

# **2004 Middle East Nuclear Update**

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## **CONTENTS:**

**Overview of Developments: 2003-4**

### **Country Studies**

- 1) Algeria
- 2) Egypt
- 3) Iran
- 4) Iraq
- 5) Libya
- 6) Saudi Arabia
- 7) Syria

## **Overview of Developments: 2003-4**

Since the 1970's, the proliferation of nuclear weapons technology in the Middle East has steadily accelerated. Despite the ousting of Saddam Hussein and Libya's pledge to dismantle its WMD program, proliferation remains a central concern. Terrorism, often sponsored by certain Middle East states, is endemic, and the concept of the *jihad* (holy war) is central. In much of the region, the degree of hostility towards Israel and the West continues to escalate, and international restrictions designed to prevent the acquisition and uses of WMD are ignored.

Although Iran is a signatory of the NPT, it is intensively seeking to acquire fissile material and technology for weapons development through a clandestine network. In addition, Iran continues to work on the Bushehr nuclear reactor, which is used as a "cover" to obtain fuel cycle facilities and materials. In November 2003 and again in May 2004, the IAEA published comprehensive reports on Iranian nuclear activity, followed by resolutions which noted "with the gravest concern, that Iran enriched uranium and separated plutonium in undeclared facilities, in the absence of IAEA safeguards." <sup>1</sup>

In other Middle East states, such as Saudi Arabia and Egypt, there is increasing activity that appears to related to potential acquisition of nuclear weapons technology. In September 2003, Saudi Arabia undertook a strategic review that included consideration of a nuclear weapons capability as a possible deterrent. Egyptian officials, journalists, and clerics often argue that Israel's nuclear capability is a justification for Arab nations to build atomic bombs. According to Dr. Ahmad Qaroun, an expert from the Egyptian Nuclear Substances Authority, "if [Egypt] wanted to develop these capabilities, we have the human and financial cadres that will allow it." <sup>2</sup>

In the following analysis, I will review and analyze the nuclear weapons acquisition status of each country, based on the available (unclassified) evidence. Due the rapidly changing developments, particularly in Iran, and the need to select a cut-off date for the research, this update is current up to March 2004.

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<sup>1</sup> "Addressing Iran's Nuclear Programme: the US, IAEA, and European Foreign Ministers," *Disarmament Diplomacy*, no. 74, December, 2003, <http://www.acronym.org.uk/dd/dd74/74news02.htm>; Gerald M. Steinberg, "After Ghadafi's Declaration: The Impact of Changes in Libyan and Iranian WMD Policies on Israel and the Region," *JCPA Jerusalem Issue Brief*, vol. 3, no. 12, December 22, 2003.

<sup>2</sup> Ewen MacAskill and Ian Traynor, "Saudis Consider Nuclear Bomb," *The Guardian*, September 18, 2003; Yotam Felder, "Egypt Rethinks It's Nuclear Program – Part 1: Scientific and Technological Capabilities Vs. International Commitments," *MEMRI*, no. 118, January 17, 2003.

## Algeria

### Introduction

Algeria accepted IAEA safeguards in 1992, joined the Nuclear Non-Proliferation Treaty (NPT) in 1995, and signed the CTBT on October 15, 1996. Nevertheless, Algeria is considered to be a potential proliferator, as indicated by its resistance to IAEA full-scope safeguards, and reports that it is operating an unreported plutonium production plant. According to the Spanish intelligence service Cesid, “the Algerian nuclear program, originally conceived with a clear military purpose, continues to equip itself with the installations necessary to carry out all the activities linked to the complete cycle for obtaining military grade plutonium, a key element in a nuclear arms program.”

### Algerian Nuclear History

In 1981 Algeria announced plans to embark on a nuclear program that would supply up to 10% of its electricity needs, and in 1984, the government purchased 150 tons of uranium concentrate from Niger.<sup>3</sup> During the 1990's, an unreported thermal heavy water moderated 15 MW nuclear thermal reactor, known as Es Salam, was discovered via space imaging. The low-enriched uranium fuelled reactor, which went critical in 1992, was transferred by China, along with a small hot cell and a facility for the production of radioisotopes. Satellite imagery also revealed a building with a 60-meter-high stack and the construction of a nuclear waste storage area capable of containing an atypically large amount of liquid waste. A ditch, which could have been designed to hold pipes, was dug between the building and the waste tanks. According to reports, the reactor might be capable of producing a few kilograms of weapon-grade plutonium on an annual basis, which could be separated in the hot cell and prepared for use in a weapons program. In addition, analysts believe that a large, heavy walled, building nearby may have been intended as a full-scale plutonium plant.<sup>4</sup>

When it was first discovered, Algerian officials claimed that the reactor would be utilized to generate electricity as well as for research purposes, including the desalination of seawater and food preservation technology. Nevertheless, analysts have noted that, “there are no electrical-power generation facilities at the reactor and no electric-power transmission lines are nearby... This is clearly a military nuclear reactor for weapons production.”

It should also be noted that Algeria operates a 1 MW Argentinian pool-type research reactor (Nur), which first went critical in 1989. Both the Nur and Es Salam reactors are now under IAEA safeguards.<sup>5</sup>

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<sup>3</sup> Jeffrey Fields and Jack Boureston (FirstWatch International), “Nuclear Forces and Arms Control - Country Profile 3: Algeria,” *Sipri*, <http://projects.sipri.se/nuclear/cnsc1alg.htm>; “Algeria Special Weapons,” *FAS*.

<sup>4</sup> David Albright and Corey Hinderstein, “Algeria: Big Deal in the Desert?” *Bulletin of the Atomic Scientists*, vol. 57, no3, pp. 45-52, May/June 2001; “Algeria Country Profile: Developments in Nuclear Technology,” *Sipri*, <http://projects.sipri.se/nuclear/cnsc3alg.htm>.

<sup>5</sup> Albright and Hinderstein, “Algeria: Big Deal in the Desert?” 2001; Bill Gertz, “China Helps Algeria Develop Nuclear Weapons,” *Washington Times*, 11 April 1991; “Algeria Country Profile: Past Nuclear Policies,” *Sipri*.

## Egypt

Egypt continues to play a primary role in the Arab world, and has sought to maintain advanced military capabilities, including ballistic missiles, chemical and, to a lesser degree, biological weapons as well. Egyptian officials, journalists, and clerics often argue that Israel's nuclear capability is a justification for Arab nations to build atomic bombs. During 2001, the Al-Ahram Center for Political and Strategic Studies published a book featuring articles by Egypt's top nuclear scientists who termed joining the NPT as "the worst blow for the Egyptian nuclear program."

Dr. Ahmad Qaroun, an expert from the Egyptian Nuclear Substances Authority noted that, "We are committed to the NPT (Nuclear Non-Proliferation Treaty), and stand by our word in this matter. But if we wanted to develop these capabilities, we have the human and financial cadres that will allow it...Thought of such weapons is still very distant, but the means exist and the material for nuclear bombs can be obtained abroad or produced locally." According to Professor Mustafa 'Alawi, "Egypt made a gross strategic miscalculation when it chose to ratify the NPT in 1981... Today, Egypt should certainly pursue a peaceful nuclear option, because such capabilities can be transformed to perform non-peaceful ends in a very short time."

The concept of exploiting nuclear dual-use infrastructure is advocated by Dr. 'Izat 'Abd Al-'Aziz of the Egyptian Nuclear Safety Authority. According to Dr. 'Aziz, "Egypt has not managed to establish strategic nuclear capability because we were not allowed to build large nuclear reactors for electricity production. The construction of such reactors constitutes a nuclear strategy in itself, because it brings us into the so-called nuclear fuel circle and gives us expertise in this area."

Support for the achievement of militaristic nuclear capability has also been voiced amongst certain Egyptian religious circles. On December 23, 2002, Al Azhar University offered its endorsement for the development of nuclear weapons following the posting of a "Fatwa," or religious ruling, by the Al-Ahzar Religious Ruling Committee on the Islam Online website. The Fatwa affirmed that the development of nuclear weapons was a "religious obligation." In an interview with the Kuwait daily, *Al-Rai Al-Aam*, Al Azhar Religious Ruling Committee head, Sheikh Ali Abu Al-Hassan stated that, "Muslims must obtain all kinds of weapons, not only nuclear weapons. I refer to arming [ourselves] with might, in accordance with the words of Allah."<sup>6</sup>

Apparently, Egyptian rhetoric has given way to action. Since 2001, Egypt has initiated nuclear research cooperation with China and signed a contract with Russia for the acquisition of "nuclear equipment" to modernize and upgrade its 22-megawatt Inshas research reactor. In addition, Egypt and Pakistan have agreed to expand cooperation in nuclear projects.<sup>7</sup> In 2002,

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<sup>6</sup> Felder, "Egypt Rethinks It's Nuclear Program – Part 1: Scientific and Technological Capabilities Vs. International Commitments," 2003; Yotam Felder, "Egypt Rethinks It's Nuclear Program – Part 3: The Religious Establishment," *MEMRI*, no. 120, January 22, 2003.

<sup>7</sup> "Egypt, Pakistan Agree on Nuke Cooperation," *MENL*, October 8, 2003; NTI: Egypt Nuclear Chronology, *Nuclear Threat Initiative*, [http://www.nti.org/e\\_research/profiles/Egypt/Nuclear/1697\\_1743.html](http://www.nti.org/e_research/profiles/Egypt/Nuclear/1697_1743.html), "Egypt, Russia Sign Cooperation Agreement on Peaceful Use of Atomic Energy," *Middle East News Agency*, April 28, 2001; in BBC, April 28, 2001.

media reports indicated that Egyptian President Hosni Mubarak pledged to continue a program to construct eight nuclear power plants for producing electricity. This pledge was made despite a statement made by Mubarak in April 2001, in which the Egyptian president noted that, "there is no thought at the present time to establish nuclear power stations for producing electricity, because we have great quantities of energy and natural gas reserves." According to Egyptian Electricity Minister Hassan Yunis, one nuclear power plant is to be constructed near the port city of Alexandria and another at Al-Dhab'a.<sup>8</sup>

In parallel to expanding its nuclear program, Egypt has also sought to acquire long-range ballistic missile capability. In 2001, Egypt reportedly signed an agreement with North Korea to purchase its 1000km-range No-Dong missile system. In May 2002, Frank Gaffney, president of the Washington-based Center for Security Policy, told the House subcommittee oversight panel on terrorism that, "Egypt recently purchased 24 No-Dong medium-range missiles, the only purpose for which I, frankly, can conceive is as a threat to Israel. They could, after all, be used to deliver chemical, biological or even perhaps small atomic or nuclear weapons."

The U.S. has reportedly expressed concern over Egypt's missile acquisitions and plans to further develop its nuclear program. In June 2003, *Middle East Newsline* reported that U.S. Undersecretary of State John Bolton had held talks in Cairo with Egyptian leaders on a range of subjects, including Egypt's WMD and missile programs, as well as Cairo's cooperation with Saddam Hussein's Iraq and North Korea. According to a U.S. official, "All of the testimony and evidence found in Iraq have shown significant Egyptian involvement in Iraq's missile and WMD programs. The issue has become too big to ignore without undermining the credibility of the administration."<sup>9</sup>

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<sup>8</sup> Daniel Sobelman, "Egypt Set to Build Nuclear Energy Plant," *Ha'aretz*, July 1, 2002; "Egypt Rejects Pressure Against Nuke Plan," *MENL*, June 10, 2002; Felder, "Egypt Rethinks It's Nuclear Program – Part 1: Scientific and Technological Capabilities Vs. International Commitments," 2003.

<sup>9</sup> "Egypt Rejects Pressure Against Nuke Plan," 2002; "U.S. Questions Egypt on WMD, Missiles," *MENL*, June 16, 2003.

## Iran

### Introduction

Although Iran is an NPT signatory under IAEA (International Atomic Energy Agency) safeguards, it has been intensively seeking to acquire fissile material and technology for weapons development through a clandestine network.<sup>10</sup> During 2003, new information relating to Iran's nuclear program was publicized by an Iranian opposition group and intelligence sources. The U.S. and other governments reacted with increased pressure in the UNSC and other frameworks designed to press Iran to allow a wide IAEA investigation and take concrete steps to end these activities.

### Illicit Production of Fissile Material

Public reports of a large-scale Iranian uranium enrichment program designed to achieve weapons capability (in violation of the NPT) began to appear over a decade ago. In 1995, Iran attempted to purchase a uranium enrichment plant from Russia, and in April 1998, Russia and Iran held talks regarding the construction of a research reactor utilizing 20% enriched uranium. In May 1998, the head of the Iranian Atomic Energy Organization visited Russia, to discuss further cooperation and purchases. Iran was again reportedly seeking gas centrifuge technology for uranium enrichment. In October 1998, Western intelligence reported that Iran (led by the AEOI) was attempting to acquire equipment for laser enrichment of nuclear materials. In September 2001, Israel and the United States received information that a Russian company was selling centrifuge parts for uranium enrichment to Iran, and in October 2002, *Ha'aretz* reported that North Korea was producing enriched uranium in Iran.<sup>11</sup>

In August 2002, a dissident group -- the National Council of Resistance of Iran, revealed the existence of the Natanz pilot (and future commercial) centrifuge enrichment facility -- located some 200 miles south of Tehran. Shortly thereafter, at the IAEA September 2002 General Conference, the Iranian government admitted that it had "ambitious" nuclear fuel cycle plans and planned to develop all aspects of the entire fuel cycle.

In response to international pressure, led by the U.S., particularly following the war in Iraq, the Iranian government acquiesced to IAEA ad-hoc inspections, and in June 2003, following an initial round of inspections, the IAEA issued the first of a series of reports that documented the Iranian

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<sup>10</sup> The unreported and unsafeguarded enrichment of uranium, which is the essential step for manufacturing atomic weapons, is explicitly prohibited under the NPT, and remained undiscovered by the IAEA. Steinberg, "After Ghadafi's Declaration: The Impact of Changes in Libyan and Iranian WMD Policies on Israel and the Region," 2003. For background material, see Gerald M. Steinberg with Aharon Etengoff, "Arms Control and Non-Proliferation Developments in the Middle East: 2000-2001," *Mideast Security and Policy Studies*, 52 (Ramat Gan: BESA Center for Strategic Studies, Bar Ilan University, December 2002).

<sup>11</sup> "Russia to Start Work on Nuclear Reactor in Iran," *Ha'aretz*, January 10, 1999; Ze'ev Schiff, "North Korea Producing Enriched Uranium in Iran," *Ha'aretz*, October 21, 2002.

government's failure to report the existence of the Natanz uranium enrichment facility and the Arak heavy water plant.<sup>12</sup>

Between March and May 2003, environmental samples taken by the IAEA inspectors were found to contain particles of highly enriched uranium (HEU). (Iran attributed the sample results to the importation of foreign centrifuge components). In June 2003, Iran began to feed uranium hexafluoride (UF<sub>6</sub>) into this facility, and in August, began testing a ten-machine cascade. Upon completion, the Natanz pilot plant could produce 10-12 kilograms of weapon-grade uranium annually. The Natanz commercial plant, which is designed to house approximately 50,000 centrifuge machines, would be capable of producing 400-500 kilograms of weapon-grade material annually – enough for 15-20 nuclear weapons per year.

On September 8, 2003, IAEA Director General, Mohamed El-Baradei, summarized a detailed report on Iran's nuclear activities for the IAEA Board of Governors. In the discussion that followed, U.S. ambassador Kenneth Brill accused Iran of "working in secret, going back into the 1980s, to develop sophisticated nuclear facilities; stalling, stonewalling, and on a number of occasions first providing the IAEA [with] false information and then changing its story when the original version was revealed to be inaccurate; [and] attempting to cover up traces of its activities to avoid detection by the Agency."

Brill also noted that, "the facts already established would fully justify an immediate finding of non-compliance by Iran with its safeguards obligations," but due to the "desire of other member states to give Iran a last chance to stop its evasions," dropped his insistence that an upcoming resolution declare Iran to be in violation of the NPT. Such a declaration would have mandated serious action by the UNSC – including sanctions and the potential for the use of force.

On September 12, 2003, the IAEA Board of Governors adopted a resolution (in response to the above-mentioned report) demanding that Iran disclose the full extent of its nuclear program by the end of October 2003, and accept the Additional Protocol that mandates much more intrusive inspection procedures. (The Additional Protocol was adopted in the 1990s by the IAEA to reinforce and repair the verification process after they failed to detect Iraqi violations, and Iran had pledged to sign and implement its terms on many occasions, but in practice, had refused to do so.) On October 21, 2003, following negotiations with British, French, and German officials, (whose leaders were prepared to act in concert with the U.S. for the first time), Iran declared it would cooperate with the IAEA, implement the Additional Protocol, and temporarily suspend its uranium enrichment programs as well as re-processing activities.

In November 2003, the IAEA released a more comprehensive report. The report was followed by a resolution which declared that Iran had "failed in a number of instances over an extended period of time to meet its obligations

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<sup>12</sup> Rebecca Johnson, "US Alleges Clandestine Nuclear Activity in Iran," *Disarmament Diplomacy*, no. 69, February-March, 2003; CIA, "Unclassified Report to Congress on the Acquisition of Technology Relating to Weapons of Mass Destruction and Advanced Conventional Munitions, 1 January Through 30 June 2003," "IAEA Increases Pressure on Iran Over Nuclear Inspections," *Disarmament Diplomacy*, no. 72, August-September 2003, <http://www.acronym.org.uk/dd/dd72/72ddnr03.htm>.

under its Safeguards Agreement with respect to the reporting of nuclear material and its processing and use, as well as the declaration of facilities." The resolution also noted "with the gravest concern, that Iran enriched uranium and separated plutonium in undeclared facilities, in the absence of IAEA safeguards."<sup>13</sup>

However, according to media reports, completion of the Nantanz plant continues. Thus, the credibility of Tehran's commitments to suspend uranium enrichment program and abide by the NPT's Additional Protocol must be viewed with caution – as Iran has traditionally exploited the cover of legal agreements to advance its weapons program. And even with temporary suspension, unless these facilities are dismantled under IAEA supervision, they will be available to resume production of highly enriched uranium whenever the regime decides to do so.<sup>14</sup>

Iran is also mining uranium reserves and constructing uranium concentration and conversion facilities, as well as fuel fabrication plants. In February 2003, President Khatami discussed these activities, and the head of the Iranian Atomic Energy Organization, Gholamreza Aghazadeh, stated that Iran planned to open a uranium-conversion facility at Isfahan. During the same month, Iranian authorities disclosed that centrifuge components were produced and machines assembled at the site of the Kalaye Electric Company. The IAEA gained access to the company's workshop in May, but was prevented from taking environmental samples until August, which tested positive for traces of highly enriched uranium. In October 2003, Iran admitted to conducting a limited number of tests that utilized 1.9 kg of uranium hexafluoride (UF<sub>6</sub>) between 1999 and 2002. However, Iran has insisted that it has not enriched uranium beyond 1.2% via centrifuges, and attributed the presence of HEU to imported and contaminated centrifuge components. In May 2003, Iranian authorities declared that equipment at the Lashkar Ab'ad laser enrichment pilot plant (established in 2002) was dismantled and moved to Karaj storage facility.

Despite the agreements with the IAEA, in February 2004, press reports noted that Iran had failed to declare designs for uranium enrichment centrifuges to the IAEA. According to Western diplomats, information from Libya and other countries led to the discovery of the designs, which could be used for the development of machines to produce weapons-grade uranium.

While seeking to produce highly enriched uranium (HEU), Iran has not neglected the plutonium route to weapons production. In August 2002, the National Council of Resistance of Iran disclosed the construction of the Arak heavy water production facility. In May 2003, Iran announced plans to build a 40MW thermal heavy water reactor at the site, which would use uranium dioxide (UO<sub>2</sub>) and heavy water, and would be capable of annually producing 8-10 weapons-grade plutonium. In August 2003, the *Los Angeles Times*

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<sup>13</sup> Brenda Shaffer, "Iran at the Nuclear Threshold," *Arms Control Today*, November 2003; Rebecca Johnson, "IAEA Adopts Critical Resolution in Deepening Crisis over Iran's Nuclear Programme," *Disarmament Diplomacy*, no. 73, October-November, 2003, <http://www.acronym.org.uk/dd/dd73/73news02.htm>; "Addressing Iran's Nuclear Programme: the US, IAEA, and European Foreign Ministers," *Disarmament Diplomacy*, no. 74, December, 2003, <http://www.acronym.org.uk/dd/dd74/74news02.htm>.

<sup>14</sup> "Iran's Programs to Produce Plutonium and Enriched Uranium," *Carnegie*, December 1, 2003; Shaffer, "Iran at the Nuclear Threshold," 2003; Douglas Frantz, "Iran Closes in on Ability to Build a Nuclear Bomb," *Los Angeles Times*, August 4, 2003.

reported that Russian scientists were helping Iran complete a special reactor that could produce weapons-grade plutonium. The *Times* also reported that Iran had approached European companies to purchase devices capable of manipulating large volumes of radioactive material, technology to forge plutonium (as well as uranium metal) and switches that could trigger a nuclear weapon. In October 2003, Iranian officials admitted that plutonium experiments had been conducted at the Teheran Nuclear Research Center between 1988 and 1992. The small amount of separated plutonium was stored in a laboratory of Jabr Ibn Hayan. The shielded boxes were reportedly dismantled in 1992.

In February 2004, media reports indicated that IAEA inspectors had discovered traces of polonium-210, an element that can be used as neutron initiator in certain designs of nuclear weapons. Additional IAEA inspections are scheduled to be conducted during 2004, and the reports that will follow will provide the background for the crucial meetings of the Board of Governors and perhaps the UN Security Council, in which the international response to Iran's ongoing nuclear weapons efforts will be determined.<sup>15</sup>

### The Bushehr Nuclear Reactor

The Bushehr reactor construction project provides the Iranian nuclear program with the façade of legitimate commercial activity, which has been used as a “cover” to obtain fuel cycle facilities and materials. The following chronology details crucial dates and significant developments – beginning with the construction of the reactor.

- **1970's:** Construction of the Bushehr Nuclear Reactor is initiated by Germany (Siemens).
- **1979:** Construction is suspended due to the Islamic revolution.
- **1995:** Iran signs a \$1 billion agreement with Russia to revive Bushehr.
- **February 1998:** Work on the 100 MW reactor resumes with Russian assistance.<sup>16</sup>
- **March 1998:** Iranian and Russian officials agree in principle to the construction of two more reactors.<sup>17</sup>
- **November 1998:** Russia and Iran announce that they are studying the possibility of building three more nuclear reactors at the site.<sup>18</sup>

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<sup>15</sup> Shaffer, “Iran at the Nuclear Threshold,” November 2003; Marshall Breit, “Iran’s Programs to Produce Plutonium and Enriched Uranium,” *Carnegie*, December 1, 2003; CIA, “Unclassified Report to Congress on the Acquisition of Technology Relating to Weapons of Mass Destruction and Advanced Conventional Munitions, 1 July Through 31 December 2001,” January 2003; Frantz, “Iran Closes in on Ability to Build a Nuclear Bomb,” 2003; “Diplomats: Iran Failed to Declare Centrifuge Designs,” *Reuters*, February 12, 2004;

<sup>16</sup> *The RiskReport*, vol. 6, no. 4, (July-August 2000).

<sup>17</sup> “Nuclear and Missile Trade Developments,” *The NonProliferation Report*, vol. 6, no. 1, Fall 1998, p. 167.

<sup>18</sup> “Russia May Build Reactors in Iran,” *Associated Press*, November 26, 1998.

- **March 2001:** Iranian President, Mohammad Khatami, arrives in Russia to sign an agreement to complete construction of Bushehr.<sup>19</sup>
- **April 2001:** Workers began laying the foundations for a steam power generator – which is delivered later in the year.<sup>20</sup>
- **November 2001:** Russia ships a 350-ton nuclear reactor assembly kit and a VVER-1000 [100MW light water] to the site.
- **February 2002:** A Russian company begins constructing diesel emergency power plants.
- **September 2002:** An Iranian Foreign Ministry spokesman announces that Russia had delivered heavy equipment that was being assembled in the reactor building of the plant.<sup>21</sup>
- **February 2003:** Russian President Vladimir Putin and senior representatives of the Russian Ministry of Atomic Energy (MINATOM) express concern over Iran's nuclear program following Iranian President Khatami's statement that Iran would retain spent fuel from Bushehr. Indeed, the first fuel shipment from Russia to the reactor is reportedly contingent upon a resolution of the issue.
- **October 2003:** Russian Minister of Nuclear Energy, Alexander Rumyanstev states that the power plant is 80-85 percent complete and predicts that the reactor will become operational in 2005.<sup>22</sup>

## Missiles

Iranian ballistic missile development is based on technology and expertise obtained from Russia, China, and North Korea. As of December 2001, Iran reportedly possessed several hundred Scud Bs and Cs; 200 Chinese-manufactured CSS-8 SRBMs; 300 North Korean produced Shahab-1 missiles; 100 North Korean produced Shahab-2 missiles; and the first locally assembled and produced Shahab-3s. Iran also reportedly began indigenous production of Scuds and continues to work on longer-range missiles that will be capable of striking targets in Europe and, eventually, the US. In addition,

<sup>19</sup> Steinberg with Etengoff, "Arms Control and Non-Proliferation Developments in the Middle East: 2000-2001," 2002.

<sup>20</sup> NTI: Iran Nuclear Chronology, *Nuclear Threat Initiative*, citing "Iran: Ceremony Marks Start of Bushehr Nuclear Reactor Steam Generator Construction," *IRNA*, April 16, 2001, April 16, 2001; "Russia Prepares Feasibility Study For New Reactors At Iranian Nuclear Plant," *ITAR-TASS*, September 4, 2001, September 4, 2001.

<sup>21</sup> "Russia Ships Reactor to Bushehr, Will Train Iranian Nuclear Physicists," *Iran Expert*, November 30, 2001, [http://204.71.60.38/e\\_research/profiles/Iran/1825\\_1878.html](http://204.71.60.38/e_research/profiles/Iran/1825_1878.html); NTI: Iran Nuclear Chronology, *Nuclear Threat Initiative*, citing "Russia: Moscow Region Firm to Supply Emergency Units for Iran's Nuclear Plant," *Agentstvo Voyennykh Novostey*, February 11, 2002; "Iran says Bushehr nuclear power plant develops well," *Xinhua*, September 2, 2002, [http://204.71.60.38/e\\_research/profiles/Iran/1825\\_1879.html](http://204.71.60.38/e_research/profiles/Iran/1825_1879.html).

<sup>22</sup> Shaffer, "Iran at the Nuclear Threshold," *Arms Control Today*, 2003; Breit, "Iran's Programs to Produce Plutonium and Enriched Uranium," 2003; NTI: Iran Nuclear Chronology, *Nuclear Threat Initiative*, citing "Russian official: No obstacle in sending fuel to Bushehr plant," *IRNA*, October 29, 2003, [http://204.71.60.38/e\\_research/profiles/Iran/1825\\_2612.html](http://204.71.60.38/e_research/profiles/Iran/1825_2612.html).

Iran began to emerge as a “third tier” supplier state, providing missile technology and assistance to Syria, Libya, and other countries in the region.<sup>23</sup>

In October 2001, John Kyl, the ranking Republican on the Senate Subcommittee on Technology, stated that China was providing Iran with the technology to mount nuclear warheads on missiles. In October 2002, *Ha'aretz* reported that North Korea was testing long-range missiles in Iran, and in June 2003, U.S. intelligence officials disclosed that North Korea was exporting missiles to Iran via air routes. In July 2003, an Iranian Foreign Ministry Spokesman confirmed that Iran had successfully conducted the final test of its Shahab 3 medium-range missile. In August 2003, a Japanese newspaper reported that North Korea was negotiating with Iran over the export of its Taepodong-2 long-range ballistic missile and the possibility of jointly developing nuclear warheads. In January 2004, the Iranian Defense Minister stated that Iran intended to become "the first Islamic country to find a way into the space beyond the Earth's atmosphere with its own satellite and indigenous launch-system."<sup>24</sup> It should be noted that such a launch-system would be equivalent to long-range intercontinental ballistic missile capability, and would serve as a “civilian” cover for an advanced weapons system.

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<sup>23</sup> Frantz, “Iran Closes in on Ability to Build a Nuclear Bomb,” 2003; CIA, “Unclassified Report to Congress on the Acquisition of Technology Relating to Weapons of Mass Destruction and Advanced Conventional Munitions, 1 January Through 30 June 2001”; Steinberg with Etengoff, “Arms Control and Non-Proliferation Developments in the Middle East: 2000-2001,” 2002.

<sup>24</sup> “Amid Afghan War China Sells Missiles to The Middle East,” *MENL*, October 31, 2001; Ze'ev Schiff, "North Korea Producing Enriched Uranium in Iran," *Ha'aretz* October 21, 2002; Nazila Fathi, "Iran Confirms Final Test of a Midrange Missile," *New York Times*, July 7, 2003; “North Korea Plans to Export Missiles to Iran,” *Reuters*, August 5, 2003; Jeremy Singer, “Iran Planning Domestic Satellite, Launcher,” *Space News*, January 5, 2004.

## Iraq

The U.S.-led war that removed Saddam Hussein's regime in the spring of 2003 was explained primarily in terms of the threat presented by the regime's WMD programs, including nuclear weapons acquisition efforts. In the aftermath of the war, the chaos in Iraq, the difficulty in locating and verifying the claims regarding WMD possession, and the public debate on these issues, efforts to resolve the details of Iraq's existing nuclear activities before the war, and plans to develop weapons are continuing. In this context, this analysis remains tentative and open to further developments.

### Background

During the early 1970's, Iraq attempted to purchase a plutonium production reactor similar to the one used by France in its nuclear weapons program. In 1976, France and Iraq agreed on the construction of the Osirak and Isis reactors - slated to become part of a sizeable nuclear research complex at Tuwaitha in Baghdad. In June 1981, Israel launched an air strike against Osirak after the international community failed to halt the flow of nuclear weapons technology to Iraq. The reactor was destroyed just before it was loaded with fuel.

Following the destruction of the reactor, Iraq shifted its efforts to the production of highly enriched uranium. In this context, Iraqi scientists investigated various techniques of uranium enrichment. Nevertheless, Iraq still maintained an interest in obtaining plutonium as fissile material for weapons - albeit on a lower level. Additional resources were made available for the acquisition of nuclear technology subsequent to the close of the Iran-Iraq war. In 1988, Iraq attempted to obtain the components and technology for the URENCO gas-centrifuge process. During this period, Saddam Hussein accelerated the rate of development and acquisition of nuclear weapons technology, materials, and expertise.

At the time of the Gulf War (January 1991), Iraq maintained a sophisticated and wide-ranging nuclear weapons development program, which was supported by at least 16 primary and supporting facilities. The program employed 10,000 people, and had a multi-year budget of approximately \$10 billion. In addition, Iraq clandestinely constructed industrial-scale facilities for the production of uranium compounds compatible with isotopic enrichment or fuel fabrication. Iraq also pursued research and development of indigenous uranium enrichment technologies, explored weaponization capabilities for implosion-based nuclear weapons, and devised a crash program to divert safeguarded research reactor fuel for use in a nuclear weapon by recovering the highly enriched uranium.<sup>25</sup>

Following the Gulf War, the inspection and verification regime, under the auspices of the United Nations Special Commission (UNSCOM), was

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<sup>25</sup> Weapons of Mass Destruction in the Middle East, *Monterey Institute Center For Nonproliferation Studies*, <http://cns.miis.edu/research/wmdme/iraq.htm>; Joseph Cirincione, Jessica T. Mathews, George Perkovich, with Alexis Orton, "WMD in Iraq Evidence and Implications," *Carnegie Endowment*, January 2004; "Iraq-Early Western Assessments: What Did We Know and When Did We Know It?" *FAS*, <http://www.fas.org/nuke/guide/iraq/nuke/when.htm>.

established and constituted the central element of the Gulf War cease-fire agreement. Under the terms of UN Security Council 687, UNSCOM was charged with verifying the validity of Iraq's "full, final, and complete" declaration of its WMD, missile capabilities, and facilities.

In parallel with UNSCOM, IAEA inspectors working in Iraq from 1991-1998 removed or secured known imported and indigenously produced uranium compounds, as well as single-use equipment used in the context of enrichment research and development. In October 1997, the IAEA assessed that there were "no indications that there remains in Iraq any physical capability for the production of amounts of weapon-usable nuclear material of any practical significance." The IAEA also stated that it had found no evidence indicating Iraq had been successful in producing nuclear weapons, nor was there any evidence that Iraq had produced more than a few grams of weapon-grade nuclear material.

In 1998, continued Iraqi interference and confrontations culminated in the expulsion of UN inspectors and the end of UNSCOM's operations, followed by Operation Desert Fox, a four-day US-led air attack against Iraqi targets. Subsequent efforts to re-design the inspection and verification regime, creating UNMOVIC (UN Monitoring, Verification and Inspection Commission), were rejected by Iraq, which "announced its firm and permanent stance" in demanding an immediate end to the economic sanctions imposed following the invasion of Kuwait in 1990. In December 1999, after a long and difficult debate, the UN Security Council (UNSC) approved Resolution 1284, which created UNMOVIC, UNSCOM's successor. However, Iraq refused to permit its deployment.

As such, despite a 1999 IAEA report which asserted that, "verification activities have revealed no indication that Iraq possesses nuclear weapons or any meaningful amounts of weapon usable nuclear material," many officials and experts believed that Iraq maintained interest in a program to develop nuclear weapons. In October 2002, the Director of Central Intelligence published an unclassified version of a report entitled *Iraq's Weapons of Mass Destruction Programs* which noted that, "most agencies assess that Baghdad started reconstituting its nuclear weapons program." On January 28, 2003, President Bush claimed in his State of the Union Address that the "British government has learned that Saddam Hussein recently sought significant quantities of uranium from Africa."

However, former ambassador Joseph Wilson, who investigated the allegation, later reported to the CIA that "it was highly doubtful...any such transaction had ever taken place." In addition, the IAEA contested claims made by US Secretary of State Colin Powell that Saddam Hussein had "made repeated covert attempts to acquire high-specification aluminum tubes from 11 different countries." According to IAEA Director General Mohamed El Baradei, citing the IAEA's technical evaluation, there was "no indication that Iraq had attempted to import aluminum tubes for use in centrifuge enrichment." El Baradei also claimed that "it was highly unlikely that Iraq could have achieved the considerable redesign needed to use them in a revived centrifuge program," and noted that there was "no indication of resumed nuclear activities...nor any indication of nuclear-related prohibited activities at any inspected sites."

Similarly, during testimony to the House Permanent Select Committee on Intelligence and the Senate Select Committee on Intelligence, David Kay, (the former) head of the Iraq Survey Group (ISG) stated that while there were “indications that there was interest, beginning in 2002, in reconstituting a centrifuge enrichment program...the evidence does not tie any activity directly to centrifuge research or development.” In addition, Kay noted that his team had “not uncovered evidence that Iraq took significant post-1998 steps to actually build nuclear weapons or produce fissile material.”

In an attempt to reconcile pre-war intelligence assessments with post-war findings, US National Security Advisor Condoleezza Rice explained that the White House did not maintain one assessment, but rather formed a “judgment...which was not about a data point here or a data point there, but about what Saddam Hussein was doing...That he had weapons of mass destruction. That was the judgment.”<sup>26</sup>

### Missiles:

Under the terms of UNSCR 687 (1991), Iraq was allowed to continue to develop, manufacture, and test ballistic missiles with ranges of up to 150 kilometers. Nevertheless, Iraq conducted R&D on various missile projects designed to exceed the permitted 150km, including:

- Attempting to acquire technology from North Korea for surface-to-surface missiles with a range of 1,300 km and land-to-sea missiles with a range of 300 km.”
- Resuming work on the conversion of SA-2 surface-to-air missiles into ballistic missiles with a range of approximately 250km.
- Increasing the range of its HY-2 coastal-defense cruise missiles from 100km to 150-180km. Iraq produced 10 such missiles, two of which were fired during the war.
- Attempting to convert the HY-2 coastal-defense cruise missile into a land-attack cruise missile with a 1,000km range.
- Working with a group of Russian engineers that clandestinely aided Saddam Hussein’s long-range ballistic missile program via technical assistance for prohibited Iraqi weapons projects.<sup>27</sup>

### **Libya**

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<sup>26</sup> Steinberg with Etengoff, “Arms Control and Non-Proliferation Developments in the Middle East: 2000-2001,” 2002; Stephen A. Cambone, “Briefing on the Iraq Survey Group,” *Department of Defense News Transcript*, May 30, 2003,

<http://www.defenselink.mil/transcripts/2003/tr20030530-0231.html>; Cirincione, Mathews, Perkovich, with Orton, “WMD in Iraq Evidence and Implications,” 2004; Paul Kerr, “Deconstructed: Kay’s Congressional Testimony,” *Arms Control Today*, November 2003.

<sup>27</sup> “Searching for the Truth About Iraq’s WMD: An interview with David Kay,” *Arms Control Today*, <http://www.armscontrol.org/aca/midmonth/March/Kay.asp>; James Risen, “Russian Engineers Reportedly Gave Missile Aid to Iraq,” *New York Times*, March 4, 2004; Kerr, “Deconstructed: Kay’s Congressional Testimony,” 2003.

## Introduction

Libya ratified the NPT in 1975, concluded a formal safeguards agreement with the IAEA in 1980, and became party to the Treaty of Pelindaba (the African Nuclear Weapons Free Zone) in 1996. Nevertheless, Libya continued to seek nuclear weapons, materials and technology from Egypt, the Soviet Union (now Russia), Argentina, India, Belgium, and, most importantly, Pakistan and China.<sup>28</sup>

As outside intelligence agencies tracked at least some of the major shipments related to uranium enrichment, Libya came under increasing pressure. In March 2003, during the Iraq war, the regime initiated a dialogue with U.S. and British officials to explore the possibility of normalizing ties in exchange for the disarmament of WMD. In October, the government agreed to allow British and US officials to inspect various Libyan facilities. At the same time, however, the technology and materials shipments continued, and a German registered ship, the *BBC China* containing centrifuge components was stopped by Italian officials working in conjunction with Germany and U.S. intelligence officials.<sup>29</sup>

In December, against the background of growing threats of military action to destroy this capability, Libya's Foreign Ministry announced that it would dismantle its WMD programs, disclose all relevant information regarding such programs, and allow inspectors to verify its compliance. Subsequently, American and British personnel began the process of dismantling Libya's WMD facilities. In this context, components of Libya's nuclear and ballistic missile programs were transported to the U.S., including, uranium hexafluoride, centrifuge parts, documentation, guidance devices for long-range missiles, and blueprints for a warhead based on a Pakistani design. In January 2004, Libya ratified the Comprehensive Nuclear Test Ban Treaty (CTBT), and agreed to conclude an additional protocol to its International Atomic Energy Agency (IAEA) safeguards agreement. Libya also became a CWC state party on February 5, 2004.

However, given Libya's long history of deception, such pledges must be viewed with some caution. Indeed, within the Arab League and other frameworks, Libya's anti-Israel and anti-American rhetoric remains intense and rejectionist.

## Illicit Acquisition of Fissile Material

Following Libya's announcement that it would dismantle its WMD programs, a senior US administration official stated that Libya had complete centrifuges and "thousands" of centrifuge components, but was lacking an operating enrichment facility. After inspecting Libyan nuclear sites in Tripoli, IAEA Director Mohamed El Baradei claimed that Libya's nuclear program was "in the initial stages of development," without any "industrial scale facility to

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<sup>28</sup> "Libya Country Profile: Past Nuclear Policies," *SIPRI*; John Elridge, "Reassessing Libya: an Analysis from Jane's NBC Defence," *Jane's*, December 23, 2003; Samia Amin, "Recent Developments in Libya," *Carnegie*, February 10, 2004.

<sup>29</sup> "Iran, Libya, and Pakistan's Nuclear Supermarket," *Disarmament Diplomacy*, no. 75, January/February, 2004, <http://www.acronym.org.uk/dd/dd75/75news02.htm>; Robin Wright, "Ship Incident May Have Swayed Libya," *Washington Post*, January 1, 2004.

produce highly enriched uranium." <sup>30</sup> However, the IAEA's information was considered sketchy and the conclusions were premature.

On February 20, 2004, a confidential IAEA report termed Libya in violation of the NPT safeguards agreement. According to the report, Libya acquired 20 pre-assembled centrifuges of the P-1 type, (a model developed by the Pakistani nuclear scientist, Dr. Abdul Qadeer Khan) from foreign suppliers in 1997. During this period, Libya also obtained components for an additional 200 P-1 centrifuges. This equipment was prepared for use between late 2000 and April 2002 – but was subsequently dismantled and stored for "security reasons." In September 2000, Libya purchased two P-2 centrifuges with rotors made of maraging steel, which enables a more effective enrichment of uranium. In February 2001, Libya also took delivery of 1.87 tons of uranium hexafluoride. The IAEA report also noted that Libya had failed to declare the import of UF<sub>6</sub> (partially enriched uranium) in 1985, 2000 and 2001, and the import of uranium compounds in 1985 and 2002. In addition, Libya had not declared "the separation of a small amount of plutonium." It should be noted that a Libyan official had previously admitted that his country had imported centrifuge components and natural uranium without informing the IAEA of "some of these activities." <sup>31</sup> As of February 2004, the record remains incomplete and additional revelations can be expected.

### Missiles

As part of the pledge to disclose all relevant information regarding WMD programs, Libya has reportedly committed to limiting its arsenal of missile to those that do not exceed a range of "no more than 300km." In addition, Libya revealed that it had sought to develop long-range Scud missiles in conjunction with North Korea. According to a senior intelligence official, inspection teams were shown a Scud-C missile with an 800-kilometer range. <sup>32</sup>

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<sup>30</sup> Amin, "Recent Developments in Libya," 2004; Paul Kerr, "Libya Vows to Dismantle WMD Program," *Arms Control Today*, January/February, 2004; Steinberg, "After Ghadafi's Declaration: The Impact of Changes in Libyan and Iranian WMD Policies on Israel and the Region," 2003; CTBTO Press Release, January 14, 2004, [http://www.ctbto.org/press\\_centre/press\\_release.dhtml?item=217](http://www.ctbto.org/press_centre/press_release.dhtml?item=217)

<sup>31</sup> Raymond Bonner and Craig S. Smith, "Pakistani Said to Have Given Libya Uranium," *New York Times*, February 21, 2004; Amin, "Recent Developments in Libya," 2004; Kerr, "Libya Vows to Dismantle WMD Program," 2004; "IAEA Says Libya Made Plutonium, Imported Uranium," *Reuters*, February 20, 2004; Douglas Frantz, "Libya's Nuclear Gains Exceeded Suspicions," *Los Angeles Times*, February 21, 2004.

<sup>32</sup> Kerr, "Libya Vows to Dismantle WMD Program," 2004; Anjali Bhattacharjee and Sammy Salama, "Libya and Nonproliferation," *CNS*, December 24, 2003.

## Saudi Arabia

Although Saudi Arabia is a signatory to the NPT, a number of reports and allegations of Saudi efforts to acquire nuclear weapons have been published over the past years. In 1994, news reports indicated that Saudi Arabia had attempted to obtain nuclear weapons from Iraq.<sup>33</sup> In 1999, Saudi Defense Minister, Prince Sultan visited Pakistan's Kahuta uranium enrichment plant and missile factory. Aziz denied the allegations, stating: "Saudi Arabia is a signatory of the nuclear non-proliferation treaty and is committed to its international pledges...[The visit did not] exceed the first entrances of the site and did not include secret facilities as was reported...We are proud that our relations with Pakistan are always friendly and strong and they should not be interpreted as something else."<sup>34</sup>

In 2002, a son of Crown Prince Abdullah was present at Pakistan's test-firing of the 950-mile range Ghauri missile. In September 2003, media reports indicated that Saudi Arabia had undertaken a strategic review that included the acquisition of nuclear weapons as a possible deterrent. The reports were based on the contents of a meeting held outside of Oxford during a three-day international symposium (organized by the Oxford Center for Islamic Studies) on Saudi Arabia, Britain, and the Wider World.<sup>35</sup>

According to Simon Henderson of the Washington Institute, Riyadh has attempted to acquire nuclear weapons to offset Iran's emerging nuclear capability, as well as to "fill the gap in the kingdom's security policy left by the departure of U.S. forces and the cooling of ties between Riyadh and Washington."

In October 2003, Saudi Crown Prince Abdullah visited Islamabad to expand defense and military ties. On October 20, 2003, a Pakistani source stated that his country had "agreed to provide KSA (Kingdom of Saudi Arabia) with the wherewithal for a nuclear deterrent."<sup>36</sup>

## Missiles

The Saudi acquisition of long-range strategic missiles is also seen as an indication of intentions in this area. On May 22, 2002, Congressman Benjamin Gilman told a House subcommittee that, "In the past, it [Saudi Arabia] has attempted to procure weapons of mass destruction in the form of Chinese missiles. The missiles include 40 to 60 Chinese CSS-2[DF-3] missiles with 2,400km range and 2,500kg payload, deployed at al-Sulaiyil and

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<sup>33</sup> "Weapons of Mass Destruction In The Middle East," *Monterey Institute Center For Nonproliferation Studies*, <http://cns.miis.edu/research/wmdme/saudi.htm>; Ephraim Asculai, "Saudi Arabia - A New Player on the Nuclear Scene?" *Jaffee Center for Strategic Studies*, Tel Aviv Notes No. 90, October 26, 2003.

<sup>34</sup> "Saudi Arabia Denies Nuclear Link with Pakistan," *Reuters*, August 5, 1999; Simon Henderson, "Toward a Saudi Nuclear Option: The Saudi Pakistan Summit," *Washington Institute Policywatch*, no. 793, October 16, 2003, <http://www.washingtoninstitute.org/watch/policywatch/policywatch2003/793.htm>.

<sup>35</sup> Henderson, "Toward a Saudi Nuclear Option: The Saudi Pakistan Summit," 2003; MacAskill and Traynor, "Saudis Consider Nuclear Bomb," 2003; Arnaud de Borchgrave, "Pakistan-Saudi Trade Nuke Tech for Oil," *UPI*, October 21, 2003.

<sup>36</sup> "Saudis, Pakistan Plan to Increase Defense Ties," *MENL*, October 18, 2003; Borchgrave, "Pakistan-Saudi Trade Nuke Tech for Oil," 2003.

al-Joffer, 500km and 100km south of Riyadh, respectively. Each site includes four-to-six concrete launch pads. In addition, various multi-billion dollar deals to acquire large numbers of the most advanced combat aircraft, tanks, and other systems were signed and implemented over the years, making Saudi Arabia one of the most highly armed countries in the world.<sup>37</sup>

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<sup>37</sup> "Saudis Said to Seek Weapons of Mass Destruction," *MENL*, June 27, 2002; "Weapons of Mass Destruction In The Middle East," *MontereyInstitute Center For Nonproliferation Studies*, <http://cns.miis.edu/research/wmdme/saudi.htm>; Gerald M. Steinberg, "Saudi Blowback," *Jerusalem Post*, February 20, 2003.

## Syria

Syria does not have an active or advanced nuclear program, but maintains a small 30kW neutron research reactor at Dayr Al Hajar<sup>38</sup>, (operated under IAEA safeguards), and the Homs fertilizer plant, which is being prepared for recovering uranium from phosphates. Syria is also reportedly constructing a radioactive waste processing facility to manage waste resulting from the production and application of radioisotopes. In recent years, Syria has increased its efforts to obtain nuclear technology and related facilities from Russia. According to the CIA, "broader access to Russian expertise could provide opportunities for Syria to expand its indigenous capabilities, should it decide to pursue nuclear weapons."<sup>39</sup>

In July 1998, the two countries signed a memorandum regarding the construction of a 25-MW light water nuclear research center. In January 2000, Moscow approved a draft program with Damascus that included cooperation on civil nuclear power. In May 2001, Russian and Syrian officials discussed construction of a \$500 million tri-superphosphate factory near the city of Palmyra – which would be part of an overall agreement to develop a nitric fertilizer production plant in Deyr ez-Zor and a phosphate fertilizer plant in Homs.<sup>40</sup> In January 2003, Russia and Syria reportedly began negotiations over the construction of a \$2 billion nuclear facility that would include a nuclear power plant as well as a nuclear desalination plant.<sup>41</sup>

## Missiles

Syria continues to work toward achieving a solid-propellant rocket motor development and production capability. Syria is also developing a liquid-propellant missile program with the aid of Russia and North Korea. In addition, Syria is working to assemble liquid-fueled Scud C missiles, and is developing longer-range missile programs such as the Scud D as well as

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<sup>38</sup> "IAEA Annual Report for 1999 (annex), IAEA, 31 October 2000; Michael Eisenstadt, *Jane's*, 1993, p. 169, cited by Lesser and Tellis, p. 70; Unclassified Report to Congress on the Acquisition of Technology Relating to Weapons of Mass Destruction and Advanced Conventional Munitions, 1 January Through 30 June 2003.

<sup>39</sup> NTI: Syria Nuclear Chronology, *Nuclear Threat Initiative*, citing "Russian, Syrian Officials to Discuss Economic Cooperation," *Pravda.ru*, May 15, 2001, [http://204.71.60.38/e\\_research/profiles/Syria/Nuclear/2079.html](http://204.71.60.38/e_research/profiles/Syria/Nuclear/2079.html); Mohammad Ghafar, "Radioactive waste management facility in Syria," International Conference on Management of Radioactive Waste from Non-Power Applications, IAEA, Report No. IAEA-CN-87/79, July 1, 2001, [http://204.71.60.38/e\\_research/profiles/Syria/Nuclear/2079.html](http://204.71.60.38/e_research/profiles/Syria/Nuclear/2079.html); CIA, "Unclassified Report to Congress on the Acquisition of Technology Relating to Weapons of Mass Destruction and Advanced Conventional Munitions, 1 January Through 30 June 2001."

<sup>40</sup> NTI: Syria Nuclear Chronology, *Nuclear Threat Initiative*, citing "Russian, Syrian Officials to Discuss Economic Cooperation," *Pravda.ru*, May 15, 2001, [http://204.71.60.38/e\\_research/profiles/Syria/Nuclear/2079.html](http://204.71.60.38/e_research/profiles/Syria/Nuclear/2079.html); "Syria-Special Weapons," FAS; CIA, "Unclassified Report to Congress on the Acquisition of Technology Relating to Weapons of Mass Destruction and Advanced Conventional Munitions, 1 January Through 30 June 2001."

<sup>41</sup> Andrew Jack, Stephen Fidler, and Roula Khalaf, "Russia in talks to build Syrian nuclear reactor," *Financial Times*, January 16, 2003; *Ministry of Foreign Affairs of the Russian Federation*, January 15, 2003; "Russian Nuclear Assistance to Syria: Scam or Scandal?" *Middle East Intelligence Bulletin*, Vol. 5, No. 1, January 2003, [http://204.71.60.38/e\\_research/profiles/Syria/Nuclear/2079.html](http://204.71.60.38/e_research/profiles/Syria/Nuclear/2079.html).

other variants with the assistance of Iran and North Korea. Syria has also reportedly discussed procurement of the No-Dong intermediate-range missile with North Korea.<sup>42</sup>

In February 2004, Syria and Iran established a joint committee to review areas of cooperation in the area of defense, military, and security. In this context, Iran's defense minister toured Syrian weapons facilities to examine potential cooperation. It should be noted that Syria had previously attempted to develop its defense industry in conjunction with Saddam Hussein's Iraq – and even began to produce and export surface-to-surface tactical rockets.<sup>43</sup>

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<sup>42</sup> CIA, "Unclassified Report to Congress on the Acquisition of Technology Relating to Weapons of Mass Destruction and Advanced Conventional Munitions, 1 January Through 30 June 2001"; "Unclassified Report to Congress on the Acquisition of Technology Relating to Weapons of Mass Destruction and Advanced Conventional Munitions, 1 January Through 30 June 2003."

<sup>43</sup> Con Coughlin, "Saddam's WMD Hidden in Syria, Says Iraq Survey Chief," *Daily Telegraph*, January 25, 2004; "Powell Says No Hard Evidence Iraqi WMD Hidden in Syria," *U.S. Department of State*, January 21, 2004, <http://usinfo.state.gov/topical/pol/arms/04012101.htm>; "Iran, Syria Set Up Panel For Defense Cooperation," *MENL*, February 29, 2004.