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ASIA PACIFIC

Chronolog : A.Q. Khan

By THE NEW YORK TIMES APRIL 16, 2006



Some key events in A.Q. Khan's life, professional career and illegal nuclear dealings.

1936: Abdul Qadeer Khan is born in Bhopal, India.

1952: Khan immigrates with his family to Pakistan.

1961: Khan moves to Europe to complete his studies, first in West Berlin and later at the Technical University in Delft, Holland, where he receives a degree in metallurgical engineering in 1967.

1972:

-- Khan receives Ph.D. in metallurgical engineering from the Catholic University of Leuven in Belgium.

-- MAY: Khan begins work at Physical Dynamic Research Laboratory (FDO), a subcontractor of Ultra Centrifuge Nederland (UCN). UCN is the Dutch partner in the Urenco uranium enrichment consortium.

-- MAY 8: Within one week of starting work at FDO, Khan visits the advanced UCN enrichment facility in Almelo, Netherlands to become familiar with Urenco centrifuge operations and the aspects relevant to his own work to strengthen the metal centrifuge components. Khan is not officially cleared to visit the facility, but does so many times with the consent of his employers.

Early 1970s: Dutch intelligence begins to monitor Khan soon after he begins work at FDO, concerned by a series of inquiries about technical information not related to Khan's own projects.

1974:

-- MAY 18: India conducts its first nuclear test, a "peaceful nuclear explosion."

-- SEPTEMBER: Khan writes to Prime Minister Zulfikar Ali Bhutto to offer his services and expertise to Pakistan.

-- LATE: Khan is tasked by UCN at Almelo with translations of the more advanced German-designed G-1 and G-2 centrifuges from German to Dutch, to which he has unsupervised access for 16 days.

Late 1970s and Early 1980s: American intelligence officials convince Dutch authorities on two occasions not to arrest Khan for the purposes of monitoring his activities further.

1975:

-- OCTOBER: Khan is transferred away from enrichment work with FDO as Dutch authorities become increasingly concerned over his activities. He is reportedly observed asking "suspicious questions" at a nuclear trade show in Switzerland.

-- DEC. 15: Khan suddenly leaves FDO for Pakistan with copied blueprints for centrifuges and other components and contact information for nearly 100 companies that supply centrifuge components and materials.

1976:



-- Khan begins centrifuge work with the Pakistan Atomic Energy Commission (PAEC).

-- JULY: After conflicts at the PAEC, Prime Minister Bhutto gives Khan autonomous control over Pakistani uranium enrichment programs. Khan founds Engineering Research Laboratory (ERL) on July 31, which focuses exclusively on developing an indigenous uranium enrichment capability.

1978: ERL develops working prototypes of P-1 centrifuges, adapted from the German G-1 design Khan worked with at Urenco. Pakistan enriches uranium for the first time on April 4 at Khan's enrichment facility at Kahuta.

Early 1980s:

-- Khan acquires blueprints for the Chinese bomb that was tested in China's fourth nuclear explosion in 1966.

-- Khan is, reportedly, approached by an unknown Arab country (possibly Saudi Arabia or Syria) requesting nuclear assistance.

1981: MAY 1: ERL is renamed A.Q. Khan Research Laboratories (KRL) by President Zia ul- Haq in recognition of Khan's contributions to the operational enrichment facility at Kahuta.

1983: Khan is convicted, in absentia, in Dutch court for conducting nuclear espionage and sentenced to four years in prison.

1985: Khan's conviction is overturned based on an appeal that he had not received a proper summons. The Dutch prosecution does not renew charges because of the impossibility of serving Khan a summons given Pakistan security and the inability to obtain any of the documents that Khan had taken to Pakistan.



A founder of Pakistan's nuclear weapons program, Dr. Abdul Qadeer Khan is the leading figure behind a global nuclear black market that continued to operate until the fall of 2005, American, European and Pakistani officials say. Dr. Khan's network sent nuclear weapons technology to Iran, North Korea and Libya. Associated Press

Mid 1980s:

-- Pakistan produces enough highly enriched uranium (HEU) for a nuclear weapon. KRL continues work on enrichment and is tasked with research and development of missile delivery systems. -- Khan, reportedly, begins to develop his export network and orders twice the number of components necessary for the indigenous Pakistani program. This transition from importer to exporter of centrifuge components is, apparently,

completely missed by western intelligence services who believe Khan is only working on Pakistan's domestic nuclear weapons program.

Late 1980s: Khan and his network of international suppliers are reported to begin nuclear transfers to Iran. The period of cooperation is thought to continue through 1995 when P-2 centrifuge components are transferred. The Pakistani government claims no transfers occurred after the shipments of P-1 components and sub-assemblies from 1989 to 1991.

1987: Khan is believed to make a centrifuge deal with Iran to help build a cascade of 50,000 P-1 centrifuges.

1988: Iranian scientists are suspected of having received nuclear training in Pakistan.

1989: Iran is suspected of receiving its first centrifuge

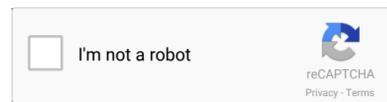
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assemblies and components around this time. The shipped components are likely older P-1 centrifuge components that Khan no longer has use for in Pakistan. Through 1995, Khan is reported to have shipped over 2000 components and

sub-assemblies for P-1, and later P-2, centrifuges to Iran.

1990: An Iraqi memo, found during inspections in 1995, indicates that Khan may have offered significant nuclear assistance to Iraq in late 1990. He offered to sell Iraq a nuclear bomb design and guarantee material support from Western Europe for a uranium enrichment program. However, Iraq is believed to have turned down the offer, suspecting it to be a sting and no known follow-ups were made after the 1991 Gulf War.

1994 or 1995: More advanced components for P-2 centrifuges are suspected to have arrived in Iran. B.S.A. Tahir, a Sri Lankan business man and Khan's chief lieutenant, told Malaysian police that Iran paid approximately \$3 million for these centrifuge parts.

Mid 1990s:

-- Khan starts travel to North Korea where he receives technical assistance for the development of the Ghauri missile, an adaptation of the North Korean No Dong design. Khan makes at least 13 visits before his public confession in 2004 and is suspected of arranging a barter deal to exchange nuclear and missile technologies, though the details of any nuclear transfers remain unknown.

-- Khan is suspected to have met with a top Syrian official in Beirut to offer assistance with a centrifuge enrichment facility.

1997:

-- Khan begins to transfer centrifuges and centrifuge components to Libya. Libya receives 20 assembled P-1 centrifuges and components for 200 additional units for a pilot enrichment facility. Khan's network will continue to supply with centrifuge components until late 2003.

-- Khan is suspected of beginning nuclear transfers to North Korea around this time, though the dates of the first transfers are highly uncertain. Transfers to North Korea are believed to have continued through 2003, but the Pakistani government claims these transfers ceased in 2001. Over this period, Khan may have supplied North Korea with old and discarded centrifuge and enrichment machines together with sets of drawings, sketches, technical data, and depleted uranium hexafluoride.

1998:

-- India detonates a total of five devices in nuclear tests on May 11 and 13.

-- Pakistan responds with six nuclear tests on May 28 and 30.

2000: SEPTEMBER: Libya receives two P-2 centrifuges as demonstrator models and places an order for components for 10,000 more to build a cascade. Each centrifuge contains around 100 parts, implying approximately 1 million parts total for the entire P-2 centrifuge cascade.

2001:

-- Libya obtains 1.87 tons of uranium hexafluoride, the gas that is used to feed enrichment centrifuges. The amount is consistent with that required for a small pilot enrichment facility.

-- MARCH: Khan is forced into retirement. Khan refuses the compensatory position of "advisor to the chief executive" and is later given the ceremonial title of "Special Advisor to the Chief Executive on Strategic and KRL Affairs."

-- SUMMER: American spy satellites detect missile components being loaded into a Pakistani cargo plane outside of Pyongyang. Intelligence

services assume the cargo to be missile technology traded in direct exchange for nuclear technology, but no hard evidence exists.

-- DECEMBER: B.S.A. Tahir signs a \$13 million contract with Scomi Precision Engineering (SCOPE) in Malaysia for 25,000 aluminum centrifuge components.

Late 2001 or Early 2002: Libya receives blueprints for nuclear weapons plans. The plans are reported to be of Chinese origin with Chinese notes in the margins.

2002: DECEMBER: Shipments begin from SCOPE of aluminum centrifuge components. Four shipments are believed to have been sent from Malaysia to Dubai before August 2003, en route to Libya.

2003:

-- OCTOBER: The German cargo ship BBC China is intercepted en route to Libya with components for 1,000 centrifuges. The parts were manufactured in Malaysia by SCOPE and shipped through Dubai.

-- DECEMBER: Libya renounces its nuclear weapons program and begins the process of full disclosure to the IAEA, including the declaration of all foreign procurements.

2004:

-- FEB. 4: Khan makes a public confession on Pakistani television (in English) of his illegal nuclear dealings. Khan claims that he initiated the transfers and cites an "error of judgment." He is pardoned soon after by President Musharraf and has been under house arrest since. The Pakistani government claims that Khan acted independently and without state knowledge.

-- MARCH: A container aboard the BBC China (the ship that was previously intercepted) arrives in Libya with one additional container of P-2 centrifuge components. Colonel Qaddafi reports the arrival to American intelligence and the IAEA. The Libyans warn American officials that not all of the components from Libya's orders had arrived and some might still show up in the future.

Source: Carnegie Endowment for International Peace

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