How can a Nuclear Program hide?
A story of Daring, Denial, and Deception

A Project Report submitted in partial fulfilment of
requirements for credit in the course

CJ839: Critical Thinking for Intelligence Analysis

offered by

the School of Criminal Justice,
(College of Social Sciences)
Michigan State University;

by

Mr. **Dakshesh Vasan**
enrolled in
the Ph.D. in Statistics Programme
Department of Statistics and Probability
(College of Natural Sciences)
Michigan State University;

on the **15th of December, 2023**;

MICHIGAN STATE
UNIVERSITY

Under the Guidance of

Dr. **Michael Rip**
Adj. Professor, The Intelligence Program, School of Criminal Justice
(College of Social Sciences)
Michigan State University

Author's Declaration

I hereby declare that this report is my own work, and to the best of my knowledge, contains neither material previously published or written by any other entity, nor substantial proportions of any material that has been accepted for the award of any other degree or diploma at Michigan State University or any other educational institution, except where due acknowledgement is made within this report.

15 Dec 2023 Dakshesh Vasan

Department of Statistics and Probability (College of Natural Sciences)

Michigan State University

Abstract

Recognising India's strategically favourable position that can let it compete with Chinese dominance in South Asia, Washington has taken several efforts recently to forge a strong partnership with India in this decade. However, just a little more than 20 years ago, the United States, along with the other major powers of this world, heavily lobbied against any form and feature of an Indian Nuclear Weapons Program. India was internationally condemned after it's demonstration of the capability to detonate a nuclear bomb under the 'Peaceful Nuclear Explosion'(PNE) test in 1974. India had also refused to ratify the Non Proliferation Treaty 1968, and voted against the Comprehensive Test Ban Treaty 1996. When US Intelligence caught India red-handily preparing for nuclear weapons testing multiple times between 1992-1995, India was bombarded by diplomatic measures that were aimed to steer India away from conducting any testing. Yet, on the 11th of May 1998 - within three years of having been caught, the world heard the declaration of the then Indian prime minister, Shri Atal Bihari Vajpayee, that India had become a full-fledged nuclear state after having successfully tested it's own nuclear weapons. In spite of the greater technological, structural and economical prowess of U.S. clandestine arrangements, India had managed to strategically conceal, deny, and deceive the United States. This report seeks to identify elements of instinctive thinking by the CIA that were exploited by India to achieve their goal, so that today's intelligence communities across the world may learn and improvise on their checks against further nuclear proliferation, especially by any rogue irresponsible state/non-state actor in the future.

Acknowledgement

I am grateful to all those sources on the internet that have analysed declassified information and helped me direct myself to what I needed to write this report. I am thankful to Professor Michael Rip, for his support and experience in imparting the idea of critical thinking. He has definitely exapnded my horizons. I also thank him for making me do such a project, it has let me explore whatever was taught in the course CJ839.

I am thankful to my parents and friends who shared with me things that allowed me to explore the topic in greater detail. They gave me political insight into India in the 1990s and other such aspects.

Sincerely,

Dakshesh

Contents

List of Abbreviations

1. **AEC:** .....Atomic Energy Commission
2. **BARC:** .....Bhabha Atomic Research Commission
3. **CIA:** .....Central Intelligence Agency
4. **CTBT:** .....Comprehensive Test Ban Treaty
5. **DRDO:** .....Defense Research and Development Organization
6. **IAEA:** .....International Atomic Energy Agency
7. **NPT:** ..... Nuclear Non-Proliferation Treaty
8. **PM:** ..... Prime Minister
9. **TIFR:** ..... Tata Institute of Fundamental Research
10. **USSR:** ..... Union of Soviet Socialist Republics
11. **UN:** ..... United Nations
12. **UNSC:** ..... United Nations Security Council
13. **US:** ..... United States
14. **USIC:** .....United States Intelligence Community

Part I

Significance of This Work

Chapter 1

The Threat of Deceptive Nuclear Proliferation

This chapter highlights the significance of studying how India managed to declare itself as a nuclear state back in 1998 amidst tight supervision by the United States' Central Intelligence Agency, and points out the relevance of such a study even today, more than two decades later.

1.1 India's Nuclear Program - An Important Lesson

When the Republic of India conducted its first nuclear explosion on May 18 1974, the world was taken by surprise. The United States Intelligence Community (USIC) too had failed to analyse and warn US Policymakers of the possibility of such a development. The USIC almost immediately conducted an after action review to recognise reasons behind their failure and prevent it in the future.[29] The US, along with many other nations, condemned the nuclear explosion in-spite of India's assurances of the explosion being a prod-

uct of exploration of peaceful purposes of nuclear power. India immediately came under the constant scrutiny of checks and safeguards by a US-India nuclear cooperation agreement, and by international bodies. Meanwhile, the US Intelligence Community reviewed its own spying mechanisms, and implemented several recommendations arising from a review of its Indian Intelligence Operations. These recommendations had the intelligence community now exert all means possible - human, open source, and communications intelligence to spy on any and every Indian nuclear energy activities in order to efficiently predict and report any intentions of an Indian nuclear test. Over the next two decades, US Policymakers even had access to reports that India may be preparing for a second nuclear test in Pokhran, [28] a test-site in the Thar Desert of Rajasthan, a northwestern state of India; which had them be wary of India's nuclear aspirations in the 1980s-90s.

Figure 1.1: "When the Buddha smiled in 1974" - This crater was formed by the successful detonation of India's first nuclear bomb in 1974, at Pokhran.

Disagreements with India on the nuclear cooperation agreement, India's unwillingness to ratify the NPT, and India's opposition to the Comprehensive Test Ban Treaty (CTBT 1996) also motivated the US to keep a tight check over India. Thus, the US Intelligence apparatus exerted its full weight on the lookout of any Indian nuclear test attempt since the 1980s. They even managed to successfully thwart efforts for an Indian weapons test in the mid-1990s. Yet, on the 11th of May, 1998, India managed to slip away from under their eyes and conduct a nuclear weapons test successfully.

In spite of constant supervision, thorough surveillance, several diplomatic induce-

ments, strong lobbying, and economic/diplomatic threats to keep India away from developing a nuclear arsenal; India managed to keep its nuclear program under wraps and eventually declare it's status as a nuclear power right under the eyes of the CIA. This was in fact quite literal, given they did hide their testing preparations from image-capturing CIA Satellites in the sky.

What this proved to the world is that even a clandestine outfit such as the Central Intelligence Agency (CIA), powered by a mighty superpower that boasts significantly large technological, economic, and military prowess; could indeed fail.

It is now well-known that India's story comprises a mix of daring, denial, and deception; which serves to remind us that intelligence is always deceivable. Consequently, this reminds us that we can never be too ready to identify and predict any event of nuclear proliferation.

If intelligence agencies across peace-loving collaborating nations do not identify the elements of instinctive thinking in their process of analysis, engage in repeated metacognition, and keep working to be alert and highly reliable; deceptive nuclear proliferation may again be employed by some actor, gods-forbid, one that may not even be as nuclear-responsible as India has come to be in the last two decades[91].

1.2 The Ever-Existing Risk of Deceptive Nuclear Proliferation

Since the 2000s, India has adopted a nuclear doctrine that rests on the 'No First Use (NFU) Policy', and the defensive posture of "credible minimum deterrence" against Chinese and Sino-Pakistani threats. India has also entered into several nuclear cooperation

treaties with the United States, Russia, and other powers after 1998. India's agreements with the International Atomic Energy Agency (IAEA) establishes nuclear safeguards and reduces risk of any unintended trigger of nuclear weapons. India has also avoided nuclear detonations as forms of military defence in conflicts with its hostile neighbours - China and Pakistan, over the past two decades.[91] In addition, India happens to be a well-functioning stable democracy. It's nuclear security comprises of compliance to international standards, a robust independent audit system, and severe checks on access to nuclear material. There is indeed scope for improvement, but India has implemented protections that have been effective so far, against any kind of illicit intrusions.[88] India is also party to international agreements addressing proliferation to non-state actors, and recognising the threat of nuclear terrorism.

In all, India has proven to be a responsible nuclear power in the past two decades. However, there are several actors in the world that seek nuclear weapons-capabilities for nefarious means, which would in totality make the world less safe. Some already well-recognised risks that threaten the world with nuclear proliferation and its consequences are:

- the Islamic Republic of Iran: The Government of Iran is likely to use its capability to resume nuclear activities as leverage to negotiate relief from sanctions. In spite of the 2015 Joint Comprehensive Plan of Action (JCPOA) signed with the UN Security Council's Permanent members, Iran has continued research that would allow it to produce fissile material if it chose to. Iran also continues to exceed JCPOA limits on the size and enrichment of its uranium stockpile.[82] It must also be noted that Iran's acquisition of nuclear power may disturb the geopolitical order in the Middle East by provoking other Arab countries to try and go nuclear. Further, Iran's blatant funding of terrorist insurgencies like Hamas in the Israel-Palestine region, Hezbollah in Lebanon, and the Houthis in Yemen, etc.; risk being

emboldened if Iran gains nuclear weapons.

- Democratic People's Republic of Korea: North Korea has declared itself a nuclear power in September 2022 and rejected denuclearisation in an official legal capacity. In fact, public statements from the government of North Korea also hint towards an intent of North Korea to enhance its ability to threaten not only South Korea but also the United States.[82]

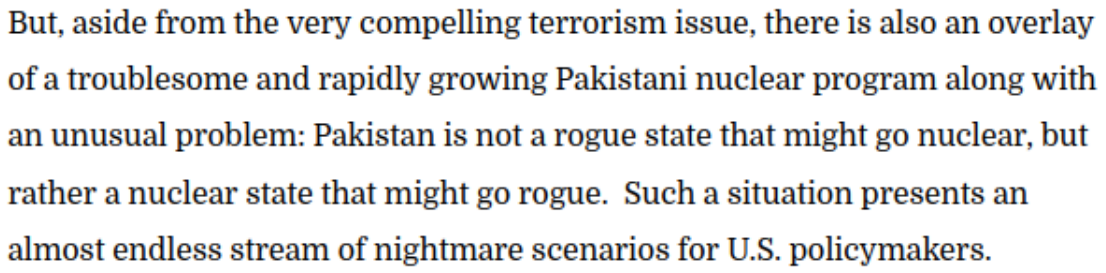


Figure 1.2: This is an excerpt from an article written by Kevin Hulbert, a former senior intelligence officer in the CIA's Directorate of Operations; for 'The Cipher Brief' - a US-based non-partisan media organisation that covers issues of geopolitics and US National Security.

- Islamic Republic of Pakistan: Since its independence from the British, Pakistan has faced chronic government instability while simultaneously being host to Islamic terrorist-outfits/extremists. To put this into perspective, Pakistan has suffered from several military coups, and has had no prime minister serve the full term of 5 years completely till date. Although confident in the United States' supervision of Pakistan's nuclear capabilities and readiness to deal with any change in the status quo; US officials have expressed concern over the existential threat posed by Pakistan's nuclear weapons amidst the unstable nature of their government. They fear that should a radical Islamist power come to power someday, nuclear weapons may be proliferated and reached into the hands of Sunni-Islamic terrorists and insurgents who are likely not to think twice before using them in their pursuit of 'Islamic Jihad' against the West, against key-Western interests in the Middle East-Africa region, and particularly against India.[84] While Pakistan too has shown

some responsibility so far by not resorting to nuclear attacks in recent border skirmishes against India, the probability of extremists in Pakistan gaining access to nuclear weapons remains non-zero given the state of affairs in the country, affected by rampant corruption and economic instability today.

- Other non-state actors: Terrorist organisations such as Al-Qaeda and the Taliban have already expressed their intent to use nuclear weapons should they possess them someday. In fact, there has already been a case of a rogue nuclear supply network operated by the father of Pakistan's nuclear program, Abdul Q. Khan, which spread nuclear access to many actors like Iran, Libya, and even North Korea before it was exposed and shut down. In fact, highly reliable reports indicate Al Qaeda approached this network once.[10] Nuclear Terrorism is also a looming threat identified by many countries that have suffered from terrorism and even though most researchers seem to be convinced that it is highly unlikely for a non-state actor to obtain access to nuclear capabilities, the probability of such an event remains non-zero.[34] Even the most well-secured facilities are prone to breaches by protesters, gangs seeking to make a profit in the black market, cyberattacks, etc.

The above examples of some very real risks of nuclear proliferation are not the only possibilities of a nuclear conflict. While rising tensions between the NPT-recognised nuclear states alone can be worthy of fear, proliferation only adds more fear.

It is scientifically established that apart from the killing, maiming, and radiation-effects that come with any nuclear detonation; the destruction of Earth's atmosphere and environment, culminating into what is popularly accepted as "Nuclear Winter", is an almost sure event, given a nuclear war occurs between any two entities. Such a nuclear winter will be characterised by many dangerous effects of which two are: a lethal combination of toxic substances introduced into the water and soil, and an ultraviolet

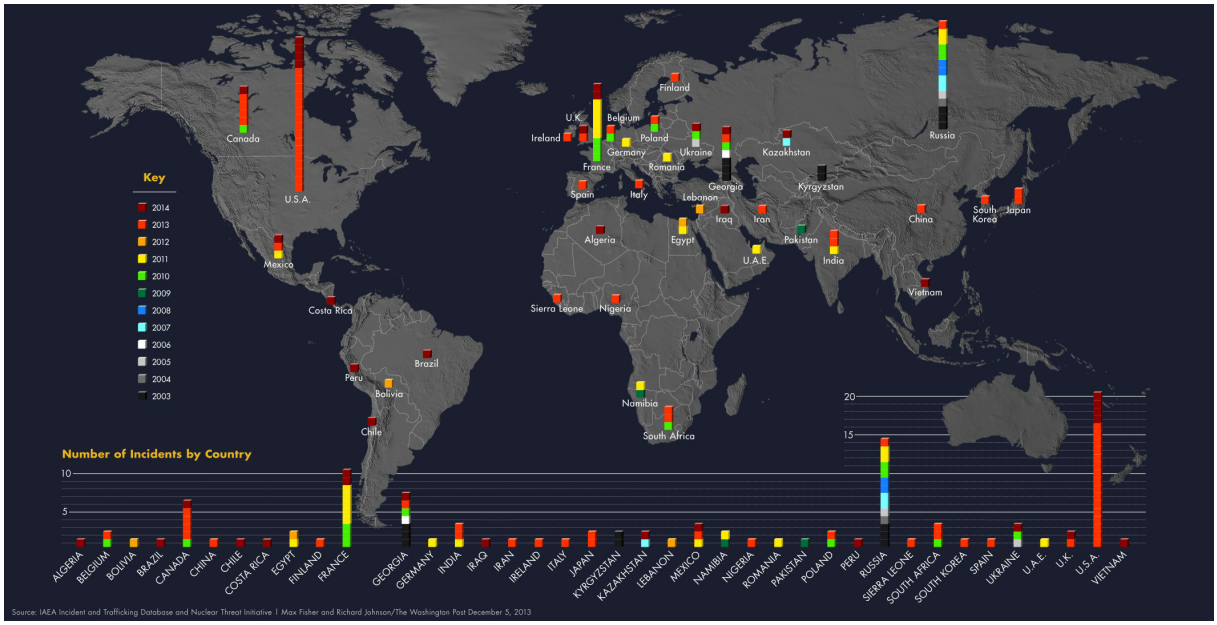


Figure 1.3: This graphic by Haisam Hussein for the Carnegie Corporation of New York's presentation on nuclear terrorism shows how the world is always susceptible to nuclear security breaches in the forms of cyber-security breaches, trespassing by protesters, or even pre-meditated plans by gangsters seeking profit in the black market (This infographic's statistics has not been verified by the author of this report for accuracy. Please treat it as a rough representation of the threat). Fortunately, none of these breaches during 2003-14' have compromised safety. However, we can never be too prepared.

irradiation of the Earth' surface due to massive tear of the Ozone Layer of our atmosphere.[96] We already have some experience of what a small atomic bomb can do from Hiroshima-Nagasaki, Japan; and what even a disastrously unfortunate nuclear spill could do from the events of Chernobyl. The consequences of nuclear warheads clashing against each other would be unimaginable. Hence, it is in the favour of all who love life and peace, that proliferation does not occur. However, we must not just blindly fear these possibilities, but rather use the fear to motivate us to be calm, composed, and thinking critically.

Chapter 2

Conclusion

From the last two sections, two things are clear;

1) that there is an ever-existent nuclear proliferation threat, and;

2) that every intelligence and counter-intelligence operation across the world that serves to check global nuclear proliferation IS SUSCEPTIBLE to failure, as was proven by CIA's failure to predict and act against the 1998 Indian nuclear test in time.

Striving for a nuclear-free world, it then becomes imperative that lesser instinctive thinking, and more critical thinking drives the process of intelligence analysis, so that the world is more alert and ready to counter any further proliferation. To this end, the first step is to identify elements of instinctive thinking that allowed India to dare to test despite being in a difficult geopolitical position, deny any intention of nuclear weapons testing until the last second, and deceive US Intelligence that was spying on it, to become a nuclear state. Only then could the world's intelligence capabilities (that wish to deter nuclear detonations across the world) continuously introspect, engage in meta-cognition, and actively eliminate elements of instinctive thinking in their processes of analysis. This is highly significant for them to avoid mistakes and failures when it comes to checking

global nuclear proliferation in the future, by highly reliably predicting and providing policymakers with effective intelligence efficiently; through critical thinking.

Part II

Identifying the Problem

Chapter 3

Introduction: The 4W1H's

This chapter lists facts: details of events that culminated to India's successful test of nuclear warheads on the 11th of May, 1998. The following questions are specifically answered from the definitive facts that are known to us by verified records/accounts:

1) What happened?

2) Who was/were responsible?

3) When did the events of our focus happen?

4) Where did they happen?

And finally, 5) How did it happen?

Collectively, these questions are our 4W's (Who, What, When, Where) and 1H (How). Based on these, we create a rough timeline beginning from the 1970s when US amped up surveillance after India's first nuclear explosion (Peaceful Nuclear Explosion) up-to the nuclear tests of 1998.

3.0.1 The Peaceful Nuclear Explosion

- By the 1970s, India had succesfully built and was operating multiple nuclear reactors, as a result of bilateral cooperation with the USSR, US, France, and Canada.[86]
- India had previously opposed the internationalisation of nuclear earths to protect its right to its own mineral deposits.[89] It also prominently voiced against the strict International Atomic Energy Agency (IAEA) safeguards to prevent foreign control of its nuclear program, and successfully managed to justify circumventing applicability of safeguards through the procurement and purchase of dual-use technologies for India's space exploration.[90] [39]
- India also did not sign the Nuclear Non-proliferation Treaty (NPT) in 1970 after staunch opposition to the 'nuclear apartheid' it established, between nuclear haves and have-nots. [100]
- The support of the Soviet Union to Russia in the Sino-Indian War of 1962 and the support for Pakistan by the United States in the Bangladesh Liberation War of 1972 showed India that it could not rely on foreign countries always for its protection against hostile nuclear China, and hostile Pakistan which was not only occupying its territory in Kashmir, but also had been receiving military assistance from the US and nuclear assistance from China.[11][101]
- On May 19, 1974; India successfully detonates its first nuclear bomb at Pokhran, Rajasthan. This was claimed to be a 'Peaceful Nuclear Explosion' intended for the purposes of peaceful applications to mining, dredging, etc.[55]
- Fearing a domino of nuclear proliferation, the United States increased surveillance in order to predict plans for further nuclear tests and pressurise India not to engage in one. After failing to counter the 1974 PNE, the USIC organized all kinds of intelligence, HUMINT, OSINT, and other surveillence technology such as satellites

Figure 3.1: The Bhabha Atomic Research Centre Plant, Mumbai, India

to spy on potential testing sites in India.[29][28] Canada also became stricter with regards to enforcement of safeguards. Canada exited India's nuclear program in 1976.[86]

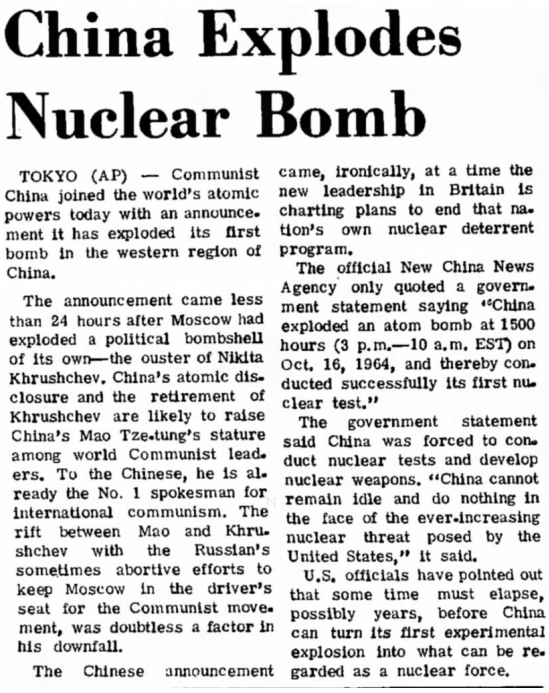
3.0.2 The Aftermath of 1947

- Between the 1970s and 1980s, India focused on increasing nuclear cooperation after 1974. While the Indian government was now declaring its lack of intentions to build weapons and lack of possession of nuclear weapons, it was also developing delivery systems that could be fitted with nuclear devices. [86]

- India bought nuclear-capable planes from France, expanded its Ballistic Missile Program, and aggressively developed these technologies in light of Indian intelligence reports suggesting Chinese nuclear assistance being available to Pakistan. [86]

- By 1982, scientists at India's Bhabha Atomic Research Centre (BARC) and the Defence Research and Development Organization (DRDO) were concentrating on improving nuclear yield and delivery mechanisms.

- India also continued talks with several countries including the USSR to continue its nuclear reactor operations that were now under the threat of lack of raw material



China Explodes Nuclear Bomb

TOKYO (AP) — Communist China joined the world's atomic powers today with an announcement it has exploded its first bomb in the western region of China.

The announcement came less than 24 hours after Moscow had exploded a political bombshell of its own—the ouster of Nikita Khrushchev. China's atomic disclosure and the retirement of Khrushchev are likely to raise China's Mao Tze-tung's stature among world Communist leaders. To the Chinese, he is already the No. 1 spokesman for international communism. The rift between Mao and Khrushchev with the Russian's sometimes abortive efforts to keep Moscow in the driver's seat for the Communist movement, was doubtless a factor in his downfall.

The Chinese announcement came, ironically, at a time the new leadership in Britain is charting plans to end that nation's own nuclear deterrent program.

The official New China News Agency only quoted a government statement saying "China exploded an atom bomb at 1500 hours (3 p.m.—10 a.m. EST) on Oct. 16, 1964, and thereby conducted successfully its first nuclear test."

The government statement said China was forced to conduct nuclear tests and develop nuclear weapons. "China cannot remain idle and do nothing in the face of the ever-increasing nuclear threat posed by the United States," it said.

U.S. officials have pointed out that some time must elapse, possibly years, before China can turn its first experimental explosion into what can be regarded as a nuclear force.

Figure 3.2: A News Article highlighting Chinese Nuclear Test

supply, and foreign assistance for the same. For example, India could legally not use heavy water imported from US, Canada, or the Soviet Union under the NPT-regime, unless some other specific arrangements could be reached.[86]

- India also imposed a self-declared moratium on nuclear testing in response to international outcry.[60]

3.0.3 1985-1995

- In 1985, media reports of Pakistan's clandestine nuclear weapons program threatened India. US intervention did not seem satisfactory to India. Stronger domestic calls for a robust response to Pakistan's program thereby followed in India.[86]

- While so far, the ruling party mostly denied any weapon-intentions strongly in public and in the Indian Parliament; the main Opposition Party that was newly formed recently, the Bhartiya Janata Party, now declared its determination to de-

velop India's own nuclear bomb should it come to power. It reasoned that India no longer could afford a policy of escapism under the circumstances of that day.[72]

- Between 1985-90, tensions between Pakistan and India flared up and down. As the Soviets began rescinding from Afghanistan and the cold war ended, the US no longer needed to appease Pakistan and could be more stricter with its non-proliferation objectives concerning Pakistan.[21] Meanwhile, India began flight-testing its missiles Prithvi, and Agni between 1988 and 1989.[3]

- In 1990, Pakistan attempted to consolidate a nuclear posture against India after an insurrection into Kashmir, which was stopped by US intervention. [19]

- Development of reactors with foreign assistance continued throughout this period. Indian Air Force had also prepared to wield nuclear weapons and practiced flight maneuveurs that would be required to eject a nuclear bomb. [86]

- Even though India took a stance of non proliferation, it continued activities that would allow it to develop nuclear weapons if the need arose.

- By the end of 1990, India possessed non-weaponized nuclear designs.

- On May 5, 1992, India conducted another flight test of its indigenous Prithvi missile.

- On May 11, 1992 the US imposed sanctions on the Indian Space Research Organization (ISRO) and its Russian counterpart, Glvkosmos; because of a proposed sale of hydrogen cryogenic rocket engines and technology for their construction because it felt that the sale was a violation of a Missile Control Regime Russia was party to; even though India insisted on its intention to only use it for civilian space program purposes. [94]

- However, by 1993, India-US and even Indo-China relations progress for the better. When France could no longer supply fuel to the Tarapur reactors, the US looked

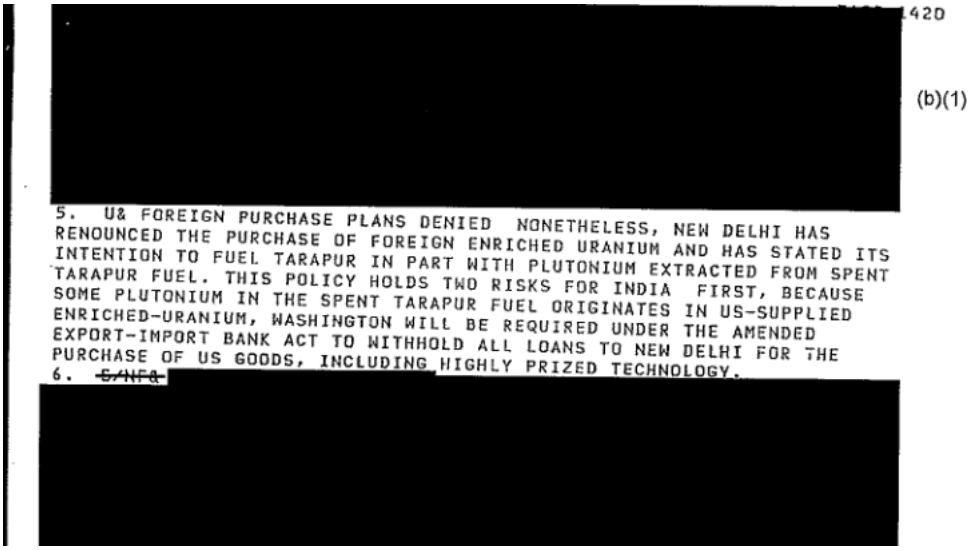


Figure 3.3: A Declassified Intelligence Report highlighting problems with the Tarapur Power Plant

for a third party that could, and China agreed to it.[99]

- By 1994, US Intelligence estimated that India had enough fissile materials for 20-25 nuclear weapons, several of which could be assembled in a few days.[46]

3.0.4 The 1995 Attempt

- In 1995, Chinese transfer of missiles to Pakistan and China's nuclear test just four days after the NPT was extended again reminded India of its ever-existent threats.[75] When the US Senate also passed the Brown Amendment that allowed transfer of previously withheld military equipment to Pakistan, nuclear testing and missile development received a further boost.[67] India expressed its strong and vocal opposition to the United Nations' indefinite extension of the NPT and how it failed to discuss any prospect of denuclearisation of the nuclear haves. Indians at home were wary of the increasing foreign dominance, and were more anticipatory for an Indian nuclear weapons program.[71]

- In December 1995, India geared up for its first test, but US intelligence had detected

activity at Pokhran, and hence pressured India to stop.[66]

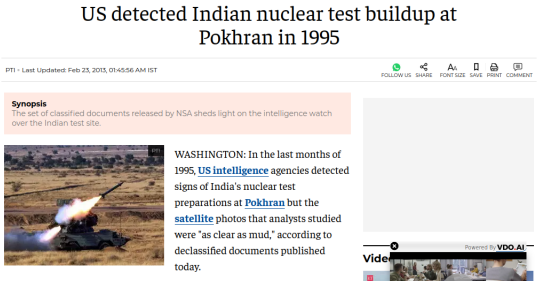
3.0.5 1996-1997

- In 1996, India went into an election, and the result was the victory of the main Opposition, the Bharatiya Janata Party. This party was very critical of the previous governments' security stance and advocated for a strong nuclear policy that entailed a strategic and effective nuclear deterrence policy. Though it stood for a nuclear free world, it also stood against 'nuclear apartheid'. It also held a strong stance against Pakistani aggression.[45]

- Once the BJP won, Shri Atal Bihari Vajpayee took the helm. The USIC knew that Shri Vajpayee preferred a small circle of close advisors.[47] However, before the government could do anything, it was dissolved by a vote of no confidence within 12 days; and a new coalition government was formed, headed by Shri H.D. Deve Gowda. Shri Gowda was later replaced by Shri Gujral in April 1997.[62]

- In June 1996, India was challenging the Comprehensive Test Ban Treaty that sought to ban nuclear testing everywhere. India continued to demand for a time-bound framework for complete disarmament and objected to the treaty's allowance of subcritical tests that did not have explosive yield; which the US and other nuclear powers wanted to be able to do to assess their weapons stock. The domestic pressure to not sign the CTBT far outweighed the international pressure to sign it.[77]

- The DRDO head Abdul Kalam gave a public speech urging the government to speed defense research programs and disregard American pressure. Supportive budget, private investment, and prioritisation to go forward with consolidation of a nuclear policy was absent despite domestic demand. The prime minister also declared that Pokhran test was a thing of the past and India does not want to make nuclear


US detected Indian nuclear test buildup at Pokhran in 1995

PTI - Last Updated: Feb 23, 2013, 01:45:56 AM IST

Synopsis
The set of classified documents released by NSA sheds light on the intelligence watch over the Indian test site.

WASHINGTON: In the last months of 1995, US intelligence agencies detected signs of India's nuclear test preparations at Pokhran but the satellite photos that analysts studied were "as clear as mud," according to declassified documents published today.

Figure 3.4: A News Article highlighting the failure of India's 1995 Attempt

weapons but merely retain the option. In all, this period had India completely averted to the development of its nuclear program.[86]

3.0.6 May 1998 : India goes fully nuclear

- In December 1997, the government dissolved yet again, and a new election brought back Shri Atal Bihari Vajpayee and his party, the BJP, to power in March 1998. [20]

- Between the dissolution and the following election, Indian analysts looked at the threats from earlier US reports of Pakistan's new ballistic missiles. The BJP promised that it would enhance India's security, fight for Pakistan-occupied Kashmir, develop India's own ballistic missiles, and re-evaluate India's nuclear policy and exercise the option to induct nuclear weapons.[44]

- Given the expressed will of the BJP several times to consolidate a strategic nuclear policy, the US was wary but was assured by India that the government was only going to review the nuclear and security threat policy and not exercise any nuclear weapons program.[47]

- Shri Vajpayee was clear that while India may keep the option open, there was no time-frame in mind for nuclear testing. The Cabinet ministers of the Vajpayee

government also continuously reproduced the government stance that it had no intention to perform a nuclear test.[92]

- On April 6, Pakistan tested its Ghauri missile. India was taken by surprise regarding this development in spite of knowing that Pakistan had the capability. [53]
- On April 10, Shri Vajpayee announced the formation of a task force to recommend for the constituion of a National Security Council. Once formed, this Council was to undertake India's first ever Strategic Defense Review to analyse all kinds of threats. [86]
- On April 14, a US Delegation arrived at India to discuss the implications of Pakistan's missile tests. [53]
- On April 15, A.Q. Khan, Pakistan's nuclear program head, declared Pakistan was ready to conduct nuclear tests if its government allowed it to. India was also mobilising the Agni missiles in Chandipur as a response to the Ghauri.[53]
- On May 11, 1998: the field of Pokhran shook again after 24 years since the previous 1974 PNE, with skockwaves rippling through the test area, cracking walls in the nearby villages. The Indian premier soon announced that India had successfully tested a nuclear fission device, to which the public celebrated. India thus declared itself to be a nuclear state. It said that the nuclear environment in India's neighbourhood had necessitated the tests to provide reassurances to the public that national security was paramount. [51]
- The US administration officials learn about the tests from the media, following India's announcement.[43]
- US spy satellites, and clandestine arrangements had failed to predict the event. Chairman of the Senate Intelligence Committee Richard C Shelby called the episode a colossal failure of the intelligence community.[43]

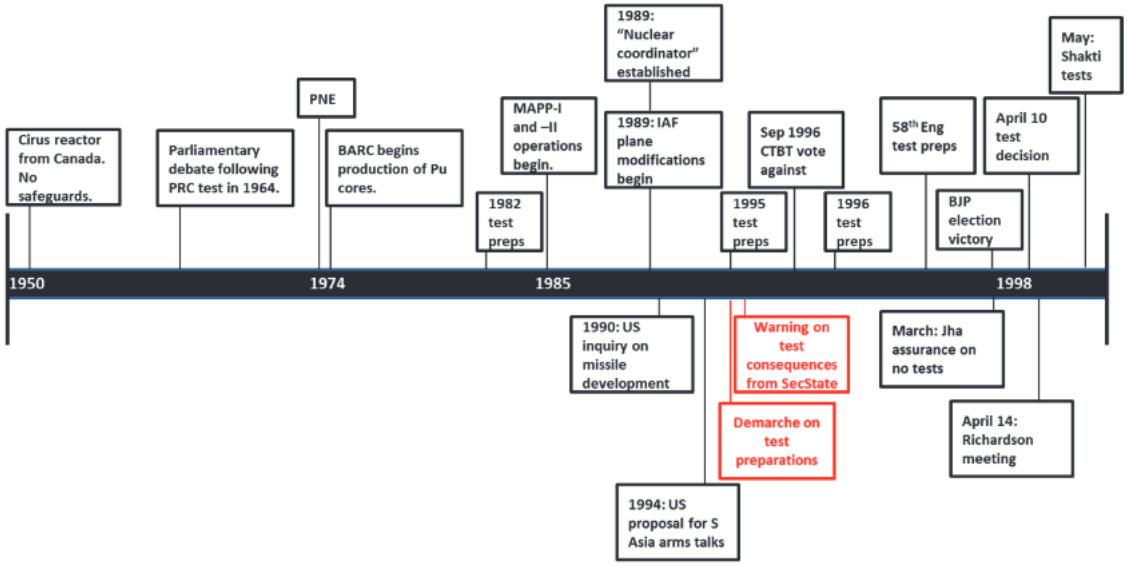


Figure 3.5: A rough timeline of India's Nuclear Program, borrowed from a RAND Corporation PhD Thesis

- On May 13, India again declared that it conducted two more tests which completed a series of planned tests.[51]

3.0.7 Conclusion of the Timeline

Based on the information obtained from credible news sources, government pages, declassified files, and books on the matter (listed in References); the above facts have been obtained. To avoid any kind of bias, only ultimate facts about events that occurred have been collected to establish the timeline above, with active disregard for commentaries, opinions, and picture-plays. Sources are varied purposely from academicians to private researchers to pages of different governments and international organizations, etc. have been used to the best of the author's ability.

Chapter 4

The Why Question and Hypotheses Generation

From these facts and the timeline, it is clear that the United States was very adamant with the non-proliferation policy after the Cuban Missile Crisis and surrounding events. It also was keen on the enforcement of the same.

Note that around the 1990s, the United States already is aware of the following:

- India had fissionable material and weapons-grade material by 1990, enough to produce an estimate of 20 nuclear weapons.[46] India also had developed indigenous missile programs, and added an inventory of nuclear-fit-able flights to its arsenal. India also had practised bomb-ejection maneuveurs. India had well-equipped processing plants, knowledge of nuclear fission, and other requirements for a nuclear program.
- India also had good contacts with several nations over time, owing to its non-aligned stance that allowed it to align with whichever alignment served it best.
- India has had trouble with both Pakistan and China. China has successively tested nuclear bombs several times.

- Indian public and many leaders shifted from an absolute NO to nuclear weaponization before the 1970s, to an ambiguous undefined position by the 1990s. Even though the nuclear program progressed steadily, there was no nuclear doctrine. India's vocal opinions at the UN and at the table for all international plans at establishing safeguards, test bans, and multinational oversight were also very strategic. While India's reasons for opposition to most international efforts at non-proliferation were based on its view of foreign assertion being akin to colonialism and apartheid - a valid justification, its refusal to sign the treaties also allowed it to get away without safeguards and so. The US was always aware that India is not a signatory to the NPT or CTBT and hence was not under much legal scrutiny with respect to its nuclear ambitions.
- In 1995, US spy satellites caught India red-handed while attempting to test in Pokhran, the same site where the 1974 explosion was undertaken. Hence, the US had a good idea of what place to keep tight supervision on.
- The US also had extensive intelligence reach in the subcontinent through spy satellites, HUMINT, and OSINT. The CIA has documented several aspects of Indian politics, economy, and other topics of interest. This is evident in declassified files that reflect on the depth of CIA analysis.

4.0.1 The Why Question

Why then did USIC fail to predict the 1998 Nuclear Testing that happened at the exact same spot where the 1974 PNE took place, and the 1995 foiled attempt was going to take place?

Reframing the same question (to deter reframing bias):

Why did India manage to successfully conduct the 1998 tests amidst global supervision, even after denying any intention to do so?

4.0.2 Hypotheses Generation

H_{chance}: India did not intend to test or build weapons. May 11 1998 was a split second decision. India managed to get ready and build weapons immediately because the Prime Minister Shri Vajpayee wanted it one fine day. The USIC hence failed because this was too random an occurence.

$H_{deception}$: Despite treaties and declared intentions of a lack of will to build weapons, India kept steady progress on its nuclear program. India, after the 1995 failure, decided to use deceptive means to fool USIC into failing to identify signs and predict India's 1998 tests in time. This is why the USIC failed, and India succeeded in declaring itself a nuclear capable power.

These are the two most basic hypotheses. *More must be generated ideally but due to time constraints, they shall not be visited.*

For the sake of this report, only $H_{deception}$ shall be visited.

4.0.3 Thesis Statement - Conclusion

The Indian government adopted a means of strategic unaligned ambiguity with no clear nuclear doctrine in spite of the capability to go nuclear and in spite of having already exploded a nuclear bomb in 1974. In 1998, India used means of deception by exploiting vulnerabilities in the United States'

surveillance.

This hypothesis shall now be investigated in the following part.

Part III

Testing of Hypothesis (Deception)

Chapter 5

Research Questions and Methodology

To investigate $H_{deception}$, the following questions are asked:

5.0.1 If $H_{deception}$ is true:

- What means of deception were likely used by India to deceive USIC? What are some possibilities?

- What vulnerabilities or elements of Instinctive thinking were employed by the United States CIA, that led to their successful deception?

- What different strategies were used by India to prevent what happened in 1995?

5.0.2 If $H_{deception}$ is false:

- Why did India deny intentions of building a nuclear weapon? Why did Indian ministers assertively deny Indian intentions to build weapons?
- Why did India purchase flights that could be fitted with nuclear warheads? Why did India build missiles that could be fitted with nuclear warheads?
- Why did Indian nuclear scientists in charge of the nuclear program lobby domestically for political support towards possessing a nuclear bomb?

5.0.3 Methods of Investigation

To investigate the above formed research questions one by one, evidences are sought along the lines of each question. These evidences are looked for at declassified materials, commentaries by experts, books and articles by authorities on the subject, government documents, and online pages of private organisations that do their own research into these subjects out of some interest.

Once evidences are lined up against each question, their weights are compared to evaluate whether the hypothesis is true or false. A confidence level on a scale of {low, medium, high} is then assigned to the hypothesis' truth. Based on this, recommendations are made appropriately.

Chapter 6

Background

This chapter covers an extensive background of India's nuclear program, right from its foundations pre-independence to the events of May 1998. It highlights events in international and Indian context as well based on the various literature referred to. While there are many sources that have come handy (listed in references).

6.0.1 Background Developments in India

In the years leading up to 1947, clarion calls for Indian independence became more and more impatient with the imperialist British occupation, that had also forced India to fight in a 'Euro-centric' World War II. Several Indians rise against the British under Netaji Subhas Chandra Bose's leadership, and several political leaders in both the UK and India be at loggerheads with each other on the issue of Indian independence and how to deal with it.[87] With fervently growing movements for independence, the notions of 'svarajya' and 'svadeshi' which stood for 'self-rule' and 'from one's own country' respectively; now were strong sentiments shared across the breadth and depth of India.

6.0.2 Establishment of the Indian Institute of Science in 1911

Shri Jamsetji Tata, the founder of the Tata Group of Industries, an Indian multinational corporation, was one such individual who was inspired by the movement for right to self determination. To develop India-based science and technology, he laid the foundations of the Indian Institute of Science (IISc), established after his death in 1911.[81]

6.0.3 The Beginning of India's Nuclear Footprint

By the 1930s, several scientists were on a race to discover new properties of elements already known, and new elements themselves. Radioactivity was a matter of intrigue to many. In 1938, nuclear fission was discovered. Realising the potential applications of any technology that would allow tapping of the immense energy produced by fission, western powers were already beginning to secure deposits of minerals rich in radioactive elements like Thorium, that were crucial in nuclear research.[90]

The IISc's Department of Physics attracted various talents including one Dr. Homi Jehangir Bhabha who had completed his Ph.D. in Nuclear Physics from the University of Cambridge, London; back in 1935.[14]

Just before the start of the world war II, in 1939, Dr. Bhabha returned to India on vacation with the intention of going back to take up research positions in a European/American University. Being stuck in India when the war broke out, Dr. Bhabha accepted a position in the Department of Physics at IISc where he pioneered several research areas in theoretical physics. During wartime, he gained experiences with different personalities like Dr. Vikram Sarabhai, a fellow Indian physicist; and was inspired toward national duty.[23]

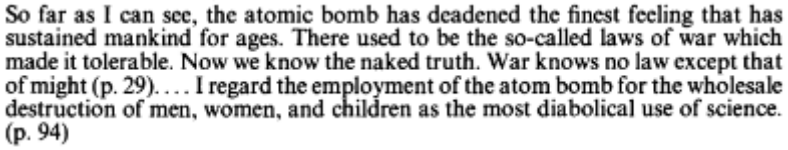

So far as I can see, the atomic bomb has deadened the finest feeling that has sustained mankind for ages. There used to be the so-called laws of war which made it tolerable. Now we know the naked truth. War knows no law except that of might (p. 29). . . . I regard the employment of the atom bomb for the wholesale destruction of men, women, and children as the most diabolical use of science. (p. 94)

Figure 6.1: Thoughts of Gandhi, a prominent Indian leader, on the Hiroshima-Nagasaki bombing

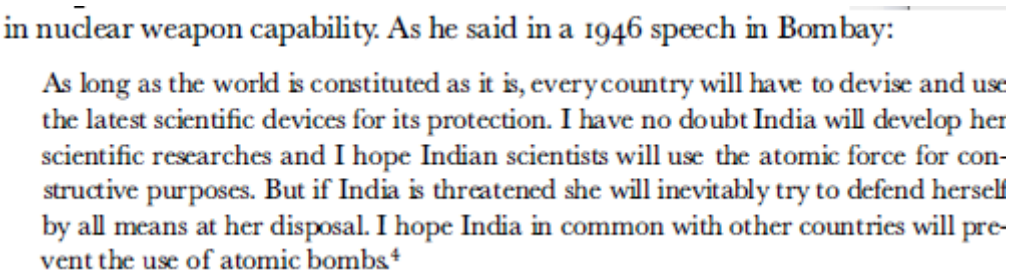
In 1944, he wrote a proposal to the Sir Dorabji Tata Trust, which aimed to provide financial support to promote and retain Indian scientific talent, among other philanthropic efforts. This proposal requested the development of and investment into India's research capabilities specifically in the field of fundamental physics, with an emphasis on nuclear and cosmic ray research. Dr. Bhabha noted that such an effort would ensure that an independent India would not have to depend on foreign experts when science would advance enough to use nuclear energy soon. This led to the establishment of the "Tata Institute of Fundamental Research" (TIFR) in 1945.[30]

6.0.4 The Dawn of the Nuclear Age, Decolonisation, and Partition

In 1945, the final year of the second world war, the United Nations as it exists today was formed, with India being the only yet colonised 'nation' included at the outset.[65] A few months later, the United States' explosion of the atomic bomb in Hiroshima and Nagasaki shook the world. Indian leaders also took note of the extreme devastation that nuclear weapons could cause.[Figure 6.1]

While mass-movements of independence like the Royal Indian Navy Mutiny, and the independence-cum-partition politics of of India were playing out; Dr. Bhabha cultivated TIFR, and began convincing Indian researchers then to join.[9][31][102]

At the same time, the soon-to-be independent India's first prime minister, Jawaharlal


in nuclear weapon capability. As he said in a 1946 speech in Bombay:

> As long as the world is constituted as it is, every country will have to devise and use the latest scientific devices for its protection. I have no doubt India will develop her scientific researches and I hope Indian scientists will use the atomic force for constructive purposes. But if India is threatened she will inevitably try to defend herself by all means at her disposal. I hope India in common with other countries will prevent the use of atomic bombs.[4]

Figure 6.2: These are words said by Jawaharlal Nehru, India's first Prime Minister, during a speech in Bombay, back in 1946.[79]

Nehru displayed views favouring the indigenous development of science and technology in India. He also seemed to have recognised the importance of Indian atomic research as early as 1946.[Figure 6.2]

Meanwhile, the Council of Scientific and Industrial Research (CSIR), an autonomous body established by the colonial government; instituted an Atomic Energy Research Committee and a Board for Research on Atomic Energy under Dr. Bhabha's leadership in 1946. They were to serve the purpose of development of expertise of nuclear physics and of nuclear research in independent India.[15][86]

6.1 The Period of 1947-1974

6.1.1 Independent India's Foundation of its Nuclear Program

Rise in post-world war dissent and mass movements against the British, plus rising costs of maintaining the colonial government; finally led to Indian independence on 15th August 1947.[9] The politics of independence perpetrated by the British, as well as many in India, led to the partition of India into what is today the all-inclusive secular republic of India; and the religious Islamic republic of Pakistan. Then, the intrusion of Muslim tribals into Kashmir, a territory that had legally acceded to India, also led to the first Indo-

Pakistani War of 1947-48. India approached the United Nations and several resolutions led to a ceasefire but no closure due to lack of good faith between the newly formed countries.[70][95]

Soon after independence, in 1948, the efforts of Dr. Bhabha and Nehru led to the passage of an Atomic Energy Act to confer to itself the powers to own all relevant raw materials, pursue and promote secretive research and development of atomic energy; even before the formal adoption of the Indian Constitution in 1950. This act was passed in recognition of the enormous energy needs for the recovery of Indian economy, and that nuclear science advancement, including the potential to weaponize if and when necessary, was a requirement for India to secure a respectable position in the world.[4] Pursuant to this act, the Atomic Energy Commission (AEC) of India was setup in 1948 within the aegis of the Department of Scientific Research, under the direct charge of the Prime Minister. The AEC, chaired by Dr. Bhabha, worked out all the details of India's Development of Atomic Energy, ranging from development and accumulation of expertise, acquisition of raw materials, to the establishment of nuclear power plants in the future. It also replaced all pre-existing boards/committees/advisory boards related to atomic energy.[58]

6.1.2 Indian Acquisition of Materials and Technology amidst the beginning of the Cold War

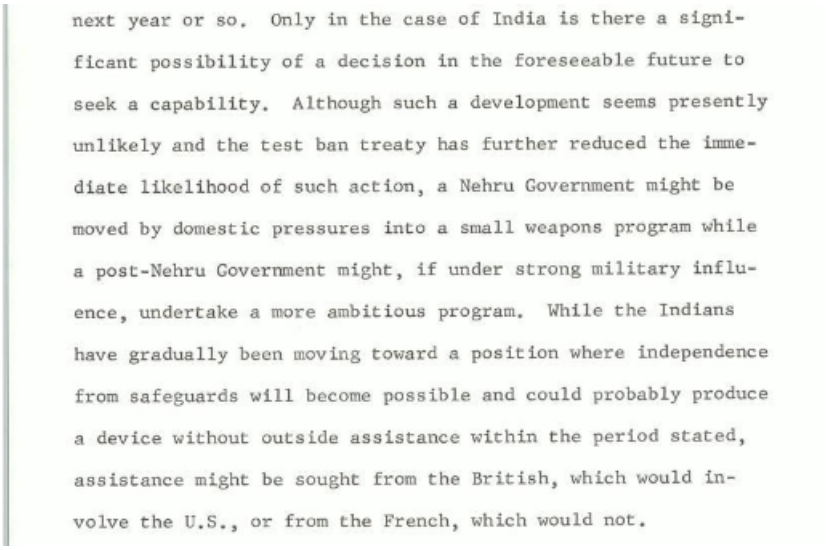
Soon after its formation, the Indian AEC retained a pre-existing embargo on particular mineral deposits that could serve as nuclear fuel, within India's borders. India also sought to use these deposits as leverage to encourage the nuclear-developed and nuclear-developing nations to set up a nuclear processing plant in exchange for access to Indian deposits.[90]

During and after the World War II, the US Congress passed acts that established the secrecy of any and all research pertaining to nuclear fission, and the acquisition plus retention of minerals that served as nuclear raw materials.[8] [61] Meanwhile, the United States proposed a 'Baruch Plan', which entailed an internationalisation of nuclear technology, nuclear research; and their oversight; in 1946. However, Soviet objections to the plan elongated discussions until 1948.[89][32] India opposed the Baruch Plan separately on the grounds that India held the right to national research and development in atomic energy production, to further its economic interests. It did not want to handover its nuclear mineral deposits.[15] By 1949, the political conflict between the second world war's allied nations had aggravated into one between the Western-bloc of nations led by the US and the Eastern-bloc of nations led by the USSR. The formation of the NATO (North Atlantic Treaty Organization) to extend the American Nuclear Umbrella and the Soviet detonation of its own nuclear bomb (despite US attempts at censorship) exacerbated the conflict.[41]

Despite the state of censorship and restriction of access to both nuclear know-how and technology, Dr. Bhabha used his pre-existing contacts with French nuclear scientists to further India's nuclear program.[86] In 1951, India entered into an agreement with France to jointly-develop and construct nuclear reactors in India and France, with French expertise and Indian nuclear mineral deposits.[42]

Soon, with the now fully begun Cold War between the two major nuclear superpowers - US and USSR - in the background; Indian Nuclear policy began taking in new dimensions. Some early incidents must be noted:

1) The US was affected by the Indian embargo on nuclear fuel. It tried to stockpile such materials, especially to avoid the possibility of the nuclear fuel reaching communist hands amidst the Cold War. However, India sought for an exchange of nuclear assistance



next year or so. Only in the case of India is there a significant possibility of a decision in the foreseeable future to seek a capability. Although such a development seems presently unlikely and the test ban treaty has further reduced the immediate likelihood of such action, a Nehru Government might be moved by domestic pressures into a small weapons program while a post-Nehru Government might, if under strong military influence, undertake a more ambitious program. While the Indians have gradually been moving toward a position where independence from safeguards will become possible and could probably produce a device without outside assistance within the period stated, assistance might be sought from the British, which would involve the U.S., or from the French, which would not.

Figure 6.3: Declassified Files: An Intelligence Report by the USIC on India's nuclear capability in the 1960s

like the arrangement with France in 1951. Hence, no agreement was reached with the US for long. Meanwhile, the Communist People's Liberation Army had successfully taken over China by 1950. China was now seen as a Soviet satellite communist state. When India wished to export nuclear fuel to China in 1953, the United States was taken aback, and expressed to India that it would be forced to cut off all aid programs in India. Disagreements and negotiations eventually led to the US buying up the Thorium minerals at a more unfavourable rate in exchange for an Indian decision to sell thorium nitrate in small quantities only to specific non-communist countries.[40][90] 2) By 1954, the US decided to offer military aid to Pakistan, which had cozied up to the US by denouncing communism and expressing favourable attitudes to the US, as it was building up an anti-communism base as strong as possible amidst the Cold War. The export of US military to Pakistan symbolised a threat to India.[1]

These episodes prompted India to invest further efforts into the development of science and technology, with the aim to secure a position strong enough to avoid foreign interference into its affairs, and the affairs of the Indian subcontinent.[1]

6.1.3 Influence of Cold War Dynamics, 1954-64

Amidst the now fully-fledged Cold-War, both the US and USSR competitively championed efforts to promote atomic energy production for peaceful purposes[80][76], as part of their attempts to encourage nations to adopt their respective ideas of governance and market.

Particularly, the US Atomic Energy Act was amended in 1954 to remove censorship and restrictions on transfer of nuclear fission-pertaining knowledge and technology.[59] This promoted an open market for nuclear fission technology. Parallely the US proposed the establishment of an 'International Atomic Energy Agency (IAEA)' to internationalise control and demilitarise nuclear technology.[27] At around the same time, the Indian premier also proposed a ban on all nuclear testing.[36] India also went forward with its plans to further its nuclear expansion and played an active role in the formulation of the IAEA Statute.[39]

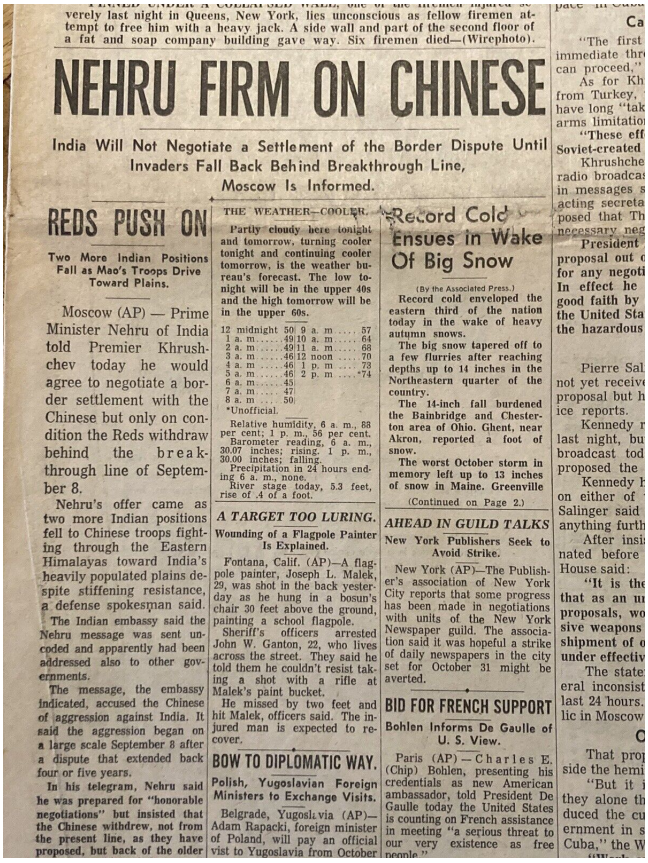
In 1954, a new and separate Department of Atomic Energy (DAE) took charge of all atomic energy related activities in India.[38] Tapping into new international developments surrounding US promotion of free market for nuclear technology, Dr. Bhabha declared his plan to tap atomic energy for electricity production at a conference held in New Delhi.[102] This plan included the construction of Plutonium, Uranium-based reactors with some Canadian assistance, in Trombay and Bombay (now, Mumbai); with the vision for greater economic development that would be fostered by affordable electricity production.

In 1955, the construction of India's first nuclear reactor Apsara begun, and it was functional by 1956. It used indigenously made fuel rods, enriched uranium fuel from France, and technical know-how from the United Kingdom.[6] Indo-Canadian agreements during the implementation of a 'Colombo Plan' also included a Canadian offer to build a

reactor called CIRUS.[16] By this time, India also succeeded in negotiations to arrive at the final IAEA Statute that only established safeguards on fissile materials and relevant reactors to prevent their diversion toward weapon programs. This meant India could obtain foreign assistance in the development of its nuclear program, and maintain control of its fissile material deposits.[39]

Between 1956-60', plans for nuclear plants were being rapidly implemented. Dr. Bhabha put forward his plan for Indian nuclear energy sufficiency at the second UN Conference on Peaceful Uses of Atomic Energy in Geneva, in 1958.[35] These plans officially provided reason of peaceful use for the plutonium by-product that would result from a functional CIRUS reactor. Hence, this Indo-Canadian CIRUS Reactor's functionality in 1960 was followed by plans to construct another Plutonium reprocessing plant in Trombay. The CIRUS reactor agreement with Canada did not come with strict safeguards, and the IAEA Safeguards were also not applicable then.[17][16] In the late 1950s and early 1960s, Chinese tensions with India for accepting Tibetan refugees, and a Tibetan government-in-exile; and US recognition of Chinese nuclear capabilities encouraged the US to pull the democratic non-communist India closer with greater nuclear cooperation; inspite of its non-aligned stance.[73] During this time, thousands of students from India also studied Nuclear physics in universities across the United States. Plans to construct a Plutonium processing plant were also drawn, and in 1961, a US-assisted PUREX Plutonium DEMONSTRATION processing plant was constructed. Dr. Bhabha also actively used the Cold War dynamics to attract more and more nuclear cooperation by engaging in talks with both the Soviets and the Americans. However, during all this time, India actively acknowledged that it will never use atomic energy for 'evil purposes' or for the creation of a bomb.[86][90]

In 1962, the Indian Atomic Energy Act of 1962 superseded all previous acts, to establish direct control of the central government over everything concerning atomic energy



verely last night in Queens, New York, lies unconscious as fellow firemen attempt to free him with a heavy jack. A side wall and part of the second floor of a fat and soap company building gave way. Six firemen died—(Wirephoto).

NEHRU FIRM ON CHINESE

India Will Not Negotiate a Settlement of the Border Dispute Until Invaders Fall Back Behind Breakthrough Line, Moscow Is Informed.

REDS PUSH ON

Two More Indian Positions Fall as Mao's Troops Drive Toward Plains.

Moscow (AP) — Prime Minister Nehru of India told Premier Khrushchev today he would agree to negotiate a border settlement with the Chinese but only on condition the Reds withdraw behind the breakthrough line of September 8.

Nehru's offer came as two more Indian positions fell to Chinese troops fighting through the Eastern Himalayas toward India's heavily populated plains despite stiffening resistance, a defense spokesman said.

The Indian embassy said the Nehru message was sent uncoded and apparently had been addressed also to other governments.

The message, the embassy indicated, accused the Chinese of aggression against India. It said the aggression began on a large scale September 8 after a dispute that extended back four or five years.

In his telegram, Nehru said he was prepared for "honorable negotiations" but insisted that the Chinese withdrew, not from the present line, as they have proposed, but back of the older

THE WEATHER—COOLER.

Partly cloudy here tonight and tomorrow, turning cooler tonight and continuing cooler tomorrow, is the weather bureau's forecast. The low tonight will be in the upper 40s and the high tomorrow will be in the upper 60s.

12 midnight	50	9 a. m.	57
1 a. m.	49	10 a. m.	64
2 a. m.	49	11 a. m.	68
3 a. m.	46	12 noon	70
4 a. m.	46	1 p. m.	73
5 a. m.	46	2 p. m.	*74
6 a. m.	45		
7 a. m.	47		
8 a. m.	50		

*Unofficial.

Relative humidity, 6 a. m., 88 per cent; 1 p. m., 56 per cent. Barometer reading, 6 a. m., 30.07 inches; rising. 1 p. m., 30.00 inches; falling. Precipitation in 24 hours ending 6 a. m., none. River stage today, 5.3 feet, rise of .4 of a foot.

A TARGET TOO LURING.

Wounding of a Flagpole Painter Is Explained.

Fontana, Calif. (AP)—A flagpole painter, Joseph L. Malek, 29, was shot in the back yesterday as he hung in a bosun's chair 30 feet above the ground, painting a school flagpole.

Sheriff's officers arrested John W. Ganton, 22, who lives across the street. They said he told them he couldn't resist taking a shot with a rifle at Malek's paint bucket.

He missed by two feet and hit Malek, officers said. The injured man is expected to recover.

BOW TO DIPLOMATIC WAY.

Polish, Yugoslavian Foreign Ministers to Exchange Visits.

Belgrade, Yugoslavia (AP)—Adam Rapacki, foreign minister of Poland, will pay an official visit to Yugoslavia from October

Record Cold Ensues in Wake Of Big Snow

(By the Associated Press.)

Record cold enveloped the eastern third of the nation today in the wake of heavy autumn snows.

The big snow tapered off to a few flurries after reaching depths up to 14 inches in the Northeastern quarter of the country.

The 14-inch fall burdened the Bainbridge and Chesterton area of Ohio. Ghent, near Akron, reported a foot of snow.

The worst October storm in memory left up to 13 inches of snow in Maine. Greenville

(Continued on Page 2.)

AHEAD IN GUILD TALKS

New York Publishers Seek to Avoid Strike.

New York (AP)—The Publisher's association of New York City reports that some progress has been made in negotiations with units of the New York Newspaper guild. The association said it was hopeful a strike of daily newspapers in the city set for October 31 might be averted.

BID FOR FRENCH SUPPORT

Bohlen Informs De Gaulle of U. S. View.

Paris (AP) — Charles E. (Chip) Bohlen, presenting his credentials as new American ambassador, told President De Gaulle today the United States is counting on French assistance in meeting "a serious threat to our very existence as free people."

Figure 6.4: News Article on Indian Position with Chinese border in the face of impending war

and its development; and their secrecy.[52]

6.1.4 The Sino-Indian War of 1962 and its Aftermath

During 1960-61, Sino-Indian conflict aggravated into excessive troop buildup at the border. This culminated into the Sino-Indian War of October 1962.[11] Parallely, the Cold War had culminated into the Cuban Missile Crisis.[7] While the Soviets had previously vetoed against a largely West Europe+US sponsored UNSC Resolution against Indian police/military action to free its territories that were still under (Dutch) colonial control, and taken other supportive stances on the Kashmir issue, transfer of technology, etc; the Soviets shifted their weight towards China this time.[104] They wanted China's support for what was going on in Cuba.[105] The US on the other hand offered military support to India upon request, despite its pre-occupation with the Cuban Missile Crises. However,

China itself took some territory and unilaterally stopped the war.[11]

This episode caused a shift in Indian domestic views on the nuclear program. The government immediately put together a Defence Council that among army chiefs and ministers, also had the DAE Secretary, Dr. Homi Bhabha. Dr. Bhabha also began announcing that India could explode a nuclear device soon.[57]

Amidst US Intelligence Reports stating that China could explode its device soon, and to prevent India from pursuing weapons capabilities especially after the Chinese defeat, secrecy enforcement by the Atomic Energy Act 1962, and greater spending on the Department of Atomic Energy; the US showed more interest in nuclear cooperation with India.[73] This resulted in the construction of India's first nuclear power reactors in Tarapur. The agreement between US and India entailed IAEA Inspection and US assistance with enriched Uranium fuel.[63] Further, the US-Based Firm, Vitro International was also involved in the construction of the first reprocessing plant, Phoenix, at Trombay, that was planned for reprocessing Plutonium that resulted from CIRUS' operations. The US also helped with CIRUS by providing India with Heavy Water required. Reprocessing of the spent fuel rods of CIRUS containing Plutonium would result in the formation of 'Weapons-grade plutonium' that could be used to build nuclear weapons. By 1964, several Indians were studying/had studied at various nuclear-oriented programs and facilities across the US and Canada. By 1964, the CIRUS and Phoenix Plants were able to produce weapons grade Plutonium.[86]

6.1.5 Post Cold War Worries of Nuclear Proliferation

Following the Cuban Missile Crisis of 1962 proved that the MAD Doctrine was not stable on its own.[93] Within the United States, these events spurred US Policy of non-

proliferation of nuclear weapons as the US Intelligence Community was convinced that any increase in the number of states that have independent power to use nuclear weapons would significantly increase the risk of nuclear war.[22] Coming very close to a full-fledged nuclear war also encouraged a new US-Soviet partnership to deter the use/proliferation of nuclear weapons.[25] The US Congress also passed a Nuclear Nonproliferation Act which controlled US Export of nuclear materials and technology. Subsequently, the United States aggressively lobbied for the ratification of the Nuclear Non-proliferation Treaty (NPT 1970), in the United Nations.

In 1963, a Limited Test Ban Treaty was signed in Moscow, on the August 1963, which disallowed Nuclear Weapons Testing in the Atmosphere, Outer Space, and underwater.[**?**]

In 1964, several key events took place in India:

- The Plutonium processing plant Phoenix was completed in Trombay. It had the capacity to produce weapons-grade Plutonium by now. Both CIRUS and this was not under any strict safeguards. This meant India now had both: its own reactor fuel and fissile material for a nuclear device.[90]
- The Prime Minister, Jawaharlal Nehru died in May and was succeeded by Shri Lal Bahadur Shastri who was an adamant proponent of non-violence.[97]
- Dr. Bhabha publicly announces the concept of nuclear deterrence capability, and India's capability of producing nuclear bombs that would not be economically demanding.[13]
- On October 16, China exploded its nuclear bomb. This created a frenzy and resulted in domestic pressure for an Indian nuclear test.[54]
- India's attempts at acquiring nuclear security guarantees from the USSR and US failed to satiate their worries.[78]

In 1965, India entered into a second war with Pakistan. This exacerbated Sino-Indian, Indo-Pakistan, US-India, and US-Pakistan tensions. During this time, China

also conducted a second nuclear weapon test. The US had been on the side of Pakistan as far as India was concerned, with military support and otherwise provided by the US to Pakistan.[90] Pakistan was also starting to side with China now, which caused tensions with the US. The war ended with a UN-mediated ceasefire finally.[64] This war and 1962 Sino-Indian War stood to show India could not rely on either the US or Russia wholly. This event, along with continuous Chinese nuclear buildup again encouraged Indian peoples' nuclear aspirations. In 1966, both Homi Bhabha and Prime Minister Shri Shastri had died within a span of two weeks; and Dr. Bhabha's succesor and PM Shastri's successor: Dr. Vikram Sarabhai and Smt. Indira Gandhi respectively now had to deal with domestic calls for nuclear aspirations, the international nuclear non-proliferation program.[56]

By 1965, the first weapons grade Plutonium (pending processing) was obtained from the CIRUS reactors.[86] As stated earlier, these did not require any IAEA safeguards to be followed. In 1966, India accepted IAEA Safeguards on the CANDU-type power reactor in Rajasthan. During this time, domestic debate on foreign policy, non-alignment, and resilience to safeguards/foreign interference were highly prominent.[12]

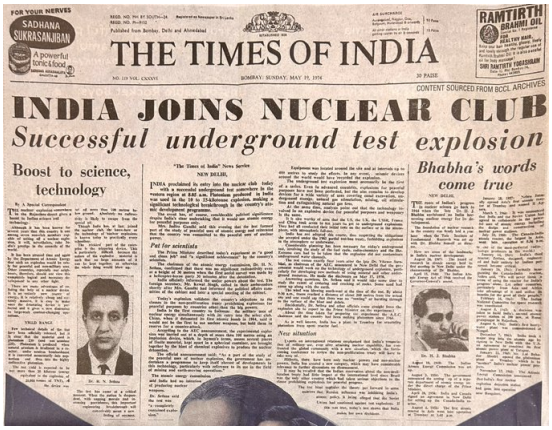
In 1968, the Indian government objected to the provisions of the formal Nuclear Non-proliferation Treaty that was now open for signature at the UN.[100] The Treaty divided countries into nuclear haves (the five permanent UNSC members) and have-nots (every other country). The treaty required that the Nuclear haves would not allow proliferation of nuclear technology to the have-nots, and that nuclear have-nots do not pursue a nuclear weapons program. It also did not give any assurances that the nuclear haves will eliminate their own nuclear weapons stocks. This meant China would be a nuclear state, but India would not be allowed to become one if it chooses to in the future. India did not sign the NPT in 1970.[100]

As NPT again closed the nuclear market, India entered into agreements for space-related exploration; with the Soviet Union, US, and France. Nuclear technologies were exchanged for the purposes of their applications in space exploration and missile technology. In late 1968, the DAE also approved the construction of a fast neutron reactor, PURNIMA; to be built with Soviet help. Thus, India was expanding its nuclear technology and knowledge under the space-based co-operations, which could be useful for its nuclear program too.[86]

6.1.6 The Peaceful Nuclear Explosion of 1974

In 1970-71, tensions in Pakistan, and specifically between East and West Pakistan; led to a refugee crisis in India as several refugees were escaping the Pakistani genocide in East Pakistan; by pouring into India.[98] Soon began a thirteen day full blown war between West Pakistan, and an East-Pakistan (now, Bangladesh) liberating India.[101] During this war, it was the Soviets that resisted the new Sino-US rapproachment interference in favour of Pakistan, by standing in the way of American nuclear-powered aircraft carrier warships reaching India. US siding with a military dictatorship-representing Pakistan, and communist China, to intimidate a democracy-based India; and China's veto against Bangladesh's inclusion into the UN; forced the latter to re-evaluate its foreign policy once more. Around this time, China was also attempting to turn Sikkim, a state of India, against India; and further seccionist movements across India.[90]

On May 18, 1974; India successfully detonated its first nuclear bomb at Pokhran, Rajasthan. This was termed a peaceful nuclear explosion (PNE) and was intended for peaceful applications of nuclear explosions in mining, dredging, etc.[55] Apart from the shock of being taken by surprise, the use of Canadian and US technologies in the explosion of the bomb raised concerns and international ire.[55] The US became stricter



THE TIMES OF INDIA

CONTENT SOURCED FROM BCCL ARCHIVES

INDIA JOINS NUCLEAR CLUB

Successful underground test explosion

Boost to science, technology

Bhabha's words come true

Figure 6.5: Post 1974 PNE News Article

with transfer of nuclear technology and passed acts that only allowed such transfer under strict safeguards-compliance. Canada exited from India's nuclear program in 1976.[86]

In the 1980s, open media reports stated that more tests may occur in Pokhran anyday; unlike the state of secrecy that existed earlier. Nuclear developments in Pakistan, Sino-Pakistan nuclear cooperation, US neglect of Pakistan's Nuclear weapons program, and US military assistance to Pakistan for their role in Afghanistan against the Soviets; all of this now created a new and explicit demand for nuclear weapons development in India. The explosion of the bomb had demonstrated India's capability to further its program, to the world.[86][90]

6.1.7 The Aftermath of 1974

Between 1981-82' India built shafts for underground nuclear devices to keep the option to test nearly ready and use it as leverage to negotiate supply of nuclear fuel for the Tarapur plants from the US; since they were now being harsher on providing the fuel. US wanted to abrogate the 1963 Tarapur agreement. US Intelligence was also more wary of India's nuclear proliferation in this decade. After failing to counter the 1974 PNE, the USIC organized all kinds of intelligence, HUMINT, OSINT, and other surveillence technology

such as satellites to spy on potential testing sites in India.[29][28]

While the Indian government was now declaring its lack of intentions and lack of possession of nuclear weapons, it was also developing its delivery systems. Ballistic Missile programs were expanded, and nuclear-capable planes were bought from France. Aggressive development of these technologies was motivated by more Indian intelligence reports of Chinese nuclear assistance to Pakistan. By 1982, the Bhabha Atomic Research Center (BARC) in India and the Defence Research and Development Organization (DRDO) of India were concentrating on improving nuclear device yield, and delivery mechanisms. India also continued talks with several countries including the USSR to continue its nuclear reactor operations that were now under the threat of lack of raw material supply, and foreign assistance for the same. For example, India could legally not use heavy water imported from US, Canada, or the Soviet Union under the NPT-regime, unless some other specific arrangements could be reached.

In 1985, media reports of Pakistan's clandestine nuclear weapons program threatened India. US intervention did not seem satisfactory to India. Stronger domestic calls for a robust response to Pakistan's program thereby followed in India. While so far, any indications of a bomb or weapons arsenal building intention was not publicly acknowledged by the ruling party which in fact mostly denied any weapon-intentions strongly in public and in the Indian Parliament; the main Opposition Party that was newly formed recently, the Bhartiya Janata Party, now declared its determination to develop India's own nuclear bomb should it come to power. It reasoned that India no longer could afford a policy of escapism under the circumstances of that day.

Between 1985-90, tensions between Pakistan and India flared up and down. As the Soviets began rescinding from Afghanistan and the cold war ended, the US no longer needed to appease Pakistan and could be more stricter with its non-proliferation objec-

tives concerning Pakistan. Meanwhile, India began flight-testing its missiles Prithvi, and Agni between 1988 and 1989.

In 1990, Pakistan attempted to consolidate a nuclear posture against India after an insurrection into Kashmir, which was stopped by US intervention. This episode encouraged India to rationalise a nuclear strategy and policy. Pakistan's nuclear capability was a sure threat to India. Development of reactors with foreign assistance continued throughout this period. Indian Air Force had also prepared to wield nuclear weapons and practiced flight maneuveurs that would be required to eject a nuclear bomb. Even though India took a stance of non proliferation, it continued activities that would allow it to develop nuclear weapons if the need arose. By the end of 1990, India possessed non-weaponized nuclear designs.

On May 5, 1992, India conducted another flight test of its indigenous Prithvi missile. On May 11, the US imposed sanctions on the Indian Space Research Organization (ISRO) and its Russian counterpart, Glvkosmos; because of a proposed sale of hydrogen cryogenic rocket engines and technology for their construction because it felt that the sale was a violation of a Missile Control Regime Russia was party to; even though India insisted on its intention to only use it for civilian space program purposes. However, in by 1993, India-US and even Indo-China relations progress for the better. When France could no longer supply fuel to the Tarapur reactors, the US looked for a third party that could, and China agreed to it. This added to Indian sentiments against American dominance.

6.1.8 The Attempted Tests of 1995-96'

By 1994, US Intelligence estimated that India had enough fissile materials for twenty to twenty five nuclear weapons, several of which could be assembled in a few days. In an

April 13 speech before the Army Commanders Conference in New Delhi, the then PM of India declared that India would reject any restrictions on its nuclear option. Instead, he said, India favored a firmly scheduled, time-bound, universal and nondiscriminatory approach to nuclear disarmament. This was in response to CTBT-paradigm that was going on.

In 1995, Chinese transfer of missiles to Pakistan and China's nuclear test just four days after the NPT was extended again reminded India of its ever-existent threats. When the US Senate also passed the Brown Amendment that allowed transfer of previously withheld military equipment to Pakistan, nuclear testing and missile development received a further boost. India expressed its strong and vocal opposition to the United Nations' indefinite extension of the NPT and how it failed to discuss any prospect of denuclearisation of the nuclear haves. Indians at home were wary of the increasing foreign dominance, and were more anticipatory for an Indian nuclear weapons program. They did not want India to sign the CTBT when China would be allowed to continuously blow up nuclear devices either way.

In December 1995, India geared up for its first test, but US intelligence had detected activity at Pokhran, and hence pressured India to stop. In 1996, India went into an election, and the result was the victory of the main Opposition, the Bharatiya Janata Party. This party was very critical of the previous governments' security stance and advocated for a strong nuclear policy that entailed a strategic and effective nuclear deterrance policy. Though it stood for a nuclear free world, it also stood against 'nuclear apartheid'. On the other hand, the previous ruling party Congress now had begun to downplay the nuclear issue. Among other issues, this allowed the win of BJP and Shri Atal Bihari Vajpayee took the helm. However, before the government could do anything, it was dissolved by a vote of no confidence within 12 days; and a new coalition government was formed, headed by Shri H.D. Deve Gowda. Shri Gowda was later replaced by Shri Gujral in April 1997.

In June 1996, India was challenging the Comprehensive Test Ban Treaty that sought to ban nuclear testing everywhere. India continued to demand for a time-bound framework for complete disarmament and objected to the treaty's allowance of subcritical tests that did not have explosive yield; which the US and other nuclear powers wanted to be able to do to assess their weapons stock. The domestic pressure to not sign the CTBT far outweighed the international pressure to sign it. The DRDO head Abdul Kalam once again went public, giving a speech in which he urged the government to speed defense research programs and disregard American pressure. India ended up attempting to block and voted against the adoption of the CTBT, which passed nevertheless. The US attemted to persuade India to sign it in the near future. Lack of budget, private investment, and political will to go forward with consolidation of a nuclear policy was absent despite domestic demand. India announced that foreign ownership of India's nuclear plants may be considered now, in 1997; to encourage foreign countries to denounce their non proliferation-based restrictions and engage in commercial nuclear transactions with India. Gowda also announced full support to scientists working on the Agni Programme. However, funding cuts and lack of political will was on display in reality. The prime minister also declared that Pokhran test was a thing of the past and India does not want to make nuclear weapons but merely retain the option. In all, this period had India completely averted the development of its nuclear program.

6.1.9 May 1998 : India goes fully nuclear

In December 1997, the government dissolved yet again, a new election brought back Shri Atal Bihari Vajpayee and his party, the BJP to power in March 1998. Between the dissolution and the following election, Indian analysts looked at the threats from earlier US reports of Pakistan's new ballistic missiles. The BJP promised that it would enhance India's security, fight for Pakistan-occupied Kashmir, develop India's own ballistic missiles,

Figure 6.6: PM Shri Atal B Vajpayee at Pokhran Site in 1998

and re-evaluate India's nuclear policy and exercise the option to induct nuclear weapons. During this time, the then AEC chairman, Chidambaram, also had expressed his intents to conduct nuclear explosion tests, if policymakers allowed him to. Given the expressed will of the BJP several times to consolidate a strategic nuclear policy, the US was wary but was assured by India that the government was only going to review the nuclear and security threat policy and not exercise any nuclear weapons program. Shri Vajpayee was clear that while India may keep the option open, there was no time-frame in mind for nuclear testing. The Cabinet ministers of the Vajpayee government also continuously reproduced the government stance that it had no intention to perform a nuclear test.

On April 6, Pakistan tested its Ghauri missile. India was taken by surprise regarding this development in spite of knowing that Pakistan had the capability. On April 10, Shri Vajpayee announced the formation of a task force to recommend for the constitution of a National Security Council. Once formed, this Council was to undertake India's first ever Strategic Defense Review to analyse all kinds of threats. On April 14, a US Delegation arrived at India to discuss the implications of Pakistan's missile tests. On April 15, A.Q. Khan, Pakistan's nuclear program head, declared Pakistan was ready to conduct nuclear tests if its government allowed it to. India was also mobilizing the Agni as a response

to the Ghauri. This would have likely made it seem like India was considering only non-nuclear options.

On May 11, 1998: the field of Pokhran shook again with skockwaves rippling through the test area, cracking walls in the nearby villages. The Indian premier soon announced that India had succesfully tested a nuclear fission device, to which the public celebrated. India thus declared itself to be a nuclear state. It said that the nuclear environment in India's neighbourhood had necessitated the tests to provide reassurances to the public that national security was paramount.

The US administration officials learn about the tests from the media, following India's announcement. US spy satellites, and clandestine arrangements had failed to predict the event. Chairman of the Senate Intelligence Committee Richard C Shelby called the episode a colossal failure of the intelligence community. On May 13, India again declared that it conducted two more tests which completed a series of planned tests.

Chapter 7

Literature Review

To collect evidence, this report uses declassified files from prior to and immediately after the 1998 event, books and articles by authorities on the subject, government admissions, and news stories by credible news organizations based in the US and India.**(Refer to List of references at the end)**

7.0.1 If $H_{deception}$ were true...

- What means of deception were likely used by India to deceive USIC? What are some possibilities?
- What vulnerabilities or elements of Instinctive thinking were employed by the United States CIA, that led to their successful deception?
- What different strategies were used by India to prevent what happened in 1995?

According to a Los Angeles Times article[5] dated May 20, 1998; Indian sources were quoted saying that Indian scientists had charted the path of the two U.S. Spy Satellites.

This is highly likely given mathematical and astronomical expertise in India, and prior knowledge of the spy satellites because when the 1995 Indian attempt at nuclear testing was caught red-handed, the then U.S. Ambassador to India. Frank G. Wisner had showed the Indian government satellite imagery of Pokhran that exposed movement of vehicles and equipment; according to an article in the Journal of U.S. Intelligence Studies.[18] This meant, Indian scientists could easily just calculate when they could safely do what they had to and when/how could hide. Work at Pokhran in 1998 was done only at night, and heavy equipment was also moved away to wherever it was previously kept, at dawn. India also employed camouflage netting to hide the shafts. Native vegetation and sand were placed artificially each time in a well calculated and coordinated manner. According to CIA Director Tenet, India also deliberately chose to come out of hiding and work when there was heavy sandstorm. Sandstorms could effectively blind the two imagery satellites. Scientists who had to move to Pokhran also did so in small groups so as to avoid suspicion. They used false identities and wore Indian Army Camouflage to hide their civilian identities. The Indian Army's 58th Engineer Regiment was called to assist the program, and this could make satellite images give the impression that the army was just stationed at the test site for maintenance. Further, just before the test, India also increased abnormal movements and Agni missile buildup away from Pokhran. However, this was not true. They were only firing a much lower capility missile to deliberately misdirect satellite attention away from Pokhran and onto Chandipur where India seemed to be testing an intermediate range ballistic missile (Agni) instead.[2]

According to US Intelligence[47] itself, Shri Vajpayee was a man that relied on a very closely kept circle of advisors alone. This would have allowed the Prime Minister to keep information and directives regarding the test extremely secretive, thereby cutting away at USIC's HUMINT and OSINT. In fact, James Rubin, a State Department Spokesman is quoted to have cited 'twenty recent high-level contact in which Indian officials had as-

sured US counterparts that there were no immediate plans for nuclear testing. Even the Richardson delegation that visited Indian and Pakistan recently to mediate the missile crisis that seemed to shape up after Pakistan's Ghauri missile test, left India convinced that it would 'react in a low-key fashion'; according to John Diamond, former Communications Director for a US Senator.[24] In fact, some sources claim that even the Indian President and Defense Minister were oblivious to the test preparations until a few days earlier. This made it easy for India to give convincing assurances and public statements denying any intention to conduct a nuclear test. India also took efforts to encrypt all communications related to its nuclear test plan. Such use of codewords also made COMINT obsolete.[2]

So, in all, there is strong evidence for intended denial and deception by India.

According to the Jeremiah Committee Report[50][49] that evaluated intelligence failures after the entire episode; some vulnerabilities in the US Intelligence Community that seem to have been exploited by India are: 1) The United States had firstly given away their best play when Ambassador Wisner gave away satellite images as proof of India's nuclear test attempt in 1995. After catching a country do something it shouldn't redhanded, it may definitely be tempting to feel powerful enough and redundant to keep defensive stances, but that is instinctive thinking (with the element of emotion). Winning once does not guarantee winning the next time, and the CIA/USIC must have strictly recommended to the ambassador to be discrete when forcing India to desist from the 1995 attempt. This allowed India to fool the spy satellites through thorough and comprehensive planning.

2) The Indian reactors were totally indigenous and within India. There were no records to trace suspiscious activities. India had openly kept its nuclear capability for decades now. Further, India was also not signatory to the NPT and thus, had no safeguards inspection for its reactors, which the USIC did not seem to think much of, possibly because

India never resisted or hid from inspections very blatantly but rather gave very justifiable arguments against all such treaties that imposed inspections on their signatories. The USIC was biased towards surveillence only in Pokhran unless something big (like the missile show in Chandipur) happened.

3) The USIC had assumed that the BJP had just made empty promises and was not looking to follow through. This is again convenient assumption based instinctive thinking that has no real basis.

4) The USIC analysis employed a very narrow utilitarian model which India and India's situation did not fit into. Yes, the risk of sanctions would not be worth testing the bomb. However, the USIC never took India-Pakistan dynamics seriously throughout the Cold War. That is evident from various dealings on the Kashmir issue, military aid to Pakistan, etc. It never correctly analysed how far India could go to establish a sense of security when threatened by an expansive power on the north and a religious unstable government to the west. It never put itself in the shoes of India, a country that had borne the brunt of around 700 years of foreign invasions only to end up with a poor economy and half its land split away. India's background including its stance on all nuclear-related treaties also reflect India's unique position of nationalistic and civilizational pride. In a sense, USIC thinking was guided on pre-conceived beliefs rather than anything India-specific, again a charcteristic of instinctive thinking.

5) The USIC depended strongly on IMINT, and when there was a deliberately created lack of HUMINT, etc, it failed. This is because the USIC never considered the hypothesis of deception when analysing India's nuclear posture. It blindly accepted claims by high level contact and never took the issue seriously enough to give it a second thought and generate hypotheses. This is an element of 'Default Position', accepting the simplest explanation, and lack of skepticism, all characteristic of instinctive thinking.

6) The USIC was heavily reliant on the data it was being supplied by India, by which it denied and decieved.

7) No inversion thinking was applied. No evidence to 'India was not preparing for a nuclear test' was seeked out actively.
8) Cognitive Heuristics were likely applied, for example, if there is a buildup only then there is something going on. This was exploited by India through the missile deceit in Chandipur.

7.0.2 If $H_{deception}$ were not true...

- Why did India deny intentions of building a nuclear weapon? Why did Indian ministers assertively deny Indian intentions to build weapons?
- Why did India purchase flights that could be fitted with nuclear warheads? Why did India build missiles that could be fitted with nuclear warheads?
- Why did Indian nuclear scientists in charge of the nuclear program lobby domestically for political support towards possessing a nuclear bomb?

India could have denied intentions of building a nuclear weapon because they may really not have had plans to test. The resulting test was too much of a split second decision and hence went unnoticed.

India could have decided suddenly owing to some reason such as an intelligence report (possibly faulty) that indicated a threat from China/Pakistan, and felt that it was time to deter them using nuclear. This could be why not many knew of the test, and only a few high level officials close to the Prime Minister knew. India could have also purchased flights that could be fitted with nuclear warheads and missiles that could be fitted with nuclear warheads to decieve Pakistan and China into believing that they have nuclear capabilities, thereby engaging in deceitful nuclear deterrence. This reason is highly

possible, also given another fact that is not mentioned here: India's claims of explosion seem to be overestimated according to the USIC and other sources; according to George Perkovich, Director of the Secure World Program. Claims also suggest that India only tested an amount that was far too less than enough for it to successfully threaten China which India claimed was its necessity. Some also claim the test only served to consolidate national unity.[48]

Indian scientists may be interested in experimentation and the physics behind nuclear fission for which they wanted to test the bomb again. The last explosion was too far behind in time, and was very less data for them. This could explain why they lobbied for India to possess a bomb.

Part IV

Evaluation of Hypotheses

Chapter 8

Results

Based on the literature review and the weight of the evidences against both alternatives, the evaluation is as follows:

$H_{deception}$ is true: High Confidence, because there is a lot of evidence aligning with this explanation.
$H_{deception}$ is false: Medium to Low Confidence, because there is very little evidence that could explain this possibility.

8.0.1 Discussion of Results

Based on the evaluation, it is safe to say that India adopted successful strategies of denial, and deceit to test nuclear weapons right in Pokhran, right under the eyes of the USIC. However, this was only possible because India identified key vulnerabilities in the USIC method of analysis and exploited them to their advantage. If the elements of instinctive thinking are removed from analysis, intelligence communities seeking to limit

nuclear proliferation may work more effectively. This needs to be done through active strategy implementation of inculcating critical thinking, and doing away with heuristics and biases.

It is also imperative that intelligence analysts use more than one hypotheses and inversion thinking at all times. The employment of these two strategies likely could have prevented the USIC Failure of May 1998. Increasing intel sources is also a good way to go about this.

Chapter 9

Conclusion

Given the looming threat of nuclear proliferation and nuclear terrorism as extremists gain power across several regions and geopolitical situations are always extremely complex, complicated, volatile, and uncertain; it is necessary for intelligence analysts - especially of functioning stable democracies that seek to maintain world peace - to actively incorporate strategies each time they analyse a problem. This would enable analysts to not succumb to the perils of instinctive thinking.

Multiple reviews of analyses, and consideration of inverse possibilities, multiple hypotheses, deception, chance, and new information that may not be previously considered could significantly improve prevention of data breaches and security breaches at nuclear power plants. Seeking evidences along opposite lines while actively countering biases requires the acknowledgement of the biases of heuristics that may be frequently employed unconsciously, so that they can be consciously countered.

Intelligence organisations must undergo constant self-introspection to be ever-ready. After all, an adversary needs to set off a nuclear bomb successfully only once, whereas we have to successfully prevent any such instance each and every time.

Chapter 10

Limitations

The author is not privy to classified information. All the information in this report is based on disclosed sources. It is possible that some information may be deception too on someone's part. Further, the author used internet, and library resources to access sources of information. Any bias that may cause (such as greater access only to US-based material), etc may have creeped in. The author is also limited by time with respect to this report and hence many directions may be unexplored.

References

[1] https://eparlib.nic.in/handle/123456789/55860?view_type=search - Lok Sabha Debates (Full Text), 21-Mar-1956, First Lok Sabha Session XII.

[2] https://irp.fas.org/news/1998/05/may16_cia.html - a news report detailing indian deception, last accessed on december 04 2023.

[3] missilethreat.csis.org/country_tax/india/. An article on the Indian Missile program, accessed last on December 13 2023.

[4] Constitutent assembly of india (legislative debates), 2d session, vol 5, april 6. 1948.

[5] Indian test deception recorded. L.A. Times Archived, 1998.

[6] Apsara - 50 glorius years of apsara. Bhabha Atomic Research Centre, Government of India, 2006.

[7] The cuban missile crisis. Center for Arms Control and Non-Proliferation | https://armscontrolcenter.org/the-cuban-missile-crisis, 2022.

[8] The Atomic Energy Act of 1946, public law 585, Seventy-Nine Congress.

[9] Swaminathan S Snklesaria Aiyar. Freedom, won by himsa or ahimsa? The Economic Times, 2007.

[10] Graham Allison. Al qaeda weapons of mass destruction threat: Hype or reality? https://www.belfercenter.org/sites/default/files/legacy/files/al-qaeda-wmd-threa

[11] Lorenz M. Luthi Amit R. Das Gupta. The Sino-Indian War of 1962: New Perspectives. New York: Routledge, 2016.

[12] K.M. Aydogdu. Safeguards spent-fuel bundle counter for candu 6 reactors. excellence in the new millenium. Canadian Nuclear Society, 2001.

[13] Homi J. Bhabha. The implications of a wider dispersal of military power for world security and the problem of safeguards. Proceedings of the Twelfth Pugwash Conference, 1964.

[14] Homi Jehangir Bhabha. On cosmic radiation and the creation and annihilation of positrons and electrons. PhD thesis, University of Cambridge, 1935.

[15] Shyam Bhatia. India's Nuclear Program. Vikas Publishing House Pvt Ltd, 1980.

[16] Brahma Chellaney. Nuclear Proliferation: The U.S.-Indian Conflict. Orient Longman, 1993.

[17] Joseph Cirincione. Oh canada! Proliferation Analysis, Carnegie Endowment for International Peace, 2006.

[18] Robert M. Clark. Denial and deception in the indian nuclear test. Journal of U.S. Intelligence Studies, 2022.

[19] Steve Coll. India, pakistan pursue peace by creating nuclear standoff. The Washington Post, September 29, 1990.

[20] Kenneth J. Cooper. India's government collapses after 10 months. The Washington Post, 1997.

[21] William Dalrymple. A deadly triangle: Afghanistan, pakistan, and india. The Brookings Essay, 2013.

[22] Therese Delpech. Nuclear Deterrence in the 21st Century. RAND Corporation, 2012.

[23] Cintamani Desamukha. Taking roots in india - the i. i. sc. interlude, homi jehangir bhabha. National Book Trust, India, 2003.

[24] John Diamond. The CIA and the Culture of Failure U.S. Intelligence from the end of the Cold War to the Invasion of Iraq. Stanford University Press, 2008.

[25] The United States of America Directorate of Intelligence. Declassified Files: Geneva Disarmament Talks Resume on 21 February. FOIA Case Number F-2008-00942, 1967.

[26] Daniel A. Dombrowski. Gandhi, sainthood, and nuclear weapons. Philosophy East and West, 1983.

[27] box 5 United Nations Speech 12/8/53 Dwight D. Eisenhower Papers as President, Speech Series. Press release, "atoms for peace" speech, december 8, 1953. Dwight D. Eisenhower Presidential Library, Abilene.

[28] FOIA. Declassified files: Congressional staff meeting request, september 29/30. General CIA Records, 2004.

[29] FOIA. Declassified files: Forthcoming community post-mortem report concerning the indian nuclear detonation. General CIA Records.

[30] Letter from H. J. Bhabha to Sorab Saklatvala. Dtt/phil/tifr/fp/1. Tata Central Archives, Pune, 1944.

[31] Daniel Eugene Garcia. Class and brass: Demobilization, working class politics, and american foreign policy between world war and cold war. Diplomatic History, 2010.

[32] Larry G. Gerber. The baruch plan and the origins of the cold war. Diplomatic History, 1982.

[33] Daniel O Graham. Memorandum for: Director, defense intelligence agency [and others], subject: Forthcoming community post-mortem report concerning the indian nuclear detonation, may 24, 1974. secret. CIA Records Search Tool, National Archives and Records Administration, Last accessed December 05 2023.

[34] Shaun Gregory. The terrorist threat to pakistan's nuclear weapons. Combating Terrorism Center Sentinel, 2-7, 2009.

[35] N.B. Prasad Homi J. Bhabha. A study of the contribution of atomic energy to a power programme in india. Proceedings of the Second UN Conference on the Peaceful Uses of Atomic Energy, Geneva, 1958.

[36] https://2009-2017.state.gov/t/avc/rls/212186.htm - State Government Archives: History of CTBT, Accessed 05 December 2023.

[37] https://2009-2017.state.gov/t/avc/trty/199116.htm - Archived content, US Department of State, Accessed 08 December 2023.

[38] https://dae.gov.in/history/ - The About Us > History Webpage, The Department of Atomic Energy, Government of India; Accessed 08 December 2023.

[39] https://eoi.gov.in/eoisearch/MyPrint.php?8838?001/0029 - An Indian Embassy Document entailing India's role in the inception of the IAEA.

[40] https://history.state.gov/historicaldocuments/frus1952-54v11p2/d1045 - Historical Documents, Foreign Relations of the United States, 1952-1954, Africa and South Asia, Volume XI, Part 2, Document 1045; from the Office Of the Historian, Department of State, United States of America - Online Repository Retrieved on 3 December, 2023.

[41] https://history.state.gov/milestones/1945-1952 - Milestones in the History of U.S. Foreign Relations, 1945-1952; from the Office Of the Historian, Department of State, United States of America - Online Repository Retrieved on 3 December, 2023.

[42] https://in.ambafrance.org/Civil-Nuclear-Energy-13004 - Civil Nuclear Energy, Visit of PM Narendra Modi to France, Archives-Visits 2015.

[43] https://irp.fas.org/news/1998/06/prsrs120.htm - A report on the comments of Richard Shelby.

[44] https://library.bjp.org/jspui/bitstream/123456789/241/1/BJP%20ELECTION%20MANIFESTO%201998.pdf - BJP's Manifesto for the 1998 Elections.

[45] https://library.bjp.org/jspui/bitstream/123456789/261/1/BJP%20ELECTION%20MANIFESTO%201996.pdf - BJP's Election Manifesto 1996.

[46] https://nsarchive2.gwu.edu/NSAEBB/NSAEBB187/IN35.pdf - Defense Intelligence Agency, "India's Nuclear Fuel Troubles," Miiltary Intelligence Digest, June 27, 1994. Secret - Availabe from a Freedom Of Information Act Request.

[47] https://nsarchive2.gwu.edu/NSAEBB/NSAEBB187/IN36.pdf - Office of Near Eastern, South Asian, and African Analysis, Central Intelligence Agency, India: Problems and Prospects for the BJP Government, April 13, 1998. Secret - Source: Freedom of Information Act.

[48] https://nsarchive2.gwu.edu/NSAEBB/NSAEBB187/IN37.pdf - An Intelligence Report (Declassified) that contains a post-mortem analysis of what's next, NSA Archives.

[49] https://nsarchive2.gwu.edu/NSAEBB/NSAEBB187/IN38.pdf - Recommendations of the Jeremiah Report UNCLASSIFIED, NSA Archives.

[50] https://nsarchive2.gwu.edu/NSAEBB/NSAEBB187/IN39.pdf - Jeremiah News Conference Press Release, NSA Archive.

[51] https://pib.gov.in/newsite/PrintRelease.aspx?relid=52814 - Press Statement by Dr. Anil Kakodkar and Dr. R. Chidambaram on Pokhran-II tests - Press Information Bureau Report, Government of India.

[52] https://www.aerb.gov.in/images/PDF/Atomic-Energy-Act-1962.pdf - The Atomic Energy Act, 1962; N0. 33 OF 1962: An Act to provide for the development, control and use of atomic energy for the welfare of the people of India and for other peaceful purposes and for matters connected therewith. Be it enacted by Parliament in the Thirteenth Year of the Republic of India as follows...

[53] https://www.armscontrol.org/act/1999-04/press-releases/india-pakistan-test-new-missiles-us-urges-restraint - An Arms Control Association Article describing Pakistan-India Missile Tests in April 1998.

[54] https://www.atomicarchive.com/history/cold-war/page-12.html - Atomic Archives Webpage Accessed last on 08 December 2023.

[55] https://www.atomicarchive.com/history/cold-war/page-17.html - An article on The Peaceful Explosion, last accessed December 01 2023.

[56] https://www.atomicarchive.com/history/cold-war/page-17.html - The Peaceful Explosion, an Overview of Indira Gandhi's Nuclear Policy: Last Accessed December 01 2023.

[57] https://www.britishpathe.com/asset/164055/ - A News Footage from 1962 covering "INDIA'S NEW TOP-LEVEL DEFENCE COMMITTEE – THE NA-

TIONAL DEFENCE COUNCIL - MET IN DELHI FOR THE FIRST TIME YESTERDAY (SUNDAY) TO PLAN MILITARY ARRANGEMENTS IN THE LIGHT OF THE BORDER DISPUTE WITH CHINA".

[58] https://www.casemine.com/act/in/5a979d954a93263ca60b70b6 - The Atomic Energy Act 1948.

[59] https://www.epa.gov/laws-regulations/summary-atomic-energy-act - Environmental Protection Agency Webpage Containing the summary of the US Atomic Energy Act 1954, and links to official US Code; accessed 05 December 2023.

[60] https://www.everycrsreport.com/reports/98-570.html - India-Pakistan Nuclear Tests and U.S. Response: This article mentions India's moratium between 1924-1998. Accessed last on December 14 2023.

[61] https://www.govinfo.gov/content/pkg/COMPS-674/pdf/COMPS-674.pdf - The Strategic and Critical Materials Stock Piling Act 1939.

[62] https://www.hindustantimes.com/india-news/when-nda-s-first-pm-atal-bihari-vajpay story-wIzcIvDLfNv7kbuNFmoHxI.html - A News Article about the Collapse of the 1996 Vajpayee Government.

[63] https://www.mea.gov.in/bilateral-documents.htm?dtl/6460/Agreement+on+Civil+Uses+of+Atomic+Energy - The Agreement on Civil Uses of Atomic Energy, August 08 1963; Courtesy: Media Center, Ministry of External Affairs, Government of India; Website Accessed 09 December 2023.

[64] https://www.oxfordreference.com/display/10.1093/oi/authority.20110803102152668 - The Tashkent Declaration of 1965 ended the Indo-Pakistani War of 1965.

[65] https://www.un.org/en/about-us/un-charter - The United Nations Charter (Official).

[66] https://www.wilsoncenter.org/publication/the-clinton-administration-and-the-indi - The Clinton Administration and the Indian Nuclear Test That Did Not Happen - 1995-1996 - An Article by William Burr, published by the Wilson Center, a US-based non-partisan centre for global affairs analysis.

[67] https://www.wrmea.org/1995-december/brown-amendment-prepares-way-for-arms-delive html - Brown Amendment Prepares Way for Arms Delivery to Pakistan - An Article entailing the consequences of the 1995 Brown Amendment.

[68] Teertha Prakash Jena. Challenge in royal indian navy (1946) - a revaluation of its causes. Proceedings of the Indian History Congress 57, 1996.

[69] Sherry L. Stephens John W. Birks. The Medical Implications of Nuclear War. National Academy of Sciences, National Academy Press, 1986.

[70] Josef Korbel. The kashmir dispute after six years. International Organization, 1953.

[71] A. Vinod Kumar. Npt@50: How india framed its decision to reject the treaty. IDSA ISSUE BRIEFS, Manohar Parrikar Institute for Defence Studies and Analyses, 2020.

[72] Sutapa Lahiry. Jana sangh and bharatiya janata party : A comparative assessment of their philosophy and strategy and their proximity with the other members of the sangh parivar. The Indian Journal of Political Science, 2005.

[73] John F. Kennedy Presidential Library and Museum. China (cpr): Nuclear explosion, 1961-1963 (1 of 2 folders). In JFKNSF-410-004. Papers of John F. Kennedy. Presidential Papers. National Security Files. Robert W. Komer Files.

[74] Mc Mahon. The Cold War on the Periphery. Columbia University Press, 1994.

[75] Steven Mufson. China holds nuclear test. The Washington Post, 1995.

[76] United Nations. Proceedings of the international conference on the peaceful uses of atomic energy, held in geneva, 8 august - 20 august 1955. volume 1, the world's requirements for energy : the role of nuclear energy. UN Document detailing the International Conference on the Peaceful Uses of Atomic Energy.

[77] Ruhee Neog. Ctbt at 20: Why india won't sign the treaty? South Asian Voices, 2016.

[78] A.G Noorani. India's quest for a nuclear guarantee. Asian Survey, 1967.

[79] Dorothy Norman. NEHRU: THE FIRST SIXTY YEARS Presenting in His Own Words the Development of the Political Thought of Jawaharlal Nehru from His Earliest Years Up to the Founding of the Republic of India, 1950. John Day, 1965.

[80] United States Freedom of Information Act Electronic Reading Room. Moscow conference on peaceful utilization of atomic energy. General CIA Records, 2012. CIA Document published in 1955 that details the Moscow Conference on Peaceful Utilization of Atomic Energy.

[81] Indian Institute of Science. History. https://iisc.ac.in/history/.

[82] Office of the Director of National Intelligence. Annual threat assessment of the us intelligence community. 2023.

[83] Snehlata Panda. India and the united states: Perceptions and policy. Strategic Analysis: A Monthly Journal of the IDSA, 23(1):310–312, 1999.

[84] Mary Beth Nikitin Paul K. Kerr. Pakistan's nuclear weapons: Proliferation and security issues. Congressional Research Service Report for Congress, 2009.

[85] William George Penney. Homi jehangir bhabha, 1909-1966. Biographical Memoirs of Fellows of the Royal Society, 1967.

[86] George Perkovich. India's Nuclear Bomb: The Impact on Global Proliferation. University of California Press, 1999.

[87] Srinath Raghavan. India's War: World War II and the Making of Modern South Asia. Basic Books, 2016.

[88] Kritika Singh Arka Biswas Rajeswari Pillai Rajagopalan, Rahul Krishna. Nuclear Security in India. Observer Research Foundation, 2016.

[89] Greville Rumble. The Politics of Nuclear Defence – A Comprehensive Introduction (1st ed.). Cambridge: Polity Press, 1985.

[90] Jayita Sarkar. Ploughshares and Swords: India's Nuclear Program in the Global Cold War. Cornell University Press, 2022.

[91] Karthika Sasikumar. India's emergence as a 'responsible' nuclear power. International Journal, 62(4), 2007.

[92] Amit Sharma. Assessing india's nuclear doctrine. National Security, Vol. 2, No. 1, 2019.

[93] Martin J. Sherwin. One Step from Nuclear War, volume 44. Prologue Magazine | Fall 2012, 2012.

[94] Jeffrey Smith. U.s. imposes sanctions against russian, indian concerns over rocket deal. The Washington Post, 1992.

[95] Dharm Pal S.N. Prasad. History of Operations in Jammu and Kashmir (1947-48). History Division, Ministry of Defence, Government of India, 1987.

[96] editors Solomon F, Marston RQ. The medical implications of nuclear war. Institute of Medicine (US) Steering Committee for the Symposium on the Medical Implications of Nuclear War, 1986.

[97] New York Times. India mourning nehru,74, dead of a heart attack; world leaders honor him; funeral is today; party members meet tomorrow to try to pick leader. 1964.

[98] New York Times. Suppression in pakistan deplored by mrs. gandhi. March 28 1973.

[99] The New York Times. The u.s. burden in the tarapur fuel issue. Opinion, 1983.

[100] New York United Nations. Treaty on the Non-Proliferation of Nuclear Weapons. Article I, Article II, March 5, 1970.

[101] Willem van Schendel. A History of Banladesh. Cambridge University Press, 2021.

[102] G. Venkataraman. Bhabha and His Magnificient Obsessions. Sangam Books Limited., 1995.

[103] William Watts. The United States and Asia: Changing Attitudes and Policies. Lexington Books, 1982.

[104] Quincy Wright. The goa incident. The American Journal of International Law 56, no. 3, 1962.

[105] Miles Maochun Yu. The 1962 sino-indian war and the cuban missile crisis. Hoover Institution, Stanford University, 2022.