an intentional airplane crash into a nuclear facility or by a cyber attack. In the United States of America there are special rules and protocols a nuclear facility has to follow. These are regarded as the highest demands for safety in the public sector, by the Nuclear Energy Institute[5], which is an American based lobby group for the nuclear industry, but nonetheless it is a safe assumption that there are strict protocols concerning nuclear power plants.

Nuclear power facilities are also a target during conflicts between nations. While these are not terrorists, there are still a cause of concern for states and even resulted in a shutdown in 2012 of the Negev Nuclear Research Center in Israel. The main reason

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[3] https://www.nrc.gov/reading-rm/doc-collections/fact-sheets/fs-dirty-bombs.html

[4] http://www.world-nuclear.org/information-library/safety-and-security/safety-of-plants/fukushima-accident.aspx

[5] https://www.nei.org/Issues-Policy/Safety-and-Security/Plant-Security

stated in the press was the fear of the Israeli Atomic Energy Agency that the site could be attacked by Iran.
There have been reports about al-Qaeda attacking nuclear bases up to three times in Pakistan. Pakistan has denied these claims and claimed that it was a regular weapon depot that was attacked, international specialists see reasons to assume it is a nuclear installation, there has also been an attack on a airbase where there are nuclear materials stored in Pakistan. The attack on the nuclear facility was one of the deadliest on Pakistan armed forced, with a suicide bomber killing 63 Pakistan officers.[6]

There have been some cases of successful theft or attempts of theft, 18 incidents are confirmed by the International Atomic Energy Agency (IAEA) of loss of theft of HEU. This means that there are currently 18 incidents in which there is an unspecified amount of nuclear waste with an unknown location or owner, these could be in the hands of terrorists or arms-dealers who want to sell these to terrorists. These HEU materials can be used to create a dirty bomb or even a nuclear bomb when they have the expertise and needed materials. This is however highly unlikely, that there is a terrorist group with these resources.

The possibility of sabotage by insiders
There is also a possibility that insiders, meaning anyone with legal acces to the nuclear facilities will steal or sabotage nuclear facilities. There have been numerous cases, one in which there was enough HEU stolen to create a bomb. an important note here is that there is no evidence of any non-state actor having the resources to do so. There have also been cases of insiders creating a fire in a nuclear power plants, but these are not considered acts of terrorism, rather of sabotage. These could however result in a disaster, when the fire damages the facility and the nuclear waste starts leaking into the environment and is exposed to the air where it could easily spread.

[6] http://www.telegraph.co.uk/news/worldnews/asia/pakistan/6011668/Pakistans-nuclear-bases-targeted-by-al-Qaeda.html

The possibility of cyber attack:
There are not many known cases of cyber attacks on nuclear power plants. One infamous case involves Stuxnet, a computer worm, which is a certain virus, that was discovered in 2010. It is believed that this virus was created by the United States of America and Israel in order to attack Iran's nuclear facilities.[7] While this is not a terrorist, but rather a state actor, it is a clear example of a terrorist attack, setting back Iranian research with three years. While there were no human casualties this time, it is a clear example of the possibility of a cyber attack and the possibility of hacking a nuclear facility. Hackers could also turn of the cooling system, which will result in a nuclear meltdown, causing radioactive waste to leak into the environment.

List of states that are a member of the United Nations Security Council (UNSC) with nuclear power plants and the amount of nuclear power plants between brackets:

P5:
The People's Republic of China (36)
The Republic of France (58)
The Russian Federation (36)
The United Kingdom (15)
The United States of America (100)

Major Parties Involved

The International Atomic Energy Agency (IAEA)
The international organisation that has the mandate to control the use and storage of radioactive materials, such as the storing facilities on nuclear facilities and the safety regulations on any and all known nuclear facilities.

The monitoring agencies of all countries with Nuclear Power Facilities
Every country that has nuclear power plants has an agency to monitor the safety and use of nuclear power, often working together with the IAEA.

[7] https://www.wired.com/2013/03/stuxnet-act-of-force/