

# PAKISTAN'S NUCLEAR POSTURE, CAPABILITY AND QUEST FOR FULL-SPECTRUM DETERRENCE

SHALINI CHAWLA

Pakistan's National Security Policy released by Prime Minister Imran Khan on January 14, 2022, emphasised strategic stability. It states "Nuclear deterrence occupies a critical role in the security calculus of South Asia. Pakistan's nuclear capability deters war through full spectrum deterrence within the precincts of credible minimum nuclear deterrence in concert with our conventional military capabilities and all elements of national power."<sup>1</sup>

Nuclear weapons remain central to Pakistan's strategic posturing and are seen as an ultimate guarantee of the state's safety and sovereignty. Islamabad has long tried to balance its domestic vulnerabilities with nuclear weapons. The nuclear expansion in Pakistan by and large manages to stay unaffected by the domestic political and economic instabilities. Pakistan believes in maintaining a low nuclear threshold and has not been hesitant to use the threat of nuclear weapons during the phases of intense bilateral tensions with India. India-Pakistan hostility is distinct and the conflict between the

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Dr **Shalini Chawla** is Distinguished Fellow at the Centre for Air Power Studies, New Delhi. Parts of the chapter have been published in author's work, "Pakistan's Nuclear Brinkmanship: Continued Reliance on Nuclear Weapons", in Tilak Devasher (ed.), *Pakistan Insights 2020* (New Delhi: Pentagon Press, 2021) pp. 103-11, and "Pakistan's Nuclear and Missile Capabilities: Implications for India", *National Security*, vol. III, no. II, April-June 2020, pp. 246-65.

1. National Security Policy of Pakistan 2022-2026, p. 25, NSP Pak.pdf. Accessed on January 15, 2022.

**Nuclear deterrence is critical to India-Pak relations. The nuclear dimension has been highlighted extensively by Pak Prime Minister Imran Khan. He repeatedly highlighted the threat of a nuclear war after India's punitive airstrikes in Balakot and much more after the revocation of Article 370 in August 2019.**

two countries has been at four levels: *Conventional, Sub-conventional, Nuclear and (now) Cyberwarfare and Propaganda.* Nuclear weapons remain integral to Pakistan's overall strategic positioning against India. While New Delhi got nuclear weapons largely for deterrence purposes, Islamabad acquired them to prevent conflict and to undertake a campaign of sub-conventional warfare through terrorism without fear of Indian military retaliation. This

explicitly explains Pakistan's nuclear positioning, which relies on a *first use doctrine* projecting a low nuclear threshold and an element of uncertainty.

Nuclear deterrence is critical to India-Pak relations. The nuclear dimension has been highlighted extensively by Pak Prime Minister Imran Khan. He repeatedly highlighted the threat of a nuclear war after India's punitive airstrikes in Balakot and much more after the revocation of Article 370 in August 2019. This focus on the nuclear factor displays Pakistan's immaturity and desperation to attract global attention towards Kashmir. Pakistan was taken aback by India's decision to repeal Article 370, and the state reacted furiously on various fronts, displaying its anxiety over how to deal with Jammu and Kashmir's new status. Pakistan launched a propaganda/narrative war and is making aggressive efforts to fallaciously project India as a state run by "Nazi ideology" under Prime Minister Modi, highlighting Kashmir at every possible national and international forum. PM Imran Khan has repeatedly highlighted various aspects of the nuclear threat in his unrelenting tweets and addresses, stating that both India and Pakistan possess nuclear weapons and any crisis in the region could lead to nuclear war, and that India's nuclear weapons are a threat to global and regional security. In the past, Pakistan has used the nuclear card spasmodically and this stems from its basic insecurity as a state and its failure to develop its

strengths. Its nuclear history and thinking explicitly explains its current nuclear behaviour and brinkmanship.

### **RATIONALE FOR NUCLEAR WEAPONS**

Pakistan's nuclear objectives explain its nuclear doctrine and posturing. Islamabad wants nuclear weapons for deterrence and more importantly, war prevention. Its nuclear aims can be summarised as follows:

1. *To neutralise India's conventional military capability:* India's conventional military superiority and Pakistan's desire to neutralise India's superiority has largely shaped Pakistan's overall defence build-up. Acquiring nuclear capability in its mind was essential to compensate for the conventional imbalance that it felt was responsible for its loss in the 1947, 1965 and 1971 wars (Pakistan's Prime Minister Zulfikar Ali Bhutto started the nuclear weapon programme after the 1971 India-Pakistan war).

The humiliation of the defeat in 1971 and the disintegration of the country was a turning point for Pakistan in terms of its strategic thinking and posture. The leadership in Pakistan was convinced that the country needs to explore options to neutralise India's superior military capability. According to Pakistani leadership, nuclear weapons were the potential answer to deal with Pakistan's "enemy number one", even though Bhutto admitted that the cost of building a bomb would be stressful for Pakistan's weak economy. In the Multan conference in 1972 Bhutto said: "We are fighting a thousand-year war with India, and we will make an atomic bomb even if we have to eat grass."<sup>2</sup>

2. *To continue strategy of sub-conventional war through terrorism against India:* Pakistan has tried to use its nuclear assets for blackmailing. The acquisition of the nuclear capability in 1987 enhanced Pakistan's capability to wage and escalate the covert war in Kashmir. The policymakers in Pakistan seem to be convinced that they can conduct operations in Kashmir because the threat of using nuclear weapons, if necessary, would constrain India's

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2. Sultan Bashiruddin Mahmood, interview by author, Islamabad, December 14, 2006, cited in, Feroz Hasan Khan, *Eating Grass: The Making of the Pakistani Bomb* (New Delhi: Cambridge University Press, 2013), p. 87.

**The policymakers in Pakistan seem to be convinced that they can conduct operations in Kashmir because the threat of using nuclear weapons, if necessary, would constrain India's strategic moves. There is a clear correlation between progress in the acquisition of nuclear weapons and the intensity of covert war in the last four decades.**

strategic moves. There is a clear correlation between progress in the acquisition of nuclear weapons and the intensity of covert war in the last four decades.

3. *Desire to be visualised as the leader of the Islamic world:* Pakistan's nuclear weapons (and strategy) also show a deep desire to emerge as a formidable country in the Muslim world and to be visualised as the *leader of the Islamic world*. It perceives nuclear weapons capability as a "currency of power"

that would enhance its strategic image in the international community in general and Muslim countries in particular.

Bhutto in his death cell testimony stated:

"... We were on the threshold of full nuclear capability when I left the government to come to this death cell. We know that Israel and South Africa have full nuclear capability. The Christian, Jewish and Hindu civilisations have this capability. The Communist powers also possess it. Only the Islamic civilisation was without it; but that position was about to change."<sup>3</sup>

In this pursuit, it did seek financial help from the Muslim countries in the 1970s and 1980s to acquire nuclear weapons and later illegally provided nuclear technology to Iran, Libya and North Korea.

4. *Guarantee Ultimate Security:* The leadership in Pakistan envisioned nuclear weapons as the sole guarantor of its national pride and national survival.

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3. *Transcript of Testimony before the Supreme Court of Pakistan*, in reply to Pakistan Government White Papers, as cited in *From Surprise to Reckoning: The Kargil Review Committee Report* (New Delhi: Sage, 1999), p. 185.

In this respect, Pakistan adopted a doctrine and strategy not very different from that pursued by the North Atlantic Treaty Organisation (NATO) against the USSR. Stephen Cohen talked about the value of nuclear weapons for Pakistan and quoted Samar Mubarakmand: “Nuclear weapons are as valuable to Pakistan as they are to North Korea—they constitute survival insurance for both. As Samar Mubarakmand, one of the leaders of the Pakistani weapons designs team, reminded the world ... Pakistan, like North Korea, is too nuclear to fail”.<sup>4</sup>

**As Pakistan’s nuclear weapon programme expanded, it served the purpose of deterring major powers such as the United States from taking military action against it.**

As Pakistan’s nuclear weapon programme expanded, it served the purpose of deterring major powers such as the United States from taking military action against it. Pakistan became the front-line state following 9/11, and the US’ frustration and harsh posture on several occasions appeared as a result of Pakistan’s sustained strategy of backing the Afghan Taliban and the Haqqani network in Afghanistan. But US pressures were restricted to issuing warnings, or cutting off of military assistance. Military action against it was not an option. Pakistan believes that its nuclear weapons have averted any probable US military action.

#### **PAKISTAN’S NUCLEAR DOCTRINE**

In the pre-nuclear test period Pakistan’s doctrine was that of ambiguity. Although, Pakistan does not have an officially announced doctrine even today, statements made by responsible policymakers in Pakistan have clearly outlined basic elements in its nuclear doctrine. There is an unofficial code adopted by the Pakistani leadership, based on *Indo-centricity*, *credible minimum deterrence*, *strategic restraint* and *first use*. Very interestingly and

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4. Stephen Cohen, *Shooting for a Century: The India Pakistan Conundrum* (Washington, DC: Brookings, 2013), p. 103.

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rather ironically, the code asserts the principles of a peaceful programme revolving more around maintaining a balance against the Indian force build-up, but it includes the right to launch a first strike in response to not only a conventional attack by India, but also a posed threat from India.

#### *Minimum Nuclear Deterrence*

This is one of the basic tenets of Pakistan's nuclear doctrine. The concept of credible minimum

deterrence is not based specifically on the numbers but it involves building an arsenal including nuclear weapons, delivery systems, command and control and doctrine, and strategy, based on the perceived threat perception from India. Credible minimum deterrent force intends to build a minimum force capable of inflicting nuclear destruction on India. PM Nawaz Sharif very distinctly talked about it in May 1999 when he highlighted the key elements of Pakistan's nuclear policy at National Defence College: "Nuclear restraint, stabilisation and minimum credible deterrence constitute the basic elements of Pakistan's nuclear policy."<sup>5</sup>

Pakistan's initial adoption of credible minimum deterrence is obvious. Pakistan desires a financially viable nuclear arsenal as the whole logic of going nuclear was Pakistan's inability to cope with India's conventional military build-up, primarily due to the financial constraints. The term "minimum" begs being defined and can be interpreted differently by the nuclear states. Pakistan's minimum deterrence appears to be based on the capability to inflict unacceptable damage or assured destruction. Pakistan asserts minimum

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5. "Remarks of the Prime Minister of Pakistan, Nawaz Sharif, on Nuclear Policies and the CTBT," National Defence College, Islamabad, May 20, 1999.

deterrence but has a fast-growing arsenal and reportedly possesses approximately 165 warheads.<sup>6</sup>

**A first-use policy, according to Pakistani leadership, provides credible security guarantees for national sovereignty.**

### *First Use Doctrine*

Pakistan has long believed that being the weaker state it can compensate for weakness by taking a bold initiative, preferably with strategic surprise, to attack Indian military capability, and thus reduce the adverse margin of capabilities. This was its military strategy in wars against India, including the last one in Kargil in 1999, and more importantly, the war through terrorism across the border for around six decades now. Seen in context of this strategic mindset, it is not surprising that it has adopted a nuclear doctrine of "First Use." In fact, it has often claimed that it would/could use nuclear weapons at the very beginning of the war with India if the Indian military even crossed the international border.

Pakistan has stated that it will use nuclear weapons to counter India's conventional capability, rejecting India's suggestion for a joint no-first-use promise in the aftermath of the nuclear tests. Lt Gen Sardar Lodhi (retd.) justified Pakistan's dismissal of India's offer: "India's offer of a treaty to be signed by the two countries, agreeing not to be the first to use nuclear weapons against each other is one-sided and would benefit India only, as it has a superior conventional force. It may be more apt for both countries to sign a mutual test ban treaty to start with, followed by a no-war pact."<sup>7</sup>

Pakistan has argued that in case of likelihood of a conventional attack, or in a situation when India breaches the line, causing major setback to the defence and security of Pakistan, it will resort to first use due to the fear of being defeated in a conventional war against India. Thus, a first-use policy,

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6. Hans M. Kristensen and Matt Korda, "Nuclear Notebook: How many nuclear weapons does Pakistan have in 2021?", *Bulletin of the Atomic Scientists*, September 7, 2021, at <https://thebulletin.org/premium/2021-09/nuclear-notebook-how-many-nuclear-weapons-does-pakistan-have-in-2021/>. Accessed on January 10, 2022.

7. Lt Gen F.S. Lodhi, "Pakistan's Nuclear Doctrine", *Defence Journal*, at <http://www.defencejournal.com/apr99/pak-nuclear-doctrine.htm>. Accessed on May 10, 2011.

according to Pakistani leadership, provides credible security guarantees for national sovereignty.

Pakistani elites have previously outlined scenarios in which Pakistan would use nuclear weapons and why it has cultivated the posture of irrational rationality to try and enhance the effect of this posture. Lt Gen Khalid Kidwai, head of the Strategic Planning Division in Pakistan's Nuclear Command and Control system, in an interview to Italian journalists in 2002, claimed that nuclear weapons would be used only "if the very existence of Pakistan as a state is at stake." But he went on to state that Pakistan would definitely use nuclear weapons if:

1. India attacks Pakistan and conquers a large part of its territory (space threshold);
2. India destroys a large part either of Pakistan's land or air forces (military threshold);
3. India proceeds to the economic strangling of Pakistan (economic strangling);
4. India pushes Pakistan into political destabilisation or creates large-scale internal subversion in Pakistan (domestic destabilisation).<sup>8</sup>

The last two elements cannot be seen in isolation. Pakistan tries to project a low nuclear threshold which, in its view, helps avert war. Air Commodore Tariq Mahmud Ashraf in his study supported the low nuclear threshold: "A nuclear deterrent should not be able to avert a war in first place, it should be able to avert an abject defeat in the event of a war materialising and not going well. Pakistan's nuclear threshold must keep these considerations in mind. If the war is not going well, Pakistan could well threaten to employ her nuclear weapons in an effort to avert an abject defeat."<sup>9</sup>

The need for Pakistan to maintain this position of first use is further exacerbated by India's assertion that the possibility of a conventional war is

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8. As cited in Paolo Cotta-Ramusino and Maurizio Martellini, *Nuclear Safety, Nuclear Stability and Nuclear Strategy in Pakistan*, Landau Network-Centro Volta Report, January 2002.

9. Air Commodore Tariq Mahmud Ashraf (Retd.), *Evolving Dynamics of Nuclear South Asia* (New Delhi: KW Publishers, 2014), p. 166.

not ruled out even with the two states possessing nuclear weapons. This has been proved more than once, during the Kargil war, and again with India's retaliation—Uri surgical strikes and in 2019 Balakot airstrikes.

### *Possibility of Pre-emption*

Pakistan's obsessive reliance on the doctrine of first use seems to be emerging from three factors. First, Pakistan wants to keep an option open for "pre-emptive nuclear strikes" against India and it is convinced that such strikes would lead to the destruction of India's retaliatory capabilities and/or restrict Indian political decision-making. Second, the international reaction to Pakistan's nuclear strikes would impact India's decision to retaliate. Third, Pakistan has failed to consider the consequences of the Indian retaliation. Pakistani leadership seems to assume that India would not opt for nuclear weapons against it even after getting hit. Assumptions related to India's strategic culture could be one of the factors shaping Pakistan's perception, which had perhaps intensified with India's non-reactive approach till recently!

India in its nuclear strategy and doctrine has adopted "restraint" as a responsible and politically mature nation-state. But the Indian restraint cannot be read by Pakistan as an open-ended policy.

### *Weapon of Last Resort*

Most of the Pakistani writings pre-1998 pointed towards build-up of the nuclear capability against the Indian conventional forces and thus implied first use. But there was a projection of a shift in the Pakistani thinking towards adoption of a relatively moderate stand by claiming nuclear weapons as the "weapon of last resort." Abdul Sattar, former Pakistan Foreign Minister, Agha Shahi and Zulfiqar Ali Khan jointly authored an article in *The News* on October 5, 1999, which stated: "Although the precise contingencies in which Pakistan may use nuclear weapons have not been articulated or even defined by the government, the assumption has been that if the enemy launches a war and undertakes a piercing attack to occupy

large territories or communications junctions, the *weapon of last resort* would have to be invoked.”<sup>10</sup>

President Pervez Musharraf, in May 2002, said that if it came to war between the nuclear-armed rivals, he would “respond with full might.” In April 2002, in an interview published in the German magazine, *Der Spiegel*, Musharraf said, “If the pressure on Pakistan becomes too great then as a last resort, the [use of] atom bomb is also possible.”<sup>11</sup>

Musharraf’s statement of last resort was made in 2002, and in the same period, in his address to Army Corps Union in Karachi, he said that war with India was averted due to his repeated warnings for using “unconventional” means (interpreted as nuclear weapons) in case of India breaching the red lines. This, however, likely implied the use of large number of guerrilla/ jihadi fighters rather than nuclear weapons. Otherwise, there is contradiction in Pakistan’s stance where, on one side it claims to use its nuclear weapons as a last resort, while on the other, it is convinced its nuclear threat was successful in deterring Indian military posture.

### ***Nuclear Policy Based on Restraint and Responsibility***

Since the mid-2000s, Pakistan’s endeavour has been to project itself as a *responsible* nuclear power. The need to do so was exacerbated with India and the US signing the nuclear deal. Pakistan has been keen for a similar nuclear agreement, and thus, projection of a responsible nuclear posture became inevitable. In 2006, Lt Gen Khalid Kidwai, in his address to the Naval Postgraduate School, Monterey, said that Pakistan has dealt with formidable challenges by developing a nuclear policy based on “restraint and responsibility” with four salient features:

“(1) deterrence of all forms of external aggression; (2) ability to deter a counterstrike against strategic assets; (3) stabilisation of strategic deterrence in South Asia; and (4) conventional and strategic deterrence methods.”

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10. Agha Shahi, Zulfiqar Khan and Abdul Sattar, “Securing Nuclear Peace”, *The News* (Islamabad), October 5, 1999.

11. Cited in H.S. Rao, “Pak Threatens to Use Nukes”, *The Tribune*, April 6, 2002, at <https://www.tribuneindia.com/2002/20020407/main4.htm>. Accessed on January 1, 2022.

Gen Khalid Kidwai talks about “deterrence to all forms of external aggression,” which should include both conventional and nuclear aggression. This is in line with the statements made by the Pakistani policymakers in the past. Deterring India’s conventional posture remains the prime objective of Pakistan’s nuclear weapons. Kidwai talks about building the ability to deter a counterstrike against strategic assets. Pakistan has expanded its arsenal and the delivery systems substantively in order to threaten a disarming strike to wipe out, or at least drastically reduce, India’s retaliatory capability.

Pakistan did make an effort to adopt a posture of a “restrained and responsible nuclear power” in 2006-2007. This posture was necessary from Pakistan’s point of view as the leadership was trying to convey the message to the West and the international community that its nuclear arsenal is safe and not threatened by a potential jihadi takeover. Pakistan did see a remarkable rise in terrorist attacks and suicide bombings after 2007 with the creation of Tehrik-i-Taliban Pakistan (TTP), which is prominent for its anti-state agenda.

### *Full-Spectrum Deterrence*

India’s stance on the probability of a conventional war despite the presence of nuclear weapons challenged Islamabad’s deterrence. Hence, on April 19, 2011, Pakistan tested its short-range surface-to-surface multi-tube ballistic missile Hatf-9 (NASR). The official press release then said: “[The NASR Weapon System] has been developed to add deterrence value to Pakistan’s Strategic Weapons Development programme at shorter ranges. NASR with a range of 60 km, carries nuclear warheads of appropriate yield with high accuracy, [and] shoot and scoot attributes.

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This quick response system addresses the need to deter evolving threats."<sup>12</sup>

NASR provides Pakistan with short-range missile capability, in addition to the long-range ballistic missiles and cruise missiles. According to Pakistani military officials, Hatf-9 belongs to the category of tactical nuclear weapons (TNW) and is a low-yield battlefield deterrent, capable of inflicting damage on armed brigades and divisions.<sup>13</sup> Pakistan has repeatedly claimed that Hatf-9 is the counter to India's Cold Start Doctrine that envisions limited conventional response from the Indian side in response to the sub-conventional attacks on India originating from Pakistani territory. This belief is reflected in Lt. Gen. Khalid Kidwai's statement: "I strongly believe that by introducing the variety of tactical nuclear weapons in Pakistan's inventory, and in the strategic stability debate, we have blocked the avenues for serious military operations by the other side."<sup>14</sup>

Kidwai justified that *Nasr* was born to fill the 'deterrence gap':

"*Nasr*, specifically, was born out of a compulsion of this thing that I mentioned about some people on the other side toying with the idea of finding space for conventional war, despite Pakistani nuclear weapons ... we figured out that what was driving this particular concept on the other side was that they were looking at certain gaps in the, on the nuclear weapon inventory of Pakistan."<sup>15</sup>

Reportedly, Pakistan is developing a sea-based nuclear force to be able to match India's nuclear triad. The Naval Strategic Force Command was announced in 2012. In January 2017, Pakistan conducted the first test of its SLCM, the *Babur-3*, from a submarine. It is estimated that *Babur-3* has

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12. Rodney W. Jones, "Pakistan's Answer to Cold Start?" *The Friday Times*, vol. XXIII, no. 13, May 13-19, 2011, at <http://www.thefridaytimes.com/13052011/page7.shtml>. Accessed on November 12, 2011.

13. "Pakistan successfully test-fires nuclear capable Hatf-9", *The Express Tribune*, April 20, 2011.

14. "A Conversation with Gen. Khalid Kidwai", Carnegie International Nuclear Policy Conference 2015, March 23, 2015, p. 5, at <https://carnegieendowment.org/files/03-230315carnegieKIDWAI.pdf>. Accessed on April 13, 2016.

15. *Ibid.*, p. 8.

a range of 450 km and will be carried on Pakistan's diesel-powered Agosta 90B submarine. Advanced versions of *Babur* with extended range have also been tested.

Pakistan has been keen on achieving a sea-based deterrent mainly because of two factors. First, to maintain uncertainty and enhance deterrence by achieving a nuclear triad. Secondly, to achieve a survivable deterrent since Pakistan does not believe India's No-First-Use (NFU) and maintains that even with an NFU doctrine, India could use nuclear weapons against Pakistan.

Pakistan claims to have developed the nuclear capability to be launched from all the three platforms—land, air and sea. The aim of full spectrum deterrence is to deny New Delhi any space for a conventional military retaliation. Pakistan's nuclear posture before and after overt nuclearisation indicates that *full-spectrum deterrence* for Pakistan also implies full spectrum of scenarios since Pakistan believes in maintaining a projection of a low nuclear threshold and also an element of uncertainty. The nuclear posture seems to rely on the threat of use of nuclear weapons to deal with a wide range of crises vis-à-vis India. After overt nuclearisation, Pakistan drew vague nuclear redlines to deter any potential punitive action by India. Later, even though Pakistan talked about using nuclear weapons as a *last resort*, it continued to use the threat of nuclear weapons frequently to deal with a crisis vis-à-vis India. It talked about the last resort but also simultaneously took pride in projecting reliance on TNWs, leaving the basic question unanswered: *What is last resort for Pakistan?*

Full-spectrum deterrence for Pakistan implies: *Full spectrum of platforms*—land, air and sea; *Full spectrum of scenarios*—keeping a low threshold and maintaining ambiguity provides flexibility to Pakistan; and *Full spectrum of targets*—counter-value and counter-force.

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### *Rapid Expansion of the Nuclear Arsenal*

Expansion of the nuclear arsenal has been a priority for Pakistan despite economic pressures. Highlighted threat perceptions by the military and civilian leadership help to justify the diversion of national resources towards the nuclear build-up, despite the fact that the country has been under constantly rising debt burden. This has been reflected in diverse Pakistani writings. Air Commodore Tariq Mahmud Ashraf wrote: "The Pakistani populace has been led to believe by the ruling elite that it is only by developing a viable nuclear capability that Pakistan can thwart Indian hegemonic designs."<sup>16</sup>

The 'actual' control of the nuclear weapon arsenal, doctrine and strategy remains with the military and any interference by the political leadership in the nuclear weapons domain has never been acceptable to the army. Propagation of the criticality and indispensability of the nuclear weapons by the leadership convinced most Pakistanis that diversion of national resources for the buildup of the weapons is in the best interest of the nation. Expansion of the nuclear arsenal has always been welcomed at the domestic level, owing to two factors:

1. The weapons are seen as the ultimate protection against India and eventually against the United States (post-2001). The dominant belief has been that the United States could not push Pakistan to the wall despite severe drifts in the relationship, because Pakistan possesses nuclear weapons. Also, the fear of nuclear weapons falling into the hands of non-state actors in Pakistan and jihadi elements did play a role in the cautious position of the United States towards Pakistan.
2. Secondly, Pakistan realised that it will be tough for it to match India's conventional capability and possessing and expanding the nuclear arsenal would reduce the pressure of modernising its conventional forces. The perception was strengthened that having nuclear weapons is actually viable for Pakistan's economy, as it needs to spend less on the conventional capability build-up. However, the defence acquisitions in the last twenty

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16. Air Commodore Tariq Mahmud Ashraf (Retd.), n. 9, p. 5.

years have projected a different thinking and reality.

## CAPABILITY

### *Nuclear Delivery Systems*

Pakistan's nuclear delivery systems can be put under three categories:

- Land-based missiles
- Cruise missiles
- Aircraft

### *Land-Based Missiles*

Although Pakistan's efforts to acquire nuclear weapons started in earnest in the early 1970s after Bhutto's announcement to build a bomb, its serious search and efforts for the missiles as a launch vehicle took place in the late 1980s when its nuclear weapon programme was nearly under completion. Ballistic missiles, in a loose sense, are more advanced than manned aircraft, and are easier to employ, relatively at a lower cost. The reasons why Pakistan has adopted an aggressive missile acquisition programme can be attributed to mainly the following factors.

First, Pakistan has a deep desire to stand at par with India's conventional military capability.

Second, Pakistan tried hard to acquire the Mirage-2000 from France but due to the economic crisis, the US sanctions and strict conditionalities from the International Monetary Fund did not allow the acquisition. Therefore, procuring the Chinese missile was seen as a cheaper option to expand its nuclear capability.

Third, although Pakistan acquired the F-16s from the US in the 1980s, there was a realisation that the aircraft delivery systems have limitations in terms of both range of delivery of nuclear weapons and also penetration of India's air defence system. Ballistic missiles provide a much more credible deterrence, against which there is no credible defence.

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**Pakistan's missile development programme has been primarily developed with China's assistance (since 1972) and, to some extent, support from North Korea, after the United States imposed sanctions on China. Chinese missile assistance to Pakistan ranges from providing equipment and training to transferring the complete missiles.**

Lastly, during the Afghan War in the 1980s, Pakistan was exposed to the threat of conventionally armed short-range missiles from the Soviet Union. The Soviet forces fired Scud missiles across the Durand Line targeting the Mujahideen camps inside the Pakistani territory. Added to this was the demonstrative threat of the missiles during the Iran-Iraq War in the 1980s. Thus, the evolving role of the missiles was sufficient to influence the Pakistani thinking for a missile development programme.

### *Ballistic Missiles*

Pakistan's missile development programme has been primarily developed with China's assistance (since 1972) and, to some extent, support from North Korea, after the United States imposed sanctions on China. Chinese missile assistance to Pakistan ranges from providing equipment and training to transferring the complete missiles.

The development of the Chinese M series of Short Range Ballistic Missiles (SRBMs) commenced in the early 1980s and the three versions are known as the M-9, M-11 and M-18. These designations were apparently used for the export versions.<sup>17</sup> All M series missiles use solid fuel, and have short operational preparation time.<sup>18</sup> Information from various sources indicates that Pakistan had negotiated the deal for the M-11 during Zia's regime. China reportedly started discussing the transfer of M-11 missiles to Pakistan in the early 1990s. In the same period, the

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17. "Nuclear Weapons Database: Pakistan's Possible Nuclear Delivery Systems", at <http://www.cdi.org/nuclear/database/panukes.html>. Accessed on September 10, 2011.

18. "Weapons of Mass Destruction: DF-11 [CSS-7], DF-11A", GlobalSecurity.org, at <http://www.globalsecurity.org/wmd/world/china/df-11.htm>. Accessed on November 10, 2021.

National Development Complex (NDC), a subsidiary of the Pakistan Atomic Energy Commission (PAEC), reportedly acquired complete though unassembled M-11s and possibly an undisclosed number of M-9 SRBMs from Beijing.<sup>19</sup>

The M-9 SRBMs, which are capable of carrying both nuclear and conventional warheads, were delivered to Pakistan in early 1991. The M-9 is reported to have a range of 600 km. It is a single-stage missile with an inertial guidance system, which signifies that the missile is programmed before the launch and does not receive any external guidance after the launch. China has never openly admitted selling the M-9 missiles to Pakistan, but has indicated that it would sell missiles to “whoever can pay for them”.<sup>20</sup>

Pakistan reportedly received the M-11 missile (which the Chinese refer to as the Dong Feng-11) in 1991, when US intelligence discovered their transfer along with the accompanying transporter-erector-launchers to Pakistan.<sup>21</sup> The M-11 is capable of carrying nuclear as well as conventional warheads. Pakistan received the M-11 variant as a single-stage, solid-fuelled missile with a range of 300 km, carrying a 800 kg warhead.<sup>22</sup> Discussions on the possible sale of M-11 missiles and related technology to Pakistan started in the late 1980s, and apparently the contract was signed in 1988. The US intelligence agencies reported in 1995 that the M-11 deal moved ahead after Pakistan apparently paid \$15 million to China for the missiles, launchers and support equipment. The M-11s were shipped to Pakistan

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19. “Missile Overview”, *NTI*, at [http://www.nti.org/e\\_research/profiles/Pakistan/Missile/index\\_3066.html](http://www.nti.org/e_research/profiles/Pakistan/Missile/index_3066.html). Accessed on August 10, 2010.

20. Bill Gertz, “China Can’t Say No to Arms Buyers”, *Washington Times*, May 28, 1991.

21. Bill Gertz, “Missile Deception,” in *Betrayal: How the Clinton Administration Undermined American Security* (Washington, DC: Regnery Publishing, Inc., 1999), p. 159, as cited in “Pakistan Profile: Missile Overview”, *NTI*, at [http://www.nti.org/e\\_research/profiles/Pakistan/Missile/index.html](http://www.nti.org/e_research/profiles/Pakistan/Missile/index.html)

22. “Although the DF-11 has a range of 300 km, the Chinese continued work on a version with a longer range. China’s 50th anniversary military parade on October 1, 1999, marked the first public Chinese display of a new version of the M-11 short-range missile, the CSS-7 Mod 2, more commonly known as the M-11 follow-on. The new Mod 2 missile is about two metres longer than the Mod 1, and believed to have a longer range, a larger warhead and greater accuracy than the earlier M-11. The accuracy of these missiles will improve in the future if China is able to apply Global Positioning System (GPS) guidance technology to provide highly accurate location information for missile launchers or pre-surveyed launch sites.” Cited in n. 18.

in 1993, but their assembly was not confirmed.<sup>23</sup> These developments are important to understand the overall Chinese support in Pakistan's missile build-up.

Beijing pledged in 1994 as part of the US-China agreement that it would not deploy M-11s in Pakistan.<sup>24</sup> After Washington received the reports of the transfer of the M-11 to Pakistan, limited sanctions were imposed on China.<sup>25</sup> Various reports at the international level have claimed that China sold over 30 M-11 missiles to Pakistan, despite repeated denials by both governments. Again, in 1996-97, there were reports of Chinese assistance in indigenous Pakistani M-11 production.<sup>26</sup>

M-11 is a road-mobile, single-stage, solid-propellant, short-range ballistic missile. The basic variant of the M-11 termed Dong Feng in China has a range of 280–350 km and delivers a single warhead of 500 kg. The basic variant of the M-11 uses an inertial guidance plus terminal radar guidance, giving a Circular Error Probability (CEP) of 500-600 m. The improved M-11A (which Pakistan is reportedly producing) uses inertial/Global Positioning System (GPS) guidance system with optical correlation terminal targeting, resulting in a greater accuracy of below 200 m CEP.<sup>27</sup>

Pakistan has a missile factory located in Rawalpindi for the manufacture of medium-range ballistic missiles. In all likelihood, while it is manufacturing the M-11 or a similar missile, it is unclear whether this facility has the capability to manufacture complete missiles or only some major components.

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23. Bill Gertz, "Pakistan Deploys Chinese Missiles", *Washington Times*, June 12, 1996.

24. Ibid.

25. Sanctions had a significant impact on the sales of high technology goods to China. Those goods were a major portion of the \$12 billion US trade with China in 1992.

26. Statement by Gordon Oehler, Former Special Assistant to the Director, CIA and Director DCI's Nonproliferation Center; Hearing of the Senate Foreign Relations Committee on Proliferation of Chinese Missiles; Gary Milhollin, Director; Wisconsin Project on Nuclear Arms Control; June 11, 1998.

27. "Dong Feng-11 (CSS-7) Short-Range Ballistic Missile", at <http://www.sinodefence.com/strategic/missile/df11>. Accessed on April 10, 2010. Also see, Collin Meisel, "Dong Feng-11 (CSS-7)", Missile Defence Advocacy Alliance, March 2017, at <https://missiledefenseadvocacy.org/missile-threat-and-proliferation/todays-missile-threat/china/dong-feng-11css-7/>. Accessed January 10, 2022.

### *Hatf-1*

Development of the Hatf-1 solid-propellant unguided rocket and ballistic missile programme started in the early 1980s and was revealed by Pakistan in early 1989. Although Islamabad claims it to be its indigenous production, there are enough reports indicating Chinese assistance. Apart from China, certain European companies have also provided assistance to Pakistan.<sup>28</sup> There have been unconfirmed reports that the initial Hatf-1 and 2 project designs were both based upon a 1960s French sounding rocket design, known as Eridan.<sup>29</sup>

Reports suggest that the Hatf-1 is a 70 km range unguided rocket, with a length of 6.0 m, a body diameter of 0.56 m and a launch weight of approximately 1,500 kg. The rocket is a single-stage solid propellant system, with a payload of 500 kg that could be conventional High Explosive (HE), chemical or submunitions.<sup>30</sup> There have also been reports of the development of the improved version Hatf-1A, 100-km range missile. The first launching of the Hatf-1A took place on February 7, 2000. It is believed that the Hatf-1 entered into service in 1992 and the Hatf-1A in 1995. The guided Hatf-1B, a further improved version with an upgraded kit fitted to the existing missile, was reported flight tested in February 2000 and is believed to have entered operational service in 2004.<sup>31</sup>

### *Hatf-2 (Abdali)*

The original version of the Hatf-1 SRBM was started in 1987, and was first deployed in 1989 as a two-stage version of the Hatf-1 missile. The Hatf-2 uses the Hatf-1 as a second stage, and has a range of 300 km with 500 kg payload.<sup>32</sup> There are unconfirmed reports that the Hatf-2 is an upgraded version of the Hatf-1B and was developed with Chinese aid and technical assistance. Although the production for the Hatf-2 started in 1987, the programme was

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28. *Jane's Strategic Weapon System*, no.48, 2008, p. 108.

29. *Ibid.*

30. *Ibid.*

31. *Ibid.*, p. 109.

32. *Ibid.*

**There are unconfirmed reports that the Hatf-2 is an upgraded version of the Hatf-1B and was developed with Chinese aid and technical assistance. Although the production for the Hatf-2 started in 1987, the programme was reportedly delayed, in all probability due to the acquisition of the M-11 in the early 1990s.**

reportedly delayed, in all probability due to the acquisition of the M-11 in the early 1990s. A new programme was later commenced in 1997 by the Pakistan National Development Complex (now NESCOM) with a reduced range of 180 km and was called the Hatf-2 or Abdali.<sup>33</sup> The Abdali missile was first flight tested in May 2002, and appears similar in size and shape to the Argentinean Alacran SRBM and the Chinese TY-3,

TY-13 and TY-14 research rockets, which confirms the Chinese assistance in the development of the missile.<sup>34</sup> Due to their limited range, it is unlikely that the Abdali missiles can carry nuclear warheads.

### *Hatf-3 (Ghaznavi)*

There has been much speculation about the origin of the Hatf-3 Ghaznavi missiles. The programme for the development of the Hatf-3 was terminated after Pakistan received the M-11 from China. The technology for the M-11 was used to develop future missiles—the *Shaheen-1* and *Shaheen-2*—in Pakistan. But, as a low priority, the programme for the Hatf-3 - Ghaznavi was initiated in 1997 by Pakistan National Development complex (NESCOM). The first flight test was undertaken in May 2002. The other three test flights for the Ghaznavi-3 took place in October 2004, November 2004 and December 2006.<sup>35</sup> Technical evaluation of the missile images suggest that the Hatf-3 is a version of the M-11 or may even be a repainted M-11. The later versions of the missile may have GPS or terminal guidance system.<sup>36</sup>

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33. Ibid.

34. Ibid.

35. S. Chandrashekar, Arvind Kumar and Rajaram Nagappa. "An Assessment of Pakistan's Ballistic Missile Programme: Technical and Strategic Capability", *NIAS Study*, 2006, p. 10

36. James C O'Hollaoran, *HIS Jane's Weapons Strategic*, 2016-2017, p. 72

The Ghaznavi missile is 8.5 m long, has a body diameter of 0.8 m and a launch weight of 4,650 kg. The missile has a single-stage solid propellant motor providing it a minimum range of approximately 50 km, a maximum range of 290 km, and it can carry single warhead of 700 kg.<sup>37</sup> The M-11 Chinese missile now has a range of 350 km and, thus, there are apprehensions that perhaps the Ghaznavi also has a range of up to 350 km.<sup>38</sup> The Ghaznavi can carry two kinds of warheads—a longer nuclear warhead and a shorter conventional warhead. Ghaznavi missile became operational in February 2004 and the final production was completed in 2007.<sup>39</sup>

**The Hatf-4 or Shaheen-1 is believed to be a scaled-up version of the M-11 missiles supplied to Pakistan in 1993. Since 1996, there have been suggestions that a solid propellant missile was being developed by Pakistan with Chinese assistance.**

#### *Hatf-4 (Shaheen-1)*

The Hatf-4 or *Shaheen-1* is believed to be a scaled-up version of the M-11 missiles supplied to Pakistan in 1993. Since 1996, there have been suggestions that a solid propellant missile was being developed by Pakistan with Chinese assistance. Ground tests of the motor for this missile were reported in 1997 and 1998.<sup>40</sup> Development of Hatf-4 took place between 1993–1997 and it was first dispatched in 1999.

The *Shaheen-1* is a single-stage, solid propellant missile with an inertial guided system and a maximum range of 750 km.<sup>41</sup> There is not much technical information available about the missile. Hatf-4 was first tested in 1999 and in early April 2013 Pakistan conducted a test launch of an improved version of Hatf-4. There are reports of an improved version of *Shaheen-1* with an enhanced range of 900 km.<sup>42</sup>

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37. Ibid., p. 73.

38. Ibid.

39. Ibid.

40. Ibid., p. 74.

41. Ibid.

42. Ibid.

### *Hatf-5 (Ghauri)*

Pakistan's second most crucial partner in the missile development programme has been North Korea, and Pakistan has been extending military assistance to North Korea in return. Pakistan's link with North Korea was established in 1993 during the second tenure of Benazir Bhutto. The Pakistani Prime Minister visited Pyongyang after having talks with North Korean President Kim Il Sung. According to Pakistani officials, the Pakistani delegation went with plans for North Korea's Nodong missile.<sup>43</sup> While Pakistan's clandestine missile transactions with China have been closely monitored by the United States, the same does not stand true for its clandestine missile technology transfer from North Korea that has enjoyed greater leverage. The US intelligence community has been warning the US Administration about the North Korea-Pakistan links related to missile transfer since 1997.<sup>44</sup>

The development programme for the Hatf-5 or Ghauri commenced in 1993 at the Khan Research Laboratories and was publicly announced in 1997. Although North Korea has consistently denied providing assistance, the US intelligence sources did monitor the North Korean flights to Pakistan. The flights mostly involved IL-76 transports; the transports apparently carried technical experts, including telemetry crews.<sup>45</sup>

Reportedly, the 5-10 Nodong missiles assembly sets were sent to Pakistan between 1994 to 1997 for trials and to set up a manufacturing capability.<sup>46</sup> The Ghauri missile, which resembles the shape of the Russian 'Scud B' is an outcome of coordinated inputs from both North Korea and China. There

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43. "Bhutto Ends Visit to North Korea", Agence France Presse, December 30, 1993, International News; in Lexis-Nexis Academic Universe, December 30, 1993, web.lexis-nexis.com, at "NTI: Country Overview: Pakistan Missile Chronology", at [http://www.nti.org/e\\_research/profiles/Pakistan/Missile/chronology\\_1992\\_1993.html](http://www.nti.org/e_research/profiles/Pakistan/Missile/chronology_1992_1993.html). Accessed on April 10, 2010.

44. In 1997, *Jane's Defence Weekly* reported that Gordon Oehler, former Director of the CIA's Non proliferation Center said that Pakistan has recently announced the development of a 1,500-km range missile called Ghauri. Even though Pakistan claims the Ghauri to be an indigenously produced missile, US analysts believed that China and North Korea provided the necessary technical advice.

45. "Pakistan's Missile 'Was a Nodong'", *Jane's Missiles & Rockets* (Coulsdon, Surrey), vol. 2, no. 5 (May 1998): pp. 1-2.

46. Ibid.

were reports regarding an arrangement among Pakistan, China and North Korea whereby China would provide the soft technology and engineering for the Ghauri, and North Korea would act as an agent for the transfer of Chinese technology and provide the hardware and components from its Nodong missile programme.<sup>47</sup>

The first flight test of the Ghauri, single-stage, liquid propellant missile, with a range of 800-1,200 km, was in April 1998. An improved version, known as the Ghauri-2, was reportedly under development in 1998, with an enhanced range of 1,500 to 1,800 km, and was first flight tested in April 1999.<sup>48</sup> It is estimated that the Ghauri-3 programme has been under development since 1994, with a range of 3,000 km and the first stage motor tests were reportedly done in July and September 1999.<sup>49</sup>

#### *Hatf-6 (Shaheen-2)*

There were unconfirmed reports regarding the development of the *Shaheen-2*, also designated as Hatf-6, which is a two-stage solid propellant ballistic missile. Some reports also suggested that it was ready for testing in June 1999.<sup>50</sup> On March 9, 2004, Pakistan test fired the nuclear capable *Shaheen-2* ballistic missile. Samar Mubarakmand, Chairman, National Engineering and Science Commission made a statement that “the full range of the missile was 2,500 km although it was tested only to 2,000 km, the edge of Pakistan’s sea limits.”<sup>51</sup> Talat Masood, a former army general said, “It gives Pakistan the ability to fire missiles much deeper into India than before.”<sup>52</sup> The *Shaheen-2* is believed to be based upon the earlier Chinese two-stage solid propellant missile M-18, which was demonstrated in 1988. The maximum range of the *Shaheen-2* missile was 2,000 km, which has now been increased to 2,500 km, sufficient to target any important part of India.<sup>53</sup>

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47. Joseph Bermudez, “A Salient Partner”, *Jane’s Defence Weekly* (Coulsdon, Surrey), May 20, 1998

48. James C O’Hollaoran, *HIS Jane’s Weapons Strategic*, n. 36, p. 75.

49. *Ibid.*, p. 75.

50. *Ibid.*, p. 77.

51. “Pakistan tests new long range missile”, *The Guardian*, March 9, 2004, at <https://www.theguardian.com/world/2004/mar/09/pakistan.kashmir>. Accessed on December 1, 2021.

52. *Ibid.*

53. James C O’Hollaoran, *HIS Jane’s Weapons Strategic*, 2016-2017, n. 36, p. 77.

**In early March 2015, Pakistan test launched a surface-to surface ballistic missile—*Shaheen-3*. Details about the missile are not available in the public domain. Reports suggest that the missile is capable of carrying a nuclear or conventional warhead to a range of 2,750 km.**

### *Shaheen-3*

In early March 2015, Pakistan test launched a surface-to surface ballistic missile—*Shaheen-3*. Details about the missile are not available in the public domain. Reports suggest that the missile is capable of carrying a nuclear or conventional warhead to a range of 2,750 km.<sup>54</sup> It is believed that the missile employs a multistage solid-fuel rocket motor and uses

inertial guidance to reach the operational range of 2,750 km.<sup>55</sup> *Shaheen-3* uses a 16-wheel Chinese transporter erector launcher (TEL). Reportedly, Pakistan started negotiations with the China Precision Machinery Import-Export Corporation (CPMIEC) and exported “two 16x16 WS-21200s for use as TELs for *Shaheen-3* missiles”.<sup>56</sup>

The *Shaheen-3* test was much applauded due to its extended range, which according to the Pakistani media is “capable of reaching the farthest point in India’s northeast and Andaman and Nicobar Islands.”<sup>57</sup> Pakistan has been anxious to cover the Andaman and Nicobar Islands and talking about the logic of *Shaheen-3*, Kidwai said:

“What we are counting on also is not just the main Indian landmass, the peninsula, the eastern dimension, the southern dimension. There is, of late, there have been reports of the Nicobar, and the Andaman Islands in the Bay of Bengal, being developed as bases, potentially as strategic bases.

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54. Ibid., p. 79.

55. Ibid., p. 79.

56. “Pakistan’s New *Shaheen-III* MRBM uses Chinese transporter, says Source”, at <http://www.janes.com/article/61862/...iii-mrbm-uses-chinese-transporter-says-source>, cited in Pakistan Defence, <https://defence.pk/pdf/threads/pakistans-new-shaheen-iii-mrbm-uses-chinese-transporter-says-source.437117/>

57. “Another Successful Test of *Shaheen III* carried out”, *The News*, January 21, 2021, at <https://www.dawn.com/news/1602683>. Accessed on February 1, 2021.

And if those bases are not covered by Pakistan, and *Shaheen-3* does that, with 2,750 kilometers,....Pakistan will be allowing, so to say, a second strike capability to India within its land borders.”<sup>58</sup>

### *Hatf -9 (Nasr)*

Hatf-9 (NASR) was tested on April 19, 2011. Although a missile with a range of 60 km is more likely to be a free-flying rocket, Pakistan has claimed the missile is nuclear capable. In all probability, the missile is a four-tube adoption of a Chinese-design multiple rocket launcher (MRL), possibly the A-100 type, on an eight-wheeler truck, capable of carrying four ready to fire ballistic missiles.<sup>59</sup> According to Jane’s (2016-2017), “The Hatf-9 is a single-stage solid-fuelled rocket motor missile with fin stabilisation. The payload is expected to be around 400 kg, and could be high explosive (HE), submunitions, or nuclear with blast yield of 0.5 to 5kt”.<sup>60</sup> The missile is fired from a modified four-tube transporter-erector-launcher chassis of the AR 1A/A-100E (8x8) multiple launch rocket system (MLRS) procured from China.<sup>61</sup>

### *Ababeel*

In January 2017 Pakistan tested the *Ababeel* surface-to-surface ballistic missile (SSM). *Ababeel* is a three-stage solid fuel missile, designated to carry both conventional and nuclear warheads, reportedly has a maximum range of 2,200 km and is capable of carrying Multiple Independently Targetable

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58. “A Conversation with Gen. Khalid Kidwai”, Carnegie International Nuclear Policy Conference 2015, no. 26, p. 10.

59. Rodney W. Jones, “Pakistan’s Answer to Cold Start?” n. 12.

60. James C O’Hollaoran, n. 36, p. 78.

61. *Ibid.*, p. 79.

Re-entry Vehicles (MIRVs).<sup>62</sup> According to the ISPR, “the development of the *Ababeel* weapon system was aimed at ensuring survivability of Pakistan’s ballistic missiles in the growing regional Ballistic Missile Defence (BMD) environment.”<sup>63</sup> Some unconfirmed reports suggest that the development of *Ababeel* commenced in 2000s and its basic design has similarities with Pakistan’s solid fuel MRBMs such as *Shaheen-2* and *Shaheen-3* and China’s CSS-7 SRBM.<sup>64</sup> Pakistan test fired the missile in 2017 and sees this as a way of “enforcing deterrence”,<sup>65</sup> it is unlikely that the induction of this capability will happen anytime soon.

## CRUISE MISSILES

### *Hatf-7 (Babur)*

The first flight test of *Babur* (Hatf-7) cruise missile was conducted in August 2005.<sup>66</sup> Development of the *Babur*, also designated as Hatf-7, which is an air, ground, ship and submarine launched short-range, turbojet-powered, single warhead cruise missile, commenced reportedly in 1990 itself, given Islamabad’s quest for enhancing its options of delivery systems. In July and August 1998, two US RGM/UGM-109 Tomahawk cruise missiles were recovered almost intact in southern Pakistan, and it is believed that these may have been used for reverse engineering or even to contribute basic technology for the development of the *Babur*.<sup>67</sup> But this does not deny the Chinese technical input in the development of the *Babur*, as the missile looks similar to the Chinese Hong Niao-3, the US RGM-109 and

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62. “Pakistan conducts first flight test of Abadeel surface-to-surface missile”, *Dawn*, January 24, 2017, at <https://www.dawn.com/news/1310452>. Accessed on December 2, 2018.

63. *Ibid.*

64. Missile Defense Project, “Abadeel,” *Missile Threat*, July 31, 2021, Centre for Strategic and International Studies, at <https://missilethreat.csis.org/missile/ababeel/>. Accessed on December 11, 2021.

65. Saad Saeed, (Reuters), “Pakistan Tests its Second Nuclear-capable Missile in a Month Amid Indian Ocean becomes ‘Nuclearization’”, *Business Insider*, January 24, 2017, at <https://www.businessinsider.com/pakistan-tests-its-second-nuclear-capable-missile-in-a-month-amid-indian-ocean-becomes-nuclearization-2017-1?IR=T>. Accessed on April 10, 2019.

66. James C O’Hollaoran, n. 36, p. 172.

67. Jane’s Strategic Weapon System, n 28, p. 108.

also has similarities with the Russian SS-N-27 Club (3M14 version) cruise missile.<sup>68</sup> The payload is 450 to 500 kg and the warheads can be high explosive (HE) either unitary or submunitions or nuclear. The maximum range was 500 km and was increased to 700 km.<sup>69</sup> Enhanced versions of *Babur* have been tested by Pakistan.

In January 2017, Pakistan conducted the first test of its SLCM, the *Babur-3* from a submarine. It is estimated that *Babur-3* has a range of 450 km and will be carried on Pakistan's diesel-powered Agosta 90B submarine. Reports suggest that the Pakistan military "seems to confirm the missile ejecting horizontally, which could eventually lead to deployment through submarine torpedo tubes rather than a vertical launch system."<sup>70</sup>

In 2018, *Babur* weapons system 1B was tested with a range of 700 km and advanced avionics and high accuracy.<sup>71</sup> In February 2021, Islamabad tested *Babur-1A*. The cruise missile has a range of 450 km and was launched from a multi-tube missile launch vehicle.<sup>72</sup> In December 2021 *Babur-1B* was tested and according to the assessment of the experts the range of the missile is around 900 km.<sup>73</sup>

### *Hatf-8—Ra'ad*

In May 8, 2008, Pakistan tested a nuclear-capable, air launched cruise missile, the *Hatf-8—Ra'ad*, with a range of 350 km. The first test-launch for the *Ra'ad* was carried on in 2007. The *Hatf-8* missile has been developed exclusively for launch from aerial platforms, enabling Pakistan to achieve a greater strategic capability on land and at sea.<sup>74</sup> Reports suggests that the

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68. Ibid.

69. James C O'Hollaoran, n. 36, p. 172.

70. "Pakistan Advances Sea Leg of Traid", Arms Control Association, at <https://www.armscontrol.org/act/2018-06/news-briefs/pakistan-advances-sea-leg-triad>. Accessed on February 15, 2020.

71. Sana Jamal, "Pakistan tests indigenous cruise missile with Enhanced Range", Gulf News, December 23, 2021, at <https://gulfnews.com/world/asia/pakistan/pakistan-tests-indigenous-cruise-missile-with-enhanced-range-1.84577835>. Accessed on January 2, 2022.

72. Ibid.

73. Ibid.

74. Iftikhar A. Khan, "Cruise Missile Fired from Aerial Platform", *Dawn*, May 9, 2008, at <http://www.dawn.com/2008/05/09/top4.htm>. Accessed on June 10, 2009.

**The F-16 is a flexible design, capable of high performance in both the air superiority and ground attack roles. The flight controls are digital computer-controlled fly-by-wire, complemented by advanced navigation and avionics systems.**

Hatf-8, has special stealth capabilities and is a low-altitude terrain-following missile with high manoeuvrability, and can deliver all types of warheads with high accuracy.<sup>75</sup> Although the missile was initially launched from a Pakistan Air Force (PAF) Dassault Mirage III combat aircraft, it is planned to be integrated with, and launched from, other PAF platforms

like the JF-17s. Ra'ad's maximum range is 350 km, and it is widely believed that the nuclear option is less likely with the missile. However, according to the Jane's, "Pakistan claims to have developed a nuclear warhead that is small enough to be housed in a MK-84-sized bomb body, so it may have the ability to build a warhead for the Ra'ad."<sup>76</sup>

## AIRCRAFT

### *Acquisition of the F-16s*

Pakistan openly announced its nuclear weapon capability in 1987 and, it can be presumed that in the early 1980s, when it had entered into an alliance with the US in the war against Communism, it was clearly exploring opportunities to acquire the delivery systems. Gen Zia-ul-Haq managed to negotiate a generous aid package of \$3.2 billion (the military component of the aid package was worth \$1.6 billion) Military assistance programmes from the US included the sale of 40 F-16s Falcon fighters/interceptors, one of the most advanced military aircraft in the world. The F-16 is a flexible design, capable of high performance in both the air superiority and ground attack roles. The flight controls are digital computer-controlled fly-by-wire, complemented by advanced navigation and avionics systems.

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75. Ibid.

76. Rahul Udoshi, *HIS Jane's Weapons Air Launched, 2016-2017*, p. 296.

The second US aid package worth \$4.02 billion for a period of six years, commenced in 1987, but was suspended in 1990 due to the arms embargo imposed under the Pressler Amendment. This was highly disappointing for Pakistan as it dried up the American supply of equipment to Pakistan. Although the Brown Amendment passed in 1995 permitted Pakistan to take possession of the military equipment frozen in the United States, it excluded the F-16s. What made matters worse for Pakistan was the US refusal to export 28 F-16s that Pakistan had paid for (and which were also manufactured) against the 1988 order for the 110 F-16s.

**The JF-17 is designated to be a low-cost, high multi-role combat aircraft to meet the tactical and strategic requirements of the Pakistan Air Force, thereby reducing the country's reliance on imports. The JF-17 is co-developed by Pakistan and China and is being built by China's Chengdu Aircraft Industry Corporation (CAC) and Pakistan Aeronautical Complex (PAC), Kamra.**

However, post 9/11, US aid and weapons sales were restarted following Pakistan's role as the chief ally in the global war against terrorism, which led to removal of US sanctions on Pakistan. Pakistan's alliance with the United States helped in the recovery of Pakistan's economy and opened up the supply of the long desired defence equipment from Washington, including the much-awaited F-16s. Pakistan received 14 F-16 A in 2005-2008 and 18 F-16C Block-50/52 in 2010.<sup>77</sup>

### *The JF-17s*

China and Pakistan entered into deals for the co-development of a fourth-generation fighter aircraft, the JF-17 (earlier called the FC-1). China delivered two Joint Fighter (JF-17) Thunder advanced jets to the Pakistan Air Force in March 2007 for flight tests and evolution. The JF-17 is designated to be a low-cost, high multi-role combat aircraft to meet

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77. For details see, Shalini Chawla, "Pakistan Air Force: Modernisation Trends", in *Strategic Advantage of Air Power: Select Writings of Air Commodore Jasjit Singh*, Manpreet Sethi and Shalini Chawla (ed.) (New Delhi: KW Publishers, 2019).

the tactical and strategic requirements of the Pakistan Air Force, thereby reducing the country's reliance on imports. The JF-17 is co-developed by Pakistan and China and is being built by China's Chengdu Aircraft Industry Corporation (CAC) and Pakistan Aeronautical Complex (PAC), Kamra. There have been reports that the design was developed by the MiG complex in Russia and transferred to China after the Russian Air Force cancelled procurements. The JF-17 is fitted with the RD-93 engine and the initial batch of JF-17s delivered to Pakistan were fitted with the Chinese radar, KLJ-7 multi-mode pulse Doppler radar. In 2007, the Pakistan Air Force Chief announced that Pakistan has increased its initial target of buying 150 JF-17s to acquiring up to 250 aircraft.<sup>78</sup> Although the initial announcement by the PAF indicated acquiring 150 JF-17s, the current execution of the procurement/product ion plans indicate that the PAF intends having a higher number of JF-17s in its inventory.

The JF-17 (FC-1) is fairly flexible in terms of avionics and weapon configurations. The JF-17 in service in the PAF is presumably fitted with the Italian Grifo S-7 fire-control radar. The radar has 25 working modes and a non-breakdown time of 200 hours. Further capabilities include look-down, shoot-down and ground strike abilities.<sup>79</sup> Pakistan has received Block I, Block II and Block III is awaited (at the time of writing this paper). The PAC has now been quite busy towards a newer and more capable Block III.

The Block III enhancements reportedly include, "Infrared Search and Track (IRST) System, a three-axis digital fly-by-wire flight control system, Helmet Mounted Display and Sight System (HMD/S), enhanced Electronic Warfare Management System, thinner holographic wide-angle head-up display and hi-tech Missile Approach Warning System (MAWS)."<sup>80</sup> The

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78. Interview, Air Chief Marshal, Tanvir Mahmood Ahmed, Pakistan's Chief of Air Staff, *Jane's Defence Weekly*, April 4, 2007, p. 34

79. "FC-1 Xiaolong/JF-17 thunder, China/Pakistan", at <http://www.airforce-technology.com/projects/fc1xiaolongjf17thund/>. Accessed on September 12, 2021.

80. "Second Prototype of JF-17 Thunder Block-3 Fighter Aircraft Bearing Number 3001 Appears With Lethal PL-10E Short Range Air To Air Missiles (AAMs)," *PAK DEFENSE*, May 1, 2021, at <https://www.pakdefense.com/blog/pakistan-air-force/second-prototype-of-jf-17-thunder-block-3-fighter-aircraft-bearing-number-3001-appears-with-lethal-pl-10e-short-range-air-to-air-missiles-aams/>. Accessed on May 9, 2021.

PAF officials describe the thunder as the '4.5++ Generation Plus Fighter jet'.<sup>81</sup> Reportedly, the upgraded Russian Kilmov RD-93MA engine 'with enhanced thrust a better Thrust to Weight ratio' will power the JF-17 Block III.<sup>82</sup> PAF has selected the KLJ-7A active electronically scanned array (AESA) radar for the Block III.<sup>83</sup> The radar has been developed by the Nanjing Research Institute of Electronics Technology (NRIET) and offers a maximum range of 170 km against a target.<sup>84</sup> While the JF-17s have been equipped with PL-5 air-to-air missile, there have been reports indicating that latest Block III was seen equipped with PL-10, an advanced air-to-air combat missile also used by China's J-10 stealth aircraft.<sup>85</sup> The PAF has reportedly placed an order of 50 JF-17 Block III and the deliveries are expected to commence from early 2022.

China has reportedly overhauled JF-17 Block I. It is interesting to note that Pakistan cannot still overhaul its growing fleet of JF-17 fighter jets.<sup>86</sup> The PAF fleet currently has 122 JF-17 Block I, JF-17 Block II and JF-17B Block II, operationally deployed.<sup>87</sup>

In December 2021, Pakistan's Interior Minister Sheikh Rasheed Ahmed announced at a public event that Pakistan will be receiving 25 J-10s from China.<sup>88</sup> According to Rashid the J-10s would counter the Dassault Rafale jet fighters that New Delhi was receiving from France.<sup>89</sup> Official details of the deal are still not known.

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81. Ibid.

82. Ibid.

83. "Pakistan Selects KLJ-7A AESA Radar for JF-17 Block III," *Quwa*, February 9, 2020, at <https://quwa.org/2020/02/09/pakistan-selects-klj-7a-aesa-radar-for-jf-17-block-iii-2/>. Accessed on May 2, 2021.

84. Ibid.

85. Liu Xuanzum, "JF-17 fighter jet gets J-10s combat missile: reports," *Global Times*, April 29, 2021, at <https://www.globaltimes.cn/page/202104/1222474.shtml>. Accessed on May 1, 2021.

86. Franz-Stefan Gady, "China Overhauls Pakistan Air Force JF-17 Fighter Jet", *The Diplomat*, May 22, 2019, at <https://thediplomat.com/2019/05/china-overhauls-pakistan-air-force-jf-17-fighter-jet/>. Accessed on June 1, 2019.

87. IISS, *The Military Balance 2021*, (London: Routledge, 2021), p. 292.

88. Sebastien Roblin, "Minister: Pakistan Bought Chinese J-10 Jets to Counter India's Rafales", *Forbes*, December 31, 2021, at <https://www.forbes.com/sites/sebastienroblin/2021/12/31/minister-pakistan-bought-chinese-j-10-jets-to-counter-indias-rafales/?sh=1a35d0961ef2>. Accessed on January 10, 2022.

89. Ibid.

**Pakistan's nuclear posture continues to assert that it does not want to start a war with India, highlights the disastrous consequences of a nuclear war but repeatedly flags the threat of nuclear conflict, creating a war hysteria in the region. It would not be incorrect to state that Pakistan has very *rationaly adopted the posture of irrationality.***

### *A-5s and French Mirage Vs*

Pakistan acquired 60 A-5s from China, and as of mid-1999, only 49 remained in service. Reportedly, some of the A-5s are capable of carrying nuclear bombs. But given their payload capability, the bomb would have to be quite small. The aircraft offers enhanced combat performance, particularly at low and super-low altitude.<sup>90</sup> Pakistan could also potentially use the French Mirage Vs for the nuclear-strike mission. The

nuclear capable cruise missile Raad–Hatf-8 could be potentially deployed to the Mirage V squadrons in the future.

### CONCLUSION

Pakistan's nuclear posture reflects some distinct contradictions. It claims to be a restrained and responsible nuclear power while relying on a *first use* doctrine and boasting about the *TNWs* and *Full Spectrum Deterrence*. It continues to assert that it does not want to start a war with India, highlights the disastrous consequences of a nuclear war but repeatedly flags the threat of nuclear conflict, creating a war hysteria in the region. It would not be incorrect to state that Pakistan has very *rationaly adopted the posture of irrationality.*

Pakistan's nuclear posturing did suffer a blow to some extent with India's airstrikes in Balakot on February 26, 2019, in retaliation to the terror attack in Pulwama claimed by Jaish-e-Mohammed (JeM) on February 14, 2019. But it seems that Pakistan's reliance on nuclear weapons to serve its strategic objectives has not been altered. Its reliance on nuclear deterrence

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90. "Fantan a-5, Q-5 (NANCHANG)" at <http://www.globalsecurity.org/military/world/pakistan/a-5.htm>. Accessed on January 10, 2022.

has intensified with constantly growing asymmetries between India and Pakistan over the last two decades. Pakistan's repeated flagging of nuclear threat can be attributed to mainly two factors:

1. First, Pakistan has spent an enormous amount of national resources in the build-up of the nuclear arsenal on the pretext that nuclear weapons are the ultimate weapons for a state's survival and security. Pakistan has always prioritised its defence expenditure even at the cost of socio-economic development of the country. The leadership at this point wants to justify the enormous nuclear build-up to its own population and assure them that nuclear weapons will ultimately guard Pakistan's fortune.
2. Second, Imran Khan wants to remind India and the international community about the presence of nuclear weapons in the region and the dangers emanating from a potential nuclear war. Pakistan is certainly trying hard to get the international attention on Kashmir by flagging the nuclear threat.

Stephen Cohen aptly highlighted the military's conviction in seeking an advantage in Kashmir through nuclear weapons: "Pakistani officers suggested to me that once they got the nuclear weapons, they could again open up the Kashmir issue, as well as protect themselves against India's larger conventional force. Thus, nuclear weapons were not merely another way of countering Indian power; they could also give Pakistan a decisive strategic advantage in the struggle over Kashmir."<sup>91</sup>

The threat perceptions of Pakistan are often exaggerated to justify and rationalise the indispensability of the nuclear arsenal despite Pakistan's economic woes and worrisome social indicators. Looking into Pakistan's nuclear posture for the last four decades, some interesting conclusions can be drawn:

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91. Stephen Cohen, *Shooting for a Century: The India Pakistan Conundrum* (Washington, DC: Brookings, 2013), p. 103.

**The threat perceptions of Pakistan are often exaggerated to justify and rationalise the indispensability of the nuclear arsenal despite Pakistan's economic woes and worrisome social indicators.**

- Pakistan is likely to continue to raise the threat of nuclear war to justify the enormous nuclear build-up to its people and to attract international attention on Kashmir.

- There might be a pause of nuclear blackmail and threats of a nuclear war from Pakistan, owing

to its strategic compulsions (from time to time), but the basic tenets of its nuclear posturing—uncertainty, ambiguity and projection of irrationality—are unlikely to change.

- Pakistan will continue to develop its second-strike capability.
- The focus of the conventional military build-up (post-Kargil War) has been modernisation of the air force and aerial maritime strike capabilities of the navy. This trend is likely to continue, primarily with Chinese assistance. Turkey is Pakistan's emerging military partner.