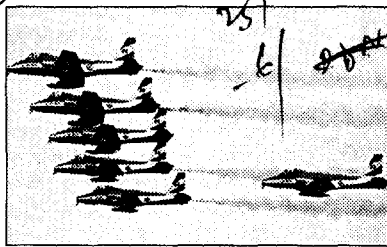


Govt to hand over Agni to army

New Delhi
23 SEPTEMBER

As a step towards the immediate operational deployment of short and medium range nuclear capable Agni missiles, the government has decided to hand them over to the army. The latter is raising two missile groups for the purpose.

"The government cleared the raising of these two Agni-specific groups some time ago," a defence ministry spokesman said on Tuesday. The plans are currently under implementation, he added. Though the financial sanction is yet to come through, the army headquarters has already started the drill to form the two groups. The teams will be called the 334 Missile Group and the 335 Missile Group. The former will be equipped with 700-km short range Agni I missiles and



SHARP SHOOTERS

the latter will field the 1,500-km Agni II missiles, the officials said.

Though the officials were not forthcoming, sources said the decision to hand over the Agni series of missiles to the army had been taken since the newly-created Strategic Forces Command is yet to find its feet. The Strategic Forces Command is still await-

ing financial sanction from the government.

The two missile groups, for which the army has already earmarked manpower, will be raised near Secunderabad. Bharat Dynamics, the manufacturers of these missiles, has its office here.

The government has also cleared the raising of two new Prithvi groups for the army, which will be named 444 and 555 Missile Groups. The army already has two Prithvi Missile Groups — 222 and 333.

Sources said besides the army, a large number of Indian Air Force and naval personnel have been trained in the use of various surface-to-surface missiles. They said the Prithvi Missile Groups would be operational by the beginning of 2005. The actual raising will be done at Secunderabad, depending on the financial allocations made by the finance ministry. — PTI

India moves to consolidate N-deterrence

HT Correspondent
New Delhi, September 1

THE POLITICAL Council of the country's Nuclear Command Authority (NCA) met for the first time on Monday. Prime Minister A. B. Vajpayee chaired the meeting, which took place five years after India declared itself a nuclear power.

Strategic affairs analysts say this delay was caused by India's hesitance over operationalising its nuclear weapons capability.

But they also said that Monday's meeting was a step towards making New Delhi's nuclear deterrence capability more credible and transparent.

Among those who attended the two-hour meeting were Deputy Prime Minister L.K. Advani, Defence Minister George Fernandes, Finance Minister Jaswant Singh, National Security Adviser Brajesh Mishra, Cabinet Secretary Kamal Pande, Defence Secretary Ajay Prasad, Air Chief Marshal S. Krishnaswamy and the Commander-in-Chief of the Strategic Forces Command, Air Marshal Teja Mohan Asthana. The *Hindustan Times* had reported on Monday that the Political Council was to meet.

A press release issued by the government said the meeting was held to "review the arrangements in place for the strategic forces programme". It said "decisions were taken to consolidate" nuclear deterrence, but gave no details.

"This is for the first time that the military has been brought on board the nuclear issue. Such a meeting is an opportunity for both sides — the military and civilian decision-making establishments — to better understand

Key terms explained

CREDIBILITY: Lies in having a command and control structure where a political authority issues orders to a capable military arm

CONSOLIDATION: Can mean having a mix of weapons so that a surprise strike can be absorbed and fire returned. Could mean N-enabling more air, sea and land weapons platforms

TRANSPARENCY: Tied to credibility under 'no-first-use' doctrine. For deterrent to be effective, the other side must know your capability

the rules of the business," said Commodore Uday Bhaskar, deputy director of the Institute for Defence Studies and Analyses.

Bhaskar said a nuclear deterrent becomes credible only after there is a demonstration of both political will and professional competence in the armed forces.

"One needs the right mix of credibility and transparency, which shows both sides working in sync. Monday's meeting was a step towards achieving a systemic nimbleness in managing nuclear capability," Bhaskar added.

The decisions taken by the Political Council on Monday came on the basis of the recommendations made by the NCA's Executive Council, which is headed by Mishra. The military leadership also gives inputs to the Political Council, which represents civilian control.

WEDNESDAY, AUGUST 20, 2003

NUCLEAR POWER SAFETY CONCERNS

THE ACCIDENT AT the Kalpakkam Atomic Re-processing Plant of the Bhabha Atomic Research Centre last January, which the head of BARC has described as the worst in the history of the organisation, raises once more serious issues about safety at the nuclear installations in the country. The event, in which six employees of KARP were exposed to levels of radiation in excess of the maximum permissible annual dose, has been categorised by BARC as an "incident" and not an "accident" according to the International Atomic Energy Agency's classification of nuclear accidents. Incident or accident, what is cause for worry is how it happened and how BARC responded to the event.

The affected staff of KARP received a high dose of radiation because the sample they collected from a waste tank turned out to emit a higher than expected amount of radioactivity. A faulty valve had channelled high-level waste into a tank meant to hold only low-level waste. The workers might have been alerted to the dangers had monitors tracking levels of radiation been installed in the area. However, there were no monitors because it was considered a zone where accidents were not likely to happen. For the chief of BARC therefore to blame an error in judgment and over-enthusiasm on the part of the workers in addition to equipment failure as causes of the accident is an attempt to shift the blame. If there was an error in judgment, it was BARC's decision not to instal equipment that would have detected the increase in radioactivity in the area. The margin of acceptable error in nuclear facilities is so small that there cannot be short cuts in the installation of monitoring equipment. The failure of the valve raises the question whether the design was faulty or the maintenance poor. A

related question is why the leak in the valve was not detected. On both, BARC has been silent. It was also silent about the event until the staff association made the accident public six months later. It is unfair for BARC to claim that the union is more concerned about promotions than safety. According to the association, it has been demanding that a separate safety officer be appointed for KARP and that temporary helpers, who are not adequately trained, should not be used for tasks like the collection of waste samples. Perhaps the January accident would not have happened had BARC listened more carefully to both demands.

As reprocessing plants deal with highly radioactive wastes, the risks of an accident are always present. Fires, explosions and criticality accidents have occurred in such facilities in Japan, Russia and the United States. The KARP staff association has now issued a warning against an accident caused by an uncontrolled nuclear chain reaction if safety norms are not tightened at the plant. BARC has been criticised by a former chief of the Atomic Energy Regulatory Board for a safety record that compares poorly with that in the facilities of the Nuclear Power Corporation. Unfortunately, since 2000 safety at BARC has been taken out of the purview of the AERB and is now the responsibility of an Internal Safety Committee of the organisation. The change was explained then as dictated by the need for secrecy and safety, since BARC is responsible for producing plutonium for India's nuclear weapons programme. That the KARP accident happened, that it took six months for BARC to acknowledge the incident, and that we still do not know the exact radiation dose received by the workers involved suggests that the new system to ensure safety is neither transparent nor reliable.

THE HINDU

20 AUG 2003

The nuclear super-cop

By M.R. Srinivasan

JAY GARNER, the U.S. viceroy in Iraq, a designation which has caught the imagination of the American public, in spite of its strong Republican tradition, revealed to journalists that the U.S. wishes to see the Kashmir conflict resolved by December 2004 and further that South Asia should be free of nuclear weapons. Gen. Garner is already speaking as a future Viceroy of the U.S. in Asia. He went on to say that it was Pakistan's official policy to see South Asia as a nuclear weapon-free zone. Surely Gen. Garner would not have been unaware that India has rejected the concept of a regional nuclear weapon-free zone while it is committed to a world free of nuclear weapons. The Pakistani spokesmen have stated that Pakistan would dismantle its nuclear weapons if India did so. It is the old formulation of the U.S. from the 1990s when it proclaimed that its policy was to 'cap, roll back and eliminate' the nuclear weapon capabilities of India and Pakistan. Recently the Syrian President called for a nuclear weapon-free zone in the Middle East, obviously targeting the nuclear weapons with Israel. The U.S. Secretary of State, Colin Powell, promptly rejected this suggestion.

Richard Armitage, the Deputy Secretary of State, has referred to India and Pakistan possessing nuclear weapons outside "the system of international restraints". He is simply obfuscating the issue by implying that a system of restraints is in place among the five recognised nuclear powers. One of the restraints the nuclear weapon powers had accepted was the non-use of nuclear weapons against non-nuclear States, for almost four or five decades. But under the Bush doctrine, this position was given up and the U.S. stated it could use nuclear weapons if any enemy threatened it with the chemical and biological weapons. While not undeploying the horrendous consequences of the use of chemical and biological weapons, it is the U.S. that adopted this asymmetry. Echo-

What the U.S. should be doing is to address the question of elimination of nuclear weapons with all countries... Regional weapon-free zones are no substitute for a nuclear weapon-free world.

ing the new American thinking, the U.K.'s Defence Secretary, Geoff Hoon, has stated that Britain should be prepared to use nuclear weapons against non-nuclear states if British forces were attacked with chemical or biological weapons.

India has been urging all nuclear weapon states to adopt a 'no first use policy'. But the U.S., Britain and Pakistan refuse to adopt this policy. Under the Nuclear Non-proliferation Treaty (NPT), which the U.S., the USSR and the U.K. sponsored in the late 1960s, the nuclear weapon powers were required to take steps to eliminate all nuclear weapons from the world in an expeditious manner. But as the NPT review conference in the late 1990s showed, there was hardly any real progress on nuclear disarmament. Only in recent times have the U.S. and Russia agreed to bring down their nuclear weapons to the range of 2,200 to 2,700 though no time frame is fixed. Also, there does not appear to be any commitment to return the weapon-grade material irreversibly into the civilian domain.

Though India carried out its first nuclear test in 1974, it exercised remarkable restraint and did not embark on a nuclear weapons programme. It continued to work on peaceful uses of nuclear energy, namely production of electricity and applications in the fields of industry, health and agriculture. These civilian applications continue to be the major preoccupation of its large and diverse nuclear infrastructure. In the late 1980s, the then Prime Minister, Rajiv Gandhi, proposed a time-bound programme of elimination of all nuclear weapons from the world. While the timetable then proposed by India may have been unre-

tle it, then we will once again be starting an acrimonious debate and cause immense harm to the emerging Indo-U.S. bilateral relations. It has to be recalled that India never agreed to the NPT and reserved its right to develop nuclear weapons if the security situation so warranted. It went about developing nuclear technology with a major emphasis on civilian applications. Indeed, the weapon component of the programme is small. The U.S. has rationalised why it will need to keep nuclear weapons into the indefinite future in spite of conventional weaponry which can take on any state or a combination of them. What the U.S. should be doing is to address the question of elimination of nuclear weapons with all countries and in this effort India will certainly play its part. Regional weapon-free zones are not a substitute to a nuclear weapon-free world.

The U.S., the nuclear super-cop, is now presented with a unique opportunity to eliminate nuclear weapons from the face of the earth. Its old nuclear rival, Russia, has a formidable agenda of reconstruction and has no quarrel with the U.S. warranting a nuclear war. China is engaged in modernising itself and would like to reduce its defence expenditure if its national interests are not under threat. France and Britain have no enemies against whom they have to target nuclear weapons. India, Pakistan and Israel have small arsenals to protect their geopolitical interests and would like to limit their outlay on nuclear weapons.

Can the U.S., given its supremacy economically and militarily, provide the imaginative leadership to show the way in dismantling all nuclear weapons with all the countries possessing them? It is indeed possible to put the nuclear genie back in the bottle with the participation of the nations concerned.

(The writer is a former Chairman, Atomic Energy Commission.)

THE HINDU

India's nuclear power units

By M. R. Srinivasan

HD-10
16/4

DURING THE year 2002, all the units of the Nuclear Power Corporation of India Ltd. (NPCIL) turned in excellent performance in excess of 89 per cent capacity factor. The first unit of Kakrapara recorded over 98 per cent. The capacity factor of the world's pressurised water (PWR) and boiling water reactors (BWR), constituting the bulk of nuclear power units in the world during 2002, was 84 per cent. In the same year, the U.S. PWRs and BWRs achieved a capacity factor of 88 per cent. The comparable performance of the Canadian pressurised heavy water reactors (PHWR) in multi-unit stations is 82 per cent.

The NPCIL PHWRs (excluding the prototypical Rajasthan unit which is operated by NPCIL for the Department of Atomic Energy) raised their capacity factor from 79 per cent in 1999 to 89 per cent in 2002. This is a remarkable improvement and the NPCIL and its employees deserve full credit for the achievement. The corporation is now targeting a performance level of 95 per cent in the next year or two.

Those of us who pioneered the pressurised heavy water reactor programme in India recall the early years when they operated fitfully with frequent interruptions and long period of rectification. First, the PHWRs that Canada and India are exploiting are substantially more complex than the PWR and BWR units more widely used around the world for power generation. Of course, the PHWRs use natural uranium as fuel, unlike the PWRs and BWRs which need enriched uranium. There are more systems and auxiliary equipment in PHWRs which have to work reliably. Following the Pokhran I test in 1974, relations with Canada, with which we had collaborated on PHWRs, ceased and all equipment and materials required for our reactors were manufactured in India. There was the inevitable process of learning to make nuclear grade equipment by manufacturers within the country for the first time. Even

the conventional power plant industry was going through a process of upgrading quality and reliability. In addition, Indian power systems are operated in a highly indisciplined manner with voltage and frequency beyond normally permitted limits for substantial periods of time. Our generating equipment, both conventional and nuclear, continue to live with this problem which will improve only

three and four show that the accelerated construction schedule is achievable. This is extremely important to contain the impact of interest during construction. Once NPCIL has an operating capacity of 8,000 MW to 10,000 MW, the surpluses from revenue streams will be able to support a larger generation programme. There would, of course, be need for additional equity and debt funds.

We should create two industrial consortia to take on the execution of the entire nuclear and conventional parts of the power stations to the designs and specifications provided by NPCIL.

after the present regime of shortages of capacity and energy changes.

One of the most important reasons for the outstanding performance of NPCIL units is the high quality of manpower and competent professional leadership at various levels. While functioning as a public sector undertaking, NPCIL is free of political and bureaucratic interference because it is operating under the umbrella of the Atomic Energy Commission. In 2002, NPCIL earned a profit of about Rs.1,600 crores, with a total revenue of about Rs.6,000 crores. The present operating capacity of NPCIL is about 3000 MW, a small fraction of our total generating capacity. The Department of Atomic Energy is projecting a nuclear power capacity of about 20,000 MW by 2020. This capacity is sought to be achieved by building a number of 700 MW units, an extrapolation of the first two 540 MW PHWRs coming up at Tarapur as units three and four. Additionally, a number of 1000 MW reactors using enriched uranium of the PWR type coming up at Kudankulam are on the anvil. The new PHWR units are programmed to be built in four years and the 100 MW PWRs in under five years. The progress of construction of about 2 per cent a month achieved on Tarapur

trusted with procurement of equipment and components from a list of suppliers approved by NPCIL. We already have the BHEL, which could be entrusted with the conventional portion of the station. The leadership of the nuclear part could be entrusted to the industry possessing the largest experience in manufacturing and supplying nuclear components for the past and ongoing units. It is necessary that each of these two consortia is awarded work of some 10,000 MW or even more in one step so that it can organise the work on different units in a sequence. It is the adoption of such an approach that enabled France in the 1980s and the 1990s to install nuclear power units in an impressive manner and at great speed.

The question would arise as to what role the NPCIL would play. It would operate all the nuclear power units in a reliable and profitable way. Also, it would pay special attention to improving safety, extending the life of the units and improving the economics. It will improve designs and work on higher unit sizes. For instance, the PHWR units of 900 to 1000 MW would offer improved economies compared to the 700 MW ones.

The NPCIL is likely to be entrusted with the execution of the Prototype Fast Breeder Reactor, which is being designed by the Indira Gandhi Centre for Atomic Research at Kalpakam. It will have to start work on industrialising the PFBR, as a series of Fast Breeder Reactors are expected to be built from 2020. Finally, since India will continue to have the public sector play an important role, if not an exclusive role, in energy supply industries, the kind of arrangement that obtains between the Atomic Energy Commission and the Nuclear Power Corporation of India, which insulates the NPCIL from political and bureaucratic interference, should be adopted to improve the efficiency and profitability of these public sector entities.

(The writer is a former Chairman of the Atomic Energy Commission.)

During the execution of the early nuclear power projects, the Nuclear Power Board, NPCIL's predecessor, carried out in-house detailed designs, engineering, procurement, construction, erection and commissioning activities. This entity was also responsible for operation and maintenance and sale of power to the State Electricity Boards. The services of Indian consulting engineers were utilised to provide detailed design support. This wide-ranging nature of activities imposed a heavy load on NPCIL management. Recent projects have resorted to letting out large package contracts so that a good part of detailed engineering, procurement, construction and erection functions are provided by large project execution agencies. This has resulted in speeding up project execution considerably.

If we have to move to the stage of installing 20,000 MW of nuclear capacity in some 15 or 20 years, we must visualise a further change in the manner in which we execute the projects. We should create two industrial consortia to take on the execution of the entire nuclear and conventional parts of the power stations to the designs and specifications provided by NPCIL.

The consortia would also be en-

Cut in N-fund raises hackles

Srinjy Chowdhury in New Delhi

Feb. 17. — India's nuclear programme is facing a funds crunch, prompting the nuclear establishment to protest strongly.

Dr Anil Kakodkar, secretary, department of atomic energy, which runs the nuclear reactors and the programme for developing nuclear weapons, has written to the government about the financial difficulties. He is clearly unhappy with the proposed allocations to the DAE.

Scientists of the DAE, who are likely to be part of the newly-created Strategic Command, responsible for the country's nuclear arsenal, are upset that the domestic budgetary support for the 2003-2004 financial year will be around Rs 1,900 crore. This is not only Rs 1,000 crore less than what the DAE has asked for (about Rs 2,900 crore), but also considerably lower than the budget estimates of last year — Rs 2,313 crore — and the actual expenditure last financial year, estimated to be over Rs 2,400 crore.

There are several reasons why the DAE is so upset at the proposed cut. Altogether eight nuclear power plants are being built and a 500MW prototype fast breeder reactor is likely to start in the next financial year. If there

g. n. e. policy
is a delay because of a funds crunch, the cost of building the reactors will go up and finally, the cost of generating each unit of electricity will escalate. Nor can, the department argues, funds be diverted from the DAE's other projects — some of them are of strategic importance, while others deal with research and development.

Sources said that the finance ministry may hike the DAE's allocation by several hundred crores of rupees following the strong protest, but the final figures are yet to be worked out.

Allocation under the DAE's internal and extra-budgetary resources, have matched what the department asked for, a six-fold hike from more than Rs 270 crore in actuals in 2002-2003 to around Rs 1,300 crore in 2003-2004. This could be expenditure on strategic issues. Most of India's strategic weapons are on intermediate-range ballistic missiles and bombs that can be delivered by warplanes. The money (about Rs 800 crores) asked for the development projects involving Russian help has also been provided.

Overall, the DAE has asked for about Rs 5,100 crore. So far, Rs 4,100 crore has been cleared. The increase sought in domestic budgetary support is being considered 'acceptable,' especially after inflation is taken into account.

THE STATESMAN

18 FEB 2003

India not to review no-first-use policy

By Our Special Correspondent

NEW DELHI, JAN. 13. India said today that it had no intention of reviewing its policy of no-first-use of nuclear weapons.

"We have a nuclear doctrine. A nuclear and strategic force command chain in position. So we stand by the no-first-use policy," said the Defence Minister, George Fernandes.

The Government reiterated its "retaliation only" policy amid reports that the National Security Advisory Board (NSAB) had asked it to review the "no-first-use" policy in light of the security politics in the subcontinent over the past four years. Reports said the third NSAB, in its final report submitted on December 20, wanted the Government to overturn the pre-Kargil conflict nuclear doctrine enunciated by the first NSAB.

Mr. Fernandes observation means that the Government still reposes faith in the doctrine which states that India will not be the first to initiate a nuclear strike but will respond with punitive retaliation should deterrence fail. This, despite an influential body of opinion which feels that New Delhi should change its policy due to the invidious nuclear policies of its neighbours. They range from



The Defence Minister, George Fernandes, taking the salute at the NCC Republic Day Camp 2003 in New Delhi on Monday.

— Photo: V.V. Krishnan

first-use of nuclear weapons to using them against states which are non-nuclear or have not signed the nuclear non-proliferation treaty. Dwelling on his eight-day tour to Russia beginning tomorrow, Mr. Fernandes indicated that the long-drawn

out process of procuring critically required military equipment was not expected to be concluded during his visit. India is chiefly seeking an aircraft carrier and nuclear capable submarines and bombers from Russia.

However, an equally important track that has engaged the Defence Ministry concerns spares for its huge fleet of Russian origin equipment in all the three services. The break-up of the Soviet Union had hit the supply of spares.

As per its security policy, the then Soviet Union had dispersed its arms manufacturing units in various republics. The sole Russia-based company authorised to supply spares was unable to source them on a regular basis from factories that were now located in sovereign republics. Despite the intervention of the Russian President, Vladimir Putin, the irregular supply of spares has played havoc with overhauls, especially of planes and ships. India has tried to ensure timely delivery of spares and sub-systems through a number of devices but the key remains sourcing them from the original equipment manufacturers.

The team accompanying Mr. Fernandes is also expected to review the progress made on some other weapons and systems which were being tried prior to induction. They include Smerch multi-barrel rocket launchers, long-range air-to-air tactical missiles and frigates.

119-12

NO-FIRST USE; RETALIATION WILL BE MASSIVE

Nuclear Command Authority comes into being

By C. Raja Mohan

NEW DELHI, JAN. 4. More than four-and-a-half years after declaring itself a nuclear weapon power, India today made public a set of political principles and administrative arrangements to manage its arsenal of atomic weapons.

Maximum restraint in the use of nuclear weapons, absolute political control over decision-making and an effective interface between civilian and military leaders in the management of its atomic quiver are at the heart of an announcement by the Government after a meeting of the Cabinet Committee on Security (CCS).

The CCS met today to review progress in implementing India's nuclear doctrine, the state of readiness of its strategic forces and the procedures for their command and control.

The significance of the CCS statement lies in the Government's decision to share information on some key aspects of its nuclear weapons management with the Indian public and the world. Although the broad outline of India's nuclear doctrine was known for a while, the nature of its command and control over the atomic arsenal had remained unclear.

The Government filled that gap today by revealing that a two-layered structure, called the Nuclear Command Authority (NCA), was responsible for the management of its weapons. The NCA comprised a Political Council and an Executive Council. The Political Council was chaired by the Prime Minister and "is the sole body which can authorise the use of nuclear weapons", the CCS said. The Executive Council, chaired by the National Security Adviser to the Prime Minister, "provides inputs for decision making by the NCA and executes the directives given to it by the Political Council".

The CCS also approved the appointment of a "Commander-in-Chief, Strategic

Forces Command", who would be responsible for the administration of the nuclear forces. A senior officer of the Air Force is expected to be nominated to the post. Taken together, these administrative arrangements form the crucial link between the civilian and military leadership on nuclear decisions and their execution.

Expressing "satisfaction with the overall preparedness" of its arsenal, the CCS reiterated the decision to limit India's capability to a "credible minimum deterrent" and the commitment to use nuclear weapons only in retaliation. India also reaffirmed that it would not use the weapons against non-nuclear weapon powers. Against nuclear weapon powers, its strategy would remain one of "No-first use".

While India has consciously chosen not to use nuclear weapons first, it warned potential adversaries that the "nuclear retaliation to a first strike will be massive and designed to inflict unacceptable damage". It also emphasised strict control over the export of sensitive technologies and materials, readiness to join multilateral arms control agreements, continued observance of the moratorium on tests and a commitment to global disarmament.

This broad framework was affirmed in the draft nuclear doctrine prepared by the National Security Advisory Board set up after the May 1998 tests. The draft doctrine was released by the NSAB in August 1999. Today's announcement confirmed the essence of that draft as official policy. The only new element in the doctrine is the interesting caveat it has introduced to its "No-first use" posture. India said its arsenal aimed to deter threats not just from nuclear weapons but also those from chemical and biological weapons. "In the event of a major attack against India, or Indian forces anywhere, by biological or chemical weapons, India will retain the option of retaliating with nuclear weapons," the CCS said.

The United States has retained a similar option to prevent nations with chemical and biological weapons from assuming that the use of these weapons of mass destruction will not invite a nuclear response.

The CCS, however, does not tell all. Missing from its statement is the actual composition of the NCA at its Political and Executive levels. The Government also mentions that it has "reviewed and approved the arrangements for alternate chains of command for retaliatory nuclear strikes in all eventualities". This is a reference to a situation in which the Prime Minister may be incapacitated during a crisis. But the CCS did not reveal how the power to press the nuclear button will move down the political chain in the event of such a contingency.

HIGHLIGHTS

- Building and maintaining a credible minimum deterrent;
- A posture of "no-first use";
- Retaliatory attacks can only be authorised by the civilian political leadership through the NCA;
- Non-use of nuclear weapons against non-nuclear weapon states;
- In the event of a major attack against India or Indian forces anywhere, by biological or chemical weapons, India will retain the option of retaliating with nuclear weapons;
- A continuance of controls on export of nuclear and missile-related materials and technologies, participation in the Fissile Material Cut-off Treaty negotiations, and observance of the moratorium on nuclear tests. — PTI

THE HINDU

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TUESDAY, JANUARY 7, 2003

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COMMAND AND CONTROL 9-NS/Jan 5

THE BROAD OUTLINES of the announcement detailing India's nuclear command and control structure and its nuclear doctrine contain no surprises. Control over the use of nuclear weapons has been placed completely in civilian or political hands, the country's commitment to no-first-use of nuclear weapons has been reiterated and the doctrine of pursuing a credible minimum nuclear deterrence has been reaffirmed. As the draft report of the National Security Advisory Board (NSAB) had recommended, the authority to release nuclear weapons has been vested at the highest political level, the office of the Prime Minister. Given the nature of our constitutional system, the command and control of nuclear weapons could hardly lie with anyone else. Moreover, nuclear weapons are at best only politically coercive tools to achieve strategic objectives; given their horrendously destructive nature, they are not — particularly in an increasingly nuclearised environment — weapons that may be regarded from a narrow perspective of military utility.

The nuclear command system or structure in any country must harmonise with its nuclear strategy and doctrine. India's defensive no-first-use strategy implies that its nuclear weapons do not have to be maintained at hair-trigger alert. Correspondingly, this also means it is unnecessary to delegate powers in a manner which is required if one's nuclear strategy embraced procedures for launch-on-warning or launch-on-attack or to delegate them specifically to military commanders in the field (as the U.S. and the Soviet Union did during the Cuban missile crisis, for example). However, what a defensive policy does imply is that in the event deterrence fails, the country's nuclear weapons systems must have the survivability and effectiveness for a rapid punitive response. This raises the obvious question: what is the alternative chain of command to conduct a retaliatory strike in the event that a first strike wipes out the civilian/political leadership?

The Cabinet Committee on Security is said to have approved the arrangements for alternative

chains of command for retaliatory strikes but has chosen to remain silent about what they are or how they will work. This is probably in the interests of security — in order to prevent these alternative chains of command from being also destroyed in a first strike. While secrecy does confer this advantage, it is arguable that a clear and publicly stated succession of command (which is in place in other countries such as the U.S.) strengthens the credibility of deterrence and increases public confidence in a world which is increasingly wary of nuclear decisions being taken without proper authority and nuclear weapons falling into the wrong hands. The announcement about the nuclear command authority, however, does envisage a body that will act as a consultative group to assist the Prime Minister — namely, an Executive Council that will be chaired by the National Security Adviser.

One rung below the rarefied level of planning and advisory inputs is the Strategic Forces Command, which will exercise overall operational control over the nuclear forces and for which the Cabinet has approved the appointment of a Commander-in-Chief (who is likely to be Air Marshal T. M. Asthana). The selection of an Air Force officer to man the job is not surprising given that, for many years from now, combat aircraft will be the chosen vehicle for nuclear warheads, serving as they do the basic requirements for dispersal and deception. As for the timing of the announcement of the nuclear command authority, it is hardly germane whether it was intended, as suggested in some quarters, to send a tough signal to Pakistan (whose President, Pervez Musharraf, recently claimed India had refrained from crossing the border because Islamabad threatened the use of non-conventional warfare). The fact is that the nuclear command authority has formally come into being almost a whole five years after Pokhran II, following which India declared it would maintain a credible nuclear deterrent. It may be only the official expression of what was contained in previous documents, but it fills a gap that was necessary to fill sooner rather than later.

THE HINDU

7 JAN 2003

JNB-Pain
HD-10
2/2

Nuclear posture

By R. Rajaraman

THE ANNOUNCEMENT by the Government of its Nuclear Command Authority (NCA) should be welcomed even by those of us who abhor nuclear weapons and disagree, despite India's admittedly serious security concerns, with the decision to go nuclear. The harsh reality is that by all reports we already have dozens of nuclear weapons in the arsenal. If you must have nuclear weapons then it is important to place them under strict civilian control with the "nuclear button" in the hands of the Prime Minister. It is equally important to formalise this arrangement and announce it publicly to reassure both the public and the international community.

The setting up of the NCA and the further consolidation of nuclearisation that it implies does not, however, foreclose the need for further public debate. There are many features of our nuclear posture that still remain to be put in place which could make all the difference between having a panic-driven or accidental nuclear war in the subcontinent and avoiding it. Specifically, one must now focus on items mentioned near the end of the announcement where it speaks of "the state of readiness, the targeting strategy for a retaliatory attack, and operating procedures for various stages of alert and launch". These are not mere details. People concerned about the risks of possessing nuclear weapons should seriously worry about them, not only to reduce these risks but also to enable the eventual goal of a nuclear-free South Asia.

The state of readiness involves three categories of issues, viz. (i) The state of alert, (ii) the size of the arsenal and its survivability, and (iii) the use of early warning systems. Let us consider them one by one. It is vital that none of the weapons be kept ready to be launched instantly. The risks of maintaining a large arsenal of weapons on hair-trigger alert are numerous, varying from hasty decisions to launch a "counter attack" based on false alarms amidst war-

time crisis, to nuclear accidents and inadvertent launches caused by human and mechanical failures. Fully deployed weapons also dangle a much more dangerous prize in front of terrorists and extremist groups.

Furthermore, launch-ready deployment nudges nuclear diplomacy towards brinkmanship. While it is good that we have declared a policy of No First Use, the credibility of this policy would be seriously undermined by a ready-to-launch retaliatory posture. The latter cannot be easily distinguished by our adversar-

iation came many hours or even a day after the original attack. You cannot empty all your cities in 24 hours nor hide millions of people in bunkers. Such an attack with just a handful of weapons, killing lakhs, should already inflict "unacceptable damage" to even a remotely responsible Pakistani or Chinese leadership. A leadership that finds this acceptable is beyond the pale of rationality and would not feel deterred by a much larger attack anyway.

For the same reason, it is not clear that deterrence necessarily calls for

ing more weapons just because the required fissile material is available.

A new element emerging in our nuclear infrastructure is some form of an early warning system. Danger lurks here too. As anticipated in item 5.6 of the Draft Nuclear Doctrine which envisaged "Space based and other assets... to provide early warning..." , India has purchased the Greenpine Radar from Israel, which was part of Israel's Arrow ABM system. Reports also mention negotiations to purchase the full Arrow system. Development of satellite surveillance systems has also started, with the launch over a year ago of the Technology Experiment Satellite (TES) with an imaging camera. It might appear that such early warning systems could only add to security and safety. But there is a flip side to this. Technology brings to bear its own influence on strategy. Generally, early warning systems go hand-in-hand with ready-to-fire weapons — it is only then that they have their maximum utility. Given a system that can detect incoming missile attacks, it would be tempting to link it to immediate retaliation with launch-ready weapons, as has been done by the U.S., and abandon any policy of delayed response. That would be suicidal in South Asia where the transit time for, say, a Shaheen missile from Lahore to New Delhi can be as little as five minutes. Prior policies of No First Use can collapse in the face of early warning signals of an incoming enemy attack. Having to make a nuclear response within those few minutes would place the leadership under unbearable pressure with potentially catastrophic consequences. Therefore, any early warning system that is set up should be used only for conventional radar detection and longer-range strategic warning of the enemy's military preparations rather than real-time warning of missiles on their way. In short, all such temptations to move to the edge of the nuclear abyss must be resisted.

(The writer is Professor of Theoretical Physics, JNU.)

It is vital that none of the weapons be kept ready to be launched instantly... Launch-ready deployment nudges nuclear diplomacy towards brinkmanship.

ies from a First Use posture if nuclear-loaded missiles are pointed at them, poised for instant launch.

It would be much wiser to keep all of our arsenal in a state of de-alert. There should be built-in delays which insert a sobering gap of a few hours or a full day between the decision to attack and its implementation. While there are many technological devices for building such delays into the launch process, the simplest way is to store the nuclear weapons un-mated and far apart from their delivery vehicles. It is believed that so far India has been doing this. This de-mated status should continue even as the full set of operating procedures is put into place. Such self-restraint would be in our own enlightened self-interest even if we pursue it unilaterally without immediate reciprocation by Pakistan.

It may be argued that keeping one's weapons on de-alert would fatally compromise their role as deterrents. But that is not really so. Just a couple of modest 15 kiloton weapons dropped on, say, Lahore and Karachi could kill lakhs of people in each city. The damage would be roughly the same even if this retal-

an arsenal of dozens let alone hundreds of weapons, even after incorporating some redundancy. Deterrence does not require that your arsenal match that of your enemy; only that you threaten to inflict unacceptable damage. The fact that China, France and the U.K. have weapons in the hundreds does not demand that we acquire the same. The size of their arsenal was determined decades ago in response to the tens of thousands of weapons that the U.S. and the USSR had, which in turn was based not just on deterrence but on confused and belligerent ambitions of winning nuclear wars and decimating entire continents.

The more understandable concern relating to de-alert is the survivability (and the perception of survivability) of our arsenal in the event of an attack. This too is not an intractable problem. The accuracy of Pakistani and Chinese missiles is limited and one should be able to design better and better ways of protecting a few weapons on mobile launchers and under the sea. It is far better to spend money and technology on survivability of a small, truly minimal arsenal than to keep mak-

Defence in a nuclear age

Greater clarity on the country's nuclear command authority was a necessity

THE phenomenal destructive power of nuclear weapons makes them qualitatively different from conventional weaponry. They must, therefore, be approached from a different perspective. Indian political leaders have, generally speaking, stayed away from trying to understand military operations. But this is a luxury that cannot be extended to nuclear weapons because they — unlike conventional military power and operations which remain the domain of professional military men — concern the country as a whole. What is even more important is that nuclear strategy must be fully understood by a large segment of the political, military and administrative elite of the country so that, if and when the need to employ them comes, there would be clarity in the minds of the decision makers, since any mistake would be catastrophic. By announcing the official doctrine, the country is now committed to nuclear weapons for defence only and only against nuclear weapon threat — except in case of large scale attack with other weapons of mass destruction.

The government has done well to announce the official doctrine for the deployment of nuclear weapons. Prime Minister Vajpayee, in continuation with policy pronouncements of earlier leaders, had committed to Parliament that India would not be the first to use nuclear weapons. The draft nuclear doctrine, prepared by the first National Security Board, had been released to the

public in August 1999 to encourage debate in the country with the goal of expanding understanding of the key principles involved. That this served the purpose is borne out by the fact that it had led even some cabinet members to reportedly describe the draft doctrine as academic! The formal announcement by the government should close all speculation on this count. It must also be remembered that a doctrine is not necessarily a policy statement but an articulation of the principles governing that policy. J. N. S. Pillay

The announcement on the national command authority does not bring any surprises. As world's largest practising democracy, it is but natural that the ultimate authority must vest in the political executive represented by the prime minister. After all, we are not faced with the situation of Pakistan where the nuclear button is supposed to be under the control of the elected prime minister but it is the army chief that controls everything, including nuclear weapons. It is good that the government has not given out any details of the chain of command. Countries adopting a first-use strategy do publicise their command chain to enhance credibility of their posture, but for India, or China, which have adopted a no-first-use strategy, projecting the details of the chain of authority could invite hostile action to decapitate the command-and-control system in the hope of stopping a retaliatory strike for punitive action.

7 JAN 2003

PM gets his finger on nuke button

Jay Raina & Vishal Thapar
New Delhi, January 4

FOUR YEARS after declaring itself as a nuclear state, India on Saturday made public the key elements of its nuclear doctrine and a National Command Authority (NCA) in which the Political Council headed by the Prime Minister will be the "sole" authorising body for retaliatory strikes.

The doctrine was adopted at a meeting here of the Cabinet Committee on Security (CCS) lasting over two hours. While reaffirming India's policy of "no first use", it extends the scope of use of nuclear weapons to meet the exigencies of a nuclear, chemical or biological weapons attack not only on Indian territory but also "on Indian forces anywhere".

An official, releasing a summarised version of the doctrine, said: "Nuclear retaliation to a first strike will be massive and designed to inflict unacceptable damage."

Experts said this aspect of the doctrine addresses the eventuality of advancing Indian troops being attacked by weapons of mass destruction. It was considered necessary in operational terms as New Delhi, being a signatory to the Chemical and Biological Weapons Conventions, does not possess such weapons.

However, the civilian-political leadership alone would have the final authority to sanction any such retaliation. In addition to the Political Council head by the PM, the NCA would comprise an

NEW ORDER

Who can order a strike?

A political council headed by the PM and advised by an executive council led by the National Security Adviser

When can a strike be ordered?

As opposed to the earlier draft 'no first use' policy, the new doctrine allows an N-strike if India or its forces are attacked with nuclear, chemical or biological weapons

Executive Council led by the National Security Adviser. The political component of the command structure will be assisted by the Executive Council, which, besides providing inputs to the NCA, will also execute the political directives.

While formalising the NCA, the CCS approved the setting up of a tri-service Strategic Forces Command (SFC) to "manage and administer" all nuclear weapons and delivery systems. Sources said Air Marshal TM Asthana is tipped to be the first Commander-in-Chief of the SFC.

The CCS discussed all doctrinal and operational details, including the alternate chains of command for retaliatory strikes. While extending the country's retaliatory options, the CCS reiterated India's commitment to strict controls on export of nuclear and missile-related materials and technologies.

F 5 JAN 2003

Nuclear messages to Pak and rest of world

PRANAY SHARMA

New Delhi, Jan. 4: The nuclear command structure announced by India today with a re-assertion of "no-first-use" is aimed at putting the pressure back on Pakistan to give up its low-intensity war in Kashmir.

It is also an attempt on Delhi's part to establish itself as a responsible nation and reassure the world that its nuclear weapons are in safe hands.

By making it clear that its nuclear posture was that of "no-first-use" but its retaliation to a first strike will be "massive and designed to inflict unacceptable damage", Delhi has given a clear signal to Islamabad to stop cross-border terrorism and infiltration across the Line of Control completely or be prepared for a conventional war.

Significantly, the command structure has been announced less than 24 hours after US secretary of state Colin Powell had a 20-minute telephone conversation with foreign minister Yashwant Sinha.

Indian officials, however, denied that the nuclear issue came up for discussion. The two leaders talked of North Korea's clandestine nuclear and missile programmes and developments in Iraq, they said.

The announcement also comes at a time when there is serious interaction between Delhi and Washington on security and



Powell: Call 'coincidence'

missile defence system.

The director of the US state department's policy planning, Richard Haas, who is arriving here tomorrow, will discuss security-related matters with Indian officials on January 6, with special emphasis on South Asia and the Gulf.

Next week, the foreign ministry additional secretary (disarmament and international security affairs), Sheel Kant Sharma, will be off to Washington to hold talks with the Bush administration on missile defence and related issues.

What is also interesting is the

addition of the provision that, in the event of a major attack on India by biological or chemical weapons, Delhi will retain its option of retaliating with nuclear weapons.

This stems from the fear, not only in India but also elsewhere in the world specially after the September 11 attack on the US, that the possibility of weapons of mass destruction being in the hands of terrorists pose a major danger to the international community.

India wants to give out a clear signal to Pakistan and the terrorist outfits operating from its soil that attacks will be fatal for Islamabad.

Apart from India, only Russia and China have a no-first-use nuclear posture. The US and its European allies — Britain and France — insist on first strike. So does Pakistan.

The logic is simple. Countries that feel are superior in conventional war with its rival adopt a no-first-strike posture.

The Indian decision also seeks to show that its nuclear command structure is transparent and, unlike in Pakistan, in the hands of responsible political leader — the Prime Minister.

The US has been asking India to put in place its nuclear command structure as it will help in tightening Delhi's export control mechanism and provide the opportunity for sophisticated technology transfer.

5 JAN 2003

India's second thoughts on no-first-use nuke policy

Vishal Thapar
New Delhi, January 9

THE NATIONAL Security Advisory Board (NSAB) has suggested that India abandon its nuclear doctrine of no-first-use. If accepted, the recommendation will turn Delhi's stated nuclear stand on its head.

The NSAB is the nation's top-most body of security experts advising the National Security Council on strategic issues. Its 160-page final report submitted to National Security Adviser Brajesh Mishra on December 20 says, "India must consider with-

drawing from this commitment as other nuclear weapon states have not accepted this policy."

The 15-member board, of which former Ambassador to China CV Ranganathan was the convener, has suggested that India should not feel obliged to stick to its self-imposed moratorium on nuclear tests should the US ever resume testing.

India had announced a moratorium on nuclear tests after the May 1998 Pokhran-II blasts with which it gatecrashed into the nuclear club. The no-first-use policy and the moratorium on testing constitute the cornerstone of

sition, Russia has already discarded this Soviet legacy.

The NSAB has also noted an element of ambivalence in China's position. While Beijing maintains that it will not be the first party to use nuclear weapons, it has different yardsticks for Taiwan.

The NSAB has also taken note of the US Nuclear Posture Review, which lists even non-nuclear weapon states as targets.

The third NSAB's recommendations thus stand in stark contrast to those of the K Subrahmaniam-headed first NSAB, which supported no-first-use. A

Board member said the NSAB's proposals represented a "long-term view".

Asked for comments, Subrahmaniam said, "The Government has reiterated its no-first-use policy as recently as January 4 (when it announced India's N doctrine, incorporating most recommendations of the Subrahmaniam-led first NSAB)."

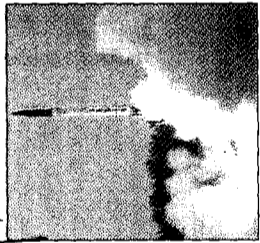
"Not all of the NSAB's recommendations are accepted," he pointed out. But Ranganathan refused to comment. "The report is secret," he said.

The report will be considered by the Strategic Policy Group.

Agni-I missile testfired

A DAY after Pakistan inducted the Hatf-V missile, India testfired the Agni-I, the short-range variant of the Agni ballistic missile on Thursday. The missile, which can carry a nuclear payload and hit targets up to 700 km away, was testfired from Wheeler's Island.

HTC, Bhubaneswar



India's nuclear policy. The third NSAB, of which former Army Chief Gen VP Malik and former Vice-Chief of Air Staff Air Marshal Vinod Patney were two high-profile members, has noted that while the US has never committed itself to a no-first-use po-

Agni I test-fired successfully

SI-6
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Statesman News Service

NEW DELHI, Jan. 9. — The nuclear-capable *Agni I* was successfully test-fired today in the second of a series of experiments before user trials by the armed forces.

About seven or eight successful trials are necessary before the missile, built as a counter to Pakistan, is handed over to the armed forces for trials. These will be conducted over the next few months. Tests of other missiles like the *Brahmos*, which has a 300-km range, the anti-tank *Nag* and the air defence *Aakash* are also likely very shortly.

Today's test was witnessed by senior defence officials and Mr George Fernandes. The ballistic missile was fired from a mobile launcher at the coastal testing range at Chandipur-on-Sea. The missile, with a range of 600-800 km, was tested before Republic Day last year. Today's test comes in the wake of Pakistan's induction of the *Haf-V Ghauri* missile, which has a range (about 1,500 km) like the *Agni-II*, into the armed forces.

Defence ministry sources said today's test-firing was a "text book launch". The missile, about 15 metres long and weighing 12 tons, uses solid fuel. It has a warhead of about 1 ton. Though defence ministry officials are silent on the issue, this missile is capable of carrying nuclear weapons. But more tests are necessary. There are likely to be different versions of the *Agni-I*. Some may be on mobile launchers, others may be on railway tracks. There is also a possibility of guiding the missiles — getting the missiles to change direction after they are fired. All these will have to be checked out. The first *Agni* missile was tested here in May 1989. In those days, it was a technology demonstrator. There were more tests in May 1992 and February 1994. Two of the three were considered successful and this later became the *Agni-II*. It was extended (in 1999) to have a range of 2,000 km.

Strategists believe the *Agni-I* is aimed at Pakistan. Firing a 1,500-km-range missile at Pakistan will have little use. A 600-800 km range missile will hit appropriate targets. They will be difficult to find if they are mobile.

Pakistan's information minister, Sheikh Rashid Ahmed, said India has a "war-mongering mind-set but Pakistan is above such war-mongering psyche". He added: "At the same time, we are not oblivious to our defence requirements." Pakistan foreign ministry spokesman Mr Aziz Ahmed Khan said the test was "not unexpected as India's nuclear and missile ambitions were well known."

The USA said it was disappointed by "ballistic missile tests in South Asia," referring to the *Agni* test, adds PTI.

In London, Britain regretted India's decision to test-launch *Agni*, saying it sends wrong signals in the region and beyond.

THE STATESMAN

10 JAN 2003

Grey areas cloud PM's nuclear chain

7/1 J-N & from (1.7)

OUR SPECIAL CORRESPONDENT

New Delhi, Jan. 6: The formalisation of a Nuclear Command Authority by the Cabinet Committee on Security has raised questions on the chains of command to be followed in the political and military establishment in executing the nuclear doctrine.

The announcement by the CCS, over the weekend, was in itself not a surprise. Indeed, it has been expected for the last four-and-a-half years since the 1998 Pokhran nuclear tests. If at all, the strategic community wonders why it has taken so long. The inference drawn is that New Delhi was under pressure to show that it was a responsible nuclear power.

However, the announcement did not make public the chains of command in the civil and military establishment. This is seen

by nuclear weapons' states — like the US and UK — as a necessity to make the command and control structure credible.

As it is, there are multiple agencies tasked with responsibility on nuclear issues. Some of these — like the department of atomic energy — are civil and some — like the army's 333 Missile Group — are military.

The NCA itself will have two layers — a political council headed by the Prime Minister and an executive council headed by the national security adviser. The status of the Strategic Forces Command (SFC), whose first head is likely to be an air force officer, is unclear.

Defence ministry sources said the CCS had only announced the intention to create the post of commander-in-chief of the SFC. The defence ministry will have to be given directives to create the SFC before it is notified. After that, an establishment

for the SFC has to be created. It is possible that it will not be headquartered in New Delhi. The command and control mechanism may be located deep in the hinterland with the arsenal spread out in multiple silos.

The Kargil Review Committee headed by defence analyst K. Subramaniam had recommended the creation of a Chief of Defence Staff (CDS), who would be the "first-among-equals" among all the service chiefs and would also function as the principal advisor to the government on security and military issues.

The CDS would also have a Strategic Forces Command, along with the Integrated Defence Staff and a tri-service command based in the Andamans, reporting to it.

However, neither has the CDS post been sanctioned — it is pending with the Cabinet which has to sort out inter-services' claims to the post —

nor has the reporting of the authority for the SFC been enunciated. In all likelihood, pending the creation of the CDS post, the SFC will report directly to the chairman, Chiefs of Staff Committee.

As things now stand, defence experts perceive the chairman of the NCA's executive council — the national security adviser, the post currently held by Brajesh Mishra — emerging as the sole link between the military establishment and the political leadership. The Chiefs of Staff Committee will, in effect, be reporting to him.

The civilian chain of command has also not been made public. In a setting in which the Prime Minister — who has been vested with the sole authority over the nuclear button — is unable to function, conventional nuclear command and control hierarchy demands that the next in the line of succession be iden-

tified. In the US, for instance, where the President has authority over the nuclear button, the structure identifies 16 others in the line of succession.

Strategic experts also point to the role of the political council. "It is not clear what exactly the political council will do because it makes more sense for one authority to be decisive," said Bharat Karnad, who was a member of the National Security Advisory Board that submitted the draft nuclear doctrine in August 1999.

There is little change in the doctrine that the CCS expounded on Saturday from the one submitted by the NSAB. The only difference is that the government now factors in the possible use of a nuclear weapon if the country and its forces are attacked using chemical or biological weapons (apart from nuclear weapons).

Karnad says this was also en-

visaged in the draft nuclear doctrine submitted by the NSAB.

"The CCS has no doubt discussed the chains of command and it is clear that while the authority vests at first with the civilian-political authority, how far down the line do you go before it passes on to the military?" he wondered.

Strategic experts say there is little difference in the structure of the NCA that Delhi has announced from that of its counterpart in Pakistan. But since the political leadership in Islamabad is in the hands of the military, the army will always wield the authority over its nuclear arsenal.

In Pakistan, after the President, General Pervez Musharraf, the line of succession passes on to army officers of lieutenant-general rank — chairman of Pakistan's Strategic Forces Command and corps commanders.

Operation of nuclear command structure is bound to be slow

By Rajat Pandit
TIMES NEWS NETWORK

New Delhi: The government may have announced the formation of a Strategic Forces Command (SFC) to manage the country's nuclear assets but it will take several months for an effective structure to be set up. It will take another few years before the SFC can come up with an operational nuclear weapon triad, with land, air and sea-based platforms.

Experts say the most effective and secretive arm of the nuclear triad is the one which moves silently under the sea in the shape of a submarine capable of launching nuclear-tipped missiles.

This becomes all the more important for a country like India which has a declared "no-first use" policy and should, hence, have a credible second-strike capability "to inflict unacceptable damage" to the adversary.

But the indigenous project to build a nuclear submarine, the Advanced Technology Vessel (ATC) project, and the quest for a submarine-launched ballistic missile Sagarika seem to be in the doldrums. "They are still years away from completion," said a defence official.

India's draft nuclear doctrine released in 1999 had proclaimed that the country's nuclear forces, based on a triad of aircraft, mobile land-based missiles and sea-based assets, would be "effective, enduring, diverse, flexible, and responsive". But

India, US skip issue

TIMES NEWS NETWORK

New Delhi: India and the US on Monday discussed the 'trinity' of civilian space and nuclear technology and facilitation of dual purpose hi-tech trade but stayed clear of discussing India's reformulated nuclear doctrine or concerns about Pakistan's proliferation to North Korea.

The discussions took place during the meetings that the visiting director, policy planning, in the US state department, Richard

Haass, had with external affairs minister Yashwant Sinha and foreign secretary Kanwal Sibal.

The external affairs spokesperson said that while North Korea, including the steps taken by the US, was discussed, Indian concerns about Pakistan's proliferation were well-known and did not need reiteration. Mr Sinha, however, did mention the issue of cross-border terrorism and told Mr Haass that there was no change in the situation on the ground.

this seems to be too ambitious at the moment.

The 2,000-km-plus ballistic missile Agni-II and the Prithvi tactical surface-to-surface missile, with a strike range of 150 km with a one-tonne warhead, are the only two land-based options available to the armed forces at present.

"It will take a year, if not more, for the Pakistan-specific 700-km ballistic missile Agni-I to be inducted. The IAF, of course, has aircraft like Mirage-2000, Sukhoi-30MKI and Jaguars, which can be configured to deliver nuclear weapons," said an official.

Defence officials say the groundwork for the tri-service SFC, which will primarily be based in central In-

dia, will firmly begin once the notification for its first commander-in-chief (likely to be Air Marshal T.M. Asthana) is issued in the next few days.

The army's two operational missile groups, the 333rd Missile Group which handles the Prithvi and the Agni Missile Group, will initially constitute the nucleus of the new command.

"In addition to the armed forces, the SFC will also have civilian experts from agencies like the Department of Atomic Energy and the Defence Research and Development Organisation (DRDO) to handle the marriage of the nuclear warheads with the delivery systems," said an official.

7 JAN 2003