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Pakistan and India

Non-Proliferation Credentials

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CONTENTS

ACRONYMS

AERB	Atomic Energy Regulatory Board
AP	Additional Protocol
BARC	Bhaba Atomic Research Centre
CACNARE	Convention on Assistance in Case of a Nuclear Accident or Radiological Emergency
CBI	Central Bureau of Intelligence
CBM	Confidence Building Measures
CD	Conference on Disarmament
CENNA	Convention on Early Notification of a Nuclear Accident
CENTO	Central Treaty Organisation
CHASNUPP	Chashma Nuclear Power Plant
CIRUS	Canadian-Indian Reactor US
CISF	Central Industrial Security Force
CNC	Computerised Numerical Control
CNS	Convention on Nuclear Safety
CPPNM	Convention on the Physical Protection of Nuclear Materials
CRS	Congressional Research Service
CSI	Container Security Initiative
CTBT	Comprehensive Test-Ban Treaty
DAE	Department of Atomic Energy
DGMOs	Directors-General of Military Operations
DSMAC	Digital Scene Matching and Area Co-relation
FAA	Foreign Assistance Act

FMCT	Fissile Material Cut-Off Treaty
GICNT	Global Initiative to Combat Nuclear Terrorism
HRP	Human Reliability Programme
IAEA	International Atomic Energy Commission
IC3	Integrated Cargo Container Control
ICP	Internal Compliance Programme
IMS	International Monitoring System
INES	International Nuclear and Radiation Event Scale
IRRS	Integrated Regulatory Review Service
IRE	Indian Rare Earths
ITDB	Incident and Trafficking Database
ISIS	Institute for Science and International Security
KANUPP	Karachi Nuclear Power Plant
MPI	Mega Port Initiative
MW	Megawatt
MTCR	Missile Technology Control Regime
NCA	National Command Authority
MCD	Minimum Credible Deterrence
NISAS	National Institute of Safety and Security
NPT	Nuclear Non-Proliferation Treaty
NRECC	National Radiation Emergency Coordination Centre
NSA	Negative Security Assurances
NSAP	National Security Action Plan
NSG	Nuclear Suppliers' Group
NSS	Nuclear Security Summits

NTI	Nuclear Threat Initiative
NURESC	Nuclear and Radiological Emergency Support Centre
NWFZ	Nuclear Weapons-Free Zone
ORF	Observer Research Foundation
PAEC	Pakistan Atomic Energy Commission
PARR	Pakistan Research Reactor
PCENS	Pakistan Centre of Excellence for Nuclear Security
PNE	Peaceful Nuclear Explosion
PNRA	Pakistan Nuclear Regulatory Authority
PRP	Personnel Reliability Programme
PSI	Proliferation Security Initiative
PTBT	Partial Test-Ban Treaty
RMP	Rare Materials Project
RUSI	Royal United Services Institute
SCCSS	Strategic Command and Control Support System
SEATO	South East Asian Treaty Organisation
SECDIV	Strategic Export Control Division
SPD	Strategic Plans Division
TBT	Tributyl Phosphate
TERCOM	Terrain Contour Matching
UNGA	United Nations General Assembly
UNSC	United Nations Security Council
UNSCEAR	United Nations Scientific Committee on the Effects of Atomic Radiation

Preface

Pakistan's nuclear programme evokes comment in Pakistan and all around the world. Think tanks in the United States, Europe, China, India and East Asia analyse Pakistan's nuclear posture and the evolution of its nuclear doctrine, as well as Pakistan's efforts to maintain symmetry and credibility of its nuclear deterrent vis-à-vis India.

In Pakistan, media networks and think tanks are increasingly focusing on Pakistan's nuclear programme in order to comprehend its rationale, its future trajectory and its impact on strategic stability in South Asia. Of course such views are diverse. Pakistan also has a compelling official narrative that has developed over the decades. Three researchers focusing on nuclear issues in the Institute ─ Malik Qasim Mustafa, Ghazala Yasmin Jalil and Tahir Mahmood Azad ─ have made an attempt to capture the broad contours and facets of this narrative.

This monograph is an evolving narrative and the paper that the three researchers have written would continue to be refined in the light of the feedback that we would receive. We would bring out the second edition of this monograph and, therefore, we look forward to your comments and observations.

Ambassador Masood Khan
Director General
Institute of Strategic Studies Islamabad

Pakistan and India
Non-Proliferation Credentials

Executive Summary

Pakistan is a responsible nuclear weapons state. It has always supported the use of nuclear technology for peaceful purposes. Pakistan has joined efforts to strengthen international nuclear non-proliferation regime and has put forward proposals ranging from a strategic restraint regime comprising nuclear and missile restraint, conventional balance and conflict resolution to nuclear weapons free zones to a regional test ban treaty. However, India has rejected all these efforts and has always tried to jeopardise regional peace and stability by nuclear and conventional build-up. India has destabilised strategic deterrence by its threatening postures and aggressive policies. Pakistan opposed the introduction of nuclear weapons in South Asia, but was compelled to acquire them to defend itself once India had tested weapons and nuclearised the region. Pakistan still opposes an open-ended nuclear arms race in the region and believes in maintaining a strategic balance. Pakistan has always assured the international community that it acquired its nuclear weapons capability only to address its security challenges. It has developed this capability to safeguard its sovereignty and territorial integrity vis-à-vis India.

Pakistan's interest in peaceful nuclear technology dates back to the age of "Atoms for Peace," but now this interest has become a necessity and a top priority to meet the challenges of energy security for economic development and prosperity. Pakistan's nuclear energy goal of producing 40,000 MW by 2050 stems from its growing energy demands. Pakistan cannot attain this objective alone in this time frame. It requires a non-discriminatory and supportive international environment, specifically through a uniform criteria-based approach for its entry into the Nuclear Suppliers Group (NSG). Like other

nations, who aspire to enhance or develop their peaceful nuclear programmes, Pakistan wants to participate in the NSG with an assurance to promote principles of international nuclear non-proliferation regime.

Claiming that it has a spotless non-proliferation record, India has demanded that it should be included in the nuclear mainstream countries and also made formal part of the NSG. However, a closer examination reveals that India's non-proliferation record is far from exemplary. The most glaring example of its proliferation activity is the 1974 nuclear explosion, for which India diverted nuclear fuel from Canadian reactors, supplied for peaceful purposes, to conduct its nuclear test. As such, India became the first country to divert peaceful nuclear resources towards weapons use. Interestingly, the NSG was created in the wake of this explosion specifically aimed at preventing the diversion of civil nuclear technology for military purposes in future. India has also proliferated by indulging in illicit procurement of dual-use nuclear items, by leaking centrifuge know-how, and by running a poorly implemented national export control regime. The safety and security of India's nuclear installations is also questionable because there are many reported instances of nuclear thefts and security breaches. With the US and other countries ready to enhance civil nuclear cooperation with India, the safety and security of its nuclear installations is a matter of great concern and urgency, as secure facilities and assets could lead to greater onward proliferation or nuclear terrorism. India's non-proliferation record is, thereby, far from unblemished, as it claims, as it has a long list of documented breaches.

Pakistan and India
Non-Proliferation Credentials

Introduction

Pakistan has always tried to make positive contribution towards the non-proliferation efforts by actively participating in multilateral negotiations towards this end. Pakistan has always supported and respected international non-proliferation norms and urged the international community to devise instruments that are non-discriminatory and ensure equal security for all. Pakistan is a party to many major conventions that aim to secure nuclear, chemical and biological weapons and prevent their onward proliferation. It also took part in the Comprehensive Test Ban Treaty (CTBT) negotiations. It has participated in the Fissile Material Cut-Off Treaty (FMCT) negotiations despite its reservations with regard to fair play, non-discrimination and a comprehensive approach. It played its role in developing a consensus on the United Nations Security Council (UNSC) Resolution 1540 (2004) which aims to prevent proliferation of nuclear, biological or chemical weapons and to prevent these weapons from falling into the hands of terrorists and criminal organisations and from obtaining most dangerous weapons.

Pakistan's security and non-proliferation policies have, however, been shaped and conditioned by its security environment. Pakistan's main security threat comes from India, which is a globally and regionally revisionist state. As India embarked upon a status-driven ambitious nuclear and missile programme, Pakistan was compelled to develop a nuclear and missile capability of its own to counter the security threat from India. Following a policy of Credible Minimum Deterrence, Pakistan has always exercised restraint and it maintains a posture of full spectrum to deter all conventional and nuclear threats emanating from India. Pakistan wishes to maintain the strategic balance, not upset it and does not seek parity with India. It has time and again reiterated that its nuclear weapons are weapons

for peace, designed to prevent a war rather than fighting one. Similarly, its non-proliferation policy is tied with India, which rejected all Pakistan's proposals made in the 1970s and the 1980s aimed at non-proliferation, conducted nuclear tests in 1974 and 1998, refused to sign CTBT and is developing its nuclear and conventional capabilities at an unprecedented speed.

India has propagated that on the basis of its untarnished non-proliferation record; it should be welcomed in the nuclear mainstream and made part of the NSG. However, India's non-proliferation record is far from exemplary. Its most glaring non-proliferation breach was in 1974, when it became the first country to divert nuclear material from a reactor provided by Canada and the United States under the *Atoms for Peace* programme to conduct its first nuclear explosion. India was the first country to introduce nuclear weapons in South Asia. Also, there is a long history of illegal procurement for its dual-use materials for its nuclear programme. It has a chronic issue of nuclear thefts and accidents at its nuclear facilities. This raises huge question marks regarding the safety and security of its nuclear installations and concerns over the possibility of onward proliferation. Yet, the international community is eager to do nuclear business with India and is willing to make India-specific adjustments to the non-proliferation regime.

Pakistan has always urged a non-discriminatory and uniform approach, which can help promote the principles of international nuclear non-proliferation regime. The non-proliferation regime should adopt a non-discriminatory criteria-based and principled approach towards the aspirants of export control arrangements, especially Pakistan and India when it comes to trade in peaceful nuclear technology. Instead of a political bias, the regime should appreciate Pakistan's legitimate security and energy needs, and recognise its positive contributions towards nuclear non-proliferation, safety and security. Pakistan is an equal and responsible nuclear partner and engaging it in a constructive manner will strengthen the regime and enhance international trade for peaceful purposes.

Pakistan's Non-Proliferation Credentials

Pakistan's Non-Proliferation Credentials

Since independence from British colonial rule in 1947, Pakistan desired to emerge as a progressive and responsible state with a strong desire to contribute towards regional as well as international peace and security. Recognising the destructive nature of nuclear weapons technology and fears associated with its proliferation, Pakistan adopted a normative approach by pursuing the objectives of nuclear non-proliferation and disarmament. Islamabad developed its nuclear weapons capability when it found itself isolated and vulnerable against a powerful adversary ─ India. Pakistan has always followed nuclear restraint in the past and has acted as a responsible nuclear weapon state.

Key Highlights

Pakistan's Non-Proliferation Credentials

- Supported the 1951 resolution on establishment of nuclear disarmament commission, and served as a member of the commission from 1952-65.
- Supported nuclear test ban, and raised its voice in 1954 Colombo Conference, in 1955 Bandung Afro-Asian Conference, and in 1955 First Committee of the United Nations General Assembly (UNGA).
- Supported the 1953 "Atoms for Peace" initiative for peaceful use of nuclear technology.
- In 1956, Pakistan Atomic Energy Commission (PAEC) was established.
- Supported the establishment of International Atomic Energy Agency (IAEA) and in 1957 and became an active member by signing the Statute of the IAEA.
- Supported the 1958 Irish proposal on nuclear non-proliferation.
- From 1962-63, Pakistan served as the Chairman of the Board of Governors of the IAEA.

- Signed the (Partial Test-Ban Treaty (PTBT) in 1963.
- In 1972, proposed to de-nuclearise South Asia, similar to Treaty of Tlatelolco. After Indian Peaceful Nuclear Explosion Pakistan formally moved this proposal at the UN in 1974.
- From 1974-1997, each year UNGA, proposed resolutions of a South Asian Nuclear Weapons Free Zone. Pakistan voted in favour, but India always rejected it.
- In 1978, proposed a joint Indo-Pakistan declaration renouncing the acquisition or manufacture of nuclear weapons.
- In 1979, proposed mutual inspections by India and Pakistan of each other's nuclear facilities; simultaneous adherence to the Nuclear Non-Proliferation Treaty (NPT) by India and Pakistan; and simultaneous acceptance of full-scope IAEA safeguards.
- In 1970s and 1980s, Pakistan suffered from Western double standards and propaganda against Pakistan's nuclear programme in the following forms: a number of international agreements cancelled; and multiple layers of sanctions imposed and aid for Pakistan cut-off.
- From 1984 to 1986, Pakistan supported 10 UNGA resolutions on nuclear test ban agreement.
- From 1986-87, Pakistan for a second time served as the Chairman of the IAEA Board of Governors.
- In 1987, proposed a bilateral regional test ban treaty with India.
- In 1989, Pakistan acceded to the Convention on Early Notification of a Nuclear Accident (CENNA).
- In 1991, signed a bilateral agreement with India for not attacking each other's nuclear installations.
- In 1993, supported the UNGA Resolution 48/75L on fissile material treaty.
- In 1993, proposed the creation of a missile-free zone in South Asia.
- In 1994, Pakistan signed the Convention on Nuclear Safety (CNS) and later ratified it in September 1997.

- In 1995, supported the Shannon Mandate on starting negotiations for a fissile material treaty, which takes into account all stocks of fissile material.
- In 1996, voted in favour of the CTBT.
- In 1998 announced unilateral moratorium on further nuclear testing. Expressed willingness to sign CTBT if India does so.
- In 1998, maintained its principled stance on FMCT by highlighting the need to address the issues of past and present fissile material stocks as a prerequisite for non-proliferation and disarmament objectives.
- In 1999, proposed to India to mutually sign the CTBT and to establish a mutual strategic restraint in South Asia.
- In 1999, in Indo-Pak talks, proposed a strategic restraint regime in South Asia and signed a MoU on bilateral nuclear CBMs.
- In 2000, established its National Command Authority (NCA) and adopted Minimum Credible Deterrence (MCD) in 2001.
- In 2001, dismissed nuclear arms race and proposed a regional nuclear test ban treaty.
- In 2001, ordered the re-deployment of nuclear weapons to at least six secret new locations and reorganised military oversight of nuclear forces.
- In 2002, renounced the use of nuclear weapons and proposed the de-nuclearisation of South Asia by a mutual roll-back of nuclear programmes of India and Pakistan.
- In 2002, reiterated a strategic restrain regime in South Asia.
- In 2001, established Pakistan Nuclear Regulatory Authority (PNRA) to oversee civilian nuclear security and safety aspects.
- In 2002, Pakistan ratified the Convention on the Physical Protection of Nuclear Materials (CPPNM).
- In 2004, in composite dialogue with India, Pakistan pledged to enhance nuclear CBMs, proposed a "no war pact" with India, urged to halt nuclear arms race.

- In 2004, Pakistan and India reaffirmed unilateral moratorium on nuclear testing; agreed to setup a hotline between their respective Directors-General of Military Operations (DGMOs) and between their foreign secretaries.
- In 2004, Pakistan consolidated most of the previous regulations in a single legislation in its 2004 Export Control Act.
- In 2004, Pakistan submitted its first report on National Measures to Implement UNSCR resolution 1540 (2004). Second, third and fourth reports were submitted in 2005, 2008, and 2010, respectively.
- In 2005, Pakistan reiterated its stance for a strategic restraint regime in South Asia.
- In 2005, Pakistan and India signed an agreement on advance notification of ballistic missile tests.
- In 2005, Pakistan issued its export control list, and later revised it in 2015.
- In 2006, joined Container Security Initiative (CSI).
- In 2006, joined Global Initiative to Combat Nuclear Terrorism (GICNT).
- In 2007, as a part of CSI and Mega Port Initiative (MPI), Pakistan established Integrated Cargo Container Control (IC3).
- In 2007, Pakistan formalised National Command Authority Ordinance, 2007.
- In 2007, established Strategic Export Control Division (SECDIV) as a part of Ministry of Foreign Affairs.
- In 2009, SECDIV issued Export Control (Licensing and enforcement) Rules 2009.
- By 2009, Pakistan deployed nearly 10,000 security force personnel to keep a tight vigil on the country's nuclear programme.
- In 2009, Pakistan participated in Proliferation Security Initiative as an observer.
- In 2010, participated in Nuclear Security Summits (NSS), Washington. Pakistan offered to provide nuclear fuel cycle services under the IAEA safeguards.

- In 2010, proposed two additional items on the Conference on Disarmament's (CD) agenda, i.e. the issue of conventional arms control at regional level and a global missile control regime.
- From 2010-11, served as a Chairman IAEA Board of Governors, for the third time.
- In 2011, became a member of the UN Scientific Committee on the Effects of Atomic Radiation (UNSCEAR).
- In 2012, Pakistan Center for Excellence for Nuclear Security was established.
- In 2012, participated in second Nuclear Security Summits (NSS) in Seoul.
- In 2013, Pakistan hosted a delegation of Missile Technology Control regime (MTCR).
- In 2014, SECDIV issued Internal Compliance Programme (ICP) Guidelines.
- In 2014, participated in third Nuclear Security Summits (NSS) in the Hague.
- In 2014, Pakistan announced to consider the ratification of the 2005 Amendment to the CPPNM
- In 2015, Pakistan revised Control Lists of Goods, Technologies, Material and Equipment related to Nuclear and Biological Weapons and their Delivery Systems maintained under its Export Control Act of 2004.

The following two sections: (1) Pre-Test phase ─ a historical background of Pakistani efforts to achieve the objectives of nuclear non-proliferation and disarmament; and (2) Post-Test phase ─ Pakistan's efforts to strengthen nuclear non-proliferation regime after becoming a nuclear weapons state ─ give an overview of country's non-proliferation credentials.

Pre-Test Record

Pakistan has always supported non-proliferation efforts designed to curtail the spread of nuclear weapons and their complete eradication. In 1949, at the Fourth United Nations General Assembly (UNGA) Session, Pakistan urged great powers to reach such an agreement. In 1951, in the Sixth Session of the UNGA, Pakistan reiterated its call for nuclear disarmament, which resulted in establishment of UN Disarmament Commission.[1] From 1952-54, Pakistan served as an active member of the Commission. At that time, Pakistan was a strong opponent of nuclearisation and advocated steps to harness the benefits of peaceful nuclear technology under the famous 1953 "Atoms for Peace" initiative.[2] Pakistan started to establish its nuclear and related infrastructure with a mandate to benefit from peaceful nuclear technology by negotiating its procurement from international atomic energy bodies.[3]

During the 1950s, Pakistan continued to step up its support for the international nuclear non-proliferation and disarmament objectives. This is demonstrated by Pakistan's support for nuclear test ban, especially after the US conducted its first thermonuclear detonation in 1952. Pakistan raised its voice against nuclear weapons and their testing in 1954 Colombo Conference, in 1955 Bandung Afro-Asian Conference, and in 1955 First Committee of the UNGA.[4] In 1957, Pakistan became an active member of the IAEA by signing its statute and supported the 1958 Irish proposal on nuclear non-proliferation. During late 1950s, Pakistan became apprehensive of acceleration in Indian nuclear programme as it started taking steps towards developing nuclear weapons capabilities. In 1956, Pakistan Atomic Energy Commission (PAEC) was established to develop peaceful applications of nuclear technology in the country.[5] However, Pakistan kept calling for nuclear non-proliferation and disarmament and continued to contribute towards the UN disarmament efforts.

During the 1960s, nuclear weapons proliferation was a growing concern, as nuclear weapons technology was proliferating to more and more countries including India. New Delhi was covertly diverting the technology provided for peaceful purpose for making nuclear weapons. In 1962-63, Pakistan served as the Chair of the Board of Governors of the IAEA and successfully supported the efforts of the international community to arrest vertical proliferation through the successful conclusion of the 1963 Partial Test Ban Treaty (PTBT), which Pakistan promptly signed.[6] At that time, Pakistan was equally vigilant about its national security concerns. Pakistan's nuclear policy assumed a new dimension when in 1964 India used Chinese bogey as a pretext to develop nuclear weapons programme. The 1956 war with Pakistan in 1965 vitiated the regional security.[7] Pakistan felt itself isolated when the US-led security alliances, viz., the 1954 South East Asian Treaty Organisation (SEATO) and the 1955 Central Treaty Organisation (CENTO) favoured India and the US placed economic and military sanctions on Pakistan even though Islamabad was a member of these.[8] These developments were a major setback to Pakistan's normative nuclear diplomacy. Pakistan's nuclear diplomacy was caught up in a dilemma of favouring nuclear weapons-free-world by standing firm, particularly against horizontal proliferation of nuclear weapons technology. Islamabad's diplomacy had to do heavy lifting to address increasing Western discrimination and counter Indian power maximisation by initiating its own nuclear weapons programme as a balancer. However, in an effort to contain the nuclearisation of the region, Pakistan continued to support the objectives of nuclear non-proliferation. The successful conclusion of the Treaty for the Prohibition of Nuclear Weapons in Latin America (Tlatelolco Treaty) was an international milestone.[9] In 1968, Pakistan supported the resolution on Treaty on the Non-Proliferation of Nuclear Weapons (NPT),[10] but did not sign it due to its legitimate regional security concerns.

During a September 1972 UN Atomic Energy Conference, Pakistan proposed a nuclear weapons-free zone in South Asia.

India responded to this proposal by conducting its so-called Peaceful Nuclear Explosion (PNE) in 1974, and cited that the whole of Asia-Pacific region should be included in this NWFZ proposal.[11] In October 1974, soon after the so-called Indian PNE, Pakistan formally placed this proposal at the UN, which later became an active campaign for a nuclear weapons free zone (NWFZ) in South Asia at the UN.[12] It is important to note that between 1974-1997, each year there were General Assembly resolutions on the establishment of an NWFZ in South Asia. When voting occurred, Pakistan supported the resolutions — but these were rejected by India on the grounds that such a zone would not address its security concerns about Chinese nuclear weapons. Pakistan maintained its stance to prevent nuclearisation of South Asia and put forth many proposals to India. In 1978, Pakistan proposed an Indo-Pak joint declaration to renounce the acquisition and manufacture of nuclear weapons. In 1979, Pakistan proposed inspections of each other's nuclear facilities, signing of the NPT and acceptance of full-scope IAEA safeguards.[13]

India once again refused all these proposals because a status quo would not suit a power that desired to revise regional and global order. The Western world turned a blind eye to these developments and was reluctant to acknowledge Pakistan's legitimate security concerns. There was no effort to control Indian aggressive designs and India actively embarked on a dangerous nuclear weapons programme.[14] Against this scenario, Pakistan was left with no choice but to fend for itself and initiate its own nuclear programme. Initially, in the 1970s and 1980s, Pakistan's nuclear weapons programme experienced technological challenges due to the massive bans on nuclear trade.[15] As a result of NSG restrictions on non-NPT member States, a number of foreign supported nuclear power projects in Pakistan were closed down, such as a Heavy Water Plant by Germany, the 1976 fuel fabrication plant by Canada, and the 1978 plutonium reprocessing plant by France. Canada's embargo impacted Karachi Nuclear Power Plant (KANUPP).[16] Simultaneously, some Western countries started to propagate

negatively only against Pakistan on the grounds that Pakistan is on the path to develop nuclear weapons.[17] At the time, the international community totally neglected Pakistan's legitimate security concerns vis-à-vis India. They did not prevent India from continuing on the path of nuclear weapons development. On the other hand, to stop Pakistan from becoming a nuclear weapons capable state, the US imposed a sanctions' regime and cut off assistance to Pakistan. The US sanctions against Pakistan during that period included the 1976 Symington Amendment , the 1979 US aid cut-off for Pakistan under Section 669 of the Foreign Assistance Act of 1961 (FAA), and the 1985 Pressler Amendment. Accordingly, military and economic aid was cut off by the Reagan and Bush administrations, though under the Reagan administration some waivers were given to Pakistan because of Pakistan's facilitation of the war against the Soviet Union in Afghanistan.[18]

Pakistan's nuclear programme follows minimalism and the developments have been made to reduce its vulnerabilities vis-à-vis India. Islamabad eschewed horizontal and vertical proliferation of nuclear weapons technology in South Asia and worked towards strengthening nuclear non-proliferation and disarmament objectives during the 1970s and the 1980s. From 1984 to 1986, Pakistan was an active supporter of around ten UN General Assembly resolutions for securing a nuclear test ban agreement.[19] From 1986-87, Pakistan for a second time chaired the IAEA Board of Governors. In 1987, Pakistan even proposed a bilateral regional test ban treaty with India.[20] At that time, Pakistan believed that negative security assurances (NSA), adherence to the NPT norms, establishment of NWFZ, IAEA full-scope safeguards and a comprehensive test ban will help to control nuclear weapons proliferation to more States.[21] India rejected all these proposals citing its security concerns vis-à-vis China. Pakistan was deeply disappointed with the slow progress in the conclusion of CTBT by major powers and urged a ban on further nuclear testing in order to stop nuclear arms race.[22] In fact, at that time major nuclear powers were still reluctant to finalise the CTBT. These powers wanted to maintain their

positions as advanced and sophisticated nuclear weapons inventory holders, which required more and more nuclear tests.[23]

In 1989, Pakistan acceded to the Convention on Assistance in Case of a Nuclear Accident or Radiological Emergency (CACNARE) and to the Convention on Early Notification of a Nuclear Accident (CENNA).[24] This move opened the way for the signing of a bilateral agreement with India for not attacking each other's nuclear installations in 1991. In 1993, Pakistan raised its voice for the control of fissile material production and supported the UNGA Resolution 48/75L of December 16, 1993, which recommended negotiating a "non-discriminatory, multilateral and internationally and effectively verifiable treaty banning the production of fissile material for nuclear weapons or other nuclear explosive devices." [25] In 1994, Pakistan signed the Convention on Nuclear Safety (CNS) and later ratified it in September 1997.[26] Pakistan also supported the 1995 Shannon mandate on fissile material treaty with the hope that it would address the issue of past stocks of fissile materials. In the same year, Pakistan proposed creation of a missile-free zone in South Asia and in 1996, Pakistan voted in favour of the CTBT while India voted against the treaty.[27] India opted out of these disarmament efforts and bilateral proposals because it had acquired the nuclear weapons capability.

Pakistan, apprehensive of Indian nuclear ambitions, kept its nuclear options open and linked the signing of the CTBT with India doing so. Pakistan's stance on the CTBT eventually proved right in 1998, when India drastically altered strategic balance by detonating its nuclear devices. Pakistan's leadership made it clear that Pakistan cannot compromise over its national security interests and will take all necessary steps to safeguard them.[28] At that time, Pakistan was left with no choice but to readdress this altered strategic balance by going nuclear,[29] which led to imposition of sanctions by the US on Pakistan under the Glenn Amendment. As in past, after the 1998 tests, Pakistan continued to pay the price for India's original sin and for safeguarding its legitimate national security interests.

Post-Test Record

Even after 1998 nuclear tests, Islamabad maintained of nuclear restraint with the hope to arrest nuclear arms race in South Asia and to pursue the objectives of international nuclear non-proliferation regime.[30] In June 1998, it announced unilateral moratorium on further nuclear testing and was even willing to sign the CTBT if India did so first.[31] Pakistan also continued its support to ban the production of fissile material for nuclear weapons. On July 30, 1998, Pakistan stated that a wide disparity in fissile material stockpiles of India and Pakistan could erode the stability of nuclear deterrence.[32] In August 1998, in another statement at the CD, Pakistan said that to pursue the objectives of nuclear non-proliferation and disarmament, difference over future and existing stockpiles must be considered.[33]

Later in 1999, Pakistan reiterated its stance on CTBT and mutual strategic restraint in South Asia.[34] During the talks with India on February 21, 1999, Pakistan proposed a strategic restraint regime in South Asia and signed a MoU with India to work on bilateral nuclear Confidence Building Measures (CBMs). India responded to these efforts with its 1999 draft nuclear doctrine signaling a dangerous conventional and nuclear arms build-up.[35] On August 25, 1999 Ministry of Foreign Affairs expressed concerns on India's aggressive conventional and nuclear militarisation programme, terming it a dangerous trend for the regional peace.[36]

Pakistan unilaterally continued its policies of nuclear restraint and believed that the objectives of international nuclear non-proliferation regime could only be achieved through equality and in an atmosphere free of coercion.[37] In pursuit of its non-proliferation ideals, Pakistan acceded to the Convention on the Physical Protection of Nuclear Material (CPPNM) on September 12, 2000.[38] Pakistan also institutionalised its nuclear weapons capability by establishing its National Command Authority (NCA) in 2000; adopted a credible minimum deterrence posture

in 2001;[39] argued against a nuclear arms race in South Asia; proposed a regional nuclear test ban treaty;[40] renounced the use of nuclear weapons; proposed the denuclearisation of South Asia; [41] and even suggested a mutual roll-back of nuclear programmes of India and Pakistan. However, India once again rejected all these proposals and held the regional stability on ransom. Following are some of the salient features of Pakistan's proposed *strategic restraint regime* in South Asia, which was rejected by India:[42]

- A bilateral nuclear test moratorium treaty;
- Non-weaponisation, non-deployment and a de-alert status of nuclear capable missile systems;
- An advance notification for ballistic missile tests;
- Moratorium on developing Anti-Ballistic Missile systems;
- Nuclear CBMs to reduce the chances of miscalculation or accidental use of nuclear weapons;
- Transparent and open nuclear doctrines;
- Not to indulge in any nuclear arms race;
- An agreement on non-use of force, including the non-use of nuclear weapons.
- Conventional arms balance with a mechanism for the resolution of disputes, particularly Jammu and Kashmir.

In the meantime, Western narrative over the safety and security of Pakistani nuclear assets started to surface, which clearly appears politically motivated and has quasi-governmental support. A 2001 report of the Institute for Science and International Security (ISIS), a Washington-based think tank, raised an alarm that Pakistan's nuclear weapons could fall into the hands of militant and terrorist groups.[43] That was a time when nuclear safety and security culture in Pakistan was evolving. In 2001, Washington Post — that has never maintained neutrality towards Pakistan, reported that in an effort to secure nuclear weapons, Pakistan had re-deployed weapons to at least six secret new locations and reorganised military oversight of nuclear forces.[44] Location of nuclear weapons is the best-kept secret in

Pakistan and Western media's traditionally offers several provocative guesstimates but seldom brings a much-needed spotlight on India's sprawling nuclear enterprise.

In 2001, Pakistan Nuclear Regulatory Authority (PNRA) was established as an independent body to regulate civilian nuclear industry. The PNRA was tasked to regulate all aspects related to civilian nuclear energy; legislation and regulations for licences for import exports; and the physical protection of nuclear installation and nuclear material.[45] The PNRA has been acting as an independent nuclear regulatory body that works synergistically with the IAEA on nuclear safety regulations.[46] Over the years, the PNRA has streamlined nuclear disaster management by announcing a host of new measures for protecting "the plant and society from hazards that could be man-made or natural."[47] In 2006, the PNRA developed a five-year National Security Action Plan (NSAP) to enhance safety and security of all nuclear and related facilities. The NSAP was later renewed in 2011.

In 2003, maintaining credible minimum deterrence as the pillar of its nuclear policy, Pakistan rejected international pressure to rollback its nuclear programme.[48] It assured the international community that nuclear weapons development would be only aimed at maintaining deterrence stability.[49] During the 2004 composite dialogue with India, Pakistan pledged to enhance nuclear CBMs, proposed a "no war pact" with India, and urged India to halt nuclear arms race.[50] During 2004 expert level talks on nuclear CBMs between India and Pakistan, both sides reaffirmed their unilateral moratorium on nuclear testing and agreed to set-up a hotline between their Directors-General Military Operations (DGMOs) and between their foreign secretaries.[51]

Pakistan had drawn lessons from its investigations into the activities of Dr. A. Q. Khan, who operated in the international nuclear black market outside governmental control. The Network involved nationals of twenty-four states around the world. While

Pakistan took requisite actions against Dr. Khan, the other governments did not do take sufficient measures and settled at given their nationals a slap on the wrist at best. Although none of the States involved with this network could build nuclear weapons, the proliferation of the second-rate centrifuge technology was combined failure of supplier States in strengthening their export control systems and preventing their nationals from illicit trade. Pakistan was proactive in sharing its essential findings with the IAEA about Dr. Khan's involvement in the Network and other international partners. Later, he was quarantined and banned from even making any statements with respect to the issue of proliferation.[52] However, none of the other states take any significant action against their nuclear industry or citizens involved in the nuclear black market.

Pakistan has made changes to its export control laws and tightened control to ensure that no proliferation would be possible in the future. Till 2003, Pakistan's nuclear export control framework was governed by statutory regulatory orders and ordinances. In 2004, Pakistan consolidated most of the previous regulations in a single legislation, "Export Control on Goods, Technologies, Material, and Equipment related to Nuclear and Biological Weapons and their Delivery Means, 2004." The 2004 Export Control Act was established to strengthen controls on the export, re-export, trans-shipment and transit of goods and technologies, materials and equipment related to nuclear and biological weapons and missiles capable of delivering such weapons.

The Act extends to the whole of Pakistan and maintains a control list, which is in harmony with the lists of the NSG, the Missile Technology Control Regime, the Australia Group, and the Wassenaar Arrangement.[53] Exporters are required to maintain detailed inventories and records and to notify the relevant authorities if they suspect use of goods or technology for making weapons. Offenders face tough penalties, which include imprisonment of up to fourteen years, a fine of up to five million rupees, and the seizure of all assets and property.[54] This Act also

led to the creation of a Strategic Export Control Division (SECDIV) in the Ministry of Foreign Affairs. Pakistan issued its control list of goods and technologies subject to regulatory controls (2005), Export Control (Licensing and enforcement) Rules (2009), Internal Compliance Programme (ICP) Guidelines (2014), and a revised Control Lists of Goods, Technologies, Material and Equipment related to Nuclear and Biological Weapons and their Delivery Systems of its Export Control Act of 2004(2015).[55]

In order to continue on the path of restraint and to strengthen international non-proliferation regime and disarmament objectives, in 2005, Pakistan once again reiterated its stance for a strategic restraint regime in South Asia. However, after many rounds of talks, on October 3, 2005, during the Indian External Affairs Minister's visit to Islamabad, Pakistan and India signed an agreement on advance notification of ballistic missile tests.[56] At that time the Indo-US nuclear deal emerged as a major irritant to Pakistan's national security interests. Initially, the US tried to persuade India to sign the CTBT as 'essential' step for the US Congress to approve the deal.[57] However, New Delhi rejected such a condition and under tremendous Indian and its caucus's pressure the US signed the deal without any reference to the CTBT. As a result, India would now be able to develop more fissile material to develop more nuclear weapons. Pakistan raised this concern at international forums especially in its deliberations at the Conference on Disarmament (CD) in Geneva. On May 16, 2006, Pakistan highlighted that asymmetry in fissile materials at global and regional levels would be a factor of strategic instability;[58] and proposed that the scope of a treaty on fissile materials should include all stocks (a disarmament measure) rather than cutting-off future production (a non-proliferation half measure that leaves P-5 in the comfort zones).

As a proactive and responsible power, in 2004, Pakistan submitted its first report on National Measures to Implement UNSCR Resolution 1540 (2004). Since then the country has been fully cooperating with the 1540 Committee and has so far

submitted four comprehensive reports.[59] In 2006, Pakistan joined the Container Security Inactive (CSI). In the same year, Pakistan also became an active member of and a contributor to the Global Initiative to Combat Nuclear Terrorism (GICNT).In 2007, as a part of CSI and Mega Port Initiative (MPI) Pakistan established Integrated Cargo Container Control (IC3).[60]

On the domestic front, on December 13, 2007, Pakistan formalised the administration of all its strategic organisations, including their research, development, production and use of nuclear and space technologies; their safety and security and non-proliferation through the National Command Authority Ordinance, 2007. Earlier the NCA had been established by an administrative order, but now it was given a full legal basis. Analysts point out that the timing of this ordinance was meant to help the command and control system.[61] The creation of the Strategic Plans Division (SPD), as the Secretariat of the NCA, plays an important role for safeguarding and securing Pakistan nuclear assets. As the Secretariat, SPD carries out operational planning, develops and maintains command and communication links, safeguards nuclear weapons and provides policy recommendations on arms control, disarmament and non-proliferation issues.[62] In addition, the SPD formulates standard operating procedures for strategic organisations; and manages approvals, reporting and monitoring of travel for all scientific personnel. It has instituted a comprehensive Personnel Reliability Programme (PRP) and Human Reliability Programme (HRP) for professional at various levels.[63] Pakistan has a strong force of around 28,000 people deployed to keep a tight vigil on the country's strategic programme.[64] Furthermore, the National Command Authority Ordinance 2007, which was later superseded by National Command Authority Act 2010, the Act made its entry into force retroactive to 2007, gives the SPD authority to investigate suspicious conduct, and can give a sentence of up to 25 years of imprisonment to any serving and retired personnel, including military personnel, notwithstanding any other laws.[65] Nuclear establishments are dispersed geographically for operations and security reasons. There is a

multi-layered system of security over these nuclear installations. This includes highly trained Special Forces at the inner perimeter, air defence systems, no fly zones, fencing of structures, monitoring by state of the art equipment, close circuit cameras, sensors, check posts at second and third level and counterintelligence teams to identify any threats to nuclear installations.

In the subsequent years, Pakistan kept on highlighting its priorities for national security concerns, its international outlook towards different instruments of nuclear non-proliferation regime and its efforts to strength nuclear safety and security culture within the country. In 2010, Pakistan's NCA stated that the country is committed to work as an "equal partner" in international effort for general and complete nuclear disarmament and non-proliferation; and underscored the need for non-discriminatory policies and accommodation of the reality of Pakistan's nuclear weapon status for promoting global non-proliferation goals. Promotion of nuclear non-proliferation and disarmament objectives in South Asia is linked with regional security dynamics and the need to address existing asymmetries and resolution of outstanding disputes.[66]

In order to meet its growing energy requirements through peaceful nuclear technology, Pakistan has several times expressed its willingness to join NSG and other export control regimes.[67] The NCA, in its statement of July 14 2011, reiterated "Pakistan's desire to constructively contribute to the realisation of a world free of nuclear weapons and to the goals of non-proliferation on the basis of equality and partnership with the international community."[68] Notably, since 2010, Pakistan has offered nuclear fuel cycle services under the IAEA safeguards within a non-discriminatory nuclear fuel cycle assurance mechanism. Most recently, the NCA, in its September 2015 statement, expressed satisfaction over its outreach with the multilateral export control arrangements. It also underlined Pakistan's commitment to play its due role as a mainstream partner in the global non-proliferation regime. The NCA also

reiterated Pakistan's interest in joining the multilateral export control arrangements on non-discriminatory basis, particularly NSG. Pakistan has maintained that it has the requisite credentials — as good as other non-NPT States — for full access to civil nuclear technology for peaceful purposes, particularly in order to meet its energy shortages.[69]

Over the years Pakistan has been saying that the international arms control and disarmament architecture is imbalanced. It has proposed two additional items on the CD's agenda, i.e. the issue of conventional arms control at the regional level and a global missile control regime.[70] However, in conformity with its policy, Indian delegation in the CD has opposed the proposal. Pakistan believes that asymmetry in fissile material stockpiles between India and Pakistan would increase, as India has eight reactors outside safeguards and has stockpiled huge stocks of reactor grade plutonium that can be used for weapons. The situation has further exacerbated after the 2008 India-specific waiver from the NSG that unencumbers its domestic uranium to be fully diverted to the military programme and make more nuclear weapons.[71] In CD sessions during 2015, Pakistan, maintaining its principled stance on negotiating a treaty on fissile materials in disarmament context, showed its willingness to join efforts for finding a new compromise to arrive at an acceptable mandate in the CD.

Pakistan believes that exercising genuine political will brings real progress when it addresses the regional security concerns and the taking all existing stocks into account.[72] Furthermore, as a practical step to express its commitment towards disarmament ideal, Pakistan tabled resolutions on regional disarmament, confidence building measures, and regional conventional arms control every year at the UN First Committee. In October 2015, at the First Committee, Pakistan clearly stated that there was a need to preserve disarmament machinery that had been developed by consensus, and that there was a need to find ways to achieve the goals of nuclear disarmament and non-proliferation in a balanced and non-discriminatory manner, keeping in view the security interests of all States.[73]

In addition to this, Pakistan held the position of Chairperson at IAEA Board of Governors, for a third time for 2010-11 and became a member of the UN Scientific Committee on the Effects of Atomic Radiation (UNSCEAR) in December 2011. Furthermore, to address nuclear safety and security issues, Pakistan has taken many steps in the past years. Pakistan's participation in all three Nuclear Security Summits (NSS), which were respectively held in 2010, 2012, and 2014, also demonstrated country's strong commitment to nuclear security. Pakistan's national statement released at the 2014 NSS lists, inter alia, the following steps:

- Establishment of Pakistan Centre of Excellence for Nuclear Security (PCENS) with a potential to grow into a regional and international hub with the support of the IAEA;
- The establishment of a National Institute of Safety and Security (NISAS) under Pakistan Nuclear Regulatory Authority (PNRA) in 2014. The School was inaugurated by IAEA Director General Yukiya Amano;
- Pakistan initiated its Nuclear Security Action Plan (NSAP) in 2006, renewable after every five years. (Recently under its NSAP, Pakistan has revised safety parameters of nuclear power plants following the Fukushima accident);
- Pakistan has also installed a Nuclear Security Cooperation Programme (NSCP) at fifteen nuclear medical centres and upgradation measures are underway at eight more.
- To enhance radiological safety, the country has established a Nuclear and Radiological Emergency Support Centre (NURESC) and a National Radiation Emergency Coordination Centre (NRECC) as well.
- The newly established National Detection Architecture deploys special nuclear material sensors at important entry and exit locations to prevent illicit trafficking of nuclear related materials.[74]

During the 2014 NSS, Pakistan also announced that "it was considering ratification of the 2005 Amendment to the CPPNM and was actively conducting a review to meet its various requirements."[75]

The PCENS conducts intense specialized courses in nuclear security, physical protection and personnel reliability and has also deployed radiation detection mechanisms at several exit and entry points to prevent illicit trafficking of radioactive and nuclear materials. Pakistan works closely with the IAEA to deal with safety and security of radioactive sources and illicit trafficking of nuclear materials. It is also working productively with IAEA to implement the National Security Action Plan (NSAP) for nuclear security. [76] Thus, through coordinated national measures, Pakistan has enhanced the safety and security of its nuclear assets against theft, diversion and accidental or unauthorised use.

Pakistan has made resolute efforts in order to fulfil its international obligations to support the objectives of non-proliferation. Pakistan's extensive measures to ensure the safety and security of its nuclear assets and also to prevent onward proliferation have been widely acknowledged. The Nuclear Threat Initiative (NTI) report on worldwide nuclear material security, released in 2014, described Pakistan as the 'most improved' country among nine nuclear-armed states, and as a state better at safeguarding its nuclear materials than India after having boosted physical protection of nuclear material and weapons.[77] On January 13, 2015, in a joint statement of US-Pakistan Strategic Dialogue, the US Secretary of State, John Kerry, stated, "The United States welcomes Pakistan's on-going efforts to harmonize its strategic trade controls with those of the multilateral export control regimes. Furthermore, the United States has full confidence in nuclear security in Pakistan and appreciates Pakistan's proactive engagement with the international community including through its hosting of IAEA training activities at its Nuclear Security Centre of Excellence and its active participation in the Nuclear Security Summits."[78]

In the 2016 NTI report, Pakistan in terms of theft ranking of quantities and sites ranked 21, which is equal to India and Japan ranking; and in terms of security and control measures Pakistan scored two additional points since 2014.[79] In terms of sabotage ranking, Pakistan and India are equal at 36 with a score of 54 points each. Pakistan has improved its position in sabotage ranking of a number of sites at number 15 with 80 points, whereas India stands below at number 30 with 60 points. In sabotage ranking, Pakistan has also achieved tremendous progress in its domestic commitment and capacity and stands at number 25 with 87 points; whereas India stands below at number 40 with 47 points.[80] The report also cites that by passing new cyber security regulations, Pakistan has improved its score in the security and control measure category.

Earlier, during his visit to Pakistan in March 2014, Yukiya Amano, IAEA Director General expressed confidence in the steps the country has taken so far to safeguard its nuclear assets.[81] During the 2014 NSS, President Obama praised the safety and security of Pakistan's nuclear assets as an example for the world to follow. The Congressional Research Service (CRS) January 2016 report on Pakistan's Nuclear Weapons quoted that "Defence Intelligence Agency Director Stewart stated in February 2015 that 'Pakistan continues to take steps to improve the security of its nuclear arsenal.'[82] The report also quoted US Ambassador Olsen arguing at a December 16, 2015, House Foreign Affairs Committee hearing that "Pakistan has 'made considerable progress' in its non-proliferation efforts."[83] The report added that Olson also argued that Washington has "confidence in the capabilities of ... the Pakistani security forces to control and secure their nuclear weapons."

Pakistan has clearly shown that it is a responsible nuclear State and its efforts are aimed at strengthening the objectives of nuclear non-proliferation regime. The planned development of a self-sustaining nuclear power generation of 40,000 MW by 2050 requires active international cooperation and support.[84] The regime should consider and compensate Pakistan's efforts by

engaging it in peaceful nuclear trade. By following a non-discriminatory criteria-based NSG membership for countries like Pakistan, major supplier States can open up new avenues of cooperation and engagement. More recently, China has also acknowledged Pakistan's aspirations to become an NSG member. China, has acknowledged key steps taken by Pakistan towards strengthening international nuclear non-proliferation regime, and supported Pakistan's engagement with the NSG.[85]

Pakistan and the International Civil Nuclear Industry

Pakistan and the International Civil Nuclear Industry

Pakistan's energy demand is increasing and its current energy resources are not sufficient to meet that demand. Pakistan is in the midst of the worst energy crisis in its history. Primary commercial energy supplies in Pakistan comprise of oil, coal, natural gas, hydro and nuclear electricity which include Oil (35.2 %), hydel (29.9 %), gas (29 %), and nuclear and imported sources (5.8 %)".[86] In the past ten years, Pakistan has been facing an acute energy crisis which has severely affected its industry and consumers. This is not only retarding economic growth but also causing civil unrest because of extended outages of electricity. In some industries, capacity utilisation has fallen to nearly 50 percent.[87]According to Ministry of Development and Reforms of Pakistan, existing installed capacity of power generation is 24,830[88]MW but production stands at a dismal 12,000 MW.[89] Currently, the average industrial and consumer demand is 17,000 to 19,000 MW.[90] In worst-case scenario, the shortfall could be as high as 8,000 MW.[91]

Nuclear energy has become a significant alternative and reliable option for Pakistan to meet its industrial and consumer demand. Because of inadequate natural resources, Pakistan is seriously considering nuclear energy as an alternative source. Currently, there are three nuclear power plants operating in Pakistan ─ Karachi Nuclear Power Plant (KANUPP), Chashma Nuclear Power Plant (CHASNUPP) I and II. They are producing 725 MW that is only 4.70 per cent of the domestic power generation.[92]

Table No. 1
Current Nuclear Energy Production

Reactor	Province	Type	Installed Capacity MW	Current Generation MW	Const-ruction start	Commercial operation	Planned deco-missioning
KANUPP 1	Sindh	PHWR	137	125	1966	1972	2019
CHASNUPP 1	Punjab	PWR	325	300		June 2000	2040
C… 2	Punjab	PWR	325	300	2005	May 2011	2051
Total (3)			787	725			

Source: *NEPRA State of Industry Report 2014.*

There are four power reactors, which are under construction – CHASNUPP 3, and 4, (C-3 and C-4) and K-2 and K-3. The installed capacity of these new nuclear power plants is 680 MW and 2200 MW respectively. "Pakistan plans to have seven functional nuclear plants of 1,100MW each by 2030 in addition to four units of 300 MW, producing a total of 8,900 MW of electricity."[93] Furthermore, addressing the 59th IAEA General Conference in Vienna in 2015, Chairman PAEC Muhammad Naeem reiterated that Pakistan is planning for nuclear power generation capacity of 40,000 MW under its Nuclear Energy Vision 2050.[94]

To operate nuclear power reactors on a large scale, Pakistan needs nuclear fuel suppliers. Pakistan's track record in maintaining nuclear reactors for civil use is unquestionable. Pakistan has maintained a safe and secure civil nuclear programme. It is a fact that all of Pakistan's nuclear facilities for civil use are under the IAEA's safeguards.[95] The details of these facilities are as follows:[96]

Table No. 2
Summary of Various Safeguards Agreements with the Agency

Sr. No.	Facility	Agency Publication	Date of Signing
1.	Pakistan Research Reactor-1 (PARR-1)	INFCIRC/34	March 05, 1962
2.	Karachi Nuclear Power Plant (KANUPP)	INFCIRC/116	June 17, 1968
3.	Karachi Nuclear Power Plant (KANUPP)	INFCIRC/135	October 17, 1969
4.	Fuel Reprocessing Plant	INFCIRC/239	March 18, 1976
5.	Hawks Bay Depot	INFCIRC/248	March 02, 1977
6.	Pakistan Research Reactor-2 (PARR-2)	INFCIRC/393	September 10, 1991
7.	Chashma Nuclear Power Plant-1 (C-1)	INFCIRC/418	February 24, 1993
8.	Chashma Nuclear Power Plant-2 (C-2)	INFCIRC/705	February 22, 2007
9.	Chashma Nuclear Power Plant-3 & 4 (C-3/C-4)	INFCIRC/816	April 15, 2011

Source: *Salim Khan and Muhammad Saeed Mulla, "Safeguards in Pakistan – State-Agency Cooperation," IAEA, Paper No. IAEA-CN-220-xx, 2014.*

Over the years, Pakistan has strengthened safety and security of its nuclear power plants and installations. After the nuclear incident of Fukushima in 2011, Pakistan carried out complete assessment of its own nuclear power plants and facilities. In response to any threat, "Pakistan has revisited safety parameters, emergency preparedness and response, and operators' training protocols and procedures." [97] In 2011, at policy levels, the SECDIV, in collaboration with the related ministries and entities, revised the 'National Export Control Lists" and "the lists, classified on the basis of the European Union's integrated system, cover the scope of export controls maintained by the NSG, Australia Group and MTCR."[98] Additionally, Pakistan as a party,

is also contributing to the global nuclear security framework such as the CPPNM, the Nuclear Safety Convention, the Convention on Early Notification of a Nuclear Accident, and the Convention on Assistance in the case of a Nuclear Accident or Radiological Emergency.[99] Pakistan is also working with the GICNT. It has consistently adhered to the IAEA Code of Conduct and contributed to the IAEA's Incident and Trafficking Database (ITDB). In December 2011, "Pakistan held the position of Chairman IAEA Board of Governors for 2010-11 and became a member of the UN Scientific Committee on the Effects of Atomic Radiation (UNSCEAR)."[100]

Pakistan has almost 45 years of experience in safe and secure operation of nuclear power plants under IAEA safeguards and safety protocols. It considers civil nuclear energy safe and sustainable as well as very essential for economic growth. To deal with the current energy crisis and to prepare for the future needs of a growing population and economy, nuclear energy is a reliable source. Most importantly, nuclear energy is cheaper and sustainable for unlimited time. To generate 1,000 MW, Pakistan spends $1 billion in oil imports, which is not cost-effective and this heavy burden can be reduced through nuclear energy.[101] Unfortunately, discriminatory attitude of the global civil nuclear industry towards Pakistan is a source of concern and constrains development of the full potential of Pakistan's civil nuclear power generation programme.

A discourse has started whether the US would negotiate with Pakistan a nuclear deal similar to India and agree to an NSG waiver for Pakistan and its group. Pakistan has made clear that it would enter into such negotiations without any preconditions, and would not accept any restrictions on its nuclear programme. The 2005 Indo-US nuclear deal has already set a precedent for the kind of deal the US could have with another non-NPT Nuclear Weapon State. The bar cannot be higher for Pakistan, by any standard.

The NSG was created to curtail any misuse of nuclear technology for military purposes following India's nuclear test in 1974. Later on, India conducted nuclear tests in May 1998, just two years after the conclusion of CTBT. The United Nations Security Council adopted its Resolution 1172 of June 6, 1998, which "encouraged all States to prevent the export of equipment, materials or technology that could in any way assist programmes in India or Pakistan for nuclear weapons."[102] Yet the US signed a nuclear treaty with India and campaigned actively for a NSG waiver for India, which materialised in 2008.

The international nuclear industry, except China's, is not investing in Pakistan's civil nuclear projects. Pakistan nuclear power plants are under IAEA safeguards and Pakistan has been working closely with the IAEA on safety and security issues.

Pakistan will in all probability only accept an "unconditional" nuclear deal with the US roughly comparable to the Indian deal, other things remaining the same. Nuclear trade between international civil nuclear industry and Pakistan will create an ideal environment for further cooperation and understandings. Pakistan, a country with a population of 200 million people, and an important player in the South Asian region, cannot be left alone or ignored for a long time.[103]

If the Pak-US nuclear deal comes through, it will be a milestone and will create further opportunities between both states. Furthermore, the international civil nuclear industry's cooperation with Pakistan will usher in a new era and that will definitely help Pakistan fulfil its energy needs. Pakistan's entry into NSG will enhance its confidence to work closely with the international nuclear industry, end discrimination against it, and foster strategic stability in the region.

India's Non-Proliferation Credentials

India's Non-Proliferation Credentials

India has claimed that it has a spotless non-proliferation record and that it should be included in the nuclear mainstream countries and also made part of the NSG. However, it seems India's non-proliferation record is not as clean as it would have us believe. One of the most glaring examples is the 1974 nuclear explosion itself, for which India diverted nuclear fuel from Canadian reactors, supplied for peaceful and civilian use, to conduct a nuclear weapons test. Ironically, the NSG was created in the wake of this explosion specifically aimed at preventing the diversion of civil nuclear technology for military purposes in future. India has always tried to take moral high ground by demanding "complete nuclear disarmament" and non-discriminatory approach in non-proliferation fora. However, it has pursued an aggressive nuclear weapons programme in order to achieve a major regional and global power status. On its road to the nuclear weapon status it has proliferated in many ways — by illicit procurement, centrifuge know-how leakage, and a poor implementation of national export control system. Moreover, the safety and security of its nuclear installations is also in question where there are many instances of nuclear thefts and security breaches. India's non-proliferation record is far from impeccable as it claims as it has a long list of documented breaches.

India's following statement sums up its stance in all the multilateral non-proliferation fora: *"*India stands for the total elimination of all nuclear weapons and ushering in of a nuclear weapons free world. However, till such time as this is achieved, India will be constrained to keep her nuclear option open.*"* [104] India has, therefore, refused to sign the CTBT. Simultaneously, India has been working towards a robust nuclear weapons programme.

India worked hard to weaken the Statute of the IAEA in the 1950s. It used *Atoms for Peace* agreements in the 1960s to further its nuclear weapons programme. It undermined the NPT with its

"peaceful" bomb of 1974. India has always called the NPT discriminatory because, in its view, it allows certain countries to possess nuclear weapons while it does not recognise the right of others to develop a nuclear weapons programme. India claims that its national security would be disadvantaged by the separation of nuclear weapons states and non-nuclear weapons states.[105] India's stance in non-proliferation fora has, therefore, been less than exemplary. It has tried to hide behind the garb of "complete nuclear disarmament" while developing its own nuclear programme; but the veneer is too thin. India's proliferation activities are discussed in the following sections:

Diversion of Foreign Civil Nuclear Assistance for Weapons Use

The single most important and glaring example of India's nuclear proliferation is the 1974 nuclear explosion, called the 'Smiling Buddha', which used the plutonium from the nuclear reactor supplied by Canada. Thus, India is the first country that diverted plutonium from reactors supplied for peaceful purposes towards making a nuclear bomb. The plutonium[106] was produced in the Canadian-Indian Reactor, US (CIRUS), which has been operating since 1960. It was built by Canada under the "Atoms for Peace" programme. The 21 tons of heavy water needed to operate the reactor were supplied by the US.[107] In return, India had a written agreement with the suppliers that obliged it to use the nuclear reactor for peaceful purposes. Once confronted, India claimed that it was a "peaceful nuclear explosion."

India had another agreement with the US in 1963, which covered the two nuclear power reactors at Tarapur and their fuel. The spent fuel from these reactors is in storage and contains India's most reactor grade plutonium. India claims that it can reprocess the spent fuel to extract plutonium for use in its civilian power reactors as fuel. That plutonium can be used for nuclear weapons. Reportedly, the plutonium from Tarapur reactors is enough to make hundreds of nuclear warheads. However, the 1963 agreement required India to get approval from the US for

reprocessing the plutonium placed at its disposal. India disputes this and insists it is free to reprocess the spent fuel at any time.[108] The US has kept the matter dormant because it is an irritant in relations between the two countries. This is yet another glaring instance of proliferation. India is willing to go against the agreement with the US in order to reprocess the plutonium, which it may divert towards weapons use.

Illicit Procurement

Indian nuclear entities and companies have procured nuclear dual-use material and equipment without revealing to the supplier that the end user is an unsafeguarded uranium enrichment plant. The Institute of Science and International Security (ISIS) released two reports in 2006, which give details of India's proliferation activities.[109] The ISIS reports reveal that India has a tendering process for acquiring equipment for it gas centrifuge programme. The Department of Atomic Energy's (DAE)'s sub-entity Indian Rare Earths (IRE) uses websites and newspapers to invite companies for supply or manufacture of equipment without specifying that the end user is a gas centrifuge programme under the DAE. According to the ISIS report, this process has been going on for years with hundreds of advertisements for tenders.

Another particular instance is when in August 2005, an Indian ordnance factory may have attempted to use a Polish and a Europe-based Egyptian firm to obtain a controlled item, a three-roller four-axis CNC flow-forming machine from a European supplier. The accompanying specifications showed that it could be used to manufacture missile casings.[110]

The ISIS's 2008 report establishes Indian illicit procurements of Tributyl Phosphate (TBP), which is a dual use chemical used in nuclear programme to separate plutonium. India used Indian trading companies to procure TBP secretly from German and Russian suppliers. The end user for the substance was Nuclear Fuel Complex in Hyderabad. These middle companies procured

the TBP without the supplier knowing that the substance was for unsafeguarded nuclear programme.[111]

Centrifuge Know-How Leakage

The ISIS reports also reveal that India's tendering process for acquiring equipment for its gas centrifuge programme also leaks sensitive gas centrifuge information. Interested bidders can purchase documents, which cost around US$10, and some of them contain detailed drawings and manufacturing instructions for direct use centrifuge components and other sensitive centrifuge related items. The tender advertisements do not indicate to the bidder that the items will be used in a gas centrifuge facility.[112] However, the whole tendering process was meant to outfit the Indian gas centrifuge programme, codenamed Rare Materials Project (RMP) under the DAE. The tender documents contain drawings and precise specifications. The level of detail is such that these documents would be considered classified in supplier countries. The bidding companies may leak the designs for secret nuclear programmes. [113] Moreover, the manufacturing companies may well be willing to sell items to others buyers once their original order is finished. Therefore, this opens many direct and indirect avenues for proliferation.

Poorly-Implemented National Export Control System

Indian export controls are poorly implemented with a greater possibility of onward proliferation. An ISIS report raises the issue that under inadequate Indian export controls, once imported items are re-exported it can be a great source of concern vis-à-vis onward proliferation. This is especially so since proliferating States are known to target Indian industries.[114] With the India-US civil nuclear deal coming through and many other Western countries engaging in nuclear trade with India, there will be a dramatic increase in nuclear dual use items. This will further strain an already inadequate export control system. The report suggests that the US should condition its support of the India-US

nuclear agreement on making substantial improvements in its export control system.

Illicit Heavy Water Acquisitions

India's nuclear programme requires a steady stream of heavy water. During the 1980s, India arranged secret shipments of Chinese, Soviet and Norwegian heavy water to help start the Madras and Dhruva reactors through a West German nuclear materials broker named Alfred Hempel. Between 1983 and 1989 India received at least 80 tons of Soviet heavy water under the table, and 26.5 tons of Norwegian heavy water through diversions.[115]

India's Nuclear Helpers

- Firms in **Germany** supplied unsafeguarded Nangal and Talcher heavy water plants and sold teleperm process control system to Hazira heavy water plant. A German firm was fined $800,000 by the US for illegally re-exporting US-origin beryllium. The German broker arranged illicit sales of more than 200 tons of heavy water to India, supplied natural lithium useful in making tritium to boost nuclear bombs and sold zircalloy pipes which are used as reactor fuel cladding.[116]

- Firms in **Norway** diverted more than 26 tons of Norwegian heavy water was diverted to India through Romania and Switzerland.

- Firms in **Soviet Union/Russia** — Secretly sold at least 80 tons of heavy water to run unsafeguarded reactors

- A Chinese firm was used by a **German** broker to sell at least 130 tons of heavy water**,** who smuggled the material to India for use in unsafeguarded nuclear reactors.

Nuclear Thefts and Accidents

India has had a long history of thefts of nuclear material and mishaps or near accidents at its nuclear facilities. This raises the question of onward proliferation of nuclear materials as well as the safety and security of its nuclear facilities. Limited access to fissile material and international safeguards on nuclear facilities are the main barriers to nuclear proliferation and nuclear terrorism. However, India has a poor record on both counts. In fulfilment of the terms of the India-US nuclear deal, India has placed 22 of its nuclear facilities under IAEA safeguards.[117] But there is a long list of incidents of theft of nuclear material and well as concerns over the safety of its nuclear installations. Potential effects of plutonium or uranium thefts go beyond national borders with the possibility of onward proliferation and threats of nuclear terrorism.

According to a 1996 report made available to IAEA, Indian nuclear facilities have had 130 instances of safety related concerns, of which 95 required urgent action.[118] According to an Indian parliamentary report, 147 mishaps or security related occurrences were reported in Indian atomic energy plants between the period of 1995 to 1998. Out of these instances, 28 were of acute nature and 9 of these occurred in nuclear power installations.[119]

The incidents of nuclear theft date back to the 1980s but increased manifold in the 1990s and 2000s. This paper would just mention a few of the theft cases. In July 1998, Indian Central Bureau of Intelligence (CBI) uncovered a theft racket of uranium in Tamil Nadu. Of the 8 kg seized, 6 kg was weapons grade unenriched uranium.[120] This led to seizure of uranium on July 31, 1998 of 2kg uranium. Samples showed 2.2% enrichment, which indicated it, had come from an atomic research centre. On May 1, 2000, Mumbai police seized 8.3 kg uranium from scrap dealers which originated from the Bhaba Atomic Research Centre (BARC), said to be depleted but radioactive.[121]

Also in November 2000, the International Atomic Energy Agency reported two incidents of uranium theft in India. In one incident, the Indian police seized three uranium rods and arrested eight persons on charges of illicit trafficking of nuclear material. In the second incident, the Indian police seized 57 pounds of uranium and arrested two men on charges of illicit trafficking of radioactive material.[122] Again in November 2000, the Indian intelligence seized 25kg of highly radioactive uranium from a scrap dealer in Bibi Cancer Hospital.[123] In August 2001, the revelation of 200 grams of semi-processed uranium theft in West Bengal led to the arrest of a uranium smuggling gang.[124] In December 2006, a container packed with radioactive material was stolen from Indian fortified research atomic facility near Mumbai. Again in September 2008, police in the north-eastern Indian state of Meghalaya arrested five people on charges of smuggling uranium ore.[125]

In March 2010, a gamma unit containing Cobalt-60 pencils was improperly disposed of by University of Delhi in violation of national regulations for radiation protection and safety of radioactive sources. This incident resulted in the material landing in the hands of a scrap dealer in West Delhi which led to the death of one person and seven were reportedly affected by radiation injuries.[126] Also in 2013, leftist guerrillas in Northeast India illegally obtained uranium ore from a government-run milling complex and strapped it to high explosives to make a crude bomb before they were caught by the police.[127]

There have been instances in India where employees have carried out damaging activities within a nuclear facility. For instance, in 2009, a disgruntled employee at the Kaiga Atomic Power Station in Karnataka was reportedly responsible for contaminating drinking water supply with heavy water from the plant which led to the poisoning of 45 employees. Similarly, there have been media reports that there have been 25 intrusions at Bhabha Atomic Research Centre (BARC) in the last two years.[128]

In view of the long list of nuclear thefts, an analysis by the Institute of Strategic Studies expressed concern over the presence of a nuclear mafia in India and organised crime relating to nuclear materials.[129] This has been a great source of concern since the effects of national nuclear theft go beyond national borders. It may lead to nuclear terrorism which is an international issue of concern.

Another 2012 analysis by the British Royal United Services Institute (RUSI) and the Observer Research Foundation (ORF) in New Delhi highlighted the potential of theft of material suitable for use in weapons of mass destruction from insufficiently protected nuclear and chemical facilities in India. This report concluded that there is a potentially high risk of the material falling into the hands of wrong elements and radiological material being used in the form of a "dirty bomb" in terrorist activities.[130]

Another analysis published by the *Foreign Policy* magazine expresses grave concerns that India is not adequately safeguarding its fast-expanding nuclear installations and materials. An incident in October 2014 raised fresh concerns over the safety of Indian nuclear facilities when a person of the Central Industrial Security Force (CISF), which is assigned to protect India's nuclear facilities and weapons related materials and installations, opened fire and killed several people in the very facility he was assigned to protect.[131]

According to the Stockholm International Peace Research Institute, an estimated 90 to 110 nuclear warheads are stored in six or so nuclear sites which are guarded by CISF. A 2013 confidential draft report of the Home Ministry revealed that the force is short staffed, ill equipped and inadequately trained.[132]

The US and other Western countries have long expressed concerns over the safety of India's nuclear facilities. India refused any help from the US in improving its nuclear safety. Its nuclear programme still remains shrouded in secrecy. This,

however, is a matter of grave concern, especially with India-US civil nuclear deal coming through. Moreover, many other countries are eagerly engaging in nuclear trade with India. This means that close to 60 reactors may be operational in the next two decades. With a poor nuclear safety and security record, it only means there would be dozens more nuclear reactors that would be vulnerable to theft and accidents.

According to latest reports, India is also building a top secret nuclear city to produce thermonuclear weapons in Southern Karnataka. Reportedly, it will be the subcontinent's largest complex of nuclear centrifuges, atomic research laboratories and weapons testing facilities and is expected to be completed in 2017. [133] Of much significance are the reports that India is building thermonuclear weapons which have a much greater explosive force. This again follows the same clandestine pattern where India exploded its first "peaceful" nuclear device, when it tested first in 1998, and is now pursuing thermonuclear weapons without the international community and especially the US being aware of it. This signifies that India is the engine of nuclear proliferation and nuclear competition in South Asia. This will not only further heighten Pakistan's threat perceptions and that of China, but may give them an incentive to pursue thermonuclear weapons of their own. This would only fuel a pointless nuclear arms race. Moreover, having a nuclear city means adding to the already extensive number of Indian nuclear facilities that need to be safeguarded. The safety and security of India's nuclear facilities thus becomes a matter of even graver concern. This may lead to onward proliferation or nuclear terrorism, or both.

It is clear that India has a poor nuclear materials safety record. According to the 2014 NTI Nuclear Materials Security Index, which assesses the security of nuclear materials around the world, India scores below Pakistan, and is ranked only above North Korea and Iran.

NTI Nuclear Materials Safety Index

The table shows the overall scores of countries with weapons-usable nuclear materials.

Rank/25	Country	Score/100	Change in score
1	Australia	92	+2
2	Canada	88	+6
3	Switzerland	87	-
4	Germany	85	+3
5	Norway	83	+1
6	Poland	82	+1
=7	France	81	+2
=7	Netherlands	81	-
9	Belarus	80	+5
10	Belgium	79	+7
=11	United Kingdom	77	-1
=11	United States	77	-1
=13	Argentina	76	+4
=13	Japan	76	+6
15	Kazakhstan	73	-
16	South Africa	71	-1
17	Italy	70	-1
=18	Russia	66	-
=18	Uzbekistan	66	+5
20	China	64	+1
21	Israel	57	+2

Rank/25	Country	Score/100	Change in score
22	Pakistan	46	+3
23	India	41	+1
24	Iran	39	-
25	North Korea	30	-

Source: *http://ntiindex.org/*

In the 2016 NTI Risk Assessment Report, India's record has improved in the theft ranking where it is at rank 21.[134] In the sabotage ranking both India and Pakistan are at the rank 36 with 54 points each out of a maximum 100. In the sabotage ranking subcategory "domestic commitments and capacity," India fares much worse than Pakistan with the former at rank 42 and the latter at rank 25.[135] This means that while India's overall safety and security ranking has improved slightly, its commitment and capacity to prevent sabotage leaves much to be desired.

Black Diamonds Incident

Black diamonds are found naturally and considered rare. However, Indian scientists have been trying to create them artificially through radioactive processes. In 1992, scientists from BARC were reportedly involved in exporting 'black diamonds' internationally. Scientists were using research reactor APSARA to irradiate natural diamonds, making them darker and radioactive and selling them on the international market. These diamonds have dangerously high levels of radioactivity.[136] BARC is central to India's nuclear weapons infrastructure. The fact that scientists from this facility were willing to engage in illegal and dangerous practices heightens fears that other nuclear material may also be available for illicit trade.

Proliferation by Individuals and Entities: Links with Iranian and Iraqi Programmes

India has a history of cooperation with Iran.[137] It had a nuclear cooperation agreement with Iran signed in 1975. During the period of 1980-3, India helped in building the Bushehr nuclear plant and also sent scientists and personnel to Iran in 1982. India negotiated a deal for the sale of a 10 MW nuclear reactor to Iran in 1991 despite US displeasure. Nuclear scientist Dr. Prasad, head of the Nuclear Corporation of India worked in Bushehr after his retirement. Another scientist, Narander Singh, also worked in Iranian nuclear facilities.[138]

The George W. Bush administration sanctioned several Indian entities for transferring technologies and know-how to Iraq and Iran that could contribute to chemical or biological weapons programmes.[139] The US clamped sanctions on five Indian entities and four individuals for their involvement in proliferation. In 2002-03, the US imposed sanctions on the Indian entity Hans Raj Shiv for transferring WMD equipment and technology to Iraq.[140] Protech Consultants Pvt Ltd came under sanctions in 2003 for transfers to Iraq. NEC Engineers Pvt Limited came under the US sanctions in 2003 for proliferation activities related to chemical and biological weapons.[141]

An Indian scientist Dr. Prasad and former Chairman of Nuclear Power Corporation of India Limited Dr. Surendar came under sanctions in 2004 for facilitating Iran's WMD and missile related programme.[142] In 2007, two Indian nationals Sudarshan and Mythili — were arrested in the US for illegally transferring latest computer technology meant for missile guidance system for their government's research and development entities.[143] Likewise, Sabero Organic and Sandhya Organic Chemicals Pvt Ltd were sanctioned in 2005 for proliferation to Iran.

It is notable that India had very strong connections with Iran's nuclear programme where Indian scientists actually worked in the Iranian nuclear programme and were accused of proliferation and

sanctioned by the US. This again is a clear example of nuclear proliferation rather than an exemplary non-proliferation record.

Comparison of Pakistan and India's Nuclear Credentials

Pakistan	India
CTBT	**CTBT**
• Actively participated in the negotiations of the CTBT. • In the UN General Assembly during adoption of the CTBT (September 10, 1996), Pakistan voted in favour of the CTBT at the UNGA. • Pakistan participates as an observer in the proceedings of the Comprehensive Nuclear-Test-Ban Treaty Organization(CTBTO). • Pakistan offered two facilities for International Monitoring System (IMS) (one Infrasound and one seismic) - a global network set up to detect explosions. • Pakistan also has a declared unilateral moratorium in place on nuclear testing and has announced that it will not be the first one to resume nuclear testing.	• India participated in the negotiations of CTBT but withdrew its support in early 1996. India had agreed to offer two seismic stations for inclusion but later withdrew that as well. • In the UN General Assembly during adoption of the CTBT (September 10, 1996), India was one of the 3 countries who voted against the treaty (the other two were Libya and Bhutan). Consequently, India does not participate in the proceedings of the CTBTO. • India has a declared unilateral moratorium in place on nuclear testing.
Safeguards	**Safeguards**
• Pakistan is not party to the Nuclear Non-Proliferation Treaty but does have its civil power reactors and two research reactors Pakistan Research Reactor (PARR 1&2) under item-specific IAEA safeguards (INFCIRC/66/Rev2). • Implementation of IAEA Safeguards in Pakistan dates back to March, 1962 when a trilateral safeguards agreement (INFCIRC/34) (Pakistan, IAEA, USA) was signed for the supply of PARR-1. • Since then Pakistan has concluded several safeguards agreements with the Agency (9	• Indian Safeguards are also modelled on INFCIRC/66/Rev2 or facility/item specific Safeguards Agreements. • Although India's first Safeguards agreement dates back to September 1971 (INFCIRC/154 between IAEA, India and USA), many of its domestic nuclear facilities remained outside IAEA's Safeguards till 2009. By 2009, India had only six imported power reactors under Safeguards and 16 Indian-built reactors were outside safeguards. • In 2008, after IAEA Board of Governor's approval, India

agreements in total). The last agreement was signed in May 2011 for Chashma 3 and 4. Unlike India, All civilian facilities in Pakistan have remained under IAEA Safeguards right from the start.	committed to a separation plan that intended to put 8 more reactors under IAEA Safeguards bringing the total number to 14 (out of 22). The eight indigenous Indian power reactors (Rajasthan 3, 4, 5, 6; Kakrapar 1, 2; Narora 1, 2) were included in the list for application of Safeguards. However, major parts of India's civilian programme remained outside IAEA safeguards. Eight indigenous Indian power reactors (Kaiga 1, 2, 3, 4; Madras 1, 2; Tarapur 3, 4) were left outside Safeguards. • According to Indian analyst M.V. Ramana, "Together, these unsafeguarded reactors have 2350 MW of electricity generation capacity and could produce about 1250 kilograms of reactor-grade plutonium every year" • In addition, Fast Breeder Test Reactor (FTBR) and Prototype Fast Breeder Reactors (PFBR), enrichment facilities, spent fuel reprocessing facilities (except for the existing safeguards on the Power Reactor Fuel Reprocessing (PREFRE) plant), research reactors (CIRUS, Dhruva, Advanced Heavy Water Reactor), and three heavy water plants were not on the separation list and thus remained outside the safeguards. • India's Safeguards Agreement with IAEA contains a number of unique provisions, giving India considerable flexibility to move safeguarded material in and out of the unsafeguarded nuclear programme. • The introduction to India's Safeguards Agreement with IAEA notes that India's access to assured supplies of fresh fuel is an "essential basis" for New Delhi's acceptance of IAEA safeguards on some of its reactors and that India has a right to

	take "corrective measures to ensure uninterrupted operation of its civilian nuclear reactors in the event of disruption of foreign fuel supplies." This guarantee was also enshrined in the Indo-US nuclear deal. • In 2014, India ratified an Additional Protocol (AP), which was weaker than the other Nuclear Weapon States. Concerns about India's AP agreement were published in Wikileaks, in a 2009 cable from Ambassador Gregory L. Schulte (then US Permanent Representative in Vienna), who reported that India's draft AP text "does not even go as far as the APs for Russia and China, the weakest among NWS, and is viewed in the Safeguards Department and the Office of the Legal Advisor as setting a bad precedent for not only Pakistan, but Brazil."
Nuclear Security	**Nuclear Security**
• In 2014, the NTI Nuclear Material Security Index noted, "among nuclear-armed states, Pakistan is most improved through a series of steps to update nuclear security regulations and to implement best practices." Pakistan was ranked 22nd among countries with weapons usable nuclear material. • Pakistan is in the process of ratifying the 2005 CPPNM amendment.	• In the 2014 NTI Nuclear Material Security Index, India was ranked one step below Pakistan (23rd). • India ratified the 2005 CPPNM amendment in 2007.
Regulatory Structure	**Regulatory Structure**
• The PNRA was established in 2001. The PNRA, an autonomous oversight body, has been developed as a sustainable nuclear safety and security regulatory system with established response and recovery capabilities. PNRA is independent of	• India has no independent nuclear regulatory authority with the mandate to ensure that high standards of safety and security are observed in India's civilian nuclear facilities. • The governance framework of Indian atomic energy has both the nuclear

the PAEC. • - The IAEA's Integrated Regulatory Review Service (IRRS) mission noted in its report of 2014 that "PNRA is an independent and a competent regulatory body empowered with the full scope of regulatory powers required by the IAEA standards".	industry and regulatory body reporting to the Atomic Energy Commission. • The IAEA's Integrated Regulatory Review Service (IRRS) mission noted in its 2015 report that "The Government should embed the Atomic Energy Regulatory Board's (AERB) regulatory independence in law, separated from other entities having responsibilities or interests that could unduly influence its decision making".
Nuclear Safety Record	**Nuclear Safety Record**
• No major incidents/accidents. • The biggest incident was Heavy Water Leakage at KANUPP in 2011 which was characterized as Level 1 on the International Nuclear and Radiation Event Scale (INES). A seven-hour emergency was imposed at KANUPP following leakage of heavy water from a feeder pipe of the reactor	• Several nuclear incidents and few accidents over the years. • Mayapuri Radiation Accident in West Delhi in 2010 was of Level 4 on International Nuclear and Radiation Event Scale (INES). Eight people were hospitalised as a result of radiation exposure, and later one died.
Export Controls	**Export Controls**
• The legislative, regulatory, administrative and enforcement measures of Pakistan's export control regime encompass the standards and scope of the NSG, the Missile Technology Control Regime (MTCR) and the Australia Group (but not with the Wassenaar Arrangement).	• India has harmonised its export control list with the technological annexes of the MTCR and the NSG (but not with the Australia Group or the Wassenaar Arrangement). • India has not included few items of the Australia Group in its export controls policy as this move is facing resistance from its chemical industry.
Nuclear Arsenal and Restraint	**Nuclear Arsenal and Restraint**
• Pakistan was not the first to introduce nuclear weapons in South Asia; India tested in 1974. India again tested on May 11 and 13, 1998. Pakistan's response on May 28, 1998 was not a knee-jerk reflex but a responsible	• In 1974, India's first bomb was made with plutonium that came from a Canadian reactor moderated with US-supplied heavy water and was reprocessed in a US-designed plant. India broke its promise to use the

decision taken after consideration of all available options. • Pakistan had also proposed a South Asia Nuclear Free Zone, which was rejected by India. • Pakistan has for decades offered proposals to India for nuclear restraint, including a Strategic Restraint Regime in 1999. • Pakistan also suggested establishing a South Asia Zero-Missile Zone in 1994. • Pakistan supports the objective of Hague Code of Conduct Against Ballistic Missile Proliferation. • Pakistan was among the members of the UNSCR 1540 Committee in 2004, 2012, 2013. A Pakistani Expert is currently included in the Group of Experts of UNSCR 1540 Committee.	material strictly for "peaceful" uses. • India continues to grow its nuclear programme by testing missiles with long and short ranges, working on increasing fissile material production facilities, and investing in a strategic nuclear triad that inevitably requires a larger nuclear arsenal. • India was among the members of UNSCR 1540 Committee.

Conclusion

This monograph does not require a formal conclusion because it identifies the policy parameters of Pakistan's nuclear programme. In the light of various policy statements made by Pakistan government officials and the research work done by scholars in Pakistan and abroad, we have tried to construct a paradigm, which tracks the evolution of Pakistan's nuclear programme, its imperatives for maintaining and constantly improving its full spectrum strategic deterrence capability. The underlying theme in this paper is that Pakistan has always tried to promote peace and stability in South Asia and safeguard its sovereignty and territorial integrity. Within that overall framework, Pakistan has understandably attached highest importance to the nation's security. In that sense, Pakistan made an existential choice to go nuclear.

For decades, Pakistan made strenuous efforts both bilaterally and at multilateral forums to keep South Asia free of nuclear weapons and to promote peaceful uses of nuclear technology in

the region. But when India decided to nuclearise South Asia by conducting its first nuclear weapons test, Pakistan had absolutely no choice but to invest in its own nuclear capability. This option was exercised against the backdrop of a hostile relationship between Pakistan and India, especially after the dismemberment of Pakistan in 1971, with the active abetment of Indian armed and paramilitary forces. The separation of East Pakistan from Pakistan was followed by statements from Indian leaders to dismember and destroy the rest of Pakistan. Pakistan had to take steps to secure its state.

In this paper, we have outlined that even after the Indian nuclear tests in 1974 and 1998, Pakistan has been pursuing constructive nuclear diplomacy with India and at the international non-proliferation and disarmament forums. After the 1998 nuclear tests, Pakistan has been pursuing its proposal for the elaboration and establishment of a *strategic restraint regime* comprising nuclear and missile restraint, conventional balance and conflict resolution. So far India has decided not to engage with us on this three-point proposal meant to ensure strategic stability in South Asia and to work for overall de-escalation. In the bilateral dialogue, however, India and Pakistan have been able to agree to some confidence building measures such as pre-notification of ballistic missile tests.

We have also tried to compare and contrast Pakistan and India in terms of their commitment to non-proliferation. An objective recapitulation of facts, through analysis and matrices, demonstrates that Pakistan has a solid record in defending and promoting non-proliferation. On the other hand, India's record shows huge gaps, violations and inconsistencies in regard to export controls, as well as safety and security. Pakistan, despite all the constraints has been making headway in all these areas.

We have also tried to establish that throughout the turbulent history of induction of nuclear weapons in South Asia, Pakistan has been a victim of discrimination and double standards. Pakistan has been subjected to multiple layers of punitive

sanctions, whereas some major counties have looked past India's glaring violations and taken steps to legitimise its proliferation. The US nuclear agreement with India in 2005 and the subsequent NSG waver given to India in 2008 have created additional space and legitimacy for India to invest in nuclear weaponisation, both quantitatively and qualitatively, with the active support of the NPT and NSG member states.

It is high time that Pakistan's voice is heard more attentively on these issues and a fair global nuclear regime is created. Pakistan, as a non-NPT nuclear weapons state like India, qualifies to become a member of the NSG and get access to nuclear technology from all NSG members.

Annexes

Annex A

Nuclear Security Summit 2014
Pakistan's National Statement

Pakistan is committed to the objective of enhancing nuclear security. It has fully been engaged with the international community to promote nuclear safety and security.

The Nuclear Security Summit process in the past four years has generated high level commitments to foster nuclear security culture. The 2014 Summit gives each participating state an opportunity to consolidate and implement the decisions it has taken in the process.

Nuclear security within a state is a national responsibility. Within that framework, the international community should pursue cooperation on nuclear security through voluntary national actions and in accordance with each state's international obligations.

The existing international nuclear security framework covers the measures taken by the International Atomic Energy Agency (IAEA) and the United Nations as well as various conventions and initiatives. Therefore, there is no need to create new, parallel institutions or mechanisms.

The Summit process enables us to coordinate and synergize the work of the international community. In this context, we reaffirm the essential responsibility and central role of the IAEA.

National Nuclear Security Regime

Pakistan's nuclear security regimen has five pillars:

One, a well defined, robust command and control system. The National Command Authority (NCA), the apex decision making body, works under the chairmanship of the Prime Minister. It is supported by its secretariat, the Strategic Plans Division (SPD), and the Strategic Forces Commands. The NCA exercises control over all aspects including policy, procurement, employment, and nuclear security. The SPD develops technical solutions, Personnel Reliability Programme (PRP), and intelligence capabilities to deal with issues related to nuclear security, non-proliferation, accidents and WMD terrorism.

Two, Pakistan's nuclear security regime is anchored in the principle of multi-layered defense for the entire spectrum of any nuclear threat — insider, outsider or cyber threat - and is guided by the concept of five Ds — deter, detect, delay, defend, and destroy. A specially trained Special Response Force ensures the security of our nuclear assets. Besides, an integrated intelligence system exercises constant vigil to provide depth in defense. Force validation exercises are carried out regularly to revisit and upgrade our safety and security regime.

Three, a rigorous regulatory regime encompasses all matters related to nuclear safety and security, including physical protection of materials and facilities, material control and accounting, transport security, prevention of illicit trafficking, border controls, and plans to deal with possible radiological emergencies. The Pakistan Nuclear Regulatory Authority (PNRA), an autonomous oversight body, has developed a sustainable nuclear security regulatory system with established response and recovery capabilities. It works closely with the IAEA.

Four, a comprehensive export control regime. The legislative, regulatory, administrative and enforcement measures of our

export control regime are at par with the standards followed by the Nuclear Suppliers Group (NSG), the Missile Technology Control Regime (MTCR) and the Australia Group.

Five, international cooperation, consistent with our national policies and interests as well as international obligations.

Centre of Excellence

As part of its nuclear security programme, Pakistan has undertaken several steps to establish a Centre of Excellence, update regulations and adopt best practices.

The Center of Excellence conducts specialized courses in nuclear security, physical protection, material control and accounting, transport security and personnel reliability.

A National Institute of Safety and Security (NISAS) has been established at PNRA for facilitating national and regional training courses on nuclear security. The Institute, a key part of the Centre of Excellence, is equipped with the state of the art laboratories for training in the nuclear and radiation safety, nuclear security and physical protection.

In 2014, the Centre of Excellence, in collaboration with the IAEA, is planning to host regional training courses including course on “Security of Radioactive Sources”. Physical protection and nuclear security courses are planned as well with IAEA's assistance.

These training facilities, associated with Pakistan's Centre of Excellence on Nuclear Security, have the potential to grow into a regional and international hub, with the support of the IAEA.

Nuclear Safety

In the past few years, Pakistan has invested heavily in nuclear safety at the plant, corporate and regulatory levels.

After the Fukushima accident, Pakistan carried out detailed assessment of its own nuclear power plants. We revisited safety parameters, emergency preparedness and response, and operators' training protocols and procedures. The approach to ensure safety of nuclear power plants is in accordance with our national legislative system. All new authorizations now require from the licensees to implement lessons learnt from the Fukushima accident.

Pakistan has accepted IAEA's proposal to join the Agency's Collaborating Centers, which are designed to standardize technology, disseminate information, and facilitate research and training.

Nuclear Security Action Plan (NSAP)

A robust Nuclear Security Action Plan (NSAP) is being implemented in collaboration with the IAEA to manage radioactive sources, secure orphan sources, detect radiation and prepare for emergencies. Collaboration with IAEA is ongoing for upgrading physical protection of a nuclear power plant at Karachi.

Nuclear Medical Centres

Under IAEA-Pakistan Nuclear Security Cooperation Programme, security measures at 15 Nuclear Medical Centres in public and private sector, having category-1 radioactive sources, have already been upgraded. Upgrade measures at 8 more centres are underway.

Nuclear Emergency Management System

A Nuclear Emergency Management System has been established at the national level to handle nuclear and radiological emergencies. A Nuclear and Radiological Emergency Support Centre (NURESC) and a National Radiation Emergency Coordination Center (NRECC) are available round the clock as

part of emergency response mechanism. The mechanism covers the entire range of activities and is endowed with state-of-the-art equipment, mobile labs and technical guidance. Several training courses and exercises for the first responders, emergency response personnel and front line officers have been conducted for emergency preparedness.

Revision of Pakistan's National Export List

The Strategic Export Control Division (SECDIV) in the Ministry of Foreign Affairs, in consultation with the relevant ministries and entities, revised the 'National Export Control Lists" in 2011. The lists, classified on the basis of the European Union's integrated system, cover the scope of export controls maintained by the NSG, Australia Group and MTCR.

Preventing Illicit Trafficking

The National Detection Architecture includes use of detection devices at several entry and exit points as well as other random check points to deter, detect and prevent illicit trafficking of nuclear and radioactive materials.

International Cooperation

Pakistan has been working with the UN Security Council Resolution 1540 Committee. So far, we have submitted four reports to the Committee that elaborate the measures we have taken for nuclear and radiological security as well as on controls over all forms of transfer of sensitive materials and technologies. We are now working on the fifth report.

As a party to the Convention on Physical Protection of Nuclear Material (CPPNM), the Nuclear Safety Convention, the Convention on Early Notification of a Nuclear Accident, and the Convention on Assistance in the case of a Nuclear Accident or Radiological Emergency, Pakistan has been contributing to the nuclear security framework. Our consistent observance of the

IAEA Code of Conduct and participation in the IAEA in the Incident and Trafficking Database (ITDB) have been highly useful.

Pakistan has been working with the Global Initiative to Combat Nuclear Terrorism (GICNT) in different areas, including the development of the GICNT guidelines on a nuclear detection architecture, nuclear forensics and response and mitigation. Pakistan held the position of Chairman IAEA Board of Governors for 2010-11 and became a member of the UN Scientific Committee on the Effects of Atomic Radiation (UNSCEAR) in December 2011.

Future Commitments and Aspirations

Pakistan has more than 40 years of experience in safe and secure operation of nuclear power plants under IAEA safeguards. Pakistan Atomic Energy Commission (PAEC), a premier national institution, is leading the effort.

Safe and sustainable civil nuclear energy is essential to advancing our economic development agenda. Our Energy Security Plan includes a futuristic, self-sustaining Nuclear Power Programme 2050, to meet the existing energy shortfalls and to respond to the future requirements of a growing population and economy. In that context, we envisage generation of nuclear energy of 8,800 MWe by 2030 and 40,000 MWe by 2050. In this regard, Pakistan looks forward to the removal of barriers to equitable access to international civil nuclear cooperation.

With the experience and expertise it has gained in the areas of nuclear power generation, non-power application of nuclear technology, nuclear security and nuclear safety, under the auspices of the IAEA, Pakistan is well placed to assist interested states.

As a country with advanced nuclear fuel cycle capability, Pakistan is in a position to provide nuclear fuel cycle services

under IAEA safeguards, and to participate in any non-discriminatory nuclear fuel cycle assurance mechanism.

Over the years, Pakistan has streamlined and strengthened its export control regime and enhanced its engagement with multilateral export regimes. Pakistan qualifies to become a member of the Nuclear Suppliers Group and other export control regimes, on a non-discriminatory basis.

www.mofa.gov.pk/chile/pr-details.php?prID=1846

Annex B

Statement by Prime Minister Nawaz Sharif at the Nuclear Security Summit at The Hague March 24, 2014 First Plenary Session

Mr. Prime Minister,

Distinguished leaders,

We congratulate you for hosting this Summit; and thank your Government and the people of the Netherlands for their gracious hospitality.

Your leadership takes us one step further to strengthen nuclear security.

I also pay a tribute to President Barack Obama for launching the nuclear security summit process four years ago.

Looking back, we can say with confidence that our decisions and commitments have spurred national action, promoted international cooperation and fostered nuclear security culture.

Pakistan has constructively contributed to this process.

We all want nuclear security, which is a national responsibility and a global priority. We should all continue to take measures to secure all nuclear facilities and materials and prevent any perceived nuclear terrorist threat. We all need radioactive sources for hospitals, industry and research; but we should be vigilant about radiological threats.

Pakistan attaches highest importance to nuclear security because it is directly linked to our national security. Pakistan is a responsible nuclear weapons state. We pursue a policy of nuclear restraint, as well as credible minimum deterrence.

Our region needs peace and stability for economic development that benefits its people. That is why, I strongly advocate nuclear restraint, balance in conventional forces and ways to resolve conflicts.

Pakistan's nuclear security is supported by five pillars – a strong command and control system led by the National Command Authority (NCA); an integrated intelligence system; a rigorous regulatory regime; a comprehensive export control regime; and active international cooperation.

Our security regime covers physical protection, material control and accounting, border controls and radiological emergencies.

Our nuclear materials, facilities and assets are safe and secure. Pakistan's nuclear security regime is anchored in the principle of multi-layered defense for the entire spectrum — insider, outsider or cyber threat.

We have established a Centre of Excellence that conducts intense specialized courses in nuclear security, physical protection and personnel reliability. Pakistan is ready to share its best practices and training facilities with other interested states in the region and beyond.

We have also deployed radiation detection mechanisms at several exit and entry points to prevent illicit trafficking of radioactive and nuclear materials.

In the realm of international cooperation on nuclear security, IAEA has an essential responsibility and a central role to play. Pakistan has been working productively with the IAEA to implement its Nuclear Security Action Plan (NSAP).

We have been running a safe, secure and safeguarded civil nuclear programme for more than forty years. We have the expertise, manpower and infrastructure to produce civil nuclear energy.

As Prime Minister, I feel that energy deficit is one of the most serious crises facing Pakistan. As we revive our economy, we look forward to international cooperation and assistance for nuclear energy under IAEA safeguards.

I call for Pakistan's inclusion in all international export control regimes, especially the Nuclear Suppliers Group.

International treaties and forums should supplement national actions to fortify nuclear security.

Pakistan is a party to the Convention on the Physical Protection of Nuclear Material (CPPNM). We work closely with the IAEA to deal with safety and security of radioactive sources and illicit trafficking of nuclear materials. We regularly submit reports to the UN Security Council 1540 Committee on the measure we take to exercise control over transfer of sensitive materials and technologies.

I would like to announce at this Summit that we are considering ratification of the 2005 Amendment to the CPPNM and are actively conducting a review to meet its various requirements.

As we look towards the future, we should consolidate progress made so far on nuclear security. We must also maintain our political will, avoid duplication of effort and broaden our membership to gain more acceptance for our decisions.

I Thank You.

www.state.gov/documents/organization/235511.pdf

Annex C

Statement by Prime Minister Nawaz Sharif at the High-Level Meeting of the General Assembly on Nuclear Disarmament

September 26, 2013

Mr. President,
Mr. Secretary General,
Excellencies,
Ladies and Gentlemen,

I thank the Non-Aligned Movement for its initiative to organize this extraordinary meeting.

Pakistan associates itself with the statement made by H.E. Dr. Hassan Rouhani, President of the Islamic Republic of Iran, on behalf of the Movement.

Today, global efforts to regulate reduce and prevent the spread of armaments, particularly nuclear weapons, are facing serious challenges.

Thirty five years ago, this august Assembly reached consensus on the mandate and machinery to pursue the disarmament agenda.

With the passage of time, regrettably this consensus has eroded; and the goals set have become elusive.

This meeting is therefore very timely for exploring common ground.

It provides us a unique platform to revive and restore our collective agreement; and in fact build a new consensus on disarmament and non-proliferation.

Mr. President,

Pakistan is committed to the goal of general and complete disarmament, which is global, non-discriminatory and verifiable.

Our approach towards nuclear disarmament is determined by the guiding principles of the First Special Session of the General Assembly on Disarmament, which upholds the right of each state to security and undiminished security at the lowest level of armaments and military force.

This means security for all; not security of a privileged few.

It was on my watch as Prime Minister in 1998 that Pakistan conducted nuclear tests.

I can tell this Assembly that this decision was taken after much thought and deliberation.

We were compelled to do so in response to the developments in our neighbourhood.

It was an existential choice we made for strategic stability in our region.

Our nuclear policy is guided by the principles of restraint and responsibility.

We do not want an arms race in South Asia, because consequences of conflict with nuclear weapons will be horrendous.

Pakistan would continue to adhere to its policy of the Credible Minimum Deterrence, without entering into an arms race.

At the same time, we are fully alive to the evolving security dynamics and would maintain deterrence to reinforce strategic stability in South Asia.

Earlier this month, I chaired a meeting of the National Command Authority (NCA) which reaffirmed our constructive strategic posture.

Regrettably, nuclear policies dictated by politics and profits in the recent past are altering the strategic balance in our region.

I take this opportunity to call upon the international community to reverse nuclear discrimination, with serious implications for Pakistan's national security and in fact the global non-proliferation regime.

On the proposed Fissile Material Treaty, our stance is determined by national security and strategic equilibrium in South Asia.

We advocate a comprehensive strategic restraint regime that establishes nuclear restraint, balance in conventional forces and a mechanism for conflict resolution.

Pakistan is an active, mainstream partner in the global non-proliferation efforts.

We have contributed constructively to the Nuclear Security Summit process, which is a laudable initiative.

I call for Pakistan's inclusion in all export control regimes, including Nuclear Suppliers Group.

As Prime Minister, I feel that *energy deficit* is one of the most serious crises facing Pakistan.

We require energy from all sources – conventional and alternate.

Pakistan qualifies to have full access to civil nuclear technology for peaceful purposes.

We have the expertise, manpower and infrastructure to produce civil nuclear energy.

As we revive our national economy, we look forward to international cooperation and assistance in nuclear energy under IAEA safeguards.

Mr. President,

The strains on the global non-proliferation regime have become more acute in recent years.

The pursuit of policies based on discrimination and double standards has damaged the integrity of treaties and norms of non-proliferation.

The multilateral disarmament machinery must be strengthened and revitalized.

For that we need collective political will.

There is a need to construct a new consensus on nuclear disarmament and non-proliferation.

Such a consensus should be based on equity, balance, restraint and cooperation among states.

I call on the General Assembly to convene a Special Session to build a new consensus on disarmament, non-proliferation and promotion of cooperation in the peaceful uses of nuclear energy.

Pakistan is ready to make its contribution to this global consensus-building exercise.

I thank you, Mr. President

www.un.org/en/ga/68/meetings/nucleardisarmament/pdf/PK_en.pdf

Annex D

Press Release

No PR344/2015-ISPR

Rawalpindi - November 13, 2015:

COAS Visits PCENS

Chief of Army Staff (COAS) General Raheel Sharif visited Pakistan's Centre of Excellence for Nuclear Security (PCENS) and witnessed its state of the art facilities and ongoing training activities.

While lauding the high standards of professionalism and commitment of the Strategic Plans Division (SPD) security forces, entrusted with safeguarding Pakistan's Strategic assets, COAS expressed full confidence in Pakistan's nuclear security regime. While interacting with officers and troops, he expressed that the nuclear security is a sacred responsibility and that, "I am glad to see that it has instilled as a culture and the progress made in the recent past was praiseworthy".

As a responsible nuclear weapon state, Pakistan has taken several measures, including setting up of the PCENS, to strengthen its nuclear security regime, at par with international best practices. Pakistan has also offered this Centre of Excellence as a regional and international hub for imparting nuclear security education and training to the international community. Since its establishment PCENS has conducted several national and international training courses focusing on physical protection, personal reliability as well as safety and security of nuclear and radiological materials and facilities.

Earlier on arrival at PCENS, General Raheel Sharif was received by Lieutenant General Mazhar Jamil, Director General Strategic Plans Division.

www.ispr.gov.pk/front/main.asp?o=t-press_release&date=2015/11/13

Annex E

Press Releases: NCA Meetings

Press Release

No PR280/2015-ISPR

Rawalpindi - September 9, 2015:

Meeting of the National Command Authority (NCA) was held on 9 September 2015, under the Chairmanship of Prime Minister Muhammad Nawaz Sharif. It was attended by Federal Ministers of Defence, Finance and Interior, the Advisor to the Prime Minister for National Security and Foreign Affairs, Special Assistant to the Prime Minister for Foreign Affairs, Chairman Joint Chiefs of Staff Committee, Services Chiefs and DG SPD.

The NCA reviewed the internal security situation and acknowledged the sacrifices and appreciated successes of the Armed Forces in the ongoing Operation Zarb-e-Azb.

The NCA reposed full confidence in Pakistan's robust nuclear command and control structure and security arrangements related to country's strategic assets.

The NCA also reviewed the regional security environment and was briefed on fast-paced strategic and conventional capabilities' developments taking place in the neighbourhood. The NCA re-affirmed that the State remains fully cognizant of the evolving security dynamics of South Asia and will take all measures to safeguard its national security. In view of the growing conventional asymmetry, the NCA reiterated the national resolve to maintain 'Full Spectrum Deterrence Capability' in line with the dictates of 'Credible Minimum Deterrence' to deter all forms of aggression, adhering to the policy of avoiding an arms race.

As responsible nuclear state, Pakistan will remain actively engaged with the international community on nuclear stability and security issues. In its appraisal of the non-proliferation debate since the last meeting, the NCA expressed satisfaction on Pakistan's enhanced outreach with the multilateral export control regimes. Pakistan shares the goals of non-proliferation and is committed to play its due role as a mainstream partner in the global non-proliferation regimes.

The Meeting renewed Pakistan's interest in joining the multilateral export control regimes on non-discriminatory basis; including the membership of NSG. Pakistan has the requisite credentials for full access to civil nuclear technology for peaceful purposes, particularly to meet its energy shortages.

Pakistan seeks peace and strategic stability in South Asia as corner stone of its policy and considers conflict resolution, as the mean to achieve this end.

www.ispr.gov.pk/front/main.asp?o=t-nca_press_release_archive

Press Release

No PR133/2013-ISPR

Rawalpindi - September 5, 2013:

A meeting of the National Command Authority (NCA) was held under the Chairmanship of Prime Minister Mr Muhammad Nawaz Sharif on 5 September 2013. The meeting was attended by all members of the NCA, the Federal Ministers of Finance and Interior, the Advisor to the Prime Minister on National Security and Foreign Affairs, Special Assistant to the Prime Minister on Foreign Affairs, the Chairman Joint Chiefs of Staff Committee and the Services Chiefs.

The NCA reaffirmed the centrality of Pakistan's nuclear programme for the defence of the country. The NCA reposed full confidence in Pakistan's robust nuclear Command and Control structure and all the security controls related to strategic assets of the country. The NCA paid rich tribute to the various scientists as well as security and policy level officials and diplomats who are associated with Pakistan's strategic programme.

The NCA reviewed developments at the regional level and reiterated that, as a responsible nuclear weapon state, Pakistan would continue to adhere to the policy of Credible Minimum Deterrence, without entering into an arms race with any other country. Pakistan, however, would not remain oblivious to the evolving security dynamics in South Asia and would maintain a full spectrum deterrence capability to deter all forms of aggression.

The NCA also reviewed the developments at the international level and took note of the discriminatory trends and policies that could have serious implications for Pakistan's national security

and the global non-proliferation regime. The NCA reiterated that while maintaining its principled position on various arms control and non-proliferation issues, Pakistan would continue to oppose any arrangement that is detrimental to its security and strategic interests. As for the proposed Fissile Material (Cut-Off) Treaty [FM(C)T], Pakistan's position will be determined by its national security interests and the objectives of strategic stability in South Asia.

The meeting underscored Pakistan's commitment to play its due part as a mainstream partner in the global non-proliferation regime, and renewed Pakistan’s keen interest in joining the multilateral export control regimes on non-discriminatory basis. Pakistan has the requisite credentials for full access to civil nuclear technology for peaceful purposes to meet its growing energy needs for continued economic growth. The meeting noted the importance of Pakistan's positive outreach and enhanced engagement with all the multilateral export control regimes including membership of the Nuclear Suppliers Group (NSG).

The NCA emphasized that Pakistan will continue to participate constructively in the Nuclear Security Summit (NSS) process. As a responsible nuclear weapon state with advanced technology and four-decade long experience in safe and secure operation of nuclear power plants, Pakistan is ready to share its expertise with other interested states by providing fuel cycle services under IAEA safeguards and by providing training placements at its Centers of Excellence on nuclear security.

www.ispr.gov.pk/front/main.asp?o=t-press_release&id=2361#pr_ link2361

Press Release

No PR260/2012-ISPR

Rawalpindi - November 28, 2012:

Pakistan today successfully conducted the training launch of Medium Range Ballistic Missile Hatf V (Ghauri). The launch was conducted by a Strategic Missile Group of the Army Strategic Force Command on the culmination of a field training exercise that was aimed at testing the operational readiness of the Army Strategic Force Command. Ghauri ballistic missile is a liquid fuel missile which can carry both conventional and nuclear warheads over a distance of 1300 kms.

The test monitoring of the launch was conducted at the National Command Centre through the medium of National Command Authority's fully automated Strategic Command and Control Support System (SCCSS).It may be recalled that the SCCSS enables robust Command and Control capability of all strategic assets with round the clock situational awareness in a digitized network centric environment to decision makers at the National Command Centre (NCC). The test consolidates and strengthens Pakistan's deterrence capability, and national security.

The President and Prime Minister congratulated all ranks of the Army Strategic Force Command on the excellent standard achieved during training which was reflected in the proficient handling of the weapon system in the field and the accuracy of the training launch.

www.ispr.gov.pk/front/main.asp?o=t-press_release&id=2208#pr_ link2208

Press Release

No PR204/2012-ISPR

Rawalpindi - September 17, 2012:

Pakistan today conducted a successful test fire of the indigenously developed multi tube Cruise Missile Hatf-VII (Babur), having a range of 700 kilometers. Babur Crusie Missile is a low flying, terrain hugging missile, which can strike targets both at Land and Sea with pin point accuracy. It carries stealth features. Equipped with modern cruise missile technology of Terrain Contour Matching (TERCOM) and Digital Scene Matching and Area Co-relation (DSMAC), it can carry both nuclear and conventional warheads. The missile was launched from a state of the art Multi Tube Missile Launch Vehicle (MLV), which significantly enhances the targeting and deployment options of Babur Weapon system.

The test was witnessed by Director General Strategic Plans Division Lieutunent General (R) Khalid Ahmed Kidwai, Chairman National Engineering and Scientific Commission (NESCOM) Mr. Muhammad Irfan Burney, senior officers from the armed forces and strategic organizations. In today's test National Command Authority's fully automated Strategic Command and Control Support System (SCCSS) was once again employed. It enables robust Command and Control capability of all strategic assets with round the clock situational awareness in a digitized network centric environment to decision makers at National Command Centre (NCC). The system has the added capability of real time remote monitoring of missile flight path. The test consolidates and strengthens Pakistan's deterrence capability and National security.

The successful test has also been warmly appreciated by the President, Prime Minister of Pakistan and Chairman Joint Chiefs

of Staff Committee, who have congratulated the scientists and engineers on their outstanding success.

Pakistan conducted a successful test fire of the indigenously developed multi tube Cruise Missile Hatf-VII (Babur), having a range of 700 kilometers today. (17-9-2012) Photo ISPR.

www.ispr.gov.pk/front/main.asp?o=t-press_release&id=2150#pr_ link2150

Press Release

No PR135/2012-ISPR

Rawalpindi - May 31, 2012:

Pakistan, today conducted a successful Flight Test of the indigenously developed Air Launched Cruise Missile, Hatf-VIII (Ra'ad).The Ra'ad Missile, with a range of over 350 KM, enables Pakistan to achieve strategic standoff capability on land and at Sea. 'Cruise Technology' is extremely complex and has been developed by only a few countries in the world. The state of the art Ra'ad Cruise Missile with Stealth Capabilities is a Low Altitude, Terrain Hugging Missile with high maneuverability, and can deliver nuclear and conventional warheads with pin point accuracy.

A major additional feature of today's test was the effective employment of the National Command Authority's fully automated Strategic Command and Control Support System (SCCSS). It has enabled robust Command and Control capability of all strategic assets with round the clock situational awareness in a digitized network centric environment to decision makers at National Command Centre (NCC). The system has the added capability of real time remote monitoring of missile flight path. The successful launch has been commended by the President, the Prime Minister of Pakistan, and Chairman Joint Chiefs of Staff Committee who have congratulated the scientists and engineers on their outstanding achievement.

www.ispr.gov.pk/front/main.asp?o=t-press_release&id=2080#pr_ link2080

Press Release

No PR166/2011-ISPR

Rawalpindi - July 14, 2011:

The National Command Authority (NCA) met today under the Chairmanship of Prime Minister Syed Yusuf Raza Gilani. Members of the NCA including Federal Ministers, Chairman Joint Chiefs of Staff Committee, Services Chiefs, Secretary NCA, DG SPD, and other senior officials attended the meeting.

The NCA comprehensively reviewed developments in the regional and global security environment. The NCA also undertook detailed appraisal of the international and regional trends and policies and their implications for Pakistan.

After in-depth consideration and evaluation, the National Command Authority, inter alia, decided that Pakistan will continue to pursue its policy of Credible Minimum Deterrence as a responsible nuclear weapons state. The NCA expressed satisfaction at the security and safety of Pakistan's strategic programmes and facilities. It also expressed confidence in the operational readiness of Pakistan's strategic weapons.

The NCA expressed concern over the continued pursuit of policies that detract from the globally shared norms and rules of equality, inclusiveness and objectivity. The NCA cautioned that such policies represent regression in the non-proliferation regime and tend to erode the strategic balance in South Asia. Pakistan would continue to take appropriate counter measures to ensure its security and to maintain regional stability.

The National Command Authority reiterated Pakistan's desire to constructively contribute to the realization of a world free of nuclear weapons and to the goals of non-proliferation on the basis

of equality and partnership with the international community. Accordingly, Pakistan was keen to join the four export control arrangements.

The NCA reaffirmed the importance of nuclear safety. In this regard, it noted with satisfaction the safety review of all the existing and planned civil nuclear facilities by the Pakistan Nuclear Regulatory Authority (PNRA). The NCA directed the PNRA and the Pakistan Atomic Energy Commission (PAEC) to continue to ensure that our programmes conform to the highest levels of safety and international best practices.

The NCA was also briefed on the nuclear security review undertaken recently. It expressed confidence in the institutionalized Command and Control System and comprehensive measures put in place to ensure reliability and security of strategic assets. The NCA underlined that the Government and the people of Pakistan stood solidly behind the country's nuclear and missile programmes, which would be pursued to maintain effective, reliable and credible deterrence capability, and all attempts to undermine this capability would be thwarted with full force.

As part of the energy security strategy, the NCA also reviewed and approved the futuristic, self-sustaining Nuclear Power Programme – 2050, to meet the existing energy shortfalls and to respond to the future requirements of a growing population and economy. The NCA emphasized the need to focus on socio-economic development of the people as a foremost priority.

The NCA also approved Pakistan's Space Programme – 2040 in order to bring the benefits of the full spectrum of space technology to the people of Pakistan.

www.ispr.gov.pk/front/main.asp?o=t-press_release&id=1796#pr_ link1796

Press Release

No PR506/2010-ISPR

Rawalpindi - December 14, 2010:

The National Command Authority (NCA) met on 14 December 2010 under the Chairmanship of Prime Minister Syed Yusuf Raza Gilani. Members of the NCA, including Federal Ministers, Chairman Joint Chiefs of Staff Committee, Services Chiefs and senior officials attended the meeting. It reviewed recent global and regional developments and their implications for Pakistan's national security.

The NCA expressed concern over policies and trends of selectivity, exceptionalism and discrimination relating to strategic export control regimes. Such policies, detrimental as they are to international peace and security, undermine the credibility of the existing non-proliferation regime and are inconsistent with the national laws and international obligations. Revisionism based on strategic, political or commercial considerations accentuates asymmetries and would perpetuate instability, especially in South Asia.

The NCA underscored that peace and security are indivisible and that the goals of non-proliferation could only be advanced by ensuring equal and undiminished security for all states. Regional balance and strategic stability in South Asia are indispensable for peace, sustained development and prosperity for the region and beyond.

The NCA categorically reiterated that Pakistan will never accept discriminatory treatment and that it rejects any effort to undermine its strategic deterrence. Pakistan will not be a party to any approach that is prejudicial to its legitimate national security interests.

As a nuclear weapon state, Pakistan is fully cognizant of its responsibilities, and has established effective and robust Command and Control structures and comprehensive export control and regulatory regimes. These are fully compatible with international best practices and global regimes – and are acknowledged internationally.

The NCA underscored that Pakistan shared the goals of non-proliferation and was prepared to work with other nuclear powers on an equal footing to advance these goals. As a state with advanced nuclear technology, Pakistan was also prepared to promote the peaceful uses of nuclear technology, under the appropriate IAEA framework.

The NCA expressed satisfaction on the pace of development and effectiveness of Pakistan's strategic deterrence. It reaffirmed that all requisite steps will be taken to ensure Pakistan's national security and to maintain credible deterrence.

www.ispr.gov.pk/front/main.asp?o=t-press_release&id=1608#pr_ link1608

Press Release

No PR140/2010-ISPR

Rawalpindi - April 5, 2010:

Prime Minister Syed Yousaf Raza Gilani chaired the 17th meeting of the National Command Authority (NCA). It was the second meeting of the NCA with the Prime Minister in chair.

The NCA reviewed policies and measures in place for the safety and security of nuclear materials and facilities. It expressed full confidence in the arrangements for custodial controls and safety and security of Pakistan's strategic assets, and the effectiveness of Pakistan's strategic deterrence.

The NCA reiterated that, as a nuclear weapon state with advanced nuclear technology and expertise, Pakistan was fully cognizant of its responsibilities. The nuclear safety, security and non-proliferation measures put in place by Pakistan were supported by extensive legislative, regulatory and administrative framework.

While expressing confidence in the indigenous knowhow and technology to sustain national nuclear safety and security systems, Pakistan would continue to benefit from IAEA's relevant programmes on nuclear security, consistent with national policies and interests.

The NCA took note of the fact that Pakistan's socio-economic development was dependent on its ability to meet rapidly expanding energy requirements. There was a need to explore all options to ensure a reliable energy mix. Civil nuclear power generation was therefore an essential part of the national energy security strategy.

Having more than 35 years experience of operating nuclear power plants, highly trained manpower and a well established safety and security culture, Pakistan fully qualifies for equal participation in civil nuclear cooperation at the international level.

Nuclear safety and security as well as safeguards are vehicles for facilitating international civil nuclear cooperation. The objectives of non-proliferation and nuclear safety and security can be promoted through a non-discriminatory approach for international cooperation in the peaceful uses of nuclear energy.

www.ispr.gov.pk/front/main.asp?o=t-press_release&id=1234#pr_link1234

Press Release

No PR11/2010-ISPR

Rawalpindi - January 13, 2010:

16th NCA Meeting

The National Command Authority (NCA) met, under the Chairmanship of Prime Minister, Syed Yousaf Raza Gilani, to review matters of strategic importance to Pakistan. This was the first NCA meeting which was chaired by democratically elected Prime Minister of Pakistan.

The NCA expressed satisfaction on the safety and security of Pakistan's strategic assets and the effectiveness of Pakistan's strategic deterrence. It emphasized the importance of Pakistan's policy of credible minimum deterrence and the maintaining of strategic stability in South Asia. It also reaffirmed Pakistan's policy of restraint and responsibility and its resolve to continue efforts to promote peace and stability in South Asia. It underscored the need for prevention of conflict and avoidance of nuclear and conventional arms race in the region.

The NCA took note of the developments detrimental to the objectives of strategic stability in the region. It observed that instead of responding positively to Pakistan's proposal for a Strategic Restraint Regime in South Asia, India continues to pursue an ambitious militarization programme and offensive military doctrines. Massive inductions of advanced weapon systems, including installation of ABMs, build-up of nuclear arsenal and delivery systems through ongoing and new programmes, assisted by some external quarters, offensive doctrines like 'Cold Start' and similar accumulations in the conventional realm, tend to destabilize the regional balance. This relentless pursuit of military preponderance will have severe

consequences for peace and security in South Asia as well as for the Indian Ocean region. Pakistan cannot be oblivious to these developments.

The NCA took serious note of recent Indian statements about its capability to conduct conventional military strikes under a nuclear umbrella. Such irresponsible statements reflected a hegemonic mindset, oblivious of dangerous implications of adventurism in a nuclearized context.

The NCA further noted that the India-specific exemption made by the Nuclear Suppliers Group (NSG) and subsequent nuclear fuel supply agreements with several countries, would enable India to produce substantial quantities of fissile material for nuclear weapons by freeing up its domestic resources.

The NCA reiterated that, while continuing to act with responsibility and avoiding an arms race, Pakistan will not compromise on its security interests and the imperative of maintaining a credible minimum deterrence.

The meeting reviewed plans for civil nuclear power generation under IAEA safeguards as part of national energy security strategy to ensure sustained economic growth. It welcomed the renewed international interest in nuclear power generation to meet the challenge of climate change.

As a country with advanced fuel cycle capability, Pakistan is in a position to provide nuclear fuel cycle services under IAEA safeguards, and to participate in any non-discriminatory nuclear fuel supply assurance mechanism.

It expressed satisfaction at the steps taken by Pakistan at the national level for nuclear safety and security, which continue to be important considerations in the context of national nuclear power development plans.

The meeting reaffirmed that, as a nuclear weapon state, Pakistan is committed to work as an equal partner in international efforts for general and complete nuclear disarmament and non-proliferation. In this regard, it underscored the need for non-discriminatory policies and accommodation of the reality of Pakistan's nuclear weapon status for promoting global non-proliferation goals.

It emphasized that promotion of nuclear non-proliferation and disarmament objectives in South Asia are linked with regional security dynamics and the need to address existing asymmetries and resolution of outstanding disputes.

The NCA stressed that, as the sole disarmament negotiating forum, the Conference on Disarmament (CD) in Geneva should play its due role in global nuclear disarmament.

As far as the consideration of a Fissile Material Treaty (FMT) at the CD is concerned, Pakistan's position will be determined by its national security interests and the objectives of strategic stability in South Asia. Selective and discriminatory measures that perpetuate regional instability, in any form and manner, derogate from the objectives of nuclear disarmament and non-proliferation and, therefore, cannot be accepted or endorsed. Pakistan will not support any approach or measure that is prejudicial to its legitimate national security interests.

www.ispr.gov.pk/front/main.asp?o=t-press_release&id=1110#pr_link1110

Press Release

No PR27/2008-ISPR

Islamabad - April 17, 2008:

Prime Minister's Secretariat
(Media Office)

Prime Minister briefed on Nuclear Programme

Prime Minister, Syed Yousaf Raza Gillani has expressed satisfaction over the effectiveness of Command and Control Structures of Pakistan's nuclear capability. He said that the structures, which have now matured, were well conceived and elaborate. It has been ensured that while our nuclear assets are safe and secure, the force development as per needs of Pakistan's Minimum deterrence is progressing well, he added.

The Prime Minister was speaking after attending a detailed briefing on the various dimensions of Pakistan's nuclear programme at the Strategic Plans Division, the Secretariat of the National Command Authority here at Rawalpindi today.

The Prime Minister while reiterating his Government's commitment to the Strategic programme said that Pakistan believed in maintaining Minimum Credible Deterrence as a corner stone of its national security policy. Pakistan's security will always remain his Government's highest priority. He said that as a responsible, declared and acknowledged nuclear power, Pakistan would continue to play a positive role in international efforts aimed at non-proliferation.

The briefing was also attended by the Federal Ministers which included Mr. Makhdoom Shah Mahmood Qureshi, Minister for

Foreign Affairs, Mr. Chaudhary Ahmad Mukhtar, Minister for Defence, Senator Mr. Mohammad Ishaq Dar, Minister for Finance, Revenue, Economic Affairs and Statistics, Ms. Sherry Rehman, Minister for Information and Broadcasting, Mr. Mahmud Ali Durrani, National Security Adviser and Chairman Joint Chiefs of Staff Committee, General Tariq Majid.

Earlier, on his arrival at the Joint Staff Headquarters, the Prime Minister was received by the Chairman Joint Chiefs of Staff Committee, General Tariq Majid. A smartly turned out Armed Forces Contingent presented guard of honour to the Prime Minister. The Prime Minister met the CJCSC for some time and discussed matters pertaining to the Armed Forces of the country.

www.ispr.gov.pk/front/main.asp?o=t-press_release&id=338#pr_link338

Annex F

Extracts from Recent Pakistan-US Joint Statements

The White House
Office of the Press Secretary
For Immediate Release
October 23, 2013
Joint Statement by President Obama and Prime Minister Nawaz Sharif

Non-proliferation, Nuclear Security and Strategic Stability

President Obama and Prime Minister Sharif emphasized that nuclear terrorism is one of the most challenging threats to international security. President Obama appreciated Pakistan's constructive engagement with the Nuclear Security Summit process and its cooperation with the International Atomic Energy Agency and other international forums, while acknowledging Pakistan's efforts to improve its strategic trade controls and enhance its engagement with multilateral export regimes. Looking ahead to the 2014 Nuclear Security Summit at the Hague, the two Leaders reaffirmed the commitments of the 2012 Nuclear Security Summit in Seoul, strengthening nuclear security; reducing the threat of nuclear terrorism; preventing terrorists, criminals, or other unauthorized actors from acquiring nuclear materials; and working closely for the objectives of the Summit. They acknowledged the importance of regional balance and stability in South Asia and pursuing increased transparency and uninterrupted dialogue in support of peaceful resolutions of all outstanding issues. Prime Minister Sharif affirmed Pakistan's support for the universal objectives of non-proliferation and disarmament. The two Leaders underscored that all sides should continuously act with maximum restraint and work jointly toward strengthening strategic stability in South Asia. Prime Minister Sharif expressed Pakistan's desire to join the multilateral export

regimes. President Obama reiterated his confidence in Pakistan's commitment and dedication to nuclear security and recognized that Pakistan is fully engaged with the international community on nuclear safety and security issues.

www.whitehouse.gov/the-press-office/2013/10/23/joint-statement-president-obama-and-prime-minister-nawaz-sharif

Office of the Spokesperson
Washington, DC
January 13, 2015

US-Pakistan Strategic Dialogue Joint Statement

Pakistan Adviser to the Prime Minister on National Security and Foreign Affairs Sartaj Aziz and US Secretary of State John Kerry met in Islamabad on January 13, 2015, for the fifth Ministerial level Pakistan-US Strategic Dialogue. The last Ministerial level session of the Strategic Dialogue was held in Washington on 27 January 2014.

Defense and Security Cooperation

Pakistan and the United States attach high importance to preventing the proliferation of Weapons of Mass Destruction (WMD) and their means of delivery to states as well as non-state actors. The US and Pakistan stand together in achieving the objectives of United Nations Security Council (UNSC) Resolution 1540, and both have consistently supported and implemented relevant United Nations Security Council Resolutions.

The United States welcomes Pakistan’s ongoing efforts to harmonize its strategic trade controls with those of the multilateral export control regimes. Furthermore, the United States has full confidence in nuclear security in Pakistan and appreciates Pakistan's proactive engagement with the international community including through its hosting of IAEA training activities at its Nuclear Security Center of Excellence and its active participation in the Nuclear Security Summits.

In this context, the two sides look forward to continuing the bilateral dialogue on Security, Strategic Stability and Non-Proliferation (SSS&NP). Both sides recognize their shared

interest in strategic stability and emphasize their commitment to meaningful progress in the future.

www.state.gov/r/pa/prs/ps/2015/01/235881.htm

The White House
Office of the Press Secretary
For Immediate Release
October 22, 2015

2015 Joint Statement By President Barack Obama and Prime Minister Nawaz Sharif

Strategic Stability, Nuclear Security, and Non-proliferation

President Obama and Prime Minister Sharif recognized the shared interest in strategic stability in South Asia. The two leaders underscored that all sides should continuously act with maximum restraint and work jointly toward strengthening strategic stability in South Asia. They acknowledged the importance of regional balance and stability in South Asia and pursuing increased transparency and uninterrupted dialogue in support of peaceful resolution of all outstanding disputes.

President Obama and Prime Minister Sharif discussed the continuing threat of nuclear terrorism. The United States and Pakistan committed to work together to make the Nuclear Security Summit hosted by President Obama next year a success. President Obama welcomed Pakistan's constructive engagement with the Nuclear Security Summit process and its cooperation with the International Atomic Energy Agency and other international forums.

The leaders noted Pakistan's efforts to improve its strategic trade controls and enhance its engagement with multilateral export control regimes**.** Recognizing the importance of bilateral engagement in the Security, Strategic Stability and Non-Proliferation Working Group, the two leaders noted that both sides will continue to stay engaged to further build on the ongoing discussions in the working group.

www.whitehouse.gov/the-press-office/2015/10/22/2015-joint-statement-president-barack-obama-and-prime-minister-nawaz

Notes and References

[1] Bhumitra Chakma, "Pakistan and the Global Non-Proliferation Regime," in *Pakistan's Nuclear Weapons* (Routledge: London& New York, 2009), 82.

[2] Under the Atoms for Peace proposal the US cooperated with a number of states including Pakistan. The US government also provided Pakistan about 70,000 items of information about atomic energy. For full speech see, "Atoms for Peace," Address by Mr. Dwight D. Eisenhower, President of the USA, to the 470th Plenary Meeting of the United Nations General Assembly, December 8, 1953, https://www.iaea.org/about/history/atoms-for-peace-speech

[3] In 1954, first step to have a nuclear facility on the ground was taken by the Government College, with the establishment of High Tension and Nuclear Research Laboratory to provide research facility to the students. In October 1954, Pakistan announced plans to establish an atomic research body, and by January 1955, the government announced to have an atomic energy institute. For further details see, S. J. Burki, "High Tension and Nuclear Laboratory," *Pakistan Quarterly*, X: 2, Special Science Number, (Autumn 1960):116, cited in, Ashok Kapur, *Pakistan's Nuclear Development* (Croom Helm: USA, 1987), 36.

[4] Dr. Savita Pande, *The Future of NPT* (Lancer Publisher: New Delhi, 1995), 135.

[5] As a result in March 1956 Pakistani government established the Atomic Energy Council, which further established the Pakistan Atomic Energy Commission (PAEC), headed by Dr. Nazir Ahmed, to promote peaceful use of nuclear energy. For details see, Dr. Nasir Ahmed, "The Atomic Energy Commission*," Pakistan Quarterly* VII: 3 (Autumn, 1957): 14, cited in Ashok Kapur, *Pakistan's Nuclear Development* (Croom Helm: USA, 1987), 36.

[6] The treaty banning nuclear weapons tests in the atmosphere, in outer space and under water, PTBT (Partial Test Ban Treaty) was opened for signature on August 5, 1963, and came into force on October 10, 1963, http://cns.miis.edu/pubs/inven/pdfs/atosuw.pdf

[7] Malik Qasim Mustafa, "CTBT: A Critical Evaluation from a Pakistani Perspective," *Strategic Studies*, vol. 33: no. 3&4 (Autumn & Winter 2013).

[8] Zafar Khan, "Pakistan's Policy of Arms Control and Disarmament: A Call for an Arms Control Regime in South Asia," *Defence Studies*, vol. 13, no. 1 (2013): 56-79,

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