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National
Intelligence
Estimate

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~~(S//NF)~~ Iraq's Continuing Programs
for Weapons of Mass Destruction

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NIE 2002-16HC

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NIE 2002-16HC
October 2002



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Addenda

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(S//NF) Errata sheet for NIE 2002-16HC, October 2002: Iraq's Continuing Programs for Weapons of Mass Destruction

Change 1

~~(S//NF)~~ Page 7, first sub-bullet under first full bullet. Replace the following:

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- Baghdad has mobile facilities for producing bacterial and toxin BW agents; these facilities can evade detection and are highly survivable. Within several days these units probably could produce an amount of agent equal to the total that Iraq produced in the years prior to the Gulf war.

With this language:

- Baghdad has mobile facilities for producing bacterial and toxin BW agents; these facilities can evade detection and are highly survivable. Within three to six months these units probably could produce an amount of agent equal to the total that Iraq produced in the years prior to the Gulf war.

This change is reflected in the text as follows:

~~(S//NF)~~ Page 43, last bullet on page. Replace the following:

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- We estimate that if all seven mobile plants were operational, Baghdad would be able to produce

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With this language:

- We estimate that if all seven mobile plants were operational, Baghdad would be able to produce

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approximately 14 to 26 weeks to produce the amount UNSCOM assessed was actually produced prior to the Gulf war.

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([redacted]) Page 76, second bullet. Replace the following:

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- [redacted]

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With this language:

- [redacted]

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NIE 2002-16HC

~~(S//NF)~~ Iraq's Continuing Programs for Weapons of Mass Destruction

~~(U)~~ This Estimate was approved for publication by the National Foreign Intelligence Board under the authority of the Director of Central Intelligence.

~~(U)~~ Prepared under the auspices of Robert D Walpole, National Intelligence Officer (NIO) for Strategic and Nuclear Programs; with assistance from Paul Pillar, NIO for the Near East and South Asia; Lawrence K. Gershwin, NIO for Science and Technology; and Major General John R. Landry, NIO for Conventional Military Issues.

~~(U)~~ Inquiries may be directed to the NIO for Strategic and Nuclear Programs on [redacted] or (703) 482-7424.

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Scope Note

(U) This National Intelligence Estimate (NIE) was requested by the Director of Central Intelligence to address the status of and outlook for Iraq's weapons of mass destruction programs.

(C) This Estimate builds on the work and judgments of recent Intelligence Community products on this issue, including:

- ~~(U)~~ *Current and Future Air Threats to the US Homeland* (ICA 2001-05HC), TOP SECRET/ [redacted] ~~NOFORN//X1~~ of July 2002. (b)(3)
- ~~(C)~~ *Smallpox: How Extensive A Threat?* (ICB 2001-34HC), TOP SECRET/ [redacted] ~~NOFORN~~ of December 2001. (b)(3)
- ~~(U)~~ *Foreign Missile Developments and the Ballistic Missile Threat Through 2015*, (NIE 2001-19HJ/L), TOP SECRET/ [redacted] ~~NOFORN//X1~~ of December 2001. (b)(3)
- ~~(S//NF)~~ *The BW Threat to the Global and US Agricultural Sectors* (ICB 2001-09), SECRET ~~NOFORN//X1~~ of March 2001.
- ~~(U)~~ *The Biological Warfare Threat* (NIC 2290), UNCLASSIFIED of January 2001.
- ~~(S//NF)~~ *Iraq: Steadily Pursuing WMD Capabilities*, (ICA 2000-007HCX), TOP SECRET/ [redacted] ~~NOFORN//X1~~ of December 2000. (b)(3)
- ~~(C//NF)~~ *Worldwide BW Programs: Trends and Prospects Update*, (NIE 2000-12HCX), TOP SECRET/ [redacted] ~~NOFORN//X1~~ of December 2000. (b)(3)
- ~~(U)~~ *Emerging Land-Attack Cruise Missile Threat (2000-2015)*, (NIE 99-25) TOP SECRET/ [redacted] ~~NOFORN~~ of December 1999. (b)(3)
- ~~(C//NF)~~ *Worldwide BW Programs: Trends and Prospects*, (NIE 99-05CX/D) TOP SECRET/ [redacted] ~~NOFORN~~ of August 1999. (b)(3)
- ~~(U)~~ *Reconstitution of Iraq's Nuclear Weapons Program: Post Desert Fox*, (JAEIC 99-003) SECRET/~~NOFORN~~ of June 1999.
- ~~(U)~~ *The Foreign Biological and Chemical Weapons Threat to the United States*, (ICA 98-07CX) TOP SECRET/ [redacted] ~~NOFORN~~ of July 1998. (b)(3)
- ~~(U)~~ *Reconstitution of Iraq's Nuclear Weapons Program: An Update*, (JAEIC 97-004) SECRET/ [redacted] ~~NOFORN~~ of October 1997. (b)(3)

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Key Judgments

~~(S//NF)~~ Iraq's Continuing Programs for Weapons of Mass Destruction

~~(S//NF)~~ We judge that Iraq has continued its weapons of mass destruction (WMD) programs in defiance of UN resolutions and restrictions. Baghdad has chemical and biological weapons as well as missiles with ranges in excess of UN restrictions; if left unchecked, it probably will have a nuclear weapon during this decade. (See INR alternative view at the end of these Key Judgments.)

~~(S//NF)~~ We judge that we are seeing only a portion of Iraq's WMD efforts, owing to Baghdad's vigorous denial and deception efforts. Revelations after the Gulf war starkly demonstrate the extensive efforts undertaken by Iraq to deny information. We lack specific information on many key aspects of Iraq's WMD programs.

~~(S//NF)~~ Since inspections ended in 1998, Iraq has maintained its chemical weapons effort, energized its missile program, and invested more heavily in biological weapons; in the view of most agencies, Baghdad is reconstituting its nuclear weapons program.

- Iraq's growing ability to sell oil illicitly increases Baghdad's capabilities to finance WMD programs; annual earnings in cash and goods have more than quadrupled, from \$580 million in 1998 to about \$3 billion this year.
- Iraq has largely rebuilt missile and biological weapons facilities damaged during Operation Desert Fox and has expanded its chemical and biological infrastructure under the cover of civilian production.
- Baghdad has exceeded UN range limits of 150 km with its ballistic missiles and is working with unmanned aerial vehicles (UAVs), which allow for a more lethal means to deliver biological and, less likely, chemical warfare agents.
- Although we assess that Saddam does not yet have nuclear weapons or sufficient material to make any, he remains intent on acquiring them. Most agencies assess that Baghdad started reconstituting its nuclear program about the time that UNSCOM inspectors departed—December 1998.

~~(TS)~~ ~~(NF)~~ How quickly Iraq will obtain its first nuclear weapon depends on when it acquires sufficient weapons-grade fissile material.

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- If Baghdad acquires sufficient fissile material from abroad it could make a nuclear weapon within several months to a year.

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- Without such material from abroad, Iraq probably would not be able to make a weapon until 2007 to 2009, owing to inexperience in building and operating centrifuge facilities to produce highly enriched uranium and challenges in procuring the necessary equipment and expertise.
 - Most agencies believe that Saddam's personal interest in and Iraq's aggressive attempts to obtain high-strength aluminum tubes for centrifuge rotors—as well as Iraq's attempts to acquire magnets, high-speed balancing machines, and machine tools—provide compelling evidence that Saddam is reconstituting a uranium enrichment effort for Baghdad's nuclear weapons program. (DOE agrees that reconstitution of the nuclear program is underway but assesses that the tubes probably are not part of the program.)
 - Iraq's efforts to re-establish and enhance its cadre of weapons personnel as well as activities at several suspect nuclear sites further indicate that reconstitution is underway.
 - All agencies agree that about 25,000 centrifuges based on tubes of the size Iraq is trying to acquire would be capable of producing approximately two weapons' worth of highly enriched uranium per year.
- In a much less likely scenario, Baghdad could make enough fissile material for a nuclear weapon by 2005 to 2007 if it obtains suitable centrifuge tubes this year and has all the other materials and technological expertise necessary to build production-scale uranium enrichment facilities.

~~(S//NF)~~ We assess that Baghdad has begun renewed production of mustard, sarin, GF (cyclosarin), and VX; its capability probably is more limited now than it was at the time of the Gulf war, although VX production and agent storage life probably have been improved.

- An array of clandestine reporting reveals that Baghdad has procured covertly the types and quantities of chemicals and equipment sufficient to allow limited CW agent production hidden within Iraq's legitimate chemical industry.
- Although we have little specific information on Iraq's CW stockpile, Saddam probably has stocked at least 100 metric tons (MT) and possibly as much as 500 MT of CW agents—much of it added in the last year.
- The Iraqis have experience in manufacturing CW bombs, artillery rockets, and projectiles. We assess that they possess CW bulk fills for SRBM warheads, including for a limited number of covertly stored Scuds, possibly a few with extended ranges.

~~(TS//NF)~~ [REDACTED] We judge that all key aspects—R&D, production, and weaponization—of Iraq's offensive BW program are active and that most elements are larger and more advanced than they were before the Gulf war.

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- We judge Iraq has some lethal and incapacitating BW agents and is capable of quickly producing and weaponizing a variety of such agents, including anthrax, for delivery by bombs, missiles, aerial sprayers, and covert operatives.

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- Chances are even that smallpox is part of Iraq's offensive BW program.
- Baghdad probably has developed genetically engineered BW agents.
- Baghdad has established a large-scale, redundant, and concealed BW agent production capability.
 - Baghdad has mobile facilities for producing bacterial and toxin BW agents; these facilities can evade detection and are highly survivable. Within several days these units probably could produce an amount of agent equal to the total that Iraq produced in the years prior to the Gulf war.

~~(S)~~ [REDACTED] ~~(NF)~~ Iraq maintains a small missile force and several development programs, including for a UAV probably intended to deliver biological warfare agents.

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- Gaps in Iraqi accounting to UNSCOM suggest that Saddam retains a covert force of up to a few dozen Scud-variant SRBMs with ranges of 650 to 900 km.
- Iraq is deploying its new al-Samoud and Ababil-100 SRBMs, which are capable of flying beyond the UN-authorized 150-km range limit; Iraq has tested an al-Samoud variant beyond 150 km—perhaps as far as 300 km.
- Baghdad's UAVs could threaten Iraq's neighbors, US forces in the Persian Gulf, *and if brought close to, or into, the United States, the US Homeland.*
 - An Iraqi UAV procurement network attempted to procure commercially available route planning software and an associated topographic database that would be able to support targeting of the United States, according to analysis of special intelligence.
 - The Director, Intelligence, Surveillance, and Reconnaissance, US Air Force, does not agree that Iraq is developing UAVs *primarily* intended to be delivery platforms for chemical and biological warfare (CBW) agents. The small size of Iraq's new UAV strongly suggests a primary role of reconnaissance, although CBW delivery is an inherent capability.
- Iraq is developing medium-range ballistic missile capabilities, largely through foreign assistance in building specialized facilities, including a test stand for engines more powerful than those in its current missile force.

~~(S)~~ We have low confidence in our ability to assess when Saddam would use WMD.

- Saddam could decide to use chemical and biological warfare (CBW) preemptively against US forces, friends, and allies in the region in an attempt to disrupt US war preparations and undermine the political will of the Coalition.

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- Saddam might use CBW after an initial advance into Iraqi territory, but early use of WMD could foreclose diplomatic options for stalling the US advance.
- He probably would use CBW when he perceived he irretrievably had lost control of the military and security situation, but we are unlikely to know when Saddam reaches that point.
- We judge that Saddam would be more likely to use chemical weapons than biological weapons on the battlefield.
- Saddam historically has maintained tight control over the use of WMD; however, he probably has provided contingency instructions to his commanders to use CBW in specific circumstances.

~~(S//NF)~~ Baghdad for now appears to be drawing a line short of conducting terrorist attacks with conventional or CBW against the United States, fearing that exposure of Iraqi involvement would provide Washington a stronger cause for making war.

~~(S//NF)~~ Iraq probably would attempt clandestine attacks against the US Homeland if Baghdad feared an attack that threatened the survival of the regime were imminent or unavoidable, or possibly for revenge. Such attacks—more likely with biological than chemical agents—probably would be carried out by special forces or intelligence operatives.

- The Iraqi Intelligence Service (IIS) probably has been directed to conduct clandestine attacks against US and Allied interests in the Middle East in the event the United States takes action against Iraq. The IIS probably would be the primary means by which Iraq would attempt to conduct any CBW attacks on the US Homeland, although we have no specific intelligence information that Saddam's regime has directed attacks against US territory.

~~(S//NF)~~ Saddam, if sufficiently desperate, might decide that only an organization such as al-Qa'ida—with worldwide reach and extensive terrorist infrastructure, and already engaged in a life-or-death struggle against the United States—could perpetrate the type of terrorist attack that he would hope to conduct.

- In such circumstances, he might decide that the extreme step of assisting the Islamist terrorists in conducting a CBW attack against the United States would be his last chance to exact vengeance by taking a large number of victims with him.

~~(C)~~ State/INR Alternative View of Iraq's Nuclear Program

~~(S//NF)~~ The Assistant Secretary of State for Intelligence and Research (INR) believes that Saddam continues to want nuclear weapons and that available evidence indicates that Baghdad is pursuing at least a limited effort to maintain and acquire nuclear weapon-related capabilities. The activities we have detected do not, however, add up to a compelling case that Iraq is currently pursuing what INR would consider to be an integrated and comprehensive approach to

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(continued ...) (C) State/INR Alternative View

acquire nuclear weapons. Iraq may be doing so, but INR considers the available evidence inadequate to support such a judgment. Lacking persuasive evidence that Baghdad has launched a coherent effort to reconstitute its nuclear weapons program, INR is unwilling to speculate that such an effort began soon after the departure of UN inspectors or to project a timeline for the completion of activities it does not now see happening. As a result, INR is unable to predict when Iraq could acquire a nuclear device or weapon.

~~(S//NF)~~ In INR's view Iraq's efforts to acquire aluminum tubes is central to the argument that Baghdad is reconstituting its nuclear weapons program, but INR is not persuaded that the tubes in question are intended for use as centrifuge rotors. INR accepts the judgment of technical experts at the U.S. Department of Energy (DOE) who have concluded that the tubes Iraq seeks to acquire are poorly suited for use in gas centrifuges to be used for uranium enrichment and finds unpersuasive the arguments advanced by others to make the case that they are intended for that purpose. INR considers it far more likely that the tubes are intended for another purpose, most likely the production of artillery rockets. The very large quantities being sought, the way the tubes were tested by the Iraqis, and the atypical lack of attention to operational security in the procurement efforts are among the factors, in addition to the DOE assessment, that lead INR to conclude that the tubes are not intended for use in Iraq's nuclear weapon program.

(U) Confidence Levels for Selected Key Judgments in This Estimate

~~(S//NF)~~ High Confidence:

- Iraq is continuing, and in some areas expanding, its chemical, biological, nuclear and missile programs contrary to UN resolutions.
- We are not detecting portions of these weapons programs.
- Iraq possesses proscribed chemical and biological weapons and missiles.
- Iraq could make a nuclear weapon in months to a year once it acquires sufficient weapons-grade fissile material.

~~(S//NF)~~ Moderate Confidence:

- Iraq does not yet have a nuclear weapon or sufficient material to make one but is likely to have a weapon by 2007 to 2009. (See INR alternative view, page 84).

~~(S//NF)~~ Low Confidence:

- When Saddam would use weapons of mass destruction.
- Whether Saddam would engage in clandestine attacks against the US Homeland.
- Whether in desperation Saddam would share chemical or biological weapons with al-Qa'ida.

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Discussion

~~(S//NF)~~ Iraq's Continuing Programs for Weapons of Mass Destruction

~~(U)~~ Introduction

(S//NF) Intelligence information over the past ten years makes clear that Saddam has never abandoned his pursuit of weapons of mass destruction (WMD). He has used chemical weapons against Iran and his own people, demonstrating that he produces WMD to be able to use, not just to deter.

- Even before the Gulf war, Iraq concealed its WMD programs and lied about its capabilities. Despite inspections after the war, Iraq never fully disclosed its capabilities and was able to retain chemical precursors, biological media, thousands of munitions suitable for chemical and biological agent, and probably a small force of Scud-variant missiles.

~~(S//NF)~~ Since the inspections ended in December 1998, Saddam has maintained elements of his chemical weapons effort, and is reconstituting and expanding it; energized his missile program; increased investment in biological weapons; and is reconstituting his nuclear weapons program (See INR alternative view on Iraq's Nuclear Program on page 14). Iraq's concerted effort to enhance its chemical, biological, nuclear, and missile infrastructure has resulted in a number of gains that increase the threat posed by

these weapons and the many options to deliver them.

- Iraq has largely rebuilt missile and biological weapons facilities damaged during Operation Desert Fox in 1998 and has expanded its chemical and biological infrastructure under the cover of civilian production.
- Baghdad has exceeded UN range limits of 150 km with its ballistic missiles and is developing unmanned aerial vehicles (UAVs), which allow for a more lethal means to deliver biological and, less likely, chemical warfare agents.
- Iraq's recent procurement attempts indicate it is reconstituting its nuclear program to produce fissile material for a nuclear weapon in the next several years.
- Saddam's growing ability to sell oil illicitly increases his capabilities to finance WMD programs; his annual earnings in cash and goods have more than quadrupled, from \$580 million in 1998 to about \$3 billion this year.

~~(S//NF)~~ We judge that we are only seeing a portion of Iraq's WMD efforts owing to Baghdad's vigorous denial and deception (D&D) efforts. We lack specific information on many key aspects of Iraq's WMD programs. Revelations after the Gulf war starkly demonstrate the extensive efforts undertaken by Iraq to deny information. The revelations also underscore the extent to which limited information fostered underestimates by the Intelligence Community of Saddam's capabilities at that time.

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~~(S//NF)~~ **WMD Expenditures Despite Sanctions**

~~(S//NF)~~ We estimate Iraq will earn about \$1.9 billion in cash and goods this year from illicit oil exports to Syria, Jordan, and Turkey, and up to another \$1 billion by imposing surcharges and kickbacks on oil-for-food suppliers and buyers.

~~(S//NF)~~ Economic sanctions have inhibited Baghdad's ability to procure essential items for programs prohibited under UN resolutions. Despite Iraqi oil smuggling, Baghdad still uses the Oil-for-Food Program for most of its oil exports, and the UN still controls 80 percent of Iraq's revenue. Most countries adhere to the ban on conventional weapons sales to Iraq, and most of Iraq's illicit military purchases have been limited to spare parts, ammunition, and most recently a limited number of combat support systems. That said, Saddam continues to pursue WMD components through a variety of creative and deceptive means, attempting to procure illicitly those items unavailable to him legitimately.

~~(S//NF)~~ Baghdad's goal of becoming the predominant regional power and its hostile relations with many of its neighbors, especially Iran and Israel, are key drivers behind Iraq's WMD programs. Baghdad also is concerned about weapons proliferation in the region and believes WMD provide deterrent value.

~~(U)~~ **Saddam's Pursuit of Nuclear Weapons**

~~(S//NF)~~ We judge that Saddam never abandoned his nuclear weapons program. Although we assess that Saddam does not yet have nuclear weapons or sufficient material to make any, he remains intent on acquiring them.

~~(NF)~~ Baghdad had an extensive program to develop a nuclear weapon for missile delivery in 1990, but Coalition bombing and International Atomic Energy Agency (IAEA) and United Nations Special Commission (UNSCOM) activities set back the effort significantly.

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- On the basis of information obtained after the Gulf war, we assess that by late 1990 Baghdad had a design for a ~~(S//NF)~~ nuclear weapon ~~(S//NF)~~ (see INR alternative view in footnote on page 26).

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- During the 1990s, the Iraqi program became less active, although ~~(S//NF)~~ stated that Iraqi authorities concentrated the former nuclear project staff in dedicated groups and continued research into design and construction of "nuclear bombs."

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- In November 1993, Saddam reportedly began to reorganize the nuclear program so that it would be poised to commence work once sanctions were lifted. At that time, ~~(S//NF)~~ the goal was a "deployable" nuclear weapon.

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~~(NF)~~ With the advent of prolonged UN sanctions, we judge that Saddam most likely shifted his strategy from waiting until the sanctions were removed to waiting for weapons inspections to end. We assess that Baghdad began reconstituting its nuclear program shortly after the departure of UNSCOM inspectors in December 1998.

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- We believe Iraq retains the technical expertise, designs, and data necessary to make nuclear weapons.
- Saddam's illicit procurement network remains active and ambitious. Most

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disconcerting are the repeated attempts to acquire tens of thousands of specialized aluminum tubes, machine tools, and magnet technology—dual-use items that could be used for gas centrifuge uranium enrichment.

- Our projections about when Iraq will obtain its first nuclear weapon depend on numerous factors:

- If Baghdad acquires sufficient weapons-grade fissile material from abroad, it could make a nuclear weapon within several months to a year. Although we have seen only a few Iraqi attempts to acquire material from abroad, those efforts do not seem to be part of a systematic effort to acquire foreign fissile materials from Russia and other sources. Iraq apparently has not instituted such a program because of fears of sting operations and scams and because the amount of material so obtained probably would be sufficient for only one or two weapons—not the arsenal Saddam intends to build. Nevertheless, the Key Judgments from our unclassified *Annual Report to Congress on the Safety and Security of Russian Nuclear Facilities and Military Forces* in February 2002 included our concern about “the total amount of material that could have been diverted [from Russia] in the last 10 years,” noting that “weapons-grade and weapons-usable nuclear materials have been stolen from some Russian institutes” and that “we assess that undetected smuggling has occurred, although we do not know the extent or magnitude of such thefts.”

- Without fissile material from abroad, Iraq probably would not be able to make a weapon until 2007 to 2009, owing to inexperience in building and operating centrifuge facilities to produce highly enriched uranium and challenges in procuring the necessary materials, equipment, and expertise.

- In a much less likely, but faster-paced scenario, Baghdad could make enough fissile material for a nuclear weapon by 2005 to 2007 if it obtains suitable centrifuge tubes this year and had all the other materials and technological expertise necessary to build production-scale uranium enrichment facilities. This period probably is the minimum amount of time to establish a centrifuge facility and would require direct and continuing foreign assistance with materials and expertise.

~~(S)~~ **Limited Information and Iraqi Denial and Deception (D&D)**

~~(S)~~ Today we have less direct access and know even less about the current status of Iraq’s nuclear program than we did before the Gulf war when significant collection gaps and effective Iraqi D&D measures resulted in Intelligence Community (IC) divisions over the status of Iraq’s nuclear program. Although we have gained knowledge of Iraq’s nuclear program through defector reporting and IAEA inspections through December 1998,

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- Only through defectors and inspections after the Gulf war did we learn that Iraq in 1991 was just a few years away from producing a nuclear weapon and had many facilities involved.

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~~(S//NF)~~ INR's Alternative View: Iraq's Nuclear Reconstitution

~~(S//NF)~~ Saddam Hussein wants nuclear weapons and will exploit any viable opportunity to acquire the capability to produce a nuclear device or weapon. The long absence of UN inspectors makes it more difficult than it was prior to 1999 to reach confident judgments about the status of Iraq's efforts to acquire this capability, and INR has taken note of intelligence information obtained during the past two years indicating increased Iraqi attempts to acquire dual-use goods with potential nuclear uses. But the detected procurement efforts are limited and rarely involve highly specialized goods. INR believes the indicators we have to be at best ambiguous and sees no compelling evidence—of the sort it would expect to detect—that Iraq has commenced what INR would consider to be an integrated and comprehensive approach to acquire nuclear weapons. The evidence indicates that Saddam wants to maintain and, as feasible, expand his nuclear capabilities but does not add up to a compelling case for reconstitution.

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~~(S//NF)~~ The information we have on Iraqi nuclear personnel does not appear consistent with a coherent effort to reconstitute a nuclear weapons program. Many key scientists evidently have been assigned to critical positions in the non-nuclear defense sector, casting doubt on their ability concurrently to perform nuclear-weapon-related research—unless one assumes a more elaborate denial and deception effort than INR is willing to posit.

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~~(S//NF)~~ Based on INR's analysis of all available intelligence information, it sees no compelling reason to judge that Iraq has entered the timeframe of "at least five to seven years" assessed in the October 1999 JAEIC estimate to be required for Baghdad to produce sufficient weapons-grade fissile material for a weapon. Moreover, INR sees no compelling evidence to shorten that timeline to three to five years under any condition short of Iraq acquiring black-market fissile material.

~~(S//NF)~~ Post-Gulf war revelations starkly demonstrate the extent and effectiveness of Iraq's D&D campaign. In late May 1991, following the first post-war inspection of Iraq's nuclear program, the IAEA inspectors concluded that they found no evidence of activities with direct relationship to nuclear explosives development or noncompliance with Baghdad's Treaty on the Non-Proliferation of Nuclear Weapons (NPT) obligations, according to Embassy reporting.

- The IAEA missed signs of proscribed nuclear activities at these sites owing to a variety of factors. First, neither the IAEA nor the US Intelligence Community anticipated EMIS work was underway in Iraq, as most pre-war evidence pointed to a clandestine centrifuge program.

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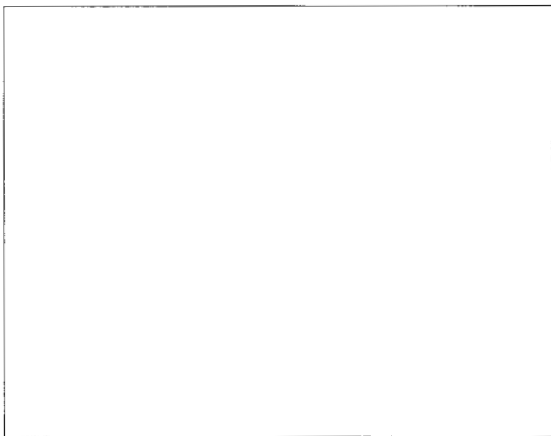
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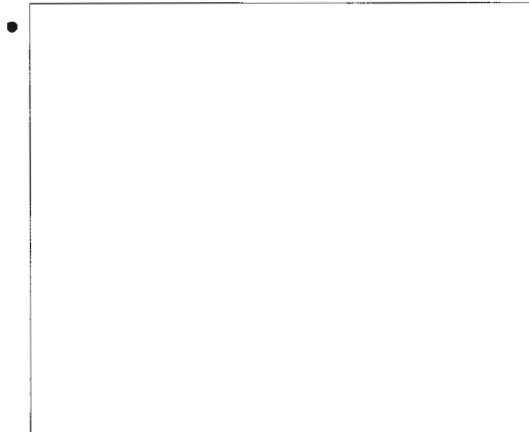


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~~(S//NF)~~ Today, we are again concerned that significant nuclear activities are escaping our detection. These concerns stem from the continued lack of access into Baghdad's nuclear program, its remaining industrial infrastructure, illicit imports found by inspectors while sanctions are still in effect, and reports that Baghdad has kept portions of its sizeable cadre of nuclear scientists working on various projects. We also know from [redacted] and inspections that Baghdad has learned important lessons on how to hide nuclear activities since the Gulf war. We believe these factors significantly raise the prospect that Baghdad could again pursue multiple paths to producing fissile material as part of a nuclear weapons program and succeed in hiding activities from us.

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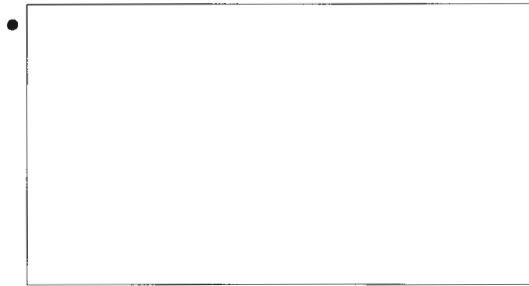
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~~(S)~~ **History of the Nuclear Weapons Program**

~~(S//NF)~~ Iraq's nuclear weapons program probably began in the early 1970s. Initially, Iraq concentrated on efforts to recover plutonium from its French-supplied Osirak reactor. After Israel destroyed this reactor in June 1981, however, Baghdad de-emphasized the plutonium pathway and switched to a highly enriched uranium route.

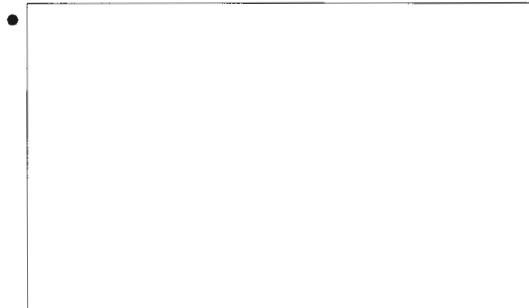
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~~(S//NF)~~ During the mid- to late-1980s, Iraq researched several different uranium enrichment techniques, such as EMIS, gaseous diffusion, chemical exchange processes, and gas centrifuge. After setbacks in the gaseous diffusion program, Iraq emphasized EMIS and gas centrifuge methods and established facilities for these types of enrichment.

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[redacted] The IC had judged in a November 1990 JAEIC assessment that "Iraq probably has the technical competence, when combined with clandestinely obtained technology and continued foreign assistance, to develop a nuclear explosive by the late 1990s using indigenously produced fissile material."

cooperation with UNSCOM; inspectors left in December and were not permitted to return.

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~~(S//NF)~~ **Reconstitution Efforts**

~~(S//NF)~~ *Lack of Inspections the Catalyst.* In June 1999, six months after the abrupt departure of the inspectors, we lacked specific evidence that Iraq had begun to reconstitute its nuclear weapon program. We noted, however, that the absence of inspections would give Iraq a greater opportunity to conduct covert R&D and perhaps undertake small-scale component production. Today we judge that Baghdad has reconstituted its nuclear weapons program. (See page 14 for INR's alternative view on reconstitution).

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[redacted]

[redacted]

~~(NF)~~ *Baghdad Seeks Aluminum Tubes.* Most agencies assess that Iraq's aggressive pursuit of high-strength aluminum tubes provides compelling evidence that Saddam is attempting to reconstitute a uranium enrichment effort for Baghdad's nuclear weapons program. (DOE agrees that reconstitution of the nuclear program is underway but assesses that the tubes probably are not part of the program. See page 81 and 84 for DOE and INR views respectively on the likely alternative use of these tubes).

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[redacted] Saddam is personally interested in the procurement of aluminum tubes—indicating clearly that such acquisition is a national priority. In addition, the Iraqi Deputy Prime Minister probably has been involved in these efforts,

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~~(S//NF)~~ After Operation Desert Storm, UN weapons inspectors directed and oversaw the destruction of much of Iraq's nuclear weapons infrastructure. Throughout the 1990s, Iraq denied inspectors full and open access to its WMD programs through a variety of D&D techniques. On 5 August 1998, Iraq announced that it was ceasing

• [redacted] Iraqi front companies have tried repeatedly to purchase tens of thousands of high-strength aluminum tubes with dimensions and tolerances suited for use as rotors in uranium enrichment gas centrifuges.

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- About 25,000 centrifuges would be capable of producing approximately enough highly enriched uranium to build two weapons per year.

- [redacted] 60,000 tubes sought in early 2001 [redacted]

[redacted]

[redacted] ~~NF~~ We first became aware of Baghdad's aluminum tube procurement effort with potential centrifuge applications in [redacted]. The effort may have begun as early as 1999 when Iraq attempted to purchase 15,000 seamless tubes with identical dimensions but unknown alloy or tolerances, [redacted]. Although conducting a final technical review will take some time, all IC agencies agree that these aluminum tubes *could* be used to build gas centrifuges for a uranium enrichment program.

- Most agencies have concluded that the composition, dimensions, and extremely tight manufacturing tolerances of the tubes far exceed the requirements for non-

~~TTS~~ [redacted] ~~NF~~ 7075 T-6 Aluminum

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[redacted] ~~NF~~ Stress tests and chemical analysis [redacted] have confirmed that the tubes seized [redacted] are made of high-strength 7075 T-6 aluminum—sometimes referred to as “aircraft aluminum.” 7075 T-6 aluminum has exceptional tensile strength (570 Mpa) while maintaining its lightweight properties and is sufficiently strong to withstand the high-speed rotational forces generated in gas centrifuges rotors.

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- Although 7075-T6 aluminum is considerably more expensive than other, more readily available material, Iraqi procurement efforts consistently demanded that this particular specification be met even if it meant higher cost, [redacted]

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- Iraqi agents agreed to pay up to \$17.50 each for the 7075 T-6 aluminum tube. Their willingness to pay such costs suggests the tubes are destined for a special project of national interest—such as a reconstituted gas centrifuge effort. *Materials or tubes meeting conventional armament requirements could be acquired at much lower prices or be produced indigenously.*

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nuclear applications but make them suitable for use as rotors in gas centrifuges. Multiple Rocket Launchers (MRLs) normally are made out of cheap steel, as they are expendable assets. The National Ground Intelligence Center (NGIC) also notes some of the specifications of the tubes are inconsistent with normal fabrication techniques for these rockets and are far tighter than necessary.

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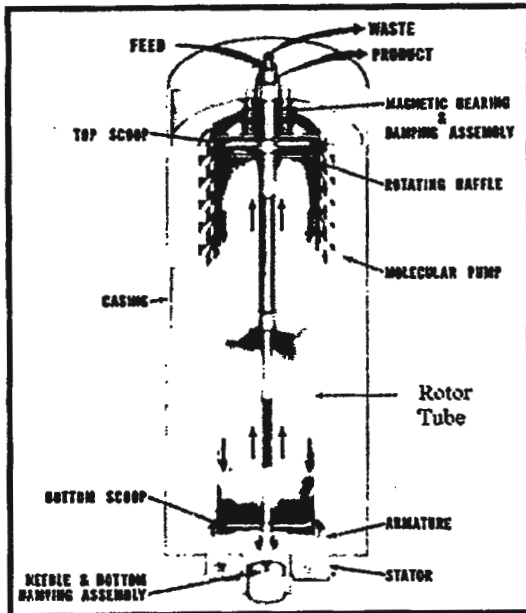
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~~(U)~~ Gas centrifuge.

- State/INR and DOE believe that although the tubes are not directly suitable for use as rotors, they could be modified for such use. In this view, the tubes more likely are intended for such alternative conventional weapons uses as the MRL program.

~~(NF)~~ *Iraq Needs More Than Centrifuges.* Iraq also would need numerous other components to build a gas centrifuge plant, and we have detected efforts to procure some of these items.

- In the last few years, Iraq has been seeking to obtain [redacted] a permanent magnet production capability. [redacted] Though dual-use, the magnets Iraq is seeking are of the proper materials and possibly size for use in gas centrifuges. Moreover, the manager of one of the Iraqi companies negotiating

~~(S)~~ Has Iraq Restarted its Electromagnetic Isotope Separation (EMIS) Uranium Enrichment Program?

~~(NF)~~ We do not know whether Iraq has reconstituted its EMIS program. The [redacted] defectors that emerged from 1991 through 1998 indicate that Iraq abandoned the EMIS effort.

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~~(S/NF)~~ If Iraq wanted to pursue EMIS again, we assess that it could reconstruct many of its capabilities, perhaps without our detection, especially if the facilities were built in smaller, discrete parts instead of one large facility. EMIS is an inherently low-technology approach to uranium enrichment. Reviews of pre-war intelligence holdings reveal very few indicators that suggested EMIS could have been underway in Iraq. If Baghdad restarted an EMIS effort in 1998 when inspections ended, it probably would have had to immediately try to solve research and development problems that plagued the earlier EMIS work. Iraq needed two to three years to complete its pre-war EMIS effort; completing such an effort today could take four to six years, as Baghdad would still have to reconstitute facilities and feed material production capabilities.

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the procurement, along with a large number of personnel for the new production facility, worked in Iraq's pre-Gulf war centrifuge program.

- Several Iraqi front companies have been seeking high-speed balancing machines used in initial centrifuge balancing work,

[Redacted]

- Iraq continues to procure numerous [Redacted] machine tools from a variety of suppliers that would add to its ability to manufacture various other centrifuge components. Baghdad probably has been successful at many of these procurement attempts, as demonstrated by its track record of illicit imports even while inspections were ongoing.

[Redacted] ~~(NF)~~ *Iraqi Atomic Energy Commission Regains Preeminence.* Evidence suggests the Iraqi Atomic Energy Commission (IAEC) has regained its preeminent role in the nuclear program and is expanding the infrastructure—research laboratories, production facilities, and procurement networks—to produce nuclear weapons.

[Redacted] the IAEC was the focal point of all nuclear weapon activities.

[Redacted] including the IAEC. Multiple sources indicate that many of the scientists recently have been reassigned to the IAEC. The renewed regular contact between Saddam and the IAEC, as well as the enhanced security, suggests the IAEC is again the focal point of Saddam's nuclear program.

~~(U)~~ **Personnel Changes at the IAEC**

[Redacted] (NF) Several key scientists and managers from the pre-1991 nuclear weapons program recently have been reassigned to the IAEC:

- [Redacted]
- [Redacted]
- [Redacted]
- [Redacted]
- [Redacted]

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~~(S/NF)~~ New Nuclear Facility?

[redacted] ~~(NF)~~ Defector reporting from early 2002 provided allegations that several new nuclear-related facilities had been constructed in Iraq in the past few years, some since 1998. Although many of these claims have not yet been substantiated, one of the facilities described in detail by the defector has been detected [redacted]. The facility, claimed to be a nuclear laboratory [redacted] is located on the banks of the Tigris River north of Baghdad.

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[redacted] ~~(NF)~~ The overall description of the site and the timelines of its construction as described by the source were reasonably consistent with details detected through [redacted]. The site consists of several small buildings of the shape and layout described by the defector, who participated in [redacted] construction. The site was constructed rapidly during the summer of 1998, although the defector claimed construction had occurred in 1999. We judge that the defector may have been confused about the year.

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[redacted] ~~(NF)~~ The defector reporting provided several datapoints that drive our concern that [redacted] may be nuclear-related:

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- Four of the lead engineers for the project reportedly were associated with the Iraqi Atomic Energy Commission.
- The source indicated that he had seen cylinders [redacted] in 2000 that were similar to sketches of large uranium hexafluoride cylinders.
- Several buildings reportedly were guarded by Amn Al Khas (the Special Security Organization, SSO) and Manthuma Al Amn security personnel. The SSO, directed by Saddam Hussein's son, Qusay, oversees security and communications at presidential compounds and guards Iraq's most sensitive WMD sites. The Manthuma Al Amn is the Iraqi Intelligence Service's Organization for Military Industrialization (OMI) security element.

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[redacted] Additional intelligence reporting is necessary before we can confirm a nuclear association [redacted]

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[Redacted]

- Over the past 18 months, Saddam has devoted more personal energy—by way of televised speeches and meetings with IAEC officials—to urge on his nuclear establishment than in the preceding several years.

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~~(NF)~~ *Increased Iraqi Atomic Energy Commission Security Precautions.* The IAEC security apparatus has been enhanced substantially in the past several years.

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[Redacted]

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~~(NF)~~ The IAEC recently has undergone changes to its key leadership

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[Redacted]

Since then, Saddam has met openly more than a dozen times with IAEC staff. At these meetings, he has increased his efforts to motivate members of the IAEC.

~~(NF)~~ *Consolidation.* In addition to the move back into the IAEC, some scientists have been consolidated into establishments previously associated with the nuclear program. As early as 1995,

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Iraqi authorities had concentrated the former nuclear project staff into closely supervised groups to conserve their know-how for a future nuclear project

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~~(S)~~ Saddam also has used these forums to emphasize the obligation of the workers to him. In early 2002, Saddam told the IAEC that its responsibilities have been doubled, because they "owe" it to their past relationship with him. Saddam officially oversaw the nuclear weapons program of the IAEC until 1989 when Dr. Jaffar Dhia Jaffar assumed the head of the nuclear weapon development group.

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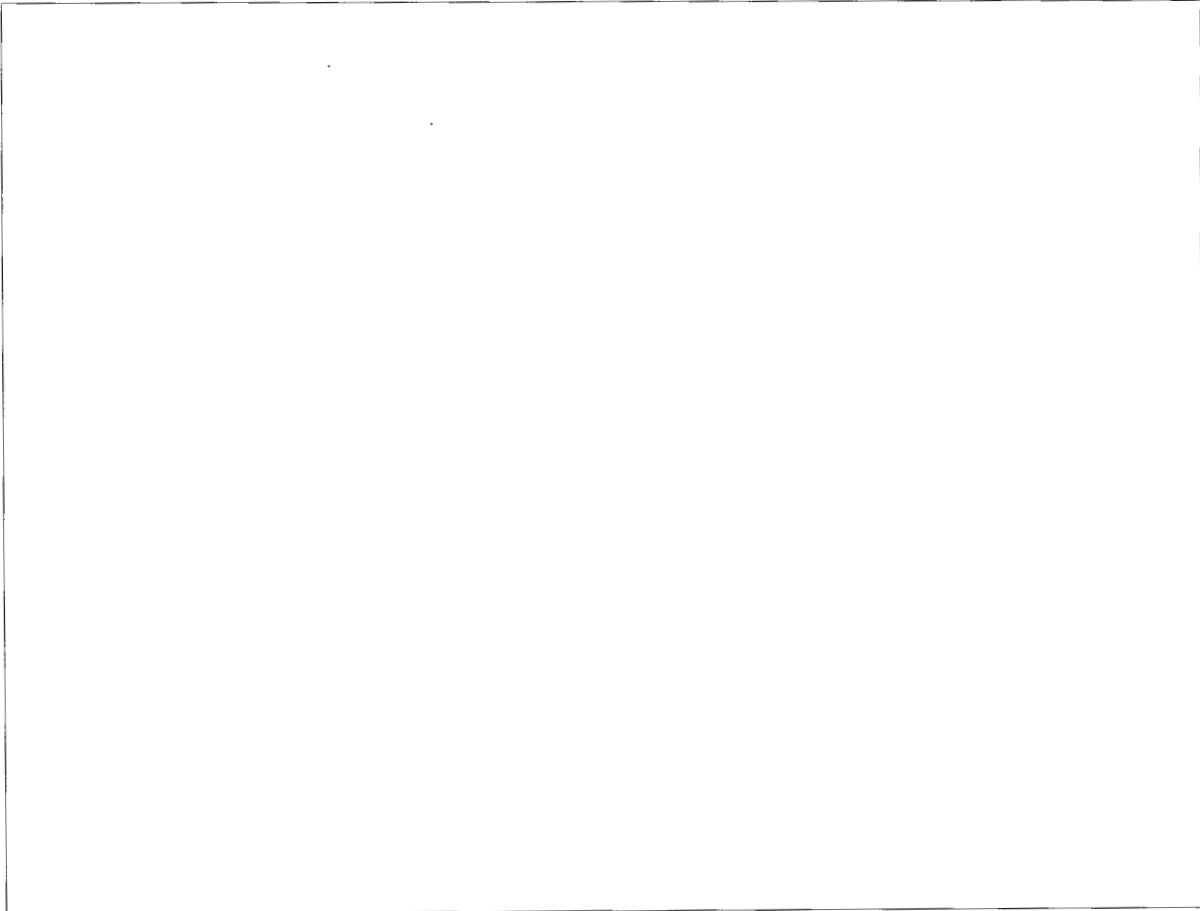
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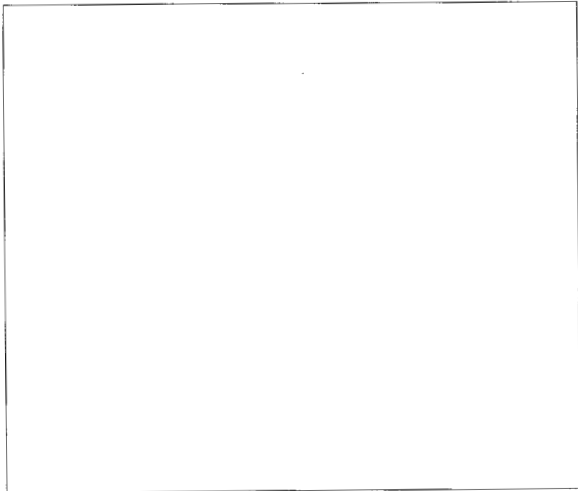
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~~TOP SECRET~~ ~~NOFORN/X1~~ ~~Al-Tahadi~~. The Al-Tahadi facility is dedicated to high-voltage and electromagnetic work,

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Activity at this facility has increased and probably is related to the procurement of a magnet production line.

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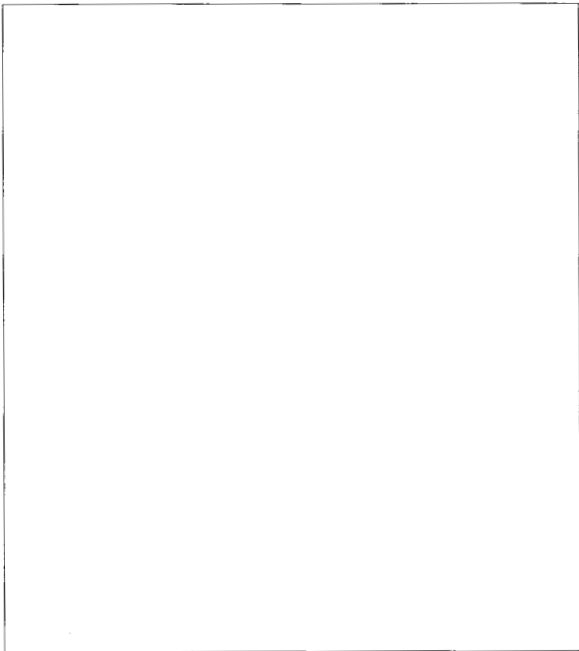
- In December 2000, work was completed at Al-Tahadi on a high-bay building with equipment suitable for permanent magnet production.

~~(S//NF)~~ We judge that because negotiations for permanent magnets were concurrent with construction, Al-Tahadi is likely to house the magnet production line. Also, most of the scientists

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have been relocated to Al-Tahadi.

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~~(S//NF)~~ **Uranium Acquisition.** Iraq retains approximately two-and-a-half tons of 2.5 percent enriched uranium oxide, which the IAEA permits. This low-enriched material could be used as feed material to produce enough HEU for about two nuclear weapons. The use of enriched feed material also would reduce the initial number of centrifuges that Baghdad would need by about half. Iraq could divert this material—the IAEA inspects it only once a year—and enrich it to weapons

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grade before a subsequent inspection discovered it was missing. The IAEA last inspected this material in late January 2002.

~~(S//NF)~~ **Uranium Milling and Conversion.**

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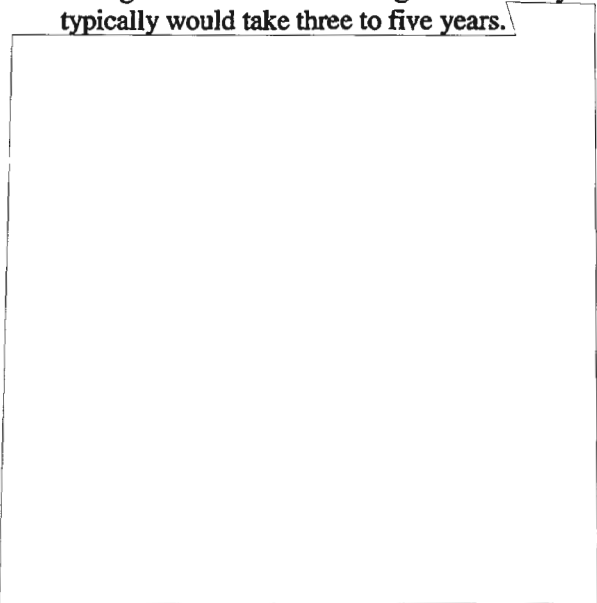
If Iraq succeeds in purchasing uranium ore or yellowcake, it still will need facilities to process the material for eventual use in a uranium enrichment plant. All known uranium milling facilities were destroyed during Desert Storm. Building a new facility typically would take three to five years.

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~~(TS)~~ [redacted] ~~(NF)~~ Iraq has about 550 metric tons of yellowcake¹ and low-enriched uranium at Tuwaitha, which is inspected annually by the IAEA. Iraq also began vigorously trying to procure uranium ore and yellowcake; acquiring either would shorten the time Baghdad needs to produce nuclear weapons.

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- A foreign government service reported that as of early 2001, Niger planned to send several tons of "pure uranium" (probably yellowcake) to Iraq. As of early 2001, Niger and Iraq reportedly were still working out arrangements for this deal, which could be for up to 500 tons of yellowcake. We do not know the status of this arrangement.
- Reports indicate Iraq also has sought uranium ore from Somalia and possibly the Democratic Republic of the Congo.



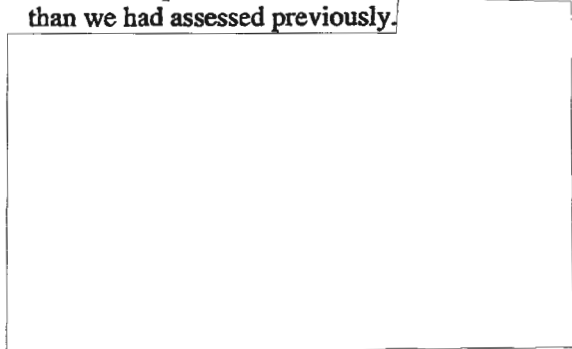
~~(S//NF)~~ We cannot confirm whether Iraq succeeded in acquiring uranium ore and/or yellowcake from these sources. Reports suggest Iraq is shifting from domestic mining and milling of uranium to foreign acquisition. Iraq possesses significant phosphate deposits, from which uranium had been chemically extracted before Operation Desert Storm. Intelligence information on whether nuclear-related phosphate mining and/or processing has been reestablished is inconclusive, however.

~~(S//NF)~~ **Nuclear Weapons Design.**

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Intelligence reporting subsequent to Operation Desert Storm revealed that Iraqi nuclear weapons research was further along than we had assessed previously.

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On the basis of information obtained after the Gulf war, we judge that by 1990 Baghdad had a design for a [redacted]

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¹ ~~(S)~~ A refined form of natural uranium.

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[redacted] nuclear weapon
[redacted]

- Common home computers now provide more than adequate computational power for an increasingly sophisticated set of modeling tools.

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[redacted]

[redacted]

- A large volume of detailed information on HE performance and modeling and nuclear weapons-related design information has become available in the open literature since the early 1990s.

² [redacted] ~~NR~~ INR judges that Baghdad did not have such a design by 1990 and sees no reason to change the implication from the 1997 JAEIC assessment that Iraq

[redacted]

[redacted] INR, however, judges that since 1990 Iraq probably completed the design for such a weapon.

~~(S)~~ Gun-Assembled Devices

[redacted] ~~NR~~ A gun-assembled nuclear device is an alternative nuclear weapon design concept that does not use an implosion system to compress the fissile material to produce nuclear yield. Although this device is relatively simple to design and build—well within Iraqi capabilities—it has several very undesirable properties:

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Thus, we judge that Iraq would be able to make a nuclear weapon within months to a year of acquiring sufficient weapons-grade fissile material.

~~(S//NF)~~ The pre-Desert Storm nuclear weapons program was Saddam's most high-value strategic priority. The program was tightly compartmented and highly concealed, and it likely remains so. The information on Iraq's recent procurement activities, though limited; as well as imagery of suspect facilities; and occasional source reporting on Iraqi efforts indicate that Saddam is continuing with his nuclear weapons program.

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~~(S//NF)~~ **Chemical Warfare (CW) Program—Rebuilt and Expanding**

~~(S//NF)~~ We judge that, prior to the Gulf war, Iraq possessed the largest and most sophisticated CW program in the developing world. We assess that Iraq has rebuilt key portions of its CW infrastructure and that Baghdad already has begun renewed production of mustard, sarin, GF (cyclosarin), and VX. Although we have little specific information on Iraq's CW stockpile, Saddam probably has stocked at least 100 metric tons (MT), and possibly as much as 500 MT, of CW agents—much of it added in the last year.³

~~(S//NF)~~ The Iraqis have experience in manufacturing CW bombs, artillery rockets, and projectiles. We assess that the Iraqis possess CW bulk fills for SRBM warheads, including for potential covertly stored Scud variants.

~~(NF)~~ Iraq's CW capability probably is more limited now than it was at the time of the Gulf war, although VX production and agent shelf life probably have been improved.

- Iraq tested chemical warheads for Scud-variant missiles before the Gulf war and almost certainly weaponized VX in warheads, [redacted]

³ ~~(S//NF)~~ Conservative estimates of Iraqi CW precursor stocks and production capacity, combined with Iraqi motivations and military requirements, suggest the stockpile is composed of at least 100 tons. We believe the Iraqis are capable of producing significantly larger quantities of CW agent in some scenarios; the 500-ton upper-end estimate takes into account practical bounds, such as Iraq's limited delivery options, and approximates Iraq's stocks at the time of Operation Desert Storm.

- Baghdad did not adequately account for pre-war chemical precursors and large numbers of munitions. This material could be combined with renewed precursor production and imports to synthesize CW agents (See box on following page on problems with Iraqi accounting).

~~(U)~~ **CW Arsenals: Estimating CW Weapons Inventories**

~~(NF)~~ Obtaining accurate information on the size of foreign CW weapons holdings is extremely difficult because CW munitions storage areas [redacted] and because most foreign states take extraordinary precautions to conceal their locations.

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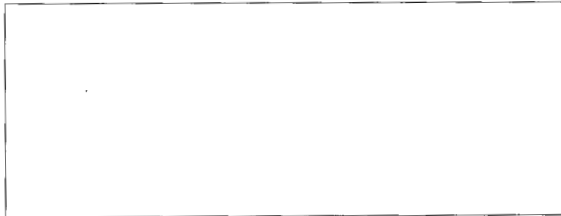
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- Iraq admitted to possessing CW-filled mortar rounds, artillery shells, rockets, Al Husayn missile warheads, and aerial bombs. In addition, Iraq admitted to researching a chemical fill for a rocket-propelled grenade, RPG-7, and producing and testing an air-delivered CW cluster bomb.
- Baghdad denies that it loaded VX into its 650-km-range al-Husayn ballistic missile warheads, despite strong forensic evidence to the contrary. An independent US laboratory detected degraded products from VX on metal fragments collected from al-Husayn warheads in 1998.
- Despite destruction of CW-related facilities by Coalition forces and UNSCOM post-war dismantlement operations, Saddam also retained some elements of his CW infrastructure, including R&D, production and weaponization. He probably also retained some CW-weaponized delivery capabilities, including ballistic missiles, spray tanks, bombs, artillery and rockets.

~~(U)~~ Problems with Iraqi Accounting

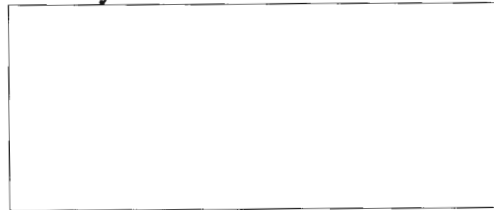
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~~(NF)~~ UNSCOM has accounted for some of Iraq's filled munitions but not for thousands of empty munitions that Iraq could fill quickly with agent. Iraq also retains the capability to produce many types of weapons that it could fill with chemical agents.

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- Iraq provided little verifiable evidence that it unilaterally destroyed 15,000 artillery rockets after the Gulf war.

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- An Iraqi Air Force document discovered by UNSCOM inspectors in July 1998 suggests that Baghdad overstated by at least 6,000 the number of chemical munitions it used during the Iran-Iraq war. Iraq has refused to hand over the document and has not accounted for these munitions. In addition, UNSCOM could not verify the disposal of 308 R-400 bombs, that Iraq claims it unilaterally destroyed.
- UNSCOM was unable to account for about 550 artillery shells filled with mustard agent.

~~(U)~~ CW Agent Production

~~(NF)~~ Capitalizing on Dual-Use Facilities. Iraq almost certainly has a CW agent production capability embedded within its chemical industry, which enables Baghdad to conceal chemical agents, munitions, precursors, production equipment, and sensitive program information. We have been unable to corroborate multiple

claims of large-scale chemical agent production, but an array of reporting reveals that Baghdad is covertly procuring the types and quantities of chemicals and equipment sufficient to allow limited CW agent production. We have no credible information indicating that Iraq is

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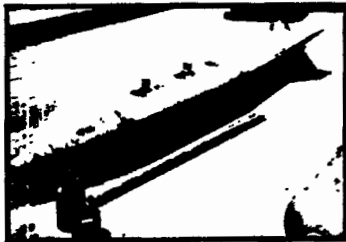
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(U) Chemical-Filled Munitions Declared by Iraq



Iraqi 250-gauge chemical bomb.



Iraqi 500-gauge chemical bombs.



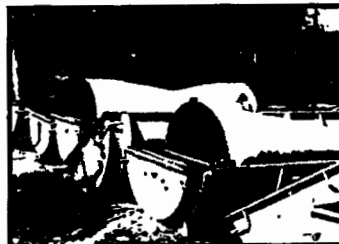
Iraqi DB-2 chemical bomb.



Iraqi R-400 chemical bombs.



Iraqi 155-mm chemical shell.



Iraqi Al Husayn chemical warheads.



122-mm rockets filled with the chemical nerve agent sarin prior to destruction.

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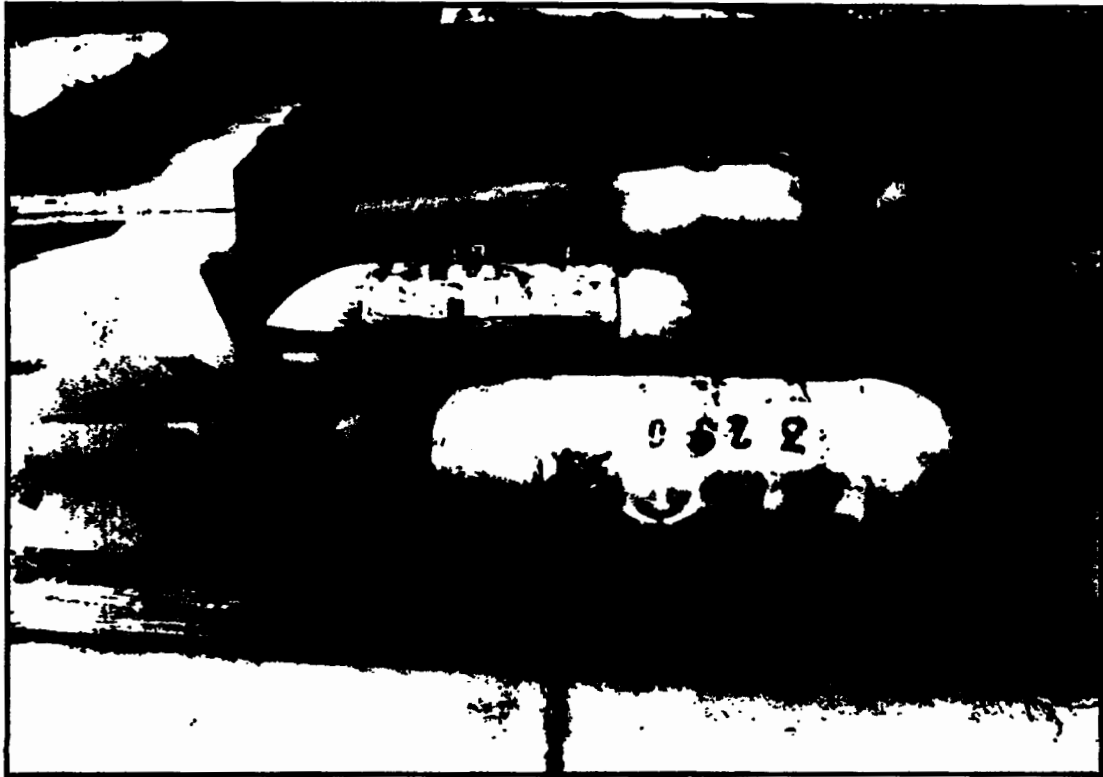
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~~(U)~~ Iraq's Biological and Chemical Bombs



Two R-400A bombs in foreground photographed by UNSCOM inspectors at Mutasana Airfield near the Al Walid Airbase in late 1991 bear markings indicating they were to be filled with botulinum toxin. Other bombs appear to have markings consistent with binary chemical agent fill.

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researching nontraditional agents.⁴ [Redacted] suggests Baghdad is developing a mobile CW agent production capability.

infrastructure that it could divert quickly to CW-related production. [Redacted]

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[Redacted]/NF) We judge that Iraq is expanding its chemical industry primarily to support CW production because it is rebuilding a dual-use

- The Fallujah II chlorine and phenol plants have been operational since March 2000, according to analysis of satellite imagery. Fallujah II was designed and built as a dedicated CW precursor production facility in the mid-1980s but now is operated as part of an ostensibly commercial entity known as the Tareq

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⁴ (U) Nontraditional agents, developed by Russia, are designed to defeat or complicate US and NATO defenses and to escape coverage under the Chemical Weapons Convention.

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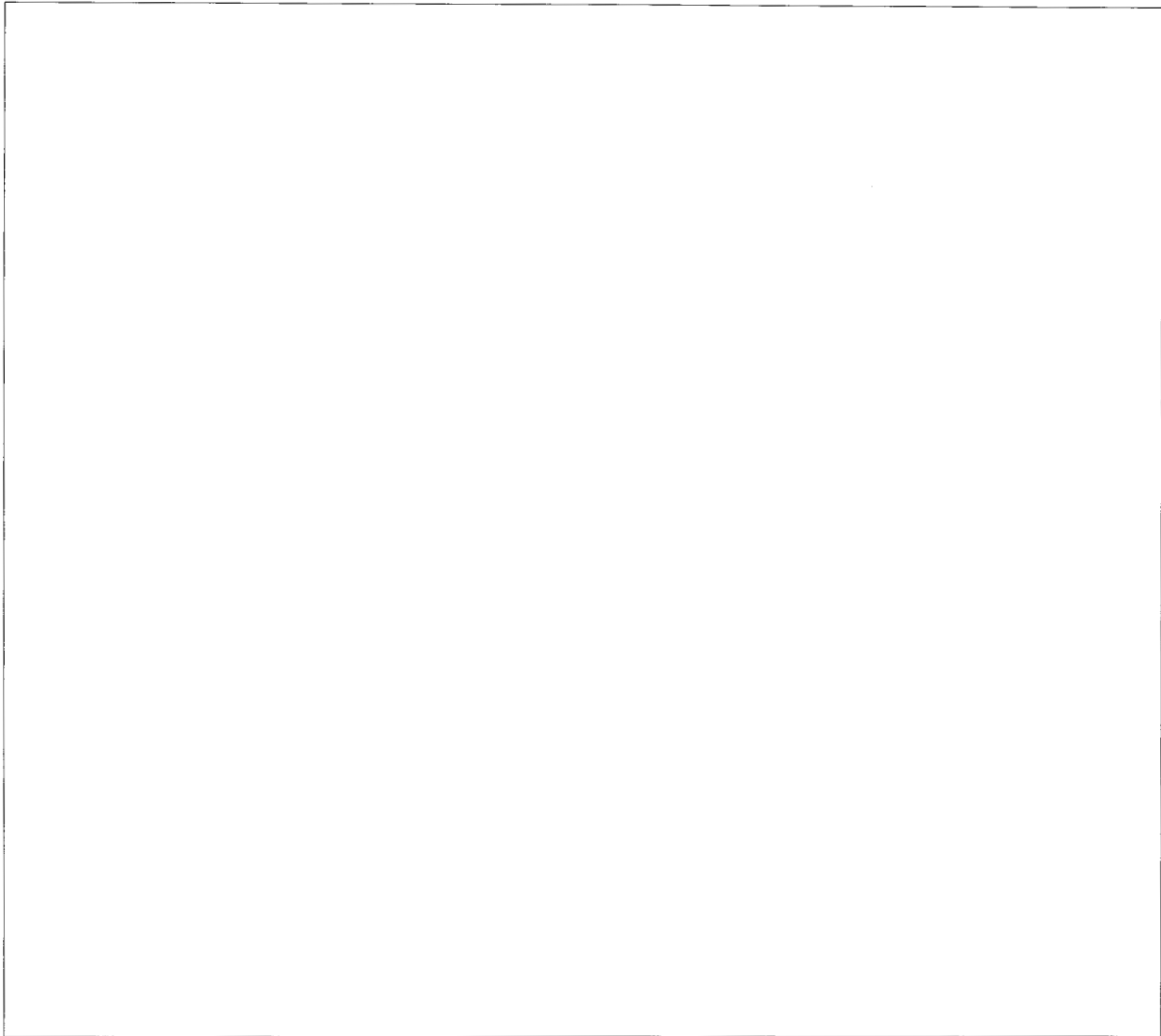
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State Establishment. Chlorine and phenol can be used to produce CW precursors and, although they have legitimate civilian applications—water treatment or pesticide and resin production—such needs already are met adequately through UN-authorized imports and the three other civilian chlorine plants in the country. Furthermore, modifications to the phenol plant was observed on satellite imagery after the departure of UNSCOM,

suggesting that it was modified for illicit use.

- Moreover, [redacted] Fallujah [redacted] worried about maintaining the cover story that some undisclosed material the plant had acquired was actually pesticide.
- [redacted] detected members of the facility engaged in

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shallow burial of equipment, almost certainly for D&D purposes.

- Furthermore, [redacted] indicate that Iraq is using its procurement network to try to acquire precursors for the various agents it has made in the past.
- We do not know the functions of at least three chemical production facilities—never inspected by UNSCOM—which Iraq built during the 1990s.
- [redacted] indicates that the management of the Tareq facility includes previously identified CW personnel.

~~(S/NF)~~ Iraq can still produce blister agents, but the limited availability of key types and quantities of chemical precursors and the destruction of its known CW production facilities during the Gulf war and the subsequent UN inspections regime probably impeded its sustained production of large amounts of G-series nerve agents and VX. Iraq historically only has had rudimentary capabilities to produce VX. We cannot rule out, however, that Iraq has produced VX on a small-scale or that it has procured enough chemical precursors to support larger-scale production.

- Iraq's attempts to procure precursors—often involving efforts to circumvent UN sanctions—indicate Baghdad is not yet self-sufficient in producing chemical agents.

~~(U)~~ **Stockpiles and Storage Facilities**

~~(NF)~~ Our information on Iraq's current CW stockpile is limited, but based on its Gulf war stockpile, precursor orders, and Baghdad's intentions, we conclude that Iraq has restocked some chemical warfare agents. The paucity of detailed intelligence, Iraq's

D&D efforts, the limitations of remotely monitoring known and suspected sites, and the dual-use nature of such sites make determining the location of suspected Iraqi CW stockpile and production facilities extremely difficult.

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- Although virtually any structure could store chemical weapons, several sites are suspected of storing CW material—al-Musayyib, [redacted]—because we have observed activity on imagery, including transshipment operations involving tanker trucks associated with the CW program, the use of decontamination vehicles, and special security measures. Activity at these sites suggests CW already is deployed with the military logistic chain.

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~~(U)~~ **Agent Research, Development, and Testing**

~~(NF)~~ Iraq probably is focusing its offensive CW research and development on quality control and extending agent shelf life of VX and other nerve agents. Baghdad probably is hiding small-scale agent production within legitimate research laboratories, but our knowledge rests on limited intelligence reporting on suspicious activity at only a few research centers. One of these sites, the al-Basel Research Center—a chemical research laboratory that Iraq declared as part of its CW program—and the facility at Habbaniyah II may be collaborating on CW-related tasks, [redacted]

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- Iraq is likely to continue field-testing a large variety of CW bombs, artillery shells, rockets, ballistic missile warheads, submunitions, and spray tanks to improve their effectiveness, [redacted]

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[Redacted]

ballistic missiles, or covert means. Even the threatened use of CW against air and seaports of debarkation could result in the loss of critical civilian support personnel, such as stevedores.

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- At the end of the Gulf war, Iraq was testing submunitions—which permit better agent distribution—for bombs and potentially for ballistic missile warheads in the future.

[Redacted] ~~(NF)~~ Iraqi troops could use NBC equipment defensively against a WMD attack or as a preventive measure during an offensive attack. If Iraq used a nonpersistent CW agent such as sarin, its troops would need protection in case the agent blew back on them, and if it used a persistent CW agent, such as VX, Iraqi troops would need defensive equipment to enter the contaminated area.

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~~(S)~~ CW Doctrine, Training, and Defensive Posture

~~(S/NF)~~ Our information on Iraqi CW doctrine is derived largely from our analysis of chemical attacks against Iranian forces during Baghdad's war with Tehran in the 1980s. Because its CW doctrine changed during the Iran-Iraq war, we assess that Iraq continued to fine-tune its doctrine in the years that followed.

[Redacted]

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- Saddam delegated the authority to use CW to his corps-level commanders after realizing that his troops could not act fast enough if he maintained release authority. Saddam used couriers to overcome communications difficulties and to avoid detection, affecting the speed at which his orders were carried out.

[Redacted]

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~~(S/NF)~~ Although we do not know Iraq's CW employment plans, several options exist for a conflict with US and Coalition forces:

- The use of persistent CW agents to contaminate areas through which US and Coalition forces would attack or along key lines of communications.
- CW employment targeting of US forces conducting river crossings during an attack north.
- The use of CW against US and Coalition marshalling activities in Kuwait (or other theater areas), delivered by UAVs,

[Redacted] ~~(NF)~~ Baghdad [Redacted] has been readying military forces to respond to an attack, including preparing them to fight in a nuclear, biological, or chemical (NBC) environment.

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atropine auto-injectors, Geiger counters, chemical detection tubes, a decontamination shower, and NBC defensive equipment,

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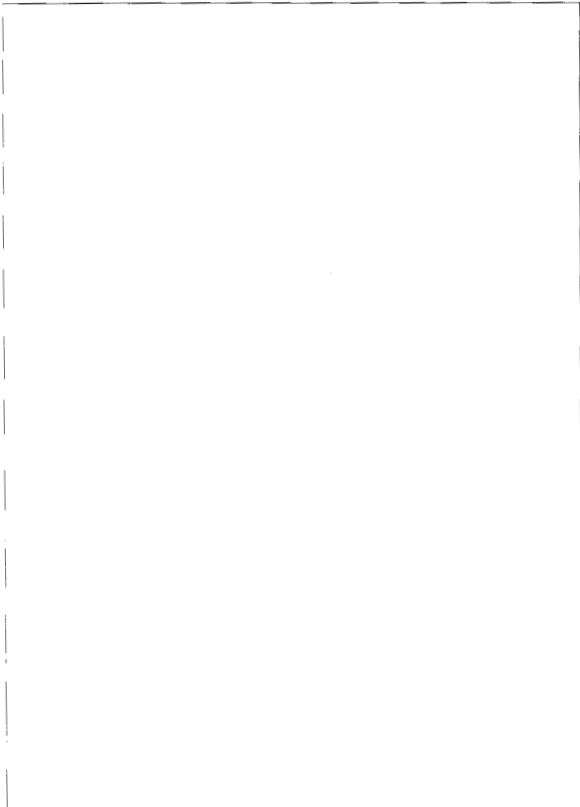
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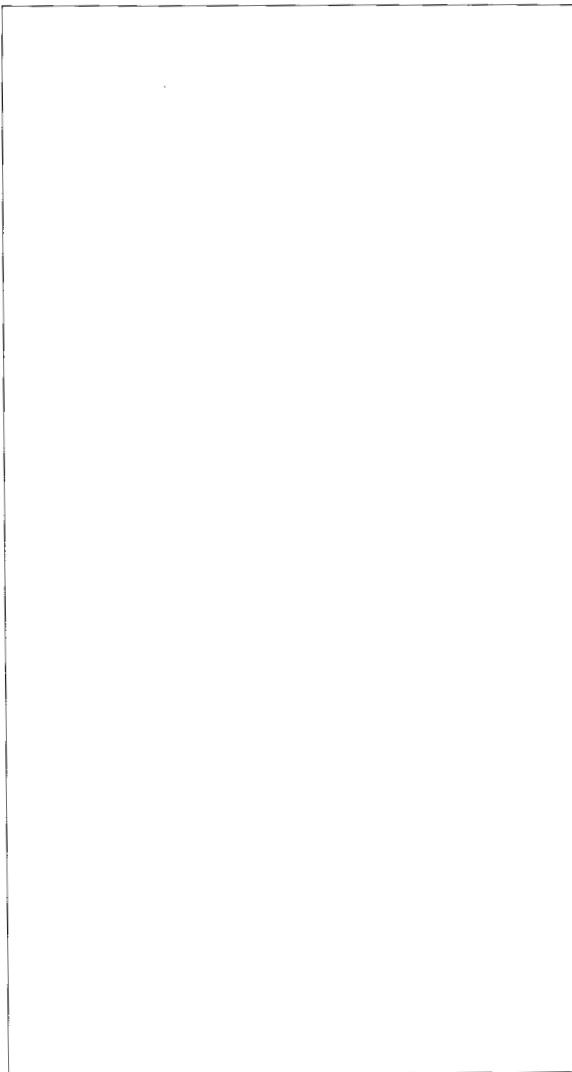
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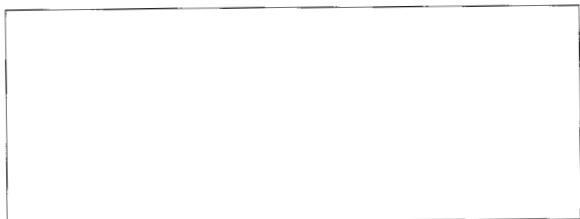
~~(S)~~ Procurement

~~(S)~~ We cannot link definitively Iraq's procurement of CW precursors, technology, and specialized equipment from foreign sources directly to Iraq's CW program, but Baghdad is working to set up CW-related clandestine procurement networks. Iraq previously used these networks to shield its military programs from detection.

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We assess that Iraq's procurements have contributed to the rebuilding of dual-use facilities that probably are adding to Iraq's overall CW agent capability.

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~~(S)~~ Biological Warfare (BW) Program—Larger Than Before

~~(S)~~ We assess that all key aspects—R&D, production, and weaponization—of Iraq's offensive BW program are active and that most elements are larger and more advanced than they were before the Gulf war.

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- We judge Iraq has some lethal and incapacitating BW agents and is capable of producing and weaponizing quickly a variety of such agents, including *Bacillus anthracis* (anthrax).
- Baghdad has been able to renovate and expand its fixed dual-use BW agent production facilities and to develop a significant mobile BW bacterial and toxin agent production capability designed to evade detection and inspections and improve survivability.

(S//NF) Iraq's BW program, however, continues to be difficult to penetrate and access, and we do not have specific information on the types of weapons, agent, or stockpiles Baghdad has at its disposal.

~~(S)~~ Agent Production and Storage

~~(S)~~ ~~(NF)~~ We judge that Iraq retains a mature offensive BW program, including R&D, production, and weaponization capabilities. Despite international efforts to disarm Iraq, Baghdad has continued and expanded its program by establishing a large-scale, redundant, and concealed BW agent production capability. We assess that Iraq has some BW agent and maintains the capability to produce *B. anthracis*, botulinum toxin, aflatoxin, *Clostridium perfringens* (gas gangrene), and ricin toxin. It also may be able to produce a number of other incapacitating and lethal agents that it has researched over the years. (See Table 1 on page 37 for list of agents Iraq has researched.) Iraq's capability to manufacture equipment and materials—[redacted]—and to procure other necessary, dual-use materials—[redacted]—[redacted] makes large-scale BW agent production easily attainable.

~~(S)~~ Was Iraq linked to the anthrax letters in fall 2001?

~~(S)~~ ~~(NF)~~ We have no intelligence information linking Iraq to the fall 2001 attacks in the United States, but Iraq has the capability to produce spores of *Bacillus anthracis*—the causative agent of anthrax—similar to the dry spores used in the letters. We do not have information suggesting that Iraq possesses the Ames strain of *B. anthracis*, the strain used in the letters. Baghdad in the 1980s approached a British laboratory to obtain the Ames strain but the request was denied, according to a United Nations inspector quoted in the press.

~~(S)~~ ~~(NF)~~ The spores found in the Daschle and Leahy letters are highly purified, probably requiring a high level of skill and expertise in working with bacterial spores. Iraqi scientists could have such expertise, although samples of Iraqi *B. thuringiensis*—which Iraq used as an anthrax simulant—were not as pure as the anthrax spores in the letters. The spores from the letters do not contain bentonite, the material Iraq used to enhance dissemination in its *B. thuringiensis* spore preparations.

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- Various intelligence reports [redacted] reporting indicate that Iraq probably has retained unauthorized stocks of Variola major virus, the causative agent of smallpox. Baghdad reportedly kept smallpox virus samples from its 1971-1972 outbreak, [redacted]

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We assess that the chances are even that smallpox is part of Baghdad's offensive BW program, although credible evidence is limited.

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Table 1
~~(S//NF)~~ BW Agents that Iraq has Researched

<i>Bacillus anthracis</i> (anthrax)	Enterovirus 70 (acute hemorrhagic conjunctivitis)
Botulinum toxin (botulism)	Camelpox virus
Ricin	Rotavirus
<i>Clostridium perfringens</i> (gas gangrene)	<i>Vibrio cholerae</i> (cholera)
<i>Yersinia pestis</i> (plague)	<i>Clostridium tetani</i> (tetanus)
<i>Brucella melitensis</i> (brucellosis)	Hemorrhagic fever viruses
Variola major virus (smallpox)	Staphylococcal enterotoxins
<i>Burkholderia mallei</i> (glanders)	<i>Rickettsia prowazekii</i> (typhus)
Aflatoxin	<i>Francisella tularensis</i> (tularemia)
Mycotoxins	<i>Shigella dysenteriae</i> (dysentery)
<i>Tilletia species</i> (wheat covered smut)	

~~(U)~~ This table is Secret/ [redacted] ~~NoFORN~~

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- According to Iraqi declarations to UNSCOM, tons of wheat covered smut, which degrades wheat crops, were produced from 1984 to 1993.

[redacted]

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[redacted] ~~(NF)~~ We assess that Baghdad also has increased the effectiveness of its BW arsenal by mastering the ability to produce dried agent. Dried agents can be disseminated over a much wider area than wet agents. Iraq had the capability to dry organisms in a respirable particle size prior to the Gulf war but declared that all weapons systems deployed during the Gulf war were filled with liquid agent. Moreover, [redacted] reporting on the procurement of dual-use drying and milling equipment suggest continued interest by Iraq in the capability to dry and size at least some of the agents in its arsenal. We assess that Iraq has both liquid and dry BW agents in its arsenal.

[redacted] suggest Iraq has equivalent particle-size drying capabilities in mobile and fixed facilities.

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[redacted] ~~(NF)~~ The nature and amounts of Iraq's stored BW material remain unresolved by UNSCOM accounting.

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- From the end of the Gulf war to mid-1995, Iraq denied that it had an offensive BW program, claiming that it had conducted only "defensive research." Only after UNSCOM confronted Baghdad with irrefutable evidence of excessive growth media procurement did Iraq admit that it had an offensive BW program and had made 30,000 liters of concentrated biological weapons agents. Even then, UNSCOM estimates that Iraq's production of anthrax spores and

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botulinum toxin could have been two to four times higher than claimed by Baghdad.

large amount of media was lost in failed production runs or was stolen from the high-security BW facility at Al Hakam and other sites, according to unclassified UNSCOM data.

- Iraq has not explained serious discrepancies between the amount of BW growth media it procured before 1991 and the amount of finished agent it declared—or could have made using the media—leading [redacted] to believe that Iraq produced substantially greater amounts of biological agents than it declared. Iraq was unable to substantiate claims that a

- Iraq claimed it destroyed 157 aerial bombs it had filled with BW agent, but UNSCOM could not confirm this destruction despite considerable efforts to do so. Iraq claimed that it produced four aerosol spray tanks by modifying a Mirage F-1 fuel drop tank. We have no

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evidence that the Iraqis destroyed these tanks

[Redacted]

have consumed Iraq's previously procured, unaccounted-for growth media.

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~~NE~~ **Fixed Dual-Use Facilities.**

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We are increasingly concerned that Baghdad's renovation and expansion of its fixed, dual-use facilities that served as Iraq's BW agent production capability prior to the Gulf war are part of an effort to increase significantly Iraq's BW agent holdings.

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- [Redacted] increased activity and construction at the **Amiriyah Serum and Vaccine Institute** since at least 2000, suggesting more than pharmaceutical production or distribution is taking place. Iraqi scientists reportedly conducted quality testing at this site on BW agents produced in the mobile production units,

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[Redacted] Several new [Redacted] storage structures have been built, for example,

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[Redacted]

This storage capability, [Redacted] far exceeds the amount necessary for vaccine distribution and production at this facility.

- UNSCOM's final report from January 1999 indicates that about 20 mobile double-jacketed storage tanks, which we judge may contain previously produced agent, remain unaccounted for. These could be used to produce, store, or transport BW agents.
- These discrepancies are overshadowed, however, by the large quantities Iraq can produce through its expanding mobile production program, which may already

- The castor oil plant at **Habbaniyah I** (also known as **Fallujah III**), which was damaged in Desert Fox, was rebuilt by early 2000 [Redacted]

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[Redacted] The facility continues to extract oil from the castor beans, allegedly for use in brake fluid production.

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Although the extraction of castor oil is a legitimate endeavor, a by-product of the process—the bean "mash"—contains the BW agent,

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ricin toxin. Ricin probably is not extracted at the castor oil plant because ricin extraction from the bean mash is a separate and distinct process from castor oil extraction. Recently noted concurrent activity at the castor oil extraction plant and the nearby main production building, however, suggests that toxin extraction may be taking place in the main production building. Iraq admitted to small-scale production of ricin toxin, as well as field testing 155mm artillery shells for ricin delivery.

- [redacted]
Dawrah Foot and Mouth Disease (FMD) Vaccine Production Plant—previously used to produce botulinum toxin and probably *B. anthracis*—[redacted]

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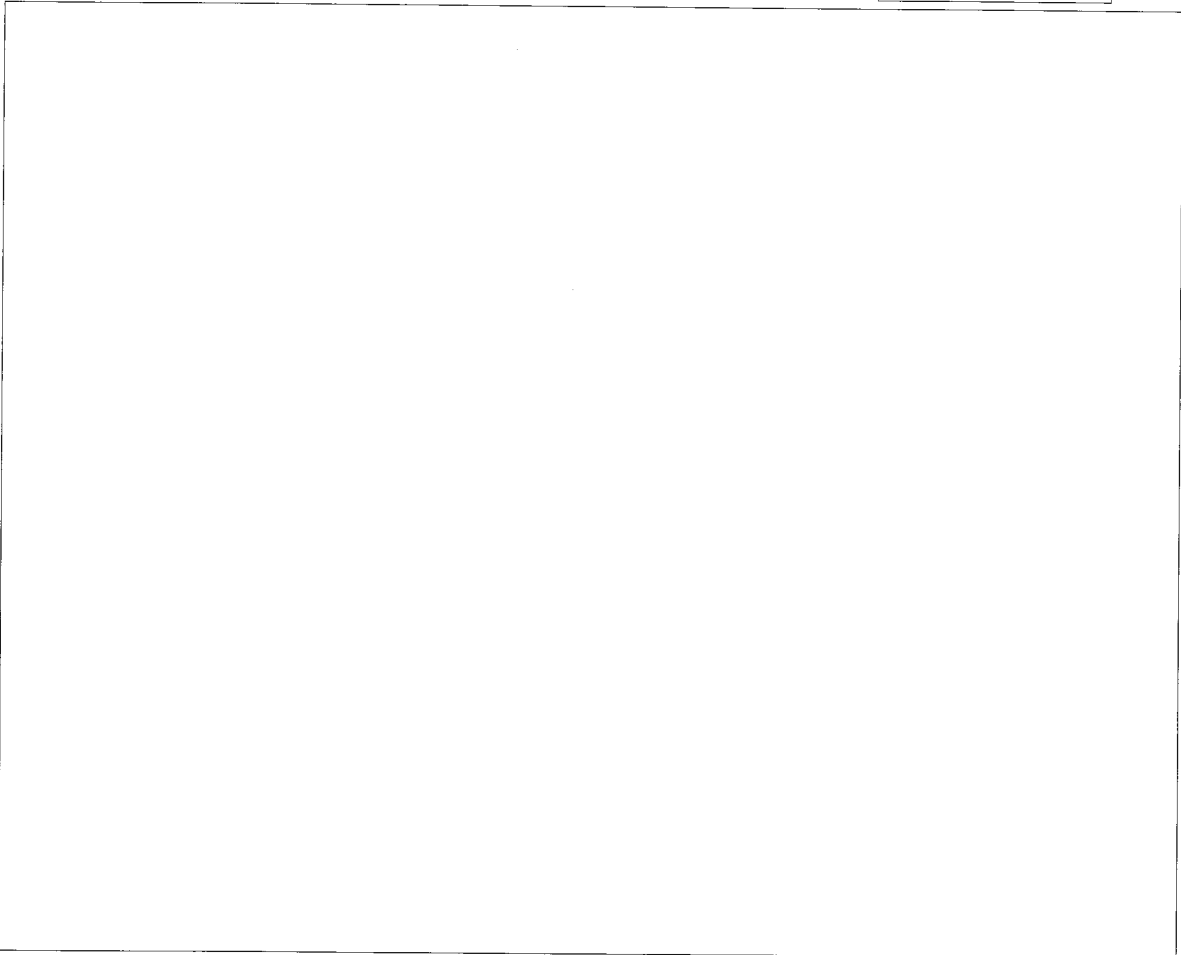
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[redacted] UNSCOM inspectors reported that the facility was one of two in the country capable of containing highly pathogenic biological organisms. UNSCOM rendered it useless in 1996 by filling ductwork with a cement and foam mixture and destroying equipment used for BW agent production but left other research and production equipment in place. [redacted]

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~~(C)~~ **Iraq's Denial and Deception (D&D) Program for Biological Weapons**

~~(NF)~~ Iraq has a national-level BW D&D program. The survival of the Iraqi offensive BW program stems primarily from the effectiveness of this effort.

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• [Redacted]

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~~(NF)~~ Iraq's BW D&D program centers on using generic facilities and embedding BW development, production, and storage [Redacted]

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• The dual-use nature of these types of facilities allows Iraq to conceal BW production behind a legitimate front.

~~(NF)~~ Iraq uses codewords to compartmentalize BW program elements, conceal the acquisition of BW-related equipment, and impair Western attempts to monitor Iraqi technology acquisition. Codes may refer to sensitive activities, personnel, or places. "Project 600" was Baghdad's code for BW activity at Abu Ghurayb, Iraq's alleged "baby milk factory" that Coalition forces bombed in Operation Desert Storm. [Redacted]

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~~(S)~~ ~~(NF)~~ To further protect its BW program, Iraq strictly enforces personnel security and takes additional damage-control measures when personnel with access to classified information defect.

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[Redacted] Iraq probably has renovated the facility, but we are unable to determine whether BW agent research or production has resumed. [Redacted]

researching and filling agent into munitions or containers, according to multiple [Redacted]

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[Redacted] suggest that Baghdad held true to its 1999 press claim to renovate this facility, reportedly to produce FMD vaccine.

sources. Iraq has pursued mobile BW production options, largely to protect its BW capability from detection, according to a credible source. This information tracks with UNSCOM evidence that Iraq in the mid-1990s was considering a mobile fermentation capability [Redacted]

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~~(NF)~~ **Mobile BW Production Units.** Baghdad has transportable facilities for producing bacterial and toxin BW agents and may have other mobile units for

Such production units provide a redundant, mobile, large-scale, and easily concealed BW production capability, which surpasses that of the pre-Gulf war era; they also make Iraq's

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~~(b) Iraqi BW Test~~




Test of dissemination of BW agents from a modified drop tank carried by a Mirage F1. The drop tank was filled with 1,000 liters of slurry Bacillus subtilis, a simulant for B. anthracis, and disseminated over Abu Obeydi Airbase in January 1991. The photo is from a videotape provided by Iraq to UNSCOM.

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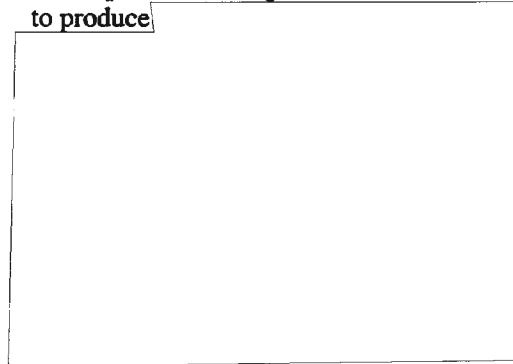
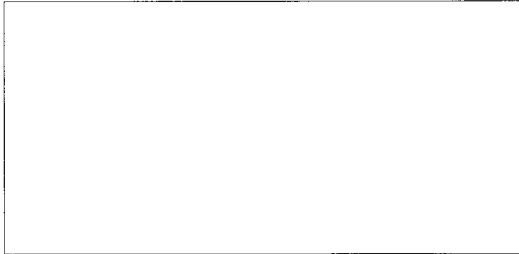
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BW capability more difficult to monitor, target, and eliminate.

produced 20 to 30 metric tons of "primary biological weapons product" (probably an unconcentrated slurry of agent and culture media) by early 1999.

- In mid-1996 Iraq decided to establish mobile laboratories for BW agent research to evade UNSCOM inspections, according to Maj. Harith Mamdouh Majid al-Assaf, an Iraqi defector associated with the Iraqi National Congress.

- We estimate that if all seven mobile plants were operational, Baghdad would be able to produce



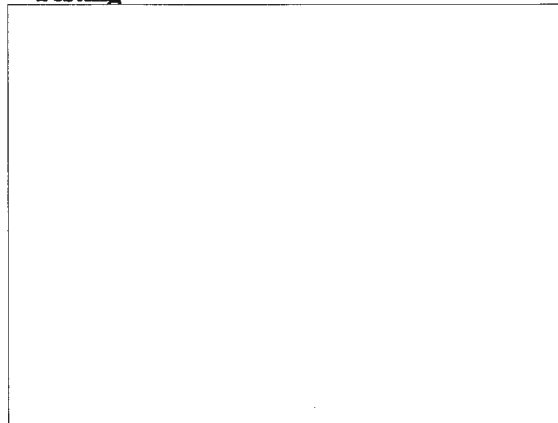
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~~NF~~ An Iraqi defector deemed credible by the IC said seven mobile BW production units were constructed and that one began production as early as 1997.

~~(S)~~ Agent Research, Development, and Testing

- The seven mobile plants were built under the cover of the "Grain Purification Project," according to the source. One mobile production plant is composed of two railroad cars and the other six plants consist of three tractor trailers each. The reported locations of these plants have been identified in imagery, but Iraq has most likely dispersed these units since the source defected.



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- Following difficulties in operating the original truck production plants, designs for a more concealable and efficient two-trailer system were completed in May 1998, possibly increasing the overall number of truck production plants.
- The mobile production units were to produce five different BW agents. Two of the agents probably are *B. anthracis* (anthrax) and botulinum toxin. The source also stated that one of the labs

~~NF~~ in 1999 that R&D in support of Iraq's offensive BW program was continuing. In the absence of UN inspectors, Iraq probably has intensified and expanded these efforts. indicates that several Iraqi biological research facilities are actively engaged in genetic engineering and biotechnology research and development. Some of these research facilities are suspected of involvement in Iraq's BW R&D program.

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- [redacted]

IPA is [redacted]

[redacted] is the parent organization for [redacted]

[redacted] a center that was involved in [redacted] research [redacted] prior to the Gulf war.

in 1995 were transferred "to the Haditha area" for CBW testing—probably to the Qadisiyah complex—from Baghdad prisons. Inmate transfer files from 1995 were missing during UNSCOM inspections of the Baghdad prisons in 1998, adding weight to the source's claim.

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- [redacted]

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- [redacted] was working in 1997 on transferring the gene encoding tetanus toxin from *Clostridium tetani* into *Bacillus subtilis*—[redacted]

~~(U) Procurement~~

[redacted] ~~(NF)~~ Iraq continues to circumvent and undermine UN sanctions to enhance its biotechnical self-sufficiency, while advancing its BW program when possible.

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- [redacted] a project to discover a strain of cholera resistant to antibiotics.

- [redacted]

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- [redacted]

[redacted] ~~(NF)~~ Iraq may have tested BW agents at a facility near the Qadisiyah Reservoir in western Iraq, according to [redacted] reporting.

- [redacted] In addition, Iraq has attempted to procure other, BW-applicable equipment, such as [redacted] a jet mill capable of grinding hundreds of kilograms of biological material per hour to 1 to 10

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- A former Directorate of General Security officer said that 1,600 death row prisoners

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microns—the ideal particle size range for BW agents.

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[redacted]

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[redacted]

• Three Iraqi intelligence officers reportedly traveled [redacted] in mid-1999 to obtain “materials” for use in the manufacture of biological weapons,

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[redacted]

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[redacted]

[redacted] ~~NE~~ Baghdad maintains a robust network of intermediary firms in [redacted] and elsewhere that assist with procurement of dual-use and support equipment for Iraq’s offensive BW program. Since the embargo was imposed in 1990, this network of front companies appears to have circumvented import controls through D&D techniques, exploitation of UN humanitarian exemptions and emphasis on the civilian applications of dual-use technology.

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[redacted] ~~NE~~ **Maintaining Some Indigenous Capabilities.** We assess that Iraq also maintains the capability to manufacture some BW-related equipment and materials indigenously.

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• [redacted] and credited them with the capability to manufacture

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equipment for BW agent production such as fermentors, [redacted] and tanks [redacted]

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[redacted]

[redacted]

[redacted] ~~NE~~ Aerial spraying of a BW agent is the most efficient method of BW dispersal. Many manned aircraft currently in the Iraqi inventory could be fitted with the spray tanks necessary to deliver biological weapons. Prior to the Gulf war, Iraq pursued R&D of UAVs, as well as light aircraft and helicopters used in agricultural spraying for BW delivery. Most importantly, however, Iraq has tested aerial spray systems for BW delivery and had spray tanks ready to deploy during the Gulf war.

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~~(U)~~ Delivery Means

[redacted] ~~NE~~ Our understanding of Iraq's current BW delivery systems is limited, based primarily on pre-Gulf War capabilities and Iraqi claims to the UN. Iraq possesses a variety of overt, military means to deliver biological agents. Iraq's pre-Gulf war BW arsenal consisted of aerial bombs, Al-Husayn missile warheads, and aircraft-fitted drop tanks modified for aerial spray delivery. Iraq probably still has such weapons and also may have developed cluster bombs, tube artillery shells, battlefield rockets, and other portable spray devices for the delivery of BW agents. In addition, Iraq could revert to more covert means of delivering biological agents by Iraqi intelligence operatives, special forces, or proxies, although we have limited information suggesting this option.

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[redacted]

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- Explosive-type weapon systems decrease the dissemination efficiency of the BW agent fill. The heat and blast associated with these systems decrease the viability of the agent contained in the weapon, as well as dispersing the agent in a relatively small area. [redacted]

- Pre-Gulf war dispersal trials of anthrax simulatant from the Mirage F-1 fighter fitted with spray tanks, as well as agricultural spray systems on helicopters, provided Iraq with valuable data for BW agent dissemination.

- [redacted] Iraq modified drop tanks for the [redacted] jet trainer to deliver CBW agents. [redacted] that attempts with a MiG-23 modified drop tank for this same purpose failed and that Iraq also [redacted]

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tested some army aviation helicopters as CBW delivery systems.

[Redacted]

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• [Redacted] Iraq has an active UAV program, which in the past has included attempts to convert the MiG-21, L-29, [Redacted] into a UAV. Although we have no information linking the current UAV development with BW delivery, this new airframe may represent another future method of BW delivery [Redacted] (see discussion of UAVs on page 50).

• [Redacted]

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~~(U)~~ BW Employment

~~(S/NF)~~ We lack good intelligence on how, where, or when Saddam's regime plans to use BW.

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• [Redacted]

~~(S/NF)~~ *Against the US Homeland.* We assess that the IIS probably would be the primary means by which Iraq would attempt to attack clandestinely the US Homeland with biological weapons. We have no specific intelligence that Saddam's regime has directed attacks against US territory, however, and Baghdad has far less capability to wage a campaign of violence and destruction in US territory than it does in the Middle East region.

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~~(NF)~~ Iraq could revert to covert means of delivering biological weapons using unconventional methods.

[Redacted]

~~(NF)~~ *In the Region.* The IIS probably also has been directed to conduct attacks against US and Allied interests in the Middle East in the event the US takes action against Iraq. In addition, Iraq's Republican Guard Special Forces, special missions units (SMU) subordinate to the General Directorate of Military Intelligence, or the Fedayeen Saddam, ostensibly under the command of Uday Saddam Hussein, could be used to perform covert delivery in the region.

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- SMUs are more likely to be used for surreptitious attacks, including those possibly involving BW weapons. Many reports put the SMU training facility at Salman Pak, southeast of Baghdad, the same area where there is a known special operations training facility and former BW facility. The only information we have linking SMUs to CBW use is an Iraqi defector's claim in a recent newspaper interview that terrorists were trained in CBW use at Camp 999, the Salman Pak facility.
- We have no information supporting the role of the Fedayeen Saddam—a small, lightly armed internal security force—in a BW attack, although this group could be used to conduct a BW attack. Such an attack probably would be unsophisticated and limited to countries bordering Iraq.

~~(S//NF)~~ Baghdad's planned BW employment strategy outside Iraq probably emphasizes countervalue targeting; i.e., attacking enemy population centers, which include ports and many airfields. The regime probably also has contingencies against purely military targets such as naval forces afloat, isolated military bases and airfields, and unit assembly areas or logistics depots.

- We believe that Israel almost certainly is a target for an Iraqi BW attack, with the city of Tel Aviv topping Saddam's list. Iraq's most reliable means of delivering BW against Israel is its covert Scud-variant missile force—the most sure means of penetrating Israel's defenses and Coalition attempts to block Iraqi attacks. Iraq's Air Force and covert operators, however, remain alternate BW delivery mechanisms.
- Kuwait is the most likely non-Israeli regional target for BW attack. We assess

Saddam would use BW against Kuwait for two reasons: a realization that Kuwait is a crucial staging base for US and allied military operations against Iraq, especially a ground invasion; and a desire for vengeance against the Sabah-regime that he despises and blames for the years of ongoing UN sanctions and US/UK military attacks.

- We judge that Baghdad would lack confidence in its ability to attack successfully well-defended military point targets outside Iraq with biological weapons, except via its missile forces. The limited numbers of dependable delivery systems—to include missiles—probably would cause Iraq to emphasize attacks against population centers and less-well defended civilian facilities. The regime also would be seeking maximum destructive and psychological impact, suggesting civilian populations would be the focus of its BW plans. Iraq also may want to hit selected military targets if enough missiles were available, however.

~~(S//NF)~~ Saddam's regime may resort to methods of BW attack that result in more indiscriminate and widespread contamination throughout the Gulf region—not just Kuwait or selected point targets—using an aerial delivery system in Iraqi airspace with prevailing winds carrying the agent across its borders.

~~(S//NF)~~ Possible constraints on Saddam's use of BW in this manner may be concerns about contaminating Iraq and his desired legacy as a great pan-Arab leader. Saddam probably thinks that if he contaminates Arab countries indiscriminately, his popular, historic image could be undermined. Saddam, however, also is vengeful and he may conclude that any "defensive" actions would be fully justified inasmuch as US-led "aggression" against Iraq

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is only possible because other Arab governments have betrayed the Arab cause.

status.⁵ (See Air Force view in next paragraph.)

~~(S//NF)~~ *Inside Iraq.* We judge that Saddam may be hesitant to employ BW against any enemy targets in the Arab heartlands of Iraq, especially the Sunni areas—preferring CW or conventional means of resistance. In extremis, we cannot rule out such BW attacks, however. If the regime attempts to use BW inside the Arab-inhabited areas of Iraq, the emphasis will be against enemy military targets rather than Iraqi population centers.

• [Redacted]

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- Saddam's regime probably realizes it has little or no means to control the effects of BW once unleashed among its own population and, as long as Saddam believes he or members of his family might survive to carry-on, he probably would be reluctant to use BW inside Iraq.

- Iraq also conducted feasibility studies on various aircraft [Redacted] MiG fighter aircraft were among those considered.

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~~(U)~~ **Delivery Systems—Iraq Increasing Its Options**

~~(U)~~ **The Unmanned Aerial Vehicle (UAV) Threat**

~~(S//NF)~~ Baghdad continues to develop UAVs, which could be used as delivery platforms for BW, and less likely CW, agents. They could threaten Iraq's neighbors; US forces in the Persian Gulf; and if brought closer to or into the United States, the US Homeland. Iraq's UAV program includes converted aircraft as well as small and medium-sized UAVs.

- The Air Force assesses that no flyable L-29 UAV airframes remain, [Redacted]

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~~(NF)~~ *Converted Aircraft.* We assess that by 2000, Iraq had converted as many as 10 L-29s—1960s vintage Czech-built jet trainers—into UAVs. We do not know their operational

⁵~~(S//NF)~~ The Military Intelligence Community assesses that the role of the L-29 UAV-modified aircraft is largely historical and that concentrating on it distracts from other more viable delivery mechanisms for CBW.

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[Redacted] ~~NE~~ The UAV program faces several technical hurdles—particularly guidance and control—and appears to have suffered a setback when an unmanned L-29 crashed last October 2000, apparently shaking the regime's confidence in the system

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[Redacted] ~~NE~~ *Small and Medium-Sized UAVs.* We are concerned about Iraq's current development and flight-testing of small to

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medium-sized UAVs and its recent procurement of significant amounts of UAV-related equipment. Although limited to smaller payloads, such UAVs would be more difficult to detect and shoot down than manned aircraft or converted aircraft-UAVs and could pose a greater danger to US forces and allies in the region.

[redacted]

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- Iraq in the past has configured small UAVs to deliver BW agents, [redacted] and UNSCOM discovered 11 small UAVs at the Iraqi BW R&D, production, and storage facility at Salman Pak.

[redacted] ~~(NF)~~ Iraq has at least one small UAV that could be employed covertly against the continental United States. [redacted] it might be available for operational use within months, [redacted]

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- [redacted] indicates the same Iraqi procurement network has been associated with attempts to procure UAV components, as well as [redacted] to be used to manufacture dozens of small- to medium-sized UAVs.

[redacted]

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[redacted] ~~(NF)~~ Centers for US civilian and military personnel in Kuwait are the easiest targets for a BW-armed UAV attack, because of Kuwait's close proximity to airfields in southeastern Iraq. These targets would receive little warning before the attack if the UAV avoided radar by flying in low to the ground or if the agent was disseminated near the Iraqi-Kuwaiti border.

[redacted]

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[redacted] ~~(NF)~~ An Iraqi UAV procurement network attempted to procure commercially available route planning software and an associated topographic database that will

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provide coverage of the "50 states"—referring to the United States—according to [redacted] during the summer of 2001. This software would provide for [redacted] in the United States for the small UAV. The software is useless outside the United States, which strongly suggests that Iraq is investigating the use of these UAVs for missions targeting the United States.

- Iraq is advancing longer-range missile development capabilities, largely through foreign assistance in building specialized facilities, including a test stand for engines more powerful than those in its existing missile force. [redacted]

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- We are attempting to collect additional information regarding the intent of this procurement effort.

~~(TS)~~ ~~(NF)~~ The Air Force judges that Iraq is developing UAVs primarily for reconnaissance rather than delivery platforms for CBW agents. The capabilities and missions of Iraq's new UAV remains undetermined, but in this view its small size strongly suggests a primary role of reconnaissance. CBW delivery is an inherent capability of UAVs but probably is not the impetus for Iraq's recent UAV programs.

~~(S/NF)~~ *Pre-Gulf War Developments.* Prior to the Gulf war, Iraq had several programs to extend the range of the 300-km-range Scud B SRBM—first acquired from the Soviet Union in the mid-1970s—and gained experience working with liquid-propellant technology. During the 1980-1988 war with Iran, Iraq sought a missile with sufficient range to reach Tehran. Iraqi engineers extended the length of the Scud B propellant tanks and reduced the payload mass to produce the 650-km-range al-Husayn SRBM—successfully flight-tested in 1987 and subsequently deployed operationally. By 1988, Iraq was flight-testing the 900-km-range al-Abbas SRBM—developed by further lengthening the propellant tanks and reducing the payload mass. The al-Abbas probably was never deployed operationally.

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~~(S)~~ **The Iraqi Ballistic Missile Program—Rising from the Ashes**

~~(NF)~~ Iraq maintains a ballistic missile force and related development program.

- Gaps in Iraqi accounting to UNSCOM suggest that Saddam retains a covert force of up to a few dozen Scud-variant SRBMs, some with ranges up to 650-900 km.
- Iraq is deploying its new al-Samoud and Ababil-100 SRBMs, which are capable of flying beyond the UN-authorized 150-km range limit; Iraq has tested an al-Samoud variant beyond 150 km—perhaps as far as 300 km [redacted]

~~(NF)~~ In addition to these programs, Iraqi engineers were researching several other SRBM design concepts that involved clustering Scud and SA-2 engines [redacted]

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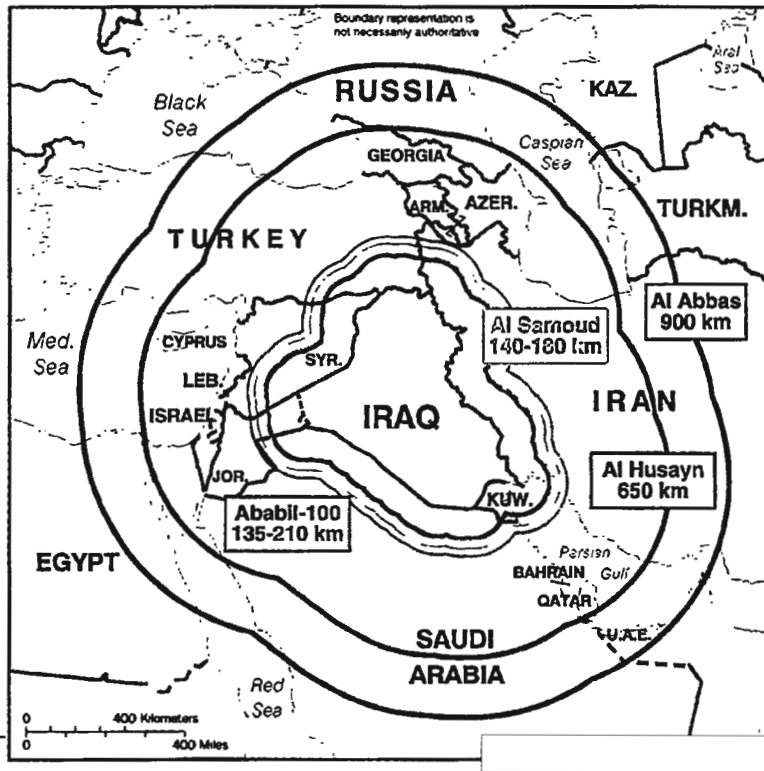
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~~(U)~~ Iraq's Ballistic Missile Force

^a Iraq is developing an extended-range Al Samoud that was flight-tested on 31 January 2002.

[redacted] we believe this missile may have flown 240 to 300 km downrange.

[redacted] we assess this missile uses the same engine as the Al Samoud and Iraq extended the range by increasing the amount of propellant and lengthening the burn time.

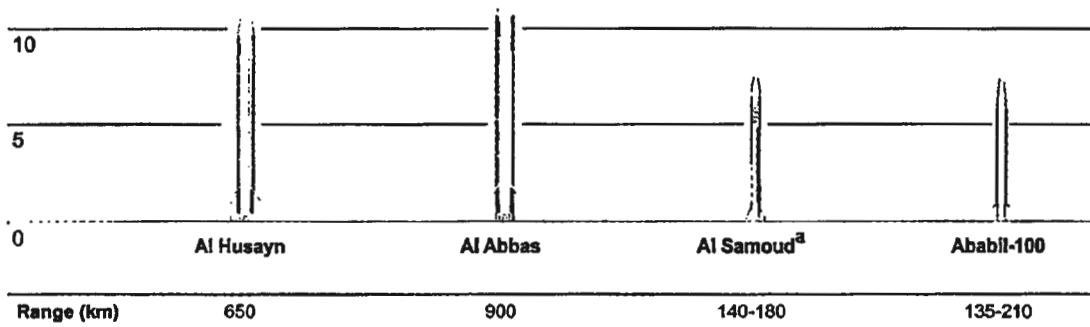


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Propellant type	Liquid	Liquid	Liquid	Solid
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Iraq has begun development of both longer-range liquid- and solid-propellant ballistic missiles. In January 2002, Iraq flight-tested an extended-range version of the al-Samoud that flew beyond the 150-km range limit.

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~~(S//NF)~~ Iraq also began a solid-propellant program in the late 1980s to develop a two-stage missile—the Badr-2000⁶—in conjunction with Argentina and Egypt and had constructed the necessary motor production and testing infrastructure prior to the start of the Gulf war. The Badr-2000 had two variants, one with a range of 750 km, the other 1,000 km.

- We do not know how many missiles and launchers Iraq may have retained from its pre-Gulf war force.

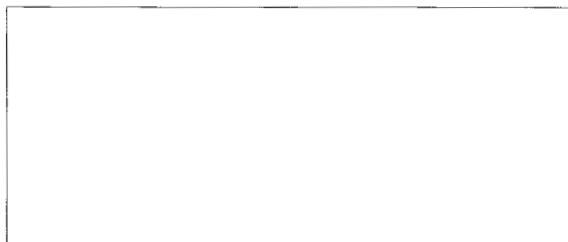
~~(NF)~~ **Covert Ballistic Missile Force.**

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Although we have no direct evidence, we assess—on the basis of significant discrepancies in accounting to UNSCOM and Iraq’s domestic production capabilities—that Iraq retains a small force of up to a few dozen Scud-variant SRBMs in defiance of UN resolutions, probably the al-Husayn 650-km SRBM and possibly the al-Abbas 900-km SRBMs.

~~(S//NF)~~ **Post-Gulf War Developments.**

Damage sustained during Operation Desert Storm and the subsequent destruction of missiles, components, and infrastructure mandated by the UN brought the Iraqi ballistic missile program to an abrupt halt. UNSCR 687 imposed a further restriction on the Iraqi program by prohibiting development of any missile with a range greater than 150 km. That resolution, however, allowed Iraq to retain its cadre of missile engineers and some of its production infrastructure; work was begun on two systems, the liquid-propellant al-Samoud SRBM and the solid-propellant Ababil-100 SRBM. Both systems have exceeded the 150-km-range limit imposed by the UN during flight tests and are now currently entering Iraq’s operational inventory. These new SRBMs allow Iraq to target Kuwait City from within its borders.



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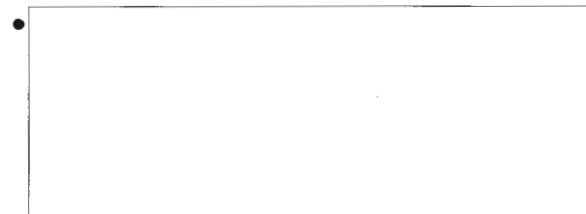
~~(NF)~~ UNSCOM believed that Iraq’s accounting of its unilateral destruction of its missiles after the Gulf war was seriously flawed. We are concerned about other accounting discrepancies as well:

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~~(S//NF)~~ Since late 2000, Iraq has rebuilt and continues to expand many facilities, including those damaged during Operations Desert Storm and Desert Fox, providing the infrastructure necessary to develop ballistic missiles with ranges equal to or greater than Iraq’s pre-Gulf war systems. We assess that



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⁶~~(S//NF)~~ Known as the Condor in Argentina and Vector in Egypt.

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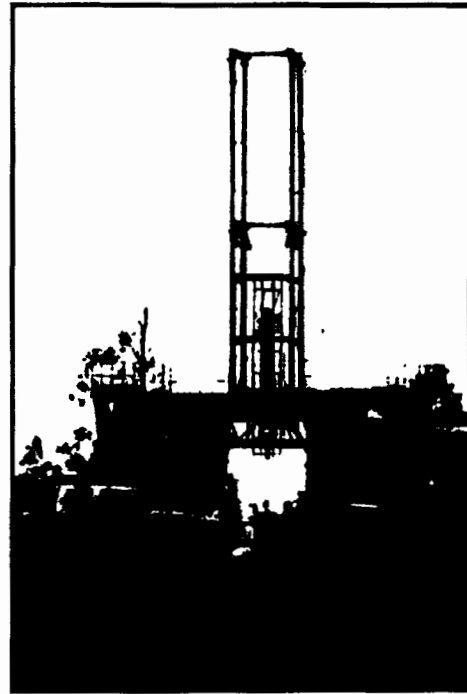
~~(U)~~ SA-2 (Al Samoud) Engine Test

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- Iraq has not accounted for a large number of Scud missile components—

[redacted]

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~~(U)~~ Liquid Propellant Ballistic Missile Programs

~~(NF)~~ The al-Samoud SRBM

[redacted]

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Analysis of the al-Samoud suggests its operational range will be 140 to 180 km and [redacted]

[redacted] the al-Samoud has been flight-tested to ranges in excess of 150 km.

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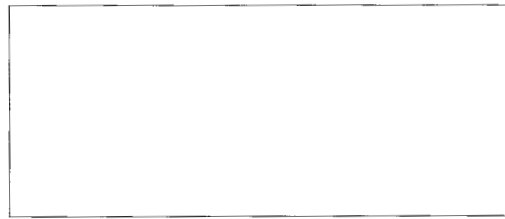
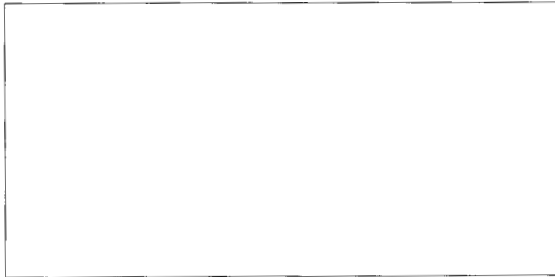
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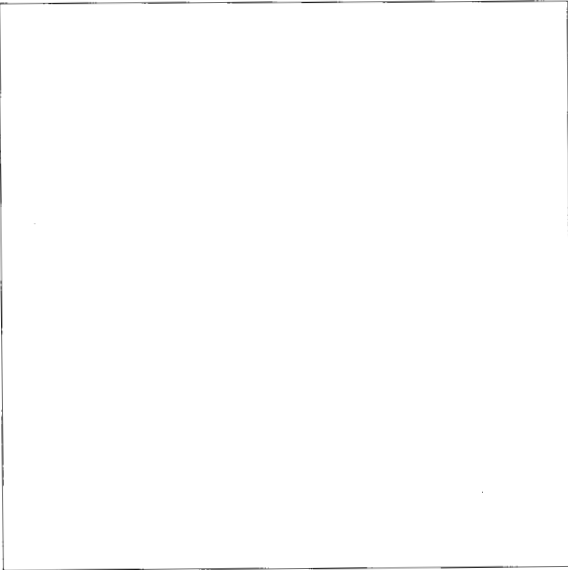
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~~(NF)~~ **Medium-Range Ballistic Missile (MRBM) Development?**



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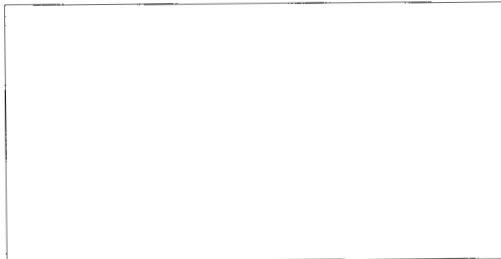
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~~(NF)~~ **Extended-range al-Samoud.** Iraq is developing an extended-range variant of the al-Samoud SRBM. This system was flight-tested [redacted] January 2002 and flew beyond the 150-km-range limit, perhaps as far as 300 km.

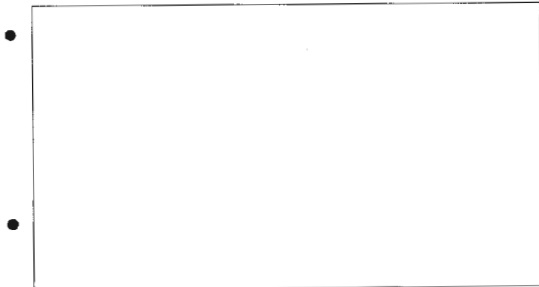
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- Iraq is nearing completion of a liquid-propellant engine test stand at Al Rafah that probably will be capable of testing engines more powerful [redacted]

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assess Iraq could static test a new engine at Al Rafah [redacted]

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[redacted] ~~NT~~ North Korean Assistance. Iraq is seeking assistance from

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[redacted]

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Iraq in

2001 sent a delegation to P'yongyang.

[redacted]

~~(U)~~ Current Solid-Propellant Ballistic Missile Programs

[redacted] ~~NT~~ We assess that the Ababil-100 can carry [redacted] to ranges of 135 to 210 km.

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[redacted] Iraq is interested in acquiring No Dong MRBMs from North Korea. Such missiles could serve as a near-term solution to Iraq's MRBM requirements as it continues to work toward developing a domestic capability.

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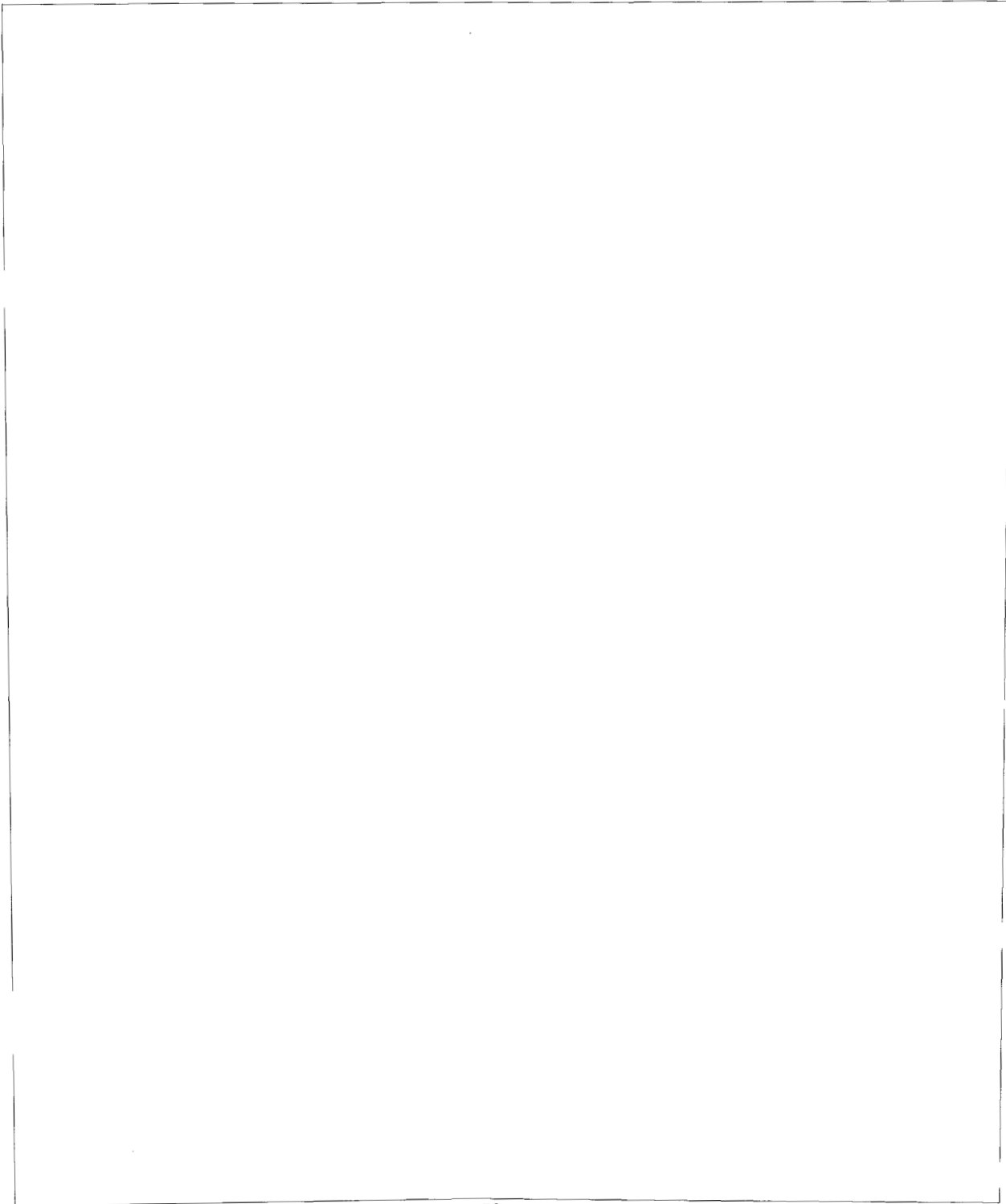
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~~(S//NF)~~ UNSCOM Accounting of Iraq's Scud force

[redacted] ~~(NF)~~ UNSCOM confirmed with the Russian Government that the Soviet Union supplied Iraq with 819 operational Scud missiles [redacted] Out of the 819 missiles, UNSCOM could not verify the destruction of two of the Soviet-supplied Scuds and seven Scud-variants that [redacted] were domestically produced and unilaterally destroyed.

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- [redacted]
- [redacted]

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~~(S//NF)~~ We do not know how many components Iraq was able to retain, and therefore we do not know how many Scud-variant missiles Iraq possesses.

[redacted]

- Continuing analysis [redacted] however, indicates that objects [redacted] previously identified [redacted] as motor cases almost certainly are heat treatment ovens used in the production of motor cases.

[redacted] ~~(NF)~~ The solid-propellant infrastructure associated with production of large motors for the Badr-2000 program was either destroyed during the Gulf war or dismantled by UN inspectors. [redacted]

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~~(U)~~ Iraqi Ababil-100
Short-Range Ballistic Missile



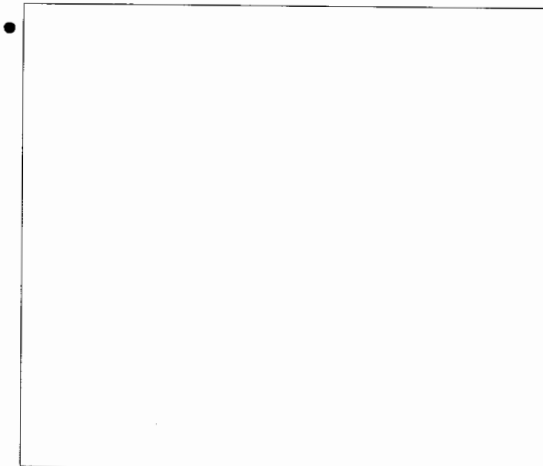
~~(S//NF)~~ Long-term plans. Iraq probably will strive to reestablish its SRBM inventory to pre-Gulf war numbers, continue developing and deploying solid-propellant systems. Baghdad also probably will pursue MRBMs to keep pace with its neighbors in Iran and Pakistan. Once its regional security concerns are being addressed, Iraq is likely to pursue a first-generation SLV/ICBM, especially if Iran and Pakistan conduct SLV tests, especially if Iran and Pakistan conduct SLV tests.

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- With substantial foreign assistance, Baghdad *could* flight-test a domestic MRBM—liquid- or solid-propellant—by 2006. This also presumes rapid sanctions erosion and Baghdad’s willingness to risk detection of developmental steps, such as static engine testing, by 2004. An MRBM flight test is *likely* by 2010.

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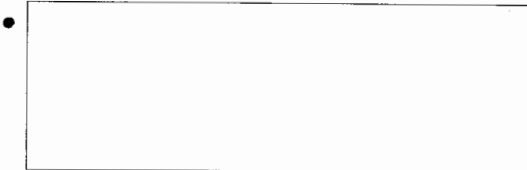
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~~(S//NF)~~ Although Iraq *could* attempt before 2015 to test a rudimentary long-range missile [redacted], we judge that Iraq is *unlikely* to do so. Such an effort almost certainly would fail. After observing North Korean missile developments that have occurred since the Gulf war, Iraq most likely would pursue a three-stage TD-2 approach to an SLV or ICBM that would be capable of delivering a nuclear weapon-sized payload to the United States. Lacking evidence, we can only postulate on potential Iraqi ICBM/SLV concepts and timelines from the beginning of sanctions relief:

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~~(S//NF)~~ Once development obstacles are overcome, and in the absence of sanctions and UN resolutions prohibiting longer-range missile development, Iraq *could* flight-test a single-stage missile based on the larger motors within two to five years.

- If Iraq could buy a TD-2 from North Korea, it *could* have a launch capability within 12 to 18 months of a purchase. Iraq currently does not have launch facilities capable of supporting a TD-2 launch and would have to construct a launch tower.
- If it acquired No Dongs from North Korea, it *could* test an ICBM within three

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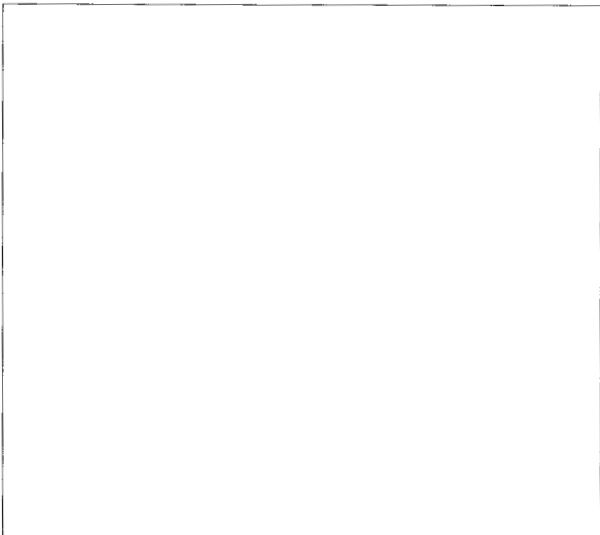
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years of acquisition by clustering and staging the No Dongs—similar to the concept the Al Abid SLV used with Scuds.

- If Iraq bought TD-2 engines, it *could* test an ICBM within about five years of the acquisition.
- Iraq *could* develop and test a Taepo Dong-2-type system within about ten years of a decision to do so.



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(U) Payload Options

~~(S)~~ Before the Gulf war Iraq had weaponized al-Husayn warheads with *chemical and biological agents*, and we assess that Iraq has retained the capability to weaponize any of its ballistic missiles

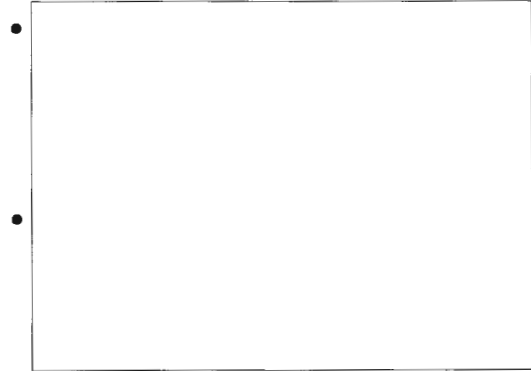


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~~(S)~~ **Iraqi Nonmissile WMD Threats**

~~(S)~~ Nonmissile means of delivering weapons of mass destruction do not provide the same prestige or degree of deterrence and coercive diplomacy associated with ICBMs. Nevertheless, we are concerned about Iraq's nonmissile options for delivering WMD to the United States. Ships, trucks, airplanes, and other means may be used. Nonmissile means:

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- Are less expensive than developing and producing ICBMs.
- Can be covertly developed and employed; the source of the weapon can be masked in an attempt to evade retaliation.
- Probably would be more reliable than ICBMs that have not completed rigorous testing and validation programs.
- Probably would be much more accurate than emerging ICBMs over the next 15 years.
- Probably would be more effective for disseminating biological warfare agent than a ballistic missile.
- Would avoid missile defenses.

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~~(U)~~ Doctrine and WMD Use

~~(S//NF)~~ We have low confidence in our ability to assess when Saddam would use WMD. Our assessment of Baghdad's doctrine for using WMD is drawn largely from Iraq's battlefield use of chemical weapons during the Iran-Iraq War in the 1980s.

[Redacted]

- During the Iran-Iraq War, Baghdad integrated CW agents into both offensive and defensive military operations. By the end of the war, Baghdad had learned to use its chemical weapons effectively—which it did not do when it initially used them in 1983—making use of weather conditions to maximize the effects of the chemical weapons. An understanding of how weather affects the use of chemical weapons would contribute to planning the successful delivery of biological weapons.
- Because Iraq has had to keep its WMD capabilities hidden over the past decade, we know little about Iraqi WMD battlefield doctrine today, but we have some reporting of Saddam's decisionmaking regarding WMD use.

~~(S//NF)~~ Among WMD, we judge that Saddam is more likely to use chemical than biological weapons on the battlefield. Iraqi forces are more experienced with chemical weapons. Chemical-filled munitions probably are more readily available to forces assigned contingency WMD missions. Baghdad also might believe that CW agents would have more immediate, lethal battlefield impact than BW agents and would achieve a psychological impact similar to that of BW on enemy forces operating inside Iraq, without the unintended or undesirable consequences. Iraq is more likely to use biological than

chemical weapons in clandestine attacks on the US Homeland. Saddam's threshold for using BW—which Baghdad has never employed—probably is higher than for CW.

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~~(S//NF)~~ Iraq's historical use of CW against Iran and its decision not to use WMD against Israel or Coalition forces in 1991 indicates that an opponent's retaliatory capability is a critical factor in Saddam's decisionmaking.

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~~(NF)~~ Although Iraq launched chemical attacks against Iranian military forces during the 1980-88 Iran-Iraq war to compensate for its inferior military manpower, Baghdad did not target Iranian civilians with chemical weapons. By contrast, Saddam ordered chemical attacks against the Kurdish population in Iraq in 1987-88 in retribution for their wartime support of the Iranians.

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- During the 1988 "war of the cities" late in the Iran-Iraq War, Baghdad fired [Redacted] conventionally-armed missiles against Iranian cities.

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~~(S//NF)~~ With respect to the 1990-91 Gulf war, [Redacted] Saddam and other senior Iraqi officials took US warnings seriously and thought that the United States would use nuclear weapons in response to Iraqi CBW use.

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~~(U)~~ Continued Restraint Today?

~~(S//NF)~~ Saddam's restraint a decade ago, however, is less meaningful in the context of a US attempt to change the regime. Saddam did not need to play the WMD card to ensure his survival during the Gulf war, but [Redacted] he was prepared to do so if the Coalition moved on to Baghdad. An Iraqi official claimed after the war that Saddam said he would have used

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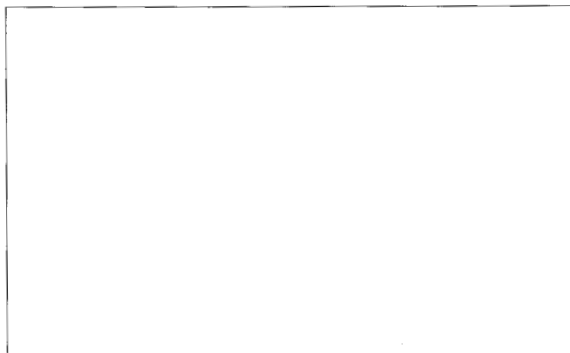
CW if the Coalition had moved north of al-Amarah, near the 32nd parallel.

his WMD capabilities despite US air attacks would mitigate concerns about a "use or lose" situation early in a war.

~~(S//NF)~~ Saddam could conclude that a US-led war to overthrow him was inevitable and decide to use WMD preemptively in an attempt to disrupt US war preparations and undermine the political will of the Coalition. In such a scenario, concentrated Coalition forces at ports, airfields, bases in Gulf Cooperation Council (GCC) countries, and naval forces at sea would present the most lucrative targets for chemical or biological attacks. Such use would be in the nature of a last resort because it would foreclose political or diplomatic options to end the crisis and would contradict Iraq's decade of denials that it had such weapons. It also would run the risk of strengthening, rather than weakening, US and international resolve against Saddam.

- Unlike 1990, when Saddam tried explicit and implicit threats to intimidate his neighbors to deny support to the United States, his recent actions suggest the Iraqi leader believes that the political benefits of his diplomacy and of keeping Iraq's CBW capabilities hidden outweigh the military advantages of early use of WMD.

- Once Saddam perceived that collapse of his regime was imminent, he might try to inflict a final blow of revenge on his regional enemies, such as Kuwait, Israel, any countries hosting US forces, or against the US Homeland.



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~~(U)~~ **Saddam's Decisionmaking on WMD Use**

~~(S//NF)~~ Iraq's actions over the past year offer other clues into Saddam's mindset. His attempts to mend fences with neighbors and internal opposition groups like the Kurds and periodic hints of flexibility on the inspections issue suggest Saddam thinks he can avoid war by preventing the United States from forming a coalition.



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- Iraq's methodical conventional defensive preparations also suggest Saddam thinks an attack is not imminent and that he will be able to mount some level of conventional defense to slow US operations and provide time for diplomacy. His past success in preserving

~~(TS//NF)~~ Saddam's past actions suggest a decision to use WMD probably would come when he feels his personal survival is at stake even after he has exhausted all political, military, and diplomatic options, *but we are unlikely to know when Saddam reaches that point.* We have examined the full range of potential Iraqi redlines for WMD use. Weighing the potential benefits and losses as we think Saddam would perceive them, we have looked at the following key decision points and red lines:

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- **Against an initial force buildup.** Saddam could conclude that a US-led war to overthrow him was inevitable and decide to use WMD preemptively. His WMD forces would have greater freedom of action against Coalition forces concentrated at ports and airfields, but any attack would end any hope he might have of rallying international pressure against the United States. An attack under these conditions would not require sophisticated delivery means and Saddam probably would expect such an action to undermine the US will to proceed.
 - **After an initial advance into Iraqi territory.** Iraqi ground forces are capable of delivering chemical weapons but would encounter difficulty targeting maneuvering US ground forces. Again, early use of WMD would foreclose Saddam's diplomatic options for stalling a US advance.
 - **As Coalition forces move toward Baghdad.** The likelihood of Iraqi WMD use would increase as US forces approached Baghdad. If US forces advance past major cities toward Baghdad, Saddam might use persistent agents to block a Coalition advance or a non-persistent agent to set up an Iraqi counterattack.
 - **As the regime is about to fall.** Saddam would use all remaining resources he perceives would forestall the imminent collapse of his regime. An attack on Baghdad might prompt a last-ditch use of WMD to halt US forces or to inflict a final blow of revenge on regional enemies or against the US Homeland.
- threaten* to use WMD, including against the US Homeland, to deter US actions.
- ~~(S//NF)~~ **Command Authority.** Saddam historically has maintained tight control over the use of WMD. He probably has provided contingency instructions to his commanders to use CBW on the battlefield under specified circumstances.
- Saddam delegated CW release authority to corps-level commanders in the latter stages of the Iran-Iraq War, but only after Iraqi military fortunes were at their lowest following defeats in 1986.
 - Saddam retained release authority during the Gulf war. According to a memoir published by the former commander of Iraq's missile forces, Saddam instructed that chemical warheads would be used only on his command or "in the event of a massive strike against Iraq."
- ~~(S//NF)~~ Whether or not the forces responsible for carrying out Saddam's orders to use WMD would follow through would hinge upon the assessment of their commanders of the consequences of disobeying Saddam's orders. Saddam's proven wrath enforced by omnipresent security officers tends to motivate obedience early in any crisis, but officers may grow more reluctant to carry out these orders if the regime appears on the verge of collapse. Some senior officers, particularly those from prominent Sunni families with a history of loyalty to Saddam, probably would respond to central authority until they were convinced the regime is no longer viable. Fear about the post-war consequences of participating in WMD attacks could dissuade military personnel from carrying out orders.

~~(S//NF)~~ When Saddam perceives that denying the existence of his WMD programs is no longer of value, he could publicly

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~~(C)~~ Who Controls WMD Employment?

~~(S//NF)~~ Saddam maintains ultimate control over the use of all WMD, using couriers or other secure communications to deliver orders to subordinate organizations in charge of these weapons systems. Credible reporting, however, suggests that Saddam's second son Qusay—who is in charge of the Republican Guard and security apparatus through the SSO—probably would have wartime authority over all military matters as well, especially if Saddam was incapacitated or killed.

~~(S//NF)~~ Beneath Saddam and Qusay, crisis or wartime C3 nodes that have de facto control over selected BW weapons and delivery systems include the missile and Republican Guard high-commands, and probably the so-called regional commands. The missile and Republican Guard commanders probably would have authority over most key units and systems that have a WMD-delivery capability. In a crisis, four to five regional commands, including the Northern, Southern, Central, and Central Euphrates regional commands, with Baghdad sometimes listed separately, probably would be reestablished.

~~(NF)~~ The regional commands were established in 1990-1991 and again during the Desert Fox time frame. [redacted] suggests these leaders, trusted cronies who have been given operational control over at least some of the forces in their respective sectors, are empowered to act on behalf of Saddam under certain circumstances. A credible body of evidence indicates that, if the ability of the leadership to communicate with and direct Iraqi forces was severed, Saddam's regime would implement contingency plans to grant selected commanders or forces authority to execute one or more possible pre-planned offensive or defensive options; we lack credible, current reporting about specific plans to use BW, however.

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- We assess Baghdad is staging CBW munitions and delivery systems to areas of likely use in Iraq. [redacted]

caught, as well as potential loss of control. We further assess that the chances of prepositioning increases as Saddam gets closer to a confrontation.

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western Iraq and areas south of Baghdad would best support Iraq's possible objectives of attacking Israel or US forces.

~~(NF)~~ *Preparing for Unconventional Environment.* Iraq's attempts to acquire NBC defensive equipment or knowledge suggest it is preparing to operate in a contaminated environment. The military has increased chemical defense training and distributed defensive equipment

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- We believe Saddam at this time is unlikely to have prepositioned CBW outside Iraq, owing to the increased risk of detection and consequences if he were

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~~(U)~~ **Potential Inadvertent CBW Release from US Strikes?**

~~(S//NF)~~ We have difficulty identifying Iraq's likely CBW facilities owing to Baghdad's D&D efforts. Iraq took great pains to keep its CBW capabilities from being damaged during the Gulf war—partly out of its own fear of contamination—and we would expect Baghdad to do the same now.

~~(S//NF)~~ Even so, in a concerted air campaign or in ground action, Coalition action could result in a release of chemical or biological agents. Predicting the area of contamination from such a release would be difficult. Immediate chemical agent casualties tend to be within a few kilometers or less of the release point and bombing. Although they are affected by sunlight, the greater toxicity of BW agents can produce casualties many times more distant from the release point than can CW agents.

any terrorist group. In addition, Baghdad for now appears to be drawing a line short of conducting terrorist attacks with conventional or CBW against the United States, fearing that exposure of Iraqi involvement would provide Washington a stronger cause for making war.

~~(NF)~~ Should Saddam conclude that a US-led attack designed to destroy his regime could no longer be deterred, however, he probably would become much less constrained in adopting the terrorist actions, and doubly so once hostilities commenced. At that point, terrorism against US interests—even with Baghdad's hand apparent—would become one more weapon in what the Iraqi leader would depict as a final showdown with "American and Zionist imperialism." Such terrorism might involve conventional means—as with Iraq's unsuccessful attempt at a terrorist offensive in 1991—or CBW.

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to its units. Iraq is trying to procure specialized protective gear, such as Geiger counters, chemical detection kits, NBC reconnaissance vehicles, and decontamination systems.

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~~(S//NF)~~ Saddam would have several options for conducting terrorist attacks against US interests. He most likely would rely on Iraqi Intelligence Service (IIS) officers to conduct terrorist-type attacks. (See Annex B for more details on the IIS and the Special Security Organization (SSO)).

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- We have scant information on the Fedayeen Saddam, other than that its members are trained in terrorist operations or assassination of Iraqi opposition members (see box on suicide attacks).

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~~(U)~~ **Covert Acts Employing CBW**

~~(S//NF)~~ All past clandestine operations that we know Iraq to have committed, attempted, or supported have involved conventional tactics, and we have no solid evidence that Iraq has ever provided CBW or materials to

~~(NF)~~ In addition, Saddam might, if sufficiently desperate, decide that only an organization such as al-Qa'ida—with worldwide reach and extensive terrorist

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infrastructure, and already engaged in a life-or-death struggle against the United States—could meet his requirements. In such circumstances, he might decide that the extreme step of assisting the Islamist terrorists in conducting a WMD attack against the United States would be his last chance to exact vengeance by taking a large number of victims with him.

general, apparently he has not been averse to some contacts with the organization. We have reliable clandestine reporting and press sources that [redacted] direct meetings between senior Iraqi representatives and top al-Qa'ida operatives were held between the early 1990s and the present. Several dozen additional direct or indirect meetings are attested to by less reliable clandestine and press sources over the same period.

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- Although Saddam has not endorsed al-Qa'ida's overall agenda and has been suspicious of Islamist movements in

~~(U)~~ **Suicide Attacks**

[redacted] ~~(NF)~~ Baghdad has claimed publicly to have a suicide capability since creating the Fedayeen Saddam as a small, lightly-armed internal security force in October 1994. Fedayeen "suicide commandos" marched in televised parades inaugurating the force wearing white robes and wrapped in explosives. [redacted] showed the Fedayeen involved in a campaign to recruit and train suicide volunteers. Despite generous enlistment incentives, Baghdad had difficulty in finding volunteers, with some units filling mandated quotas from the prison population.

- In late December 1998, the Fedayeen issued several directives defining criteria for suicide recruits, [redacted] Suitable candidates were to be younger than 35, willing to carry out "serious missions" risking death, distance themselves from their families, and maintain physical fitness.
- A senior Fedayeen commander directed the Baghdad Republican Guard Division in January 1999 to forward a list of prisoners willing to conduct suicide missions in exchange for their release.
- The USDAO in Ankara reported that as of late 2000, the Fedayeen had a 520-member special operations element trained for airborne, underwater demolition, and sabotage operations. This group reportedly signed an oath to conduct suicide missions if directed by Saddam.
- [redacted] reported that the Fedayeen had a 150-member suicide unit in 1997.
- [redacted] reports concerning the formation of other suicide forces involving explosive-laden boats or pilots trained to crash jet fighters into US ground or naval forces but have to date not seen any evidence to corroborate any of the reports.

[redacted] ~~(NF)~~ Saddam has thus far used the Fedayeen and other announced suicide forces exclusively as a propaganda tool. We have never detected a Fedayeen suicide operation. [redacted]

[redacted] Saddam is capable of recruiting and equipping a suicide unit and ordering suicide attacks, but whether his orders would be carried out is questionable.

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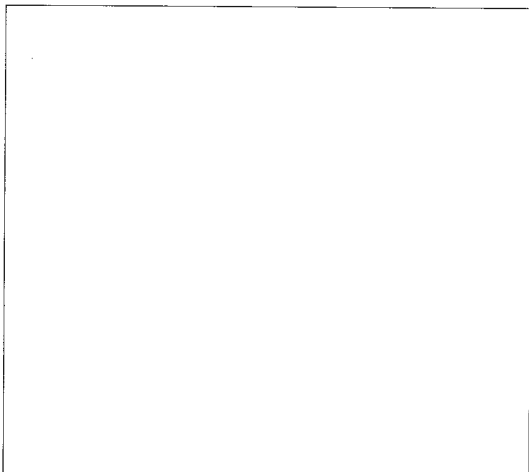
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trained in Iraq or by Iraqi trainers elsewhere, but given al-Qa'ida's interest over the years in training and expertise from outside sources, we cannot discount reports of such training entirely.

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~~NF~~ Another dimension of possible connections between Iraq and al-Qa'ida involves the presence in Iraq of extremists with al-Qa'ida ties. Most of the reporting on this presence relates to Kurdish-inhabited northern Iraq, which Baghdad has not controlled since 1991. Baghdad reportedly has had contacts, however, with a local Kurdish extremist group called Ansar al-Islam, which hosts al-Qa'ida members in the north. An unknown number of al-Qa'ida associates also have fled during the past six months to or through other parts of Iraq.

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~~NF~~ As with much of the information on the overall relationship, details on training and support are second-hand or from sources of varying reliability. The most conspicuous pattern in the reporting is of al-Qa'ida's enduring interest in acquiring chemical, biological, radiological, and nuclear (CBRN) expertise from Iraq. ~~NF~~ a dozen reports ~~NF~~ from sources of varying reliability suggest the involvement of Iraqi or Iraqi nationals in al-Qa'ida's CBW efforts. We cannot determine, however, how many of these Iraqi nationals were directed by Baghdad or how many of the reported plans for CBW training or support were actually realized.

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• ~~NF~~ in July 2002 indicated that several militants associated with al-Qa'ida were checking into hotels in Baghdad and using the Iraqi capital as a base for financial transactions and other activities.

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• Senior al-Qa'ida planner Abu Mus'ab al-Zarqawi was in Baghdad under an assumed identity in mid-2002, ~~NF~~ although his current location is unknown.

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• Detainee Ibn al-Shaykh al-Libi—who had significant responsibility for training—has told us that Iraq provided unspecified chemical or biological weapons training for two al-Qa'ida members beginning in December 2000. He has claimed, however, that Iraq never sent any chemical, biological, or nuclear substances—or any trainers—to al-Qa'ida in Afghanistan.

• None of the ~~NF~~ al-Qa'ida members captured during Operation Enduring Freedom report having been

~~NF~~ The presence of al-Qa'ida militants in Iraq poses many questions. We do not know to what extent Baghdad may be actively complicit in this use of its territory for safehaven and transit. Given the

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pervasive presence of Iraq's security apparatus, al-Qai'da would have difficulty maintaining an active, long-term presence in Iraq without alerting the authorities or without at least their acquiescence.

~~(U)~~ National Responses to Iraqi CBW Attacks

~~(S//NF)~~ Saddam's rhetoric during various crises since the Gulf war suggests that in a war against a US-led coalition he would attempt to strike Israel and GCC states with any practicable conventional means, including ballistic missiles, for the same reasons as in 1991: to try to fracture the Coalition and disrupt US and Coalition rear areas.

- Saddam is attempting to establish himself as the leading proponent of the Palestinian cause and probably would seek to bring Israel into the war to recast the conflict as a Zionist-Arab struggle. At the same time, he may calculate that strikes against US allies in the region would strike fear and exacerbate popular resentment against a US-initiated war.
- At a minimum, Saddam would issue veiled threats or attempt a conventional strike against his GCC neighbors or Israel in the hopes of provoking such reactions without having to play his WMD card.

~~(S//NF)~~ Should Baghdad launch CBW attacks against its neighbors, those states capable of responding militarily may not initially retaliate in kind with WMD. The effectiveness of the Iraqi strikes and the threat of more attacks—which create pressures to re-establish deterrence—would drive decisions on the nature of retaliatory attacks. Those states not able to retaliate would seek greater US support to counter the Iraqi threat while public reactions in the Arab states probably would be mixed in blaming Iraq and the United States for the spread of the war.

~~(S//NF)~~ Would Saddam Target the Dimona Nuclear Facility?

~~(S//NF)~~ Iraqi attacks against neighboring states might target nuclear facilities, such as Israel's Dimona reactor. In addition to the symbolic value of hitting an adversary's nuclear program, Saddam might hope to achieve through conventional weapons the unconventional effect of a release of radiation from a damaged reactor. Iraq's ability to conduct effective strikes against such targets is limited, particularly because of the inaccuracy of its missiles. The two Al Husayn missiles that Iraq fired at Dimona during the Gulf war fell harmlessly in the Negev Desert.

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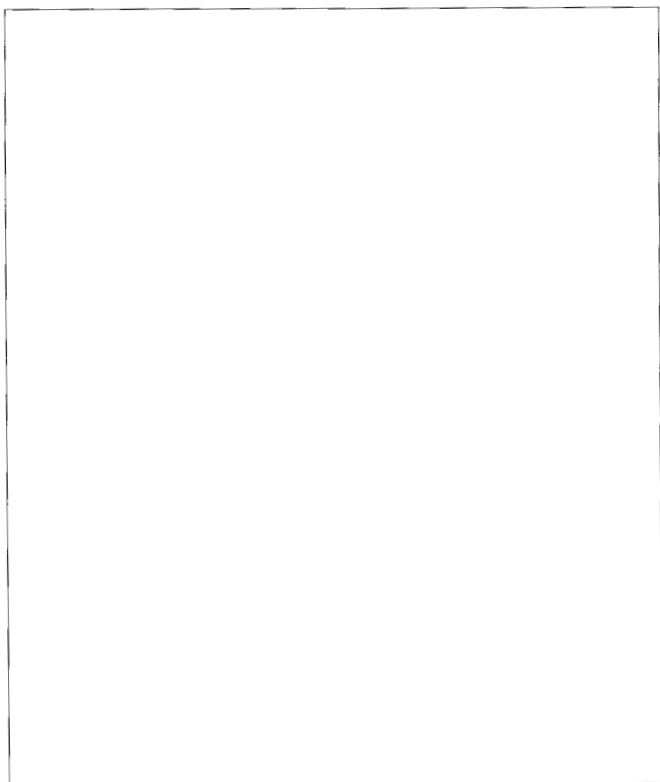
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~~(U)~~ Annex A

~~(U)~~ Iraq's Attempts to Acquire Aluminum Tubes

[redacted] ~~(S)~~ We first became aware of Baghdad's aluminum tube procurement effort with potential centrifuge applications in [redacted]. The effort may have begun as early as 1999 when Iraq attempted to purchase 15,000 seamless tubes with identical dimensions but unknown alloy or tolerances. [redacted]

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[redacted] ~~(S)~~ Denial and Deception (D&D) Efforts Suggest Sensitive End Use. Iraq has proven to be an aggressive user of denial and deception techniques. Since early 2001 [redacted] attempting to procure 60,000 aluminum tubes [redacted]

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- According to multiple sources, Iraq has insisted that the tubes be shipped through such intermediary countries as [redacted] in an attempt to conceal the ultimate end user; such activities are consistent with the long-standing D&D efforts associated with Iraq's prewar nuclear procurement strategy but are more robust than post-war D&D efforts.

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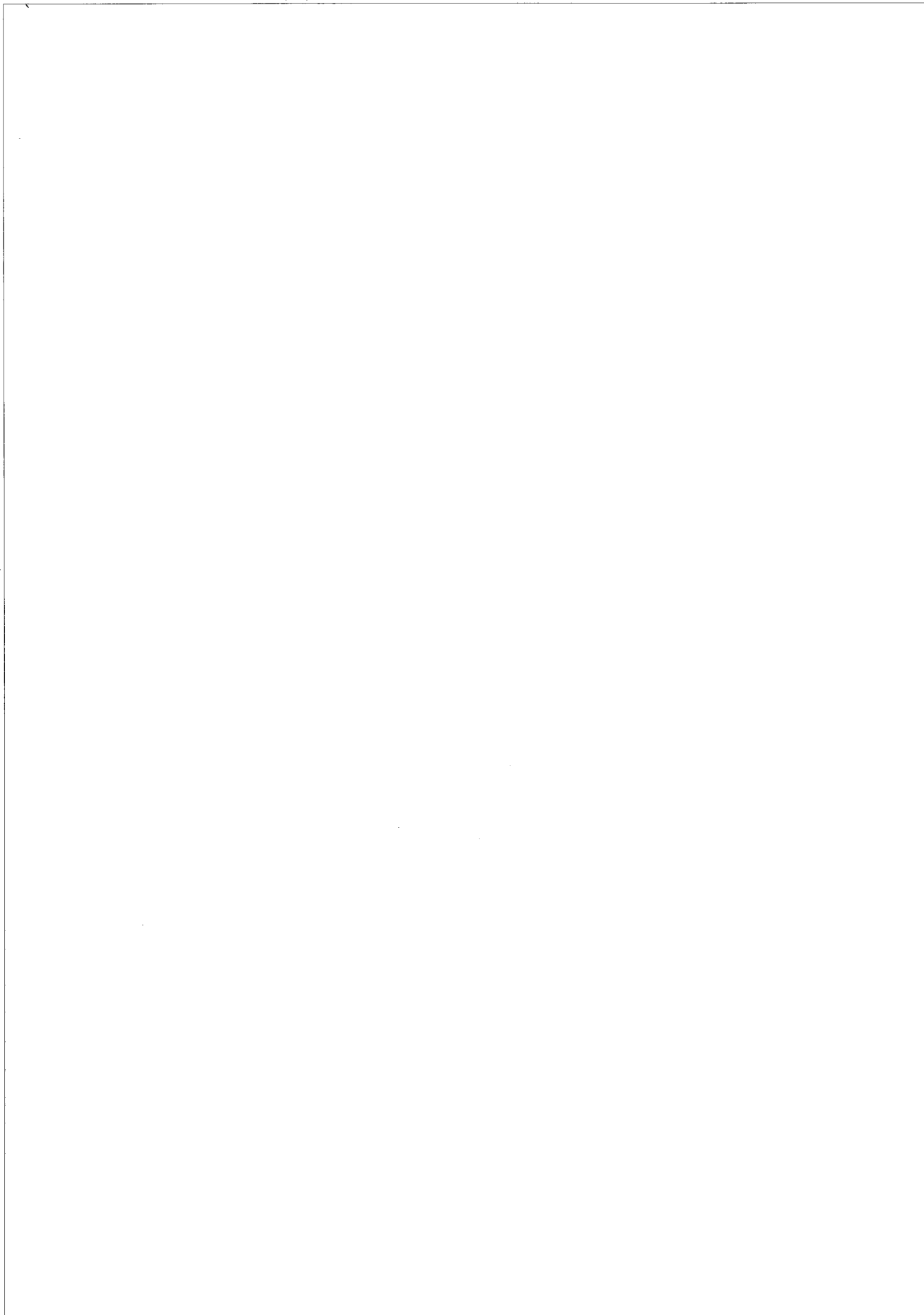
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~~NF~~ Iraq attempted to procure 60,000 7075-T6 aluminum tubes in early 2001

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- In [redacted] 2001, the shipment was seized [redacted].
[redacted] The International Atomic Energy Agency (IAEA) was told of the shipment, inspected it, and informed [redacted] that the tubes could not be sent on to Iraq because they are controlled by the Nuclear Supplier Group (NSG) dual-use list and prohibited by United Nations sanctions on Iraq owing to their applicability for gas centrifuge components.

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- We were able to obtain several samples from this shipment and are continuing to test them for suitability in gas centrifuges.

~~NF~~ After the procurement effort [redacted] was halted, Baghdad began seeking new suppliers.

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[redacted] all attempts have been for at least 60,000 7075-T6 aluminum tubes.

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~~(NF)~~ **Tube Characteristics.** Gas centrifuge experts [redacted] tested and evaluated the tubes seized [redacted] to determine their suitability as rotors in gas centrifuges. Most agencies agree that the dimensions, materials, manufacturing tolerances, [redacted] all indicate that the tubes are suitable for gas centrifuge rotors.

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• [redacted] have spun an aluminum tube built to the Iraqi specifications for the tubes seized [redacted] in a laboratory setting to 60,000 rpm (1000 Hz). This test was performed without balancing the tube—a critical step required for full speed operation—but still provided a rough indication that the tube is suitable as a centrifuge rotor. Testing is being

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~~(NF)~~ **Tight Manufacturing Tolerances and Dimensions.** [redacted] Iraqi front companies attempting to procure aluminum tubes have required extremely tight manufacturing tolerances from suppliers. Most agencies assess these tolerances are indicative of those necessary for gas centrifuge rotors but unnecessary for such conventional armament as multiple rocket launchers (MRLs). In 2001, Iraq specified roundness tolerances—the inner and outer diameter—to be plus or minus +/-0.1 mm. [redacted]

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[redacted] Such tight roundness dimensions are necessary to obtain optimal balancing of the rotor during operation.

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- In addition to the tolerances [redacted], Iraq requested that the tubes be wrapped in wax paper [redacted] during shipment.

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[redacted] (NF) The dimensions of the tubes seized [redacted] are similar to those used in the Zippe and Beams-type gas centrifuge—declassified designs from the early 1960s that were instrumental in the early Russian and US centrifuge programs. The inner diameter of the seized tubes—74.4 mm—nearly matches the tube size used by Zippe and is described in detail in his unclassified report on centrifuge development. We assess these designs were the basis for Iraq’s prewar centrifuge effort. The length and wall thickness of the seized tubes are similar to Iraq’s prewar Beams design.

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- Based on analysis of Zippe’s report to the US Atomic Energy Commission, DOE believes that the Zippe rotor is 1 mm thick. Tubes with a thickness three times greater than the Zippe design significantly complicate the design of the lower suspension system.
- Although the tubes sought by Iraq are longer—900 mm—than the declassified Zippe design, we assess they will be cut to form two centrifuge rotors approximately 400 mm in length. The IAEA Action Team that acquired and evaluated a tube seized [redacted] determined that cutting the tubes in this manner is viable.

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- Iraq performed internal pressure tests to induce a hoop-stress level similar to that obtained by an operating rotor.

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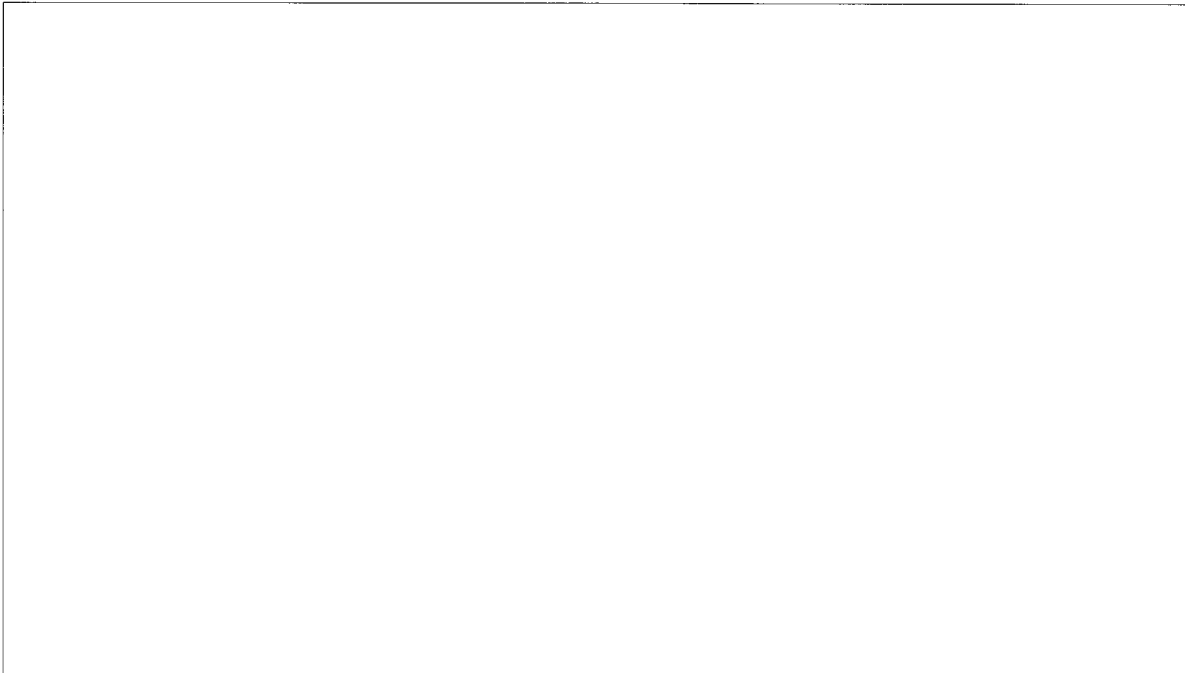
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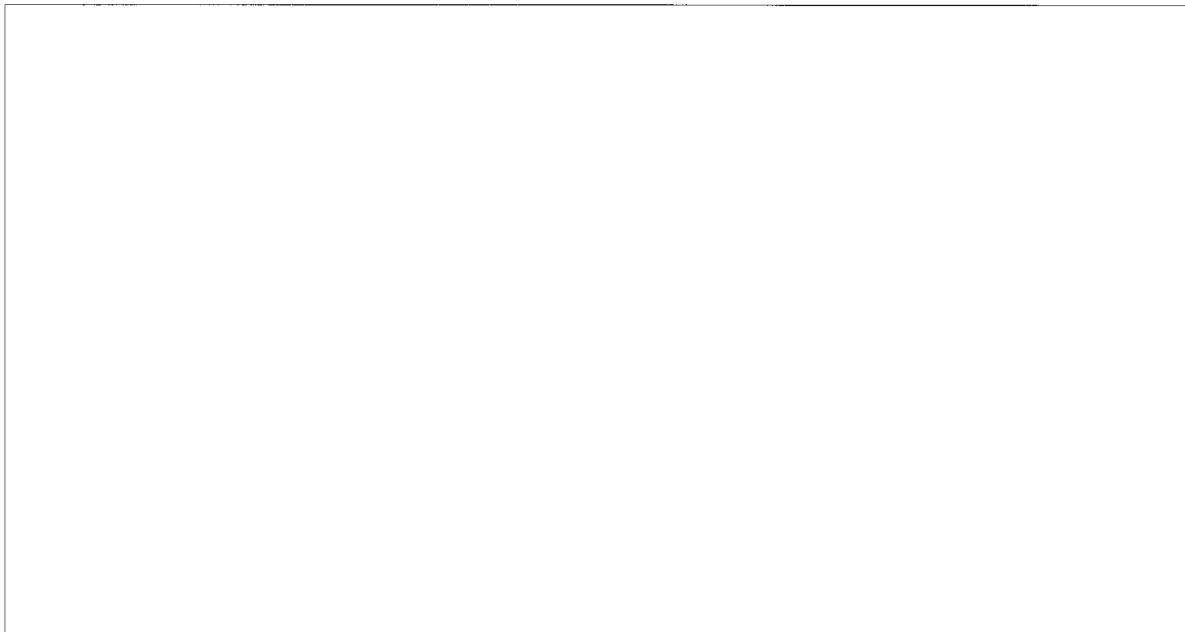
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~~(S)~~ **Why Use Aluminum Rotors Now?** We assess that Baghdad currently is pursuing aluminum rotors for its centrifuge program because the centrifuge designs that use these rotors were the only ones Iraq was successful in building prior to the Gulf war without extensive assistance from foreign experts. This is a viable option for Baghdad, particularly if Iraq has had difficulty obtaining access to foreign expertise.

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~~(U)~~ Comparison of Rotor Dimensions

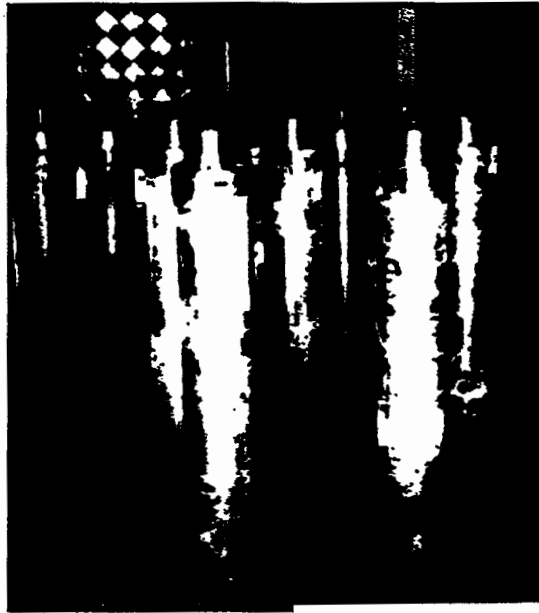
	Oil Centrifuge Rotor	Tubes Seized	Beams Centrifuge Rotor	Zippe Centrifuge Rotor
Length	651 mm	[redacted]	~900 mm	279.4-381 mm
Inside diameter	84 mm		69.85 mm	68.6-76.3 mm
Outside diameter	96 mm		76.2 mm	74.2-81.9 mm
Wall thickness	6 mm		3.175 mm	2.8 mm

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~~(NF)~~ This table is classified [redacted] ~~(NF)~~

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- Iraq's prewar centrifuge development program focused on two different gas centrifuge designs in its efforts to enrich uranium. The earliest centrifuge developed by Iraq was based on the Beams design. This design requires a high-strength aluminum rotor that is approximately 900 mm long and 3.175 mm thick. Based on information provided by UN inspectors, we know that Iraq operated an unknown number of oil centrifuges using 7075



~~(S/NF)~~ These centrifuges, found in Iraq after the Gulf war, are made of maraging steel and have a greater separation capacity than those made of aluminum.

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~~(U)~~ The Zippe unclassified report discusses several centrifuge rotor designs but does not explicitly state the wall thickness of any of the rotors. Based on the limited documentation, we can infer that Zippe used rotors with wall thickness that range from 1 mm to approximately 2.8 mm. We know that more advanced Zippe designs used rotors with 1 mm thick walls. We do not know what exact wall thickness was used in the early Zippe designs. The rotor wall thickness for the Beams centrifuge has also been specified as 6.35 mm.

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(U) Rocket Motor Application?

~~(S)~~ Experts at the National Ground Intelligence Center (NGIC) have examined the possibility that the tubes seized [redacted] could be used for conventional military systems. In particular, we have examined whether these tubes are intended for use as rocket motor casings for Iraq's Nasser 81 Multiple Rocket Launcher (MRL). Most agencies agree with NGIC, the DoD experts on conventional military systems, that tubes with the specifications—materials and tolerances—like those seized [redacted] are highly unlikely to be intended for rocket motor cases. NGIC also concluded that the wall thickness and overall weight would make these particular tubes poor choices for rocket motor bodies.

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- Tubes of apparently similar dimensions were discovered during IAEA inspections at the Nasser State Establishment—one of Baghdad's industrial centers—in 1996. The Iraqis claimed to UN inspectors that the tubes were 7075-T6 aluminum and were used by Iraq for the Nasser 81 MRL.
- We have compared the [redacted] tubes to the US Mark 66 2.75 inch rocket that uses a 7075 aluminum case and found that the tubes Iraq is seeking are much more precisely manufactured, far exceeding US requirements for such a system. In fact, no US or Russian manufactured MRL—that we are aware of—uses tubes of the accuracy required for the Iraqi tubes.

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aluminum rotors. Iraq modified the design slightly by reducing the size of the rotor to 650 mm. This gas centrifuge design was the first indigenously developed by Iraq. Although Iraq sought outside technical help for the Beams centrifuge program, the technology was understood by indigenous personnel, [redacted]

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~~(S//NF)~~ The View of DOE and the National Laboratories on Iraqi Tube Procurement Efforts and Nuclear Reconstitution

~~(S//NF)~~ According to recent sensitive reporting, Iraq is continuing in its attempt to procure large numbers of seamless, 7075 T6 aluminum alloy tubes. DOE assesses that these tubes could be modified for use as centrifuge rotors. No successful centrifuge cascade has ever been built using rotors of the size and material being procured. Technical experts at DOE and the National Laboratories believe, however, other conventional military uses are more plausible. The tubes are built of the same material and have the same dimensions as those used by Iraq in the past to manufacture rocket casings, including the Nassr-81 rocket. In 1996, Iraq declared to the UN and the IAEA an in-country stockpile of over 66,437 such 7075-T6 aluminum alloy tubes. Regardless of their end use, any Iraqi inventories of such tubes (including new acquisitions) are required to be declared and subjected to UN/IAEA monitoring under the terms of existing UN Security Council resolutions.

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~~(S//NF)~~ Our centrifuge experts note that the tubes' specifications and the number of tubes do not match what we would expect to see for centrifuge rotors. One possibility is that Iraq could modify these tubes, or some portion of the tubes, to make centrifuge rotors. The other option is that the tubes are intended for some other specialized military application. Because we observe that the characteristics of these attempted orders align more closely with a previously observed Iraqi rocket motor casing application, DOE and the National Laboratories assess that this is the more likely intended end use.

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~~(S//NF)~~ More specifically, several technical aspects of the tubes and their handling seem inconsistent with a gas centrifuge application. First is the reported pressure-testing of the tubes. Materials intended for use in high-speed rotational equipment, such as centrifuges, would typically be subjected to a battery of tests, such as spin testing, to determine ultimate tensile strength, yield strength, metallurgical flaws, and balance. The tests conducted by Iraq have focused on the dimensional conformity to the specifications and the pressure rating of the tubes. The tubes were reportedly pressure tested to approximately 150 percent of the design pressure, which is the industry standard testing procedure. We assess that if Iraq were pressure testing the tubes to qualify them for use as centrifuge rotors, it would have conducted the pressure test to failure—a value likely much greater than the 150-percent value—to verify the ultimate tensile strength of the tubes. Pressure testing is not a known test method for centrifuge rotors.

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~~(S//NF)~~ Another apparent inconsistency is the length. The recent reporting indicates that the Iraqis plan to use the tubes in lengths of 900 mm. In order to disguise the tubes, it was suggested that the tubes be fabricated in lengths of 1,800 mm or 2,700 mm and then to cut them into two or three pieces once they arrive. A 900-mm long centrifuge rotor with a wall velocity of 350 m/s would operate well above the first flexural critical and possibly above the second flexural critical. Operating a supercritical one-piece metal rotor with a magnetic suspension was attempted in the US centrifuge program, as well as various foreign programs. The approach was abandoned in favor of constructing long metal rotors from short tube sections connected by flexible bellows. We assess that Iraq does not have the engineering capabilities to resolve the technical issues associated with operating a 900-mm long one-piece metal rotor.

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(continued...) (S//NF) **The View of DOE and the National Laboratories on Iraqi Tube Procurement Efforts and Nuclear Reconstitution**

(S//NF) In contrast, the dimensions of the tubes are consistent with applications to rocket motors previously declared by Iraq. According to research by DOE and National Laboratory technical analysts, many conventional rocket motors are approximately 80-85 mm in outer diameter, 900 mm in length, and are composed of high-strength aluminum alloys.

- The Nassr-81 is made at Nassr State Establishment. Iraq has manufactured large numbers of these 81-mm rockets since the 1980s. When inspected by the IAEA in 1996, the Iraqis had sixty-six thousand four hundred and thirty-seven 7075 T6 aluminum tubes with the same dimensions as the tubes originally sought by Iraq last year. IAEA inspectors reportedly reviewed this case and determined that the factory was indeed producing rockets for the Nassr-81. This 81-mm rocket of aluminum construction was declared by Iraq in its 1996 "Full, Final, and Complete Disclosure" on missiles to the UN following the Gulf war.
- These procurements are being conducted at a security level consistent with much of Iraq's military and industrial procurement activities, and not at a level that we would expect for WMD procurements.

(S//NF) Furthermore, the reported pressures, stresses, and method of testing are consistent with the testing of rocket motor casings. Unlike centrifuges, which develop their stresses from the high speed of rotation, solid-fuel rocket motors develop stresses from internal pressure, and hydrostatic testing is typical for rocket motor cases.

- UNSCOM missile inspectors at Nassr State Establishment noted hydrostatic testing of 81-mm rocket motor tubes in progress in 1993.
- The specification for the 2.75-inch (70-mm, 1.8-mm wall thickness) aluminum motor tube of the US Mark 66 rocket requires that each item be hydrostatically tested at 183 bar. Based on the Mark 66 tube dimensions, this test pressure is equivalent to a hoop stress of 349 MPa, which is close to the 370 MPa value calculated for the Iraqi pressure test.
- We have also analyzed a Russian 80-mm air-to-surface missile that has an anodized aluminum casing similar to this tube (905 mm long, 80 mm in diameter) and assess that a 300-bar hydrostatic test would be consistent as well with the internal design pressure for that tube.

(S//NF) Several other features also appear to track with an intended use in solid-fuel rocket motor cases.

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(continued...) ~~(S//NF)~~ **The View of DOE and the National Laboratories on Iraqi Tube Procurement Efforts and Nuclear Reconstitution**

- *The tube wall thickness.* The tube wall's thickness does not correspond with what we would expect to see in centrifuge designs—except possibly a Beams-type centrifuge—it is too thick for the design we assess that Iraq is most likely to be pursuing today, the Zippe design. The tubes sought earlier by Iraq and intercepted [REDACTED] have a wall thickness nominally three times thicker than other known aluminum centrifuge rotors using a Zippe-type suspension. Although Iraq has experimented with a Beams-type design in the past, it abandoned that design in favor of the Zippe design, and DOE assesses that a cascade based on a Beams-type design is not viable. The significantly thicker tube wall substantially increases the mass of the assembled rotor, with attendant undesirable increases in the load on the bottom bearing and damping system. Increasing the wall thickness of the aluminum tubes by yet another 1 mm just compounds this problem relative to the gas centrifuge end-use. On the other hand, the tube wall thickness would accommodate internal threaded joints on each end necessary for a rocket motor application and external machining.
- *Balancing of the tubes.* The fact that Iraq appeared more interested in the pressure rating of the tubes than the ultimate balance of tubes suggests that the end use may not be a centrifuge rotor.
- *Surface finish of the tubes.* Tube samples obtained purportedly were anodized on the outside rather than the inside. We assess that the requirement for anodization is not necessary—and is even problematic—for centrifuges. It is well established in open sources that bare aluminum is resistant to UF₆ and anodization is unnecessary for corrosion resistance, either for the aluminum rotors or for the thousands of feet of aluminum piping in a centrifuge facility. Instead, anodization would likely introduce uncertainties into the design that would need to be resolved before a centrifuge could be operated. In contrast, anodization is a standard practice in missile construction for environmental protection.
- *Quantity of tubes:* The quantity of the tubes Iraq is attempting to procure (60,000 or more) is inconsistent with its needs. Ten thousand to twenty thousand machines would be capable of producing sufficient HEU for approximately two weapons annually. The fabrication of 60,000 centrifuges would take well over a decade even if Iraq was able to produce 20 acceptable centrifuges per day, a large number for a proliferant country. This means that a centrifuge plant incorporating all of these aluminum tubes would not be operational until well into the next decade.

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~~(C//NF)~~ INR's Alternative View: Iraq's Attempts to Acquire Aluminum Tubes

~~(TS [redacted] NF)~~ Some of the specialized but dual-use items being sought are, by all indications, bound for Iraq's missile program. Other cases are ambiguous, such as that of a planned magnet-production line whose suitability for centrifuge operations remains unknown. Some efforts involve non-controlled industrial material and equipment—including a variety of machine tools—and are troubling because they would help establish the infrastructure for a renewed nuclear program. But such efforts (which began well before the inspectors departed) are not clearly linked to a nuclear end-use. Finally, the claims of Iraqi pursuit of natural uranium in Africa are, in INR's assessment, highly dubious.

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[redacted] INR accepts the DOE technical assessment that the high-strength aluminum tubes sought by Iraq in recent years are poorly suited for use as centrifuge rotors, and we judge that they are fully consistent with ordnance casings for Iraq's 81m "Nasser" multiple rocket launcher (MRL) system.

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Whereas there is a strong possibility Iraqi nuclear scientists have considered these tubes as centrifuge rotors, many technical experts assess that the Iraqis should understand the serious drawbacks of these tubes in terms of centrifuge use.

~~(NF)~~ As the paper implicitly recognizes, *high-strength aluminum is used for tactical rockets in the US and other countries*. Iraq has negotiated relatively low prices for these tubes—typically around \$15 to \$16, and apparently as low as \$10 in some instances [redacted]

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Moreover, *these tubes clearly have been used in huge quantities for Iraq's 81mm MRL system*. IAEA inspectors in the mid-1990s observed virtually identical tubes intended for 81mm rocket casings at an Iraqi rocket production facility (which UNSCOM visited as well). Plant records indicated that 160,000 of these tubes were at the site in 1989 and over 60,000 in 1996. .

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(continued...) ~~(C/NF)~~ **INR's Alternative View: Iraq's Attempts to Acquire Aluminum Tubes**

~~(NF)~~ Iraq also has sought aluminum tubes in huge volumes-

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Finally, operational security

practices-

-are uncharacteristically loose in

terms of Iraqi nuclear procurement.

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~~(U)~~ **Annex B**

~~(U)~~ **Inspections, Media, and Cover Stories**

~~(S//NF)~~ A robust, unconstrained inspection regime would hinder over time Iraqi WMD and longer-range missile development efforts, but inspectors would have difficulty discovering and slowing all elements of these programs. We assess that inspectors would have only a small chance of finding significant portions of Iraq's clandestine nuclear program.

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- We can identify a few sites that may be involved in portions of the program.

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- Moreover, before any inspectors arrive in country, Iraq would hide materials, components, and documentation and perform other denial and deception operations to thwart inspectors.

- Although unlikely, the inspectors could fortuitously find something at one of the sites.

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~~(S//NF)~~ **Missiles.** [Redacted] inspectors to known missile facilities, where they would be able to identify and monitor large-scale work (research, development, testing) for ballistic missiles but would be unlikely to discover covert facilities, any hidden missiles, or widely dispersed manufacturing.

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[Redacted]

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~~(S//NF)~~ **Hiding the Programs.** Before offering to allow inspectors back into the country, Iraq almost certainly developed evasion schemes.

- Iraq's CW program is hidden within its civilian chemical industry.
- Baghdad developed mobile BW production units for survivability and to evade detection, including to evade UNSCOM inspections; the same techniques will be used during these inspections.
- Even with the al-Samoud and Ababil-100 missiles in hand, inspectors would be hard-pressed to prove that the systems could deliver payloads over the 150 km limit and could not prove that the al-Samoud had flown over 150 km.

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- Given the leaks on the differences in the Intelligence Community regarding whether the aluminum tubes are intended for gas centrifuges rather than rockets, Iraq could mock up—for the international media—a facility for small rocket manufacture using similar tubes. Although the tubes themselves are proscribed items, their discovery as rocket casings would cause Saddam significantly less problems than their discovery as uranium enrichment centrifuges; he probably would assess that this revelation also could deflect attention from his pursuit of nuclear weapons.

~~(S//NF)~~ *Using the Media.* Baghdad's offer in August 2002 to let foreign journalists tour facilities that historically have been linked to its CBW programs is intended to bolster the cover provided by such dual-use sites. Tours of ostensibly legitimate facilities reveal few indicators to untrained observers and reinforce the benign cover stories that mask ongoing CBW activity.

~~(NF)~~ As expected on a planned and guided visit, the journalists found no evidence of BW activity at the Dawrah Foot-and-Mouth Disease Vaccine Plant or Taji warehouse facilities during tours in August. Indeed, we now judge that the Taji warehouse appears currently to be used exclusively to store food vice to store heat-sensitive BW weapons.

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- The Taji warehouse facility was bombed during the Gulf war because of suspicions that it was a BW storage facility. Baghdad orchestrated the tour on 20 August in response to a US press report that speculated this facility still was linked to Iraq's BW program.

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- Iraq allowed reporters to visit the Habbaniyah I facility—also known as Fallujah III—on 28 August, but no indications of suspected CBW-related production activity were seen.

- Reporters on 2 September were shown the Al Qaim uranium extraction facility that was destroyed during the Gulf war.

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~~(U)~~ Annex C

~~(U)~~ Iraqi Special Operations Forces and Intelligence Service



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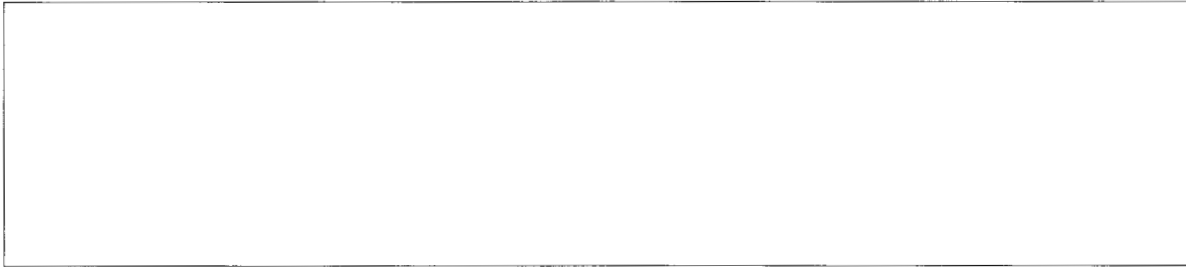
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**Information available as of 1 October 2002 was used in
the preparation of this National Intelligence Estimate**

**The following intelligence organizations participated
in the preparation of this Estimate:**

The Central Intelligence Agency

The Defense Intelligence Agency

The National Security Agency

National Imaging and Mapping Agency

The Bureau of Intelligence and Research,
Department of State

The Department of Energy

Also participating:

The Deputy Chief of Staff for Intelligence,
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The Director of Naval Intelligence,
Department of the Navy

The Director, Intelligence, Surveillance, and Reconnaissance,
Department of the US Air Force

The Director of Intelligence, Headquarters,
Marine Corps

**This Estimate was approved for publication by the National
Foreign Intelligence Board under the authority of the
Director of Central Intelligence.**

**Dissemination Control
Abbreviations**

NOFORN (NF) Not releasable to foreign nationals

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