

LEARN ABOUT NUCLEAR WEAPONS

Libya

On 19 December 2003, the Socialist People's Libyan Arab Jamahiriya (Libya) agreed to eliminate all materials, equipment, and programs for the production of nuclear or other internationally proscribed weapons. Libya's leader Colonel Muammar al-Gaddafi admitted that, in contravention of its international obligations under the Treaty on the Non-Proliferation of Nuclear Weapons (NPT), Libya had pursued a nuclear weapons program, allegedly to counter the covert Israeli nuclear program. In 2004, groups from the United States and Britain began dismantling Libya's nuclear weapons infrastructure with oversight from the International Atomic Energy Agency (IAEA).¹ As an incentive for giving up its nuclear weapons program, in September 2004 the United States lifted economic sanctions that had been in place since the 1980s in connection with Libya's purported sponsorship of terrorism.²

Since the 1970s, Libya and Muammar al-Gaddafi had shown a great interest in acquiring nuclear weapons in response to the Israeli nuclear weapons. Despite membership in the NPT as a non-nuclear weapon state, al-Gaddafi still decided to go for a clandestine nuclear weapon programme. With the help of the nuclear black market run by Pakistani nuclear scientist A. Q. Khan, Libya bought uranium, enrichment centrifuges, and weapons technology and information. Despite this assistance, experts believe that Libya did not have enough centrifuges or sufficient technological capacity to produce nuclear weapons.³

Iraq

During the 1970s, Iraq made big bucks in the oil business and bought a medium size nuclear power plant and a new research reactor from France. Iraq was a signatory of the NPT as non-nuclear weapon state, and had agreed to inspections by the International Atomic Energy Agency (IAEA). The new facility was named Osirak after the God of growth, Osiris, and the name of the country, Iraq. In June 1981, in less than two minutes, 12 Israeli warplanes destroyed the core of the Osirak reactor then nearing completion outside of Baghdad. Israel called the attack "a preventive act", since it worried that Iraq was running a secret nuclear weapon programme in violation of the NPT. The Israeli bombs did more than level the nuclear plant; they

also struck at the heart of the uneasy strategic balance of the Middle East, sending shock waves that have long reverberated throughout the region.⁴

An article in the Swedish magazine *Ny Teknik* (New Technology) gives a vivid description of the development of Iraq's nuclear weapon programme. Jafar D Jafar, PhD in nuclear science, was summoned to the half brother of Saddam Hussein, Barsam Ibrahim al-Tikriti. "The President wants you to make an atomic bomb", said al-Tikriti. "I'll do my very best", replied Jafar.⁵

Dr Jafar decided to work on a bomb based on highly enriched uranium (HEU), since the risk of being detected by the IAEA inspectors would be much larger if plutonium were produced in the research reactors. The project proceeded slowly – everything had to be done from scratch so as not to raise suspicions by buying material or technology from abroad. In the mid 1980s, researchers succeeded in enriching uranium and in 1990 the first production facilities started. The aim was to produce enough HEU for the first Iraqi bombs within four to five years.⁶

Then everything changed. In 1991, Saddam Hussein invaded Kuwait and about half a year later allied UN troops under US command began a counter attack. Despite the fact that Saddam had introduced a "crash-programme" to speed up nuclear weapons production, Iraq was still a few years from nuclear weapons in January 1991. The UN Security Council mandated the IAEA and the UN Special Commission on Iraq (UNSCOM) to conduct comprehensive inspections in Iraq after the end of the Gulf War. Large quantities of nuclear equipment and material were found and destroyed. The inspectors revealed a far-reaching nuclear weapon programme – something that Saddam and the Iraqi regime denied until 1995.⁷

This was the beginning of the end of Saddam Hussein's regime, and this was also the beginning of the development leading up to the US invasion of Iraq in 2003. The nuclear physicist Jafar, together with Iraq's government, worked hard to convince the world – and especially the US – that the Iraqi nuclear weapon programme was a closed chapter. IAEA inspectors under the lead of Hans Blix of Sweden found no weapons of mass destruction in Iraq, and asked for more time to complete their inspections, while the US pushed for an invasion. On 20 March 2003, US troops supported by the UK and a "coalition of the willing" invaded Iraq. "Saddam Hussein possesses weapons of mass destruction and has to be stopped" was the message of George W. Bush and Tony Blair. The fact that the UNMOVIC inspectors had conducted 700 inspections at more than 500 facilities without finding a trace of weapons of mass destruction was ignored.⁸

Post-Soviet Union

When Belarus gained independence in December 1991, there were 81 road-mobile SS-25s on its territory stationed at three missile bases, and an unknown number of tactical nuclear weapons. During the 1980s, a number of units equipped with intermediate-range ballistic missiles (IRBMs) were also stationed in the Belarusian SSR; all of these weapons, however, were eliminated under the Intermediate-Range Nuclear Forces (INF) Treaty by 1991. In May 1992, Belarus signed the Lisbon Protocol, which obligated it to accede to the Treaty on the Non-Proliferation of Nuclear Weapons (NPT) as a non-nuclear weapon state, which it did in July 1993, and to ratify the Strategic Arms Reduction Treaty (START), which it ratified in February 1993. As a result of these commitments, Belarus transferred its nuclear weapons to Russia. The process of transferring tactical warheads was completed in May 1992, and the last strategic warheads and associated missiles were sent to Russia in November 1996. No nuclear forces have been stationed in Belarus since then, although the possibility of stationing Russian nuclear weapons in Belarus was broached by a number of Belarusian officials in the late 1990s.⁹ Stationing of Russian nuclear weapons in Belarus would obviously be in violation of the NPT!

When the Soviet Union collapsed in December 1991, Kazakhstan inherited 1,410 nuclear warheads and the Semipalatinsk nuclear weapon test site. Kazakhstan transferred all of these nuclear warheads to Russia by April 1995 and destroyed the nuclear testing infrastructure at Semipalatinsk by July 2000. Weapons-grade nuclear material remains in Kazakhstan, however, including three metric tons of plutonium at a shutdown breeder reactor in western Kazakhstan and small amounts of highly enriched uranium (HEU) at two nuclear research institutes. Approximately 600 kilograms of weapons-grade HEU was removed to the United States from the Ulba Metallurgy Plant in 1994 under a joint US-Kazakhstan operation known as Project Sapphire. Kazakhstan is a party to START-I, the Nuclear Non-Proliferation Treaty (NPT), and the Comprehensive Test Ban Treaty (CTBT). It signed an Additional Protocol with the International Atomic Energy Agency in February 2004 and is a member of the Nuclear Suppliers Group. The foreign ministers of the five Central Asian States (Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan) signed a treaty establishing a Central Asian Nuclear Weapon Free Zone on 8 September 2006. On 19 February 2007, Kazakhstan President Nazarbayev signed a law approving the nation's Additional Protocol to its nuclear safeguards agreement with the International Atomic Energy Agency.¹⁰

After the September 11, 2001 attacks, concerns were raised in relation to plutonium remaining in the soil of one of the sections of the former test site. According to a May 2003 article in *Science* magazine, Kazakh officials believed that plutonium contamination of a patch of land outside the main testing areas resulted from an experiment that involved the detonation of a nuclear device with a small release of nuclear energy – a hydro nuclear test. In order to address the threat, Kazakhstan and the United States jointly conducted "Operation Groundhog," covering the contaminated area with steel-reinforced concrete. It remains unclear, however,

whether there are more such contaminated spots on the former test sites around the country, representing both a health hazard and a proliferation concern.

Upon the breakup of the Soviet Union, Ukraine inherited a considerable nuclear potential, in the form of 176 SS-19 and SS-24 intercontinental ballistic missiles (ICBMs): 1,240 warheads and 44 strategic bombers. In addition, there were an unspecified number of tactical nuclear warheads on its territory. Despite some domestic opposition, however, Ukraine gradually rid itself of its nuclear weapon inheritance by transferring all tactical and strategic warheads to Russia (the last warheads were transferred by June 1996 in return for Russian compensation in the form of fuel for Ukraine's nuclear power reactors) and eliminating missiles, missile silos, and strategic bombers on its territory. Ukraine also acceded to the Strategic Arms Reduction Treaty (START I) and joined the NPT as a non-nuclear weapon state. By January 2002, all strategic bombers on Ukraine's territory had been dismantled, transferred to Russia, or converted to non-military use; all ICBMs had been extracted from the silos and either eliminated or disassembled pending elimination; and all ICBM silos had been eliminated.¹¹

South Africa

South Africa is the only state ever to possess nuclear weapons and voluntarily give them up in order to join the NPT as a non-nuclear weapon state. The country had a nuclear weapon programme during the 1970s and 1980s. It produced six nuclear devices and had a seventh under development when it abandoned the nuclear option in the early 1990s.

In connection with the end of the apartheid regime in the early 1990s, South Africa gave up its nuclear weapon programme. The reason is believed to be a change in the political climate that initially led to the development of the South African weapons. When the Cold War ended and, with it, the meddling of the two superpowers in local conflicts in Africa, South Africa believed the situation in the region would stabilize, and nuclear weapons would be less attractive. At the same time, South Africa began seriously considering changing the apartheid politics that had isolated the country from the rest of the world and sought ways to get out of that isolation. Others have speculated that the white South African government did not want a new, post-apartheid government to have a "black" bomb. In 1994, the IAEA inspectors declared the South African nuclear weapon programme fully terminated after careful inspections of the country's nuclear facilities.¹²

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- 1 Nuclear Threat Initiative http://www.nti.org/e_research/profiles/Libya/3939.html
 - 2 Nuclear Files <http://www.nuclearfiles.org/menu/key-issues/nuclear-weapons/issues/proliferation/libya/index.htm>
 - 3 Global Security <http://www.globalsecurity.org/wmd/world/libya/nuclear.htm>
 - 4 Global Security <http://www.globalsecurity.org/wmd/library/report/1984/vanden.htm>
 - 5 Ny Teknik http://www.nyteknik.se/efter_jobbet/kaianders/article34128.ece
 - 6 Institute for Science and International Security <http://www.isis-online.org/publications/iraq/act1298.html>
 - 7 Arms Control Association http://www.armscontrol.org/act/1998_10/daoc98.asp
 - 8 Blix, Hans. "A war of utter folly". *The Guardian online*, 20 Mars, 2008.
<http://www.guardian.co.uk/commentisfree/2008/mar/20/iraq.usa>
 - 9 Nuclear Threat Initiative http://www.nti.org/e_research/profiles/Belarus/index.html
 - 10 Nuclear Threat Initiative http://www.nti.org/e_research/profiles/Kazakhstan/index.html
 - 11 Nuclear Threat Initiative http://www.nti.org/e_research/profiles/Ukraine/index.html
 - 12 Nuclear Weapons Archive <http://nuclearweaponarchive.org/Safrica/SADisarming.html>