



SPECIAL CASE, INDIA: BACK TO DISARMAMENT?

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OUTLINE

- **History of India's Nuclear Weapon Program**
- **India's Global efforts at Nuclear Disarmament**
- **Efforts at Regional Nuclear Stability**
- **New issues and challenges:**
 - A.Q. Khan and non-state actors
 - Indo-US Nuclear Deal
- **Conclusions**

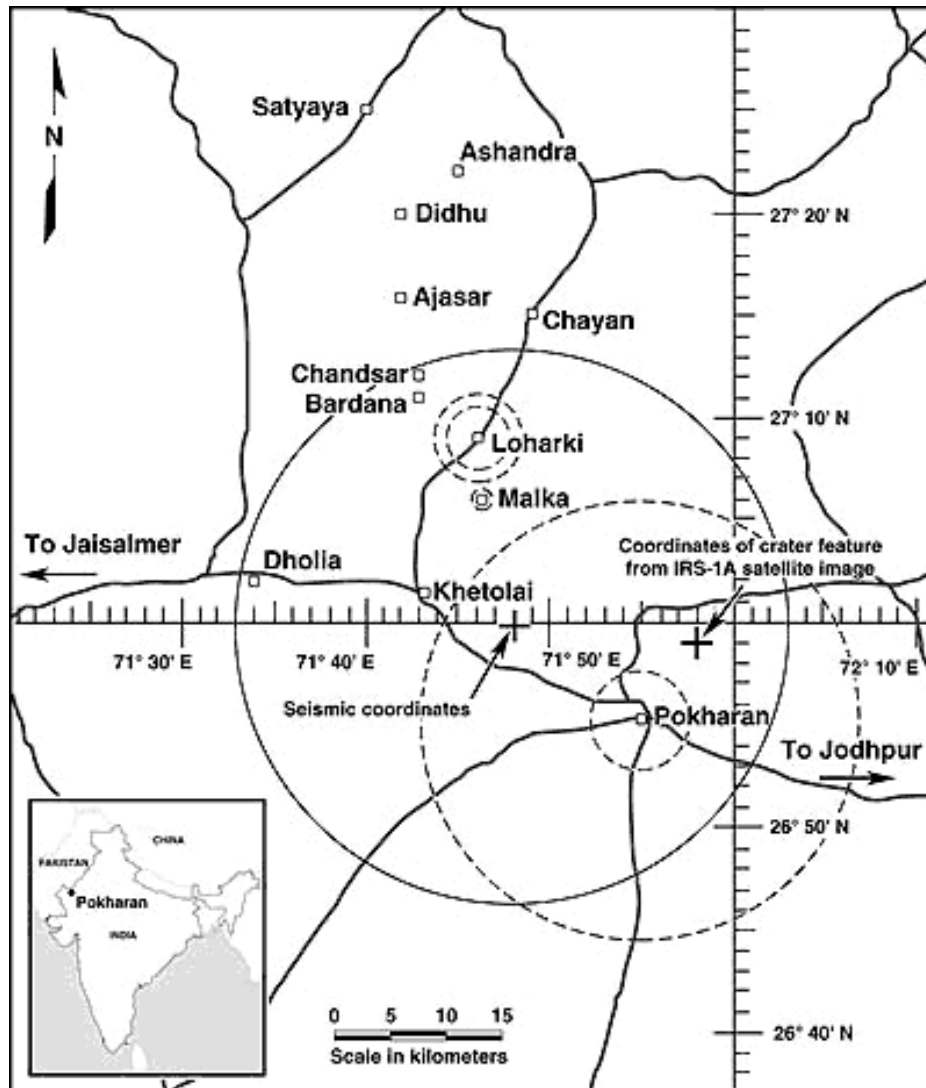
INDIA'S NUCLEAR WEAPONS PROGRAM

- **Four distinct phases:**
- **1948-1974: 'Weapon Option' phase**
- **1974-1985~88: 'Un-weaponised' phase**
- **1988-1998: 'Recessed deterrence' phase**
- **1998 onwards: 'Minimum Credible Deterrence' phase**

CIRUS AND DHRUVA



1974: 'PEACEFUL NUCLEAR EXPLOSION'



1998: 'SHAKTI I'

Test: Shakti I

Time: 15:47:07 11 May 1998 (IST);
10:17:07 UCT (Indian Government), 10:13:42 UCT (USGS)

Location: Pokhran, Thar Desert,
Rajasthan, India
27.0716 deg N, 71.7612 deg E

Test Height and Type: Underground, more than -200 m

Yield: [30 kt est. \(22-30 kt possible range; 43-45 kt claimed\)](#)



1998: 'SHAKTI II'

Test: Shakti II

Time: 15:47:07 11 May 1998 (IST);
10:17:07 UCT (Indian Government), 10:13:42 UCT (USGS)

Location : Pokhran, Thar Desert, Rajasthan, India
27.0716 deg N, 71.7612 deg E

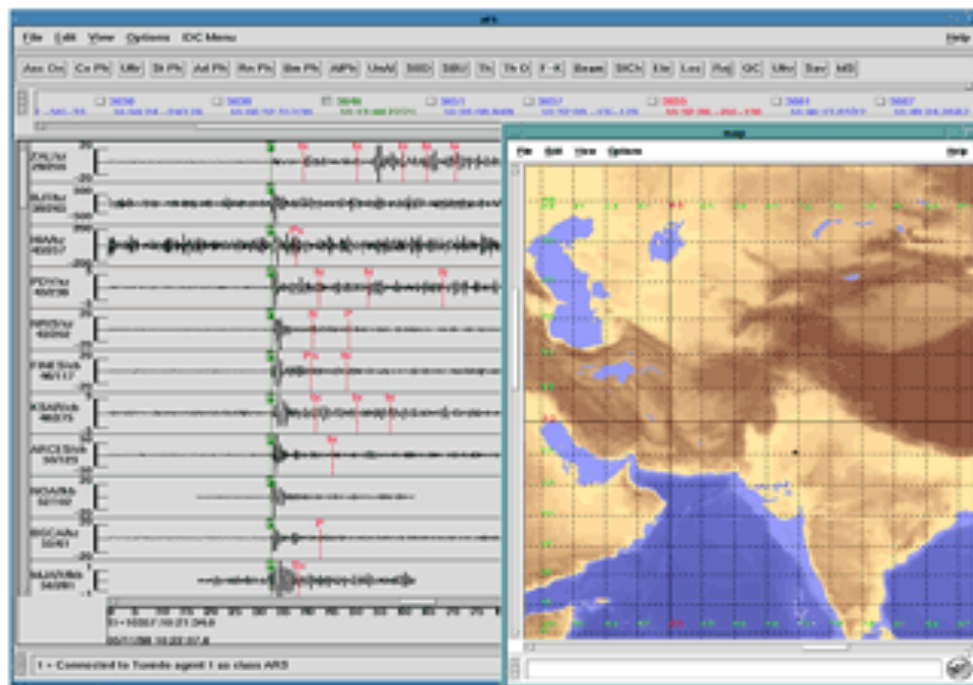
Test Height and Type: Underground, more than -150 m

Yield: 12 kt



CTBTO DETECTION OF 1998 TESTS

Seismic Waveforms and Regional Map
Indian Nuclear Test: 11 May 1998



Origin Time: 1998/05/11
10:13:44.2

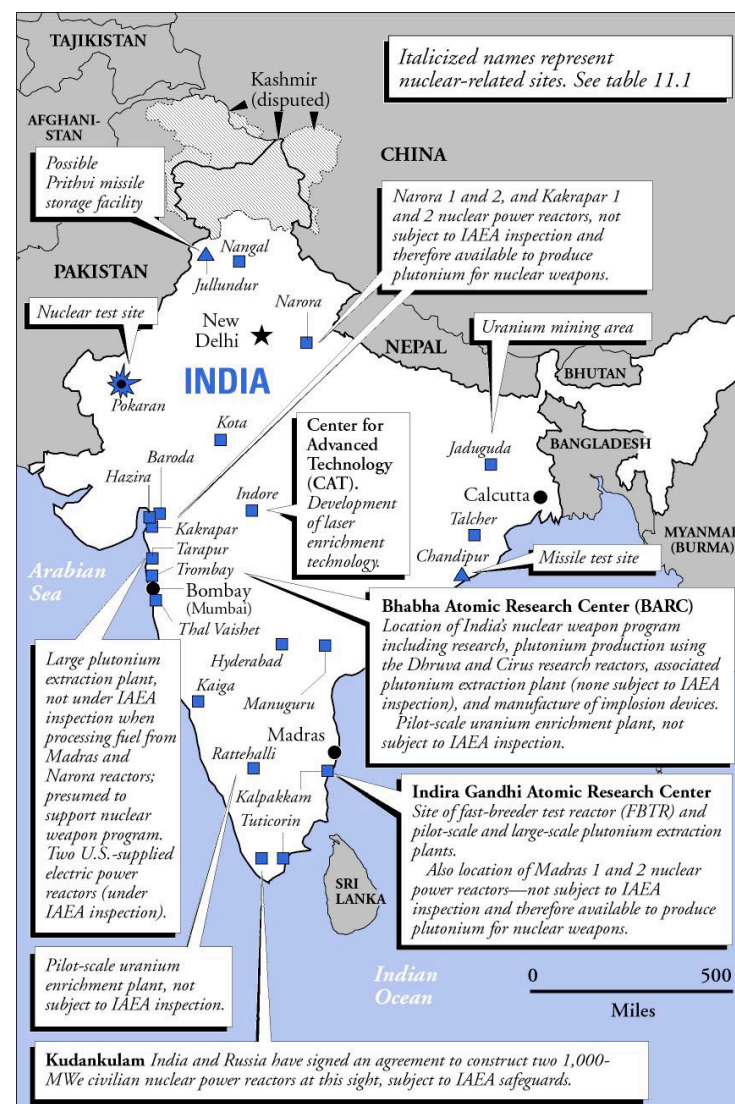
Coordinates: 27.09°N
71.69°E
± 13-14 km

$m_b = 5.0$ $M_s = 3.2$

IDC Solution			Ground Truth		Difference
OT (GMT)	LAT (°N)	LON (E)	LAT (°N)	LON (E)	
10:13:44.2	27.0925	71.6896	27.078	71.719	3.3km

MAP OF INFRASTRUCTURE

India's Pu stockpile is estimated between 240 and 395 kg, enough for 40-90 simple fission weapons. India is capable of building nuclear weapon systems ranging from "...low yields to 200 kilotons, involving fission, boosted-fission, and two-stage thermonuclear designs."



INDIA'S MISSILE ARSENAL

Missile	Status	Range (km)	Payload (kg)	Source
Prithvi-1	Operational	150	1,000	Domestic
Prithvi-2	Operational	250	500	Domestic
Dhanush/ Prithvi-3	Tested/ development	350	1,000	Domestic
Agni-1 variant	Tested/ development	725	~1,000	Domestic
Agni-1	Tested/ prototype only	1,500	1,000	Domestic
Agni-2	Serial production	2,000	1,000	Domestic
Agni-3	Tested	3,000–5,500	?	Domestic
Surya	Development	5,500+	2,000	Domestic/ Russian Federation
Sagarika (SLBM)*	Development	350	500	Domestic/ Russian Federation

* = Submarine-launched ballistic missile.

Source: Worldwide Ballistic Missile Inventories available at www.armscontrol.org/factsheets/missiles.asp

INDIA'S STRATEGIC ARSENAL



DOCTRINE AND DEPLOYMENT

- **Strong civilian control**
- **Clearly articulated no-first use policy and survivable second strike arsenal**
- **Non –deployed forces**
- **De-alerted forces**

GLOBAL DISARMAMENT EFFORTS

- **April 1954: Nehru's 'Standstill Agreement'**
- **August 1963: India signed and ratified the PTBT**
- **1965-1968: Participation in NPT negotiations**

GLOBAL DISARMAMENT EFFORTS

- **May 1984: India joins the ‘Six-Nation Initiative’ with the objective of promoting nuclear disarmament, comprehensive nuclear test ban and general disarmament.**
- **November 1986: Rajiv Gandhi and President Gorbachev sign “Joint Declaration of Principles of a Nuclear-Weapon-Free and Non-Violent World”**

GLOBAL DISARMAMENT EFFORTS

- **June 1988: Rajiv Gandhi Action Plan presented at UNSSOD III. The plan, which sought to eliminate nuclear weapons by 2010, had three stages:**
 - **A binding commitment from all to eliminate nuclear weapons in fixed time frame**
 - **Participation of all nuclear weapon states in the process of nuclear disarmament, while ensuring other countries also part of the process**
 - **Demonstration of tangible progress at each stage**

GLOBAL DISARMAMENT EFFORTS

- **1994-1996: Participation in CTBT**
(Unilateral moratorium on nuclear tests)
- **2006: Seven-step disarmament plan:**
 - Reaffirm commitment to complete elimination
 - Reduce salience of nuclear weapons
 - Measures to reduce nuclear dangers & accidents
 - Global 'no-first-use' agreement
 - Universal non-use against non-nuclear states
 - Convention to prohibit use or threat of use
 - Negotiate Nuclear Weapon Convention

REGIONAL NUCLEAR STABILITY

- **Three Indo-Pak agreements are noteworthy:**
- **Non-attack on nuclear facilities (1991)**
- **Pre notification of ballistic missile tests (1999 & 2005)**
- **Agreement on Reducing the Risk from Nuclear Weapon Accidents (2007)**

REGIONAL NUCLEAR STABILITY

- **Sino-India CBMs in the Military Field along the LAC, Nov, 1996:**
 - Lists specific categories of armaments to be reduced (including missiles)
 - Exercises involving Division (15,000 or more) prohibited
 - No-fly zone for combat aircraft
 - Exchange information on natural disasters and diseases

NEW ISSUES

- **Role of non-state actors in instigating crises between nuclear neighbours.**
- **Indo-US Nuclear deal (Feb 2006); passed by US legislature and signed by President Bush (Dec 2006) and approved by the IAEA, the NSG and the US Senate (Aug-Sep 2008).**

INDO-US NUCLEAR DEAL

- **Non-proliferation pessimists: deal will not only allow India to enlarge its nuclear arsenal but also further undermine the NPT regime.**
- **Non-proliferation optimists: deal essential to facilitate India's participation in the NPT regime but would also ensure its relevance.**

CONCLUSIONS

- **India's path towards nuclear armament has been slow, cautious and reluctant and is likely to remain so, unless dramatic internal or external factors accelerate that process.**
- **The push towards weaponisation has been tempered by a pull towards disarmament (at least until 1988) which has led to a dual-track approach.**