



Iraq's Weapons of Mass Destruction Programs

July 2002

Summary

Iraq—which has the expertise, facilities, and equipment to expand its WMD arsenal—is working to reconstitute prohibited WMD programs.

- Since December 1998, Baghdad has refused to allow UN inspectors into Iraq as required by UN Security Council resolutions; in the absence of such inspections, Iraq's ability to work on prohibited programs without risk of discovery undoubtedly has increased.
- Iraq has stockpiles of CW and BW agents and munitions, is rebuilding its dual-use production facilities, and is aggressively pursuing delivery platforms—including UAVs—for chemical and biological agents.
- Iraq retains a small force of prohibited Scud-variant missiles and launchers and is developing two short-range ballistic missile systems that could violate UN-imposed range restrictions. All of these Iraqi weapons could have warheads that deliver chemical or biological agents.
- Iraq still has much of the infrastructure needed to pursue its goal of building a nuclear weapon, but it is unlikely to produce indigenously enough weapons-grade material for a deliverable nuclear weapon until late in the decade. Baghdad could shorten the acquisition timeline significantly if it were able to procure fissile material abroad.
- Iraq has been able to import dual-use, WMD-related equipment and material through procurements both within and outside the UN sanctions regime. Baghdad diverts some of the \$10 billion worth of goods now entering Iraq every year for humanitarian needs to support the military and WMD programs.

Iraq's Weapons of Mass Destruction Programs

In April 1991, the UN Security Council enacted Resolution 687 requiring Iraq to declare, destroy, or render harmless its weapons of mass destruction (WMD) arsenal and production infrastructure under UN or International Atomic Energy Agency (IAEA) supervision. UN Security Council Resolution (UNSCR) 687 also demanded that Iraq forgo the future development or acquisition of WMD.

Baghdad's determination to hold onto a sizeable remnant of its arsenal, agents, equipment, and expertise has led to years of dissembling and obstruction of UN inspections. Elite Iraqi security services orchestrated an extensive concealment and deception campaign to hide incriminating documents and material that precluded resolution of key issues in each WMD category: Iraq's missile, chemical warfare (CW), biological warfare (BW), and nuclear programs.

- Iraqi obstructions prompted the Security Council to pass several subsequent resolutions demanding that Baghdad comply with its obligations to cooperate with the inspection process and to provide United Nations Special Commission (UNSCOM) and IAEA officials immediate and unrestricted access to any site they wished to inspect.
- While outwardly maintaining the facade of cooperation, Iraqi officials frequently denied access to facilities, personnel, and documents in an effort to conceal critical information about their WMD programs.

Successive Iraqi declarations on Baghdad's pre-Gulf war WMD programs gradually became more accurate between 1991 and 1998 but only because of sustained pressure from UN sanctions, coalition military force, and vigorous and robust inspections facilitated by information from cooperative countries. Nevertheless, **Iraq never has fully accounted for major gaps and inconsistencies in its declarations and has provided no credible proof that it has completely destroyed its weapons stockpiles and production infrastructure.**

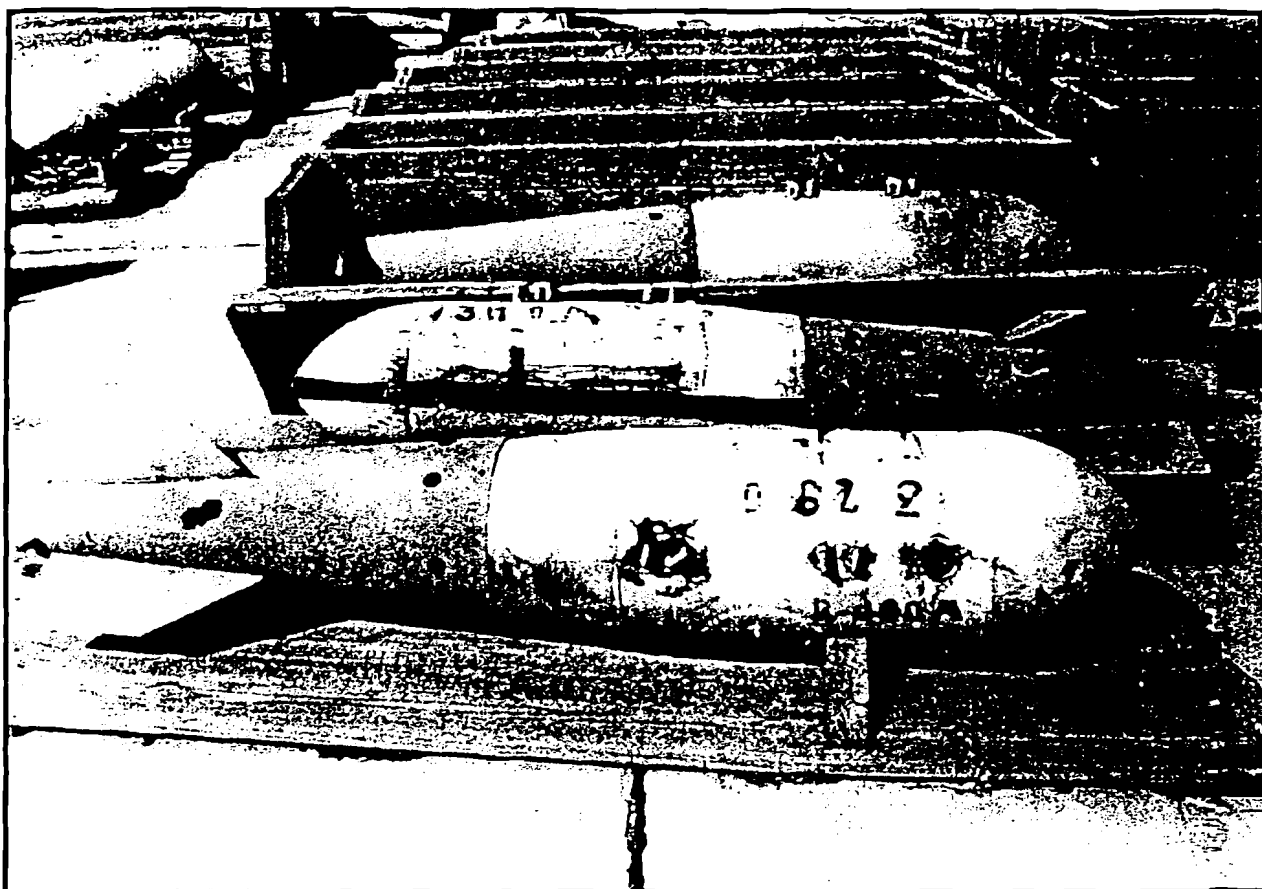
- Despite the destruction of most of its prohibited ballistic missiles and some Gulf war-era chemical and biological munitions, Iraq probably still has a small force of Scud-variant missiles, chemical precursors, biological seed stock, and thousands of munitions suitable for chemical and biological agents.
- Iraq has managed to preserve and in some cases even enhance the infrastructure and expertise necessary for WMD production and has used that capability to maintain a stockpile and possibly to increase its size and sophistication.

Since December 1998, Baghdad has refused to allow United Nations inspectors into Iraq as required by the Security Council resolutions. Technical monitoring systems installed by the UN at known and suspected WMD and missile facilities in Iraq no longer operate.

UN Security Council Resolutions and Provisions for Inspections and Monitoring: Theory and Practice

Resolution Requirement	Reality
<p>Res. 687 (3 April 1991) Requires Iraq to declare, destroy, remove, or render harmless under UN or IAEA supervision and not to use, develop, construct, or acquire all chemical and biological weapons, all ballistic missiles with ranges greater than 150 km, and all nuclear weapons-usable material, including related material, equipment, and facilities. The resolution also formed the Special Commission and authorized the IAEA to carry out immediate on-site inspections of WMD-related facilities based on Iraq's declarations and UNSCOM's designation of any additional locations.</p>	<p>Baghdad refused to declare all parts of each WMD program, submitted several declarations as part of its aggressive efforts to deny and deceive inspectors, and ensured that certain elements of the program would remain concealed. The prohibition against developing delivery platforms with ranges greater than 150 km allowed Baghdad to research and develop shorter-range systems with applications for longer-range systems and did not affect Iraqi efforts to convert full-size aircraft into unmanned aerial vehicles as potential WMD delivery systems with ranges far beyond 150 km.</p>
<p>Res. 707 (15 August 1991) Requires Iraq to allow UN and IAEA inspectors immediate and unrestricted access to any site they wish to inspect. Demands Iraq provide full, final, and complete disclosure of all aspects of its WMD programs; cease immediately any attempt to conceal, move, or destroy WMD-related material or equipment; allow UNSCOM and IAEA teams to use fixed-wing and helicopter flights throughout Iraq; and respond fully, completely, and promptly to any Special Commission questions or requests.</p>	<p>Baghdad in 1996 negotiated with UNSCOM Executive Chairman Ekeus modalities that it used to delay inspections, to restrict to four the number of inspectors allowed into any site Baghdad declared as "sensitive," and to prohibit them altogether from sites regarded as sovereign. These modalities gave Iraq leverage over individual inspections. Iraq eventually allowed larger numbers of inspectors into such sites but only after lengthy negotiations at each site.</p>
<p>Res. 715 (11 October 1991) Requires Iraq to submit to UNSCOM and IAEA long-term monitoring of Iraqi WMD programs; and approved detailed plans called for in UNSCRs 687 and 707 for long-term monitoring.</p>	<p>Iraq generally accommodated UN monitors at declared sites but occasionally obstructed access and manipulated monitoring cameras. UNSCOM and IAEA monitoring of Iraq's WMD programs does not have a specified end date under current UN resolutions.</p>
<p>Res. 1051 (27 March 1996) Established the Iraqi export/import monitoring system, requiring UN members to provide IAEA and UNSCOM with information on materials exported to Iraq that may be applicable to WMD production, and requiring Iraq to report imports of all dual-use items.</p>	<p>Iraq is negotiating contracts for procuring—outside of UN controls—dual-use items with WMD applications. The UN lacks the staff needed to conduct thorough inspections of goods at Iraq's borders and to monitor imports inside Iraq.</p>
<p>Res. 1060 (12 June 1996) and Resolutions 1115, 1134, 1137, 1154, 1194, and 1205: Demand Iraq cooperate with UNSCOM and allow inspection teams immediate, unconditional, and unrestricted access to facilities for inspection and access to Iraqi officials for interviews. UNSCR 1137 condemns Baghdad's refusal to allow entry to Iraq to UNSCOM officials on the grounds of their nationality and its threats to the safety of UN reconnaissance aircraft.</p>	<p>Baghdad consistently sought to impede and limit UNSCOM's mission in Iraq by blocking access to numerous facilities throughout the inspection process, often sanitizing sites before the arrival of inspectors and routinely attempting to deny inspectors access to requested sites and individuals. At times, Baghdad would promise compliance to avoid consequences, only to renege later.</p>
<p>Res. 1154 (2 March 1998) Demands Iraq comply with UNSCOM and IAEA inspections and endorses the Secretary General's memorandum of understanding with Iraq, providing for "severest consequences" if Iraq fails to comply. Res. 1194 (9 September 1998) Condemns Iraq's decision to suspend cooperation with UNSCOM and the IAEA. Res. 1205 (5 November 1998) Condemns Iraq's decision to cease cooperation with UNSCOM.</p>	<p>UNSCOM could not exercise its mandate without Iraqi compliance. Baghdad refused to work with UNSCOM and instead negotiated with the Secretary General, whom it believed would be more sympathetic to Iraq's needs.</p>
<p>Res. 1284 (17 December 1999) Established the United Nations Monitoring, Verification, and Inspection Commission (UNMOVIC), replacing UNSCOM; and decides Iraq shall allow UNMOVIC teams immediate, unconditional, and unrestricted access to any and all aspects of Iraq's WMD program.</p>	<p>Iraq repeatedly has rejected the return of UN arms inspectors and claims that it has satisfied all UN resolutions relevant to disarmament. Compared with UNSCOM, 1284 gives the UNMOVIC chairman less authority, gives the Security Council a greater role in defining key disarmament tasks, and requires that inspectors be full-time UN employees.</p>

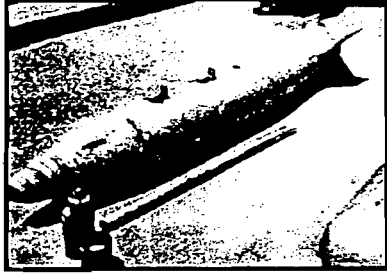
- After four years of claiming that they had conducted only “small-scale, defensive” research, Iraqi officials finally admitted in 1995 to production and weaponization of biological agents. The Iraqis admitted this only after being faced with evidence of their procurement of a large volume of growth media and the defection of Husayn Kamil, former director of Iraq’s military industries.
- Iraq admitted producing thousands of liters of the BW agents anthrax,² botulinum toxin, (which paralyzes respiratory muscles and can be fatal within 24 to 36 hours) and aflatoxin, (a potent carcinogen that can attack the liver, killing years after ingestion) and preparing BW-filled Scud-variant missile warheads, aerial bombs, and aircraft spray tanks before the Gulf war, although it did not use them.



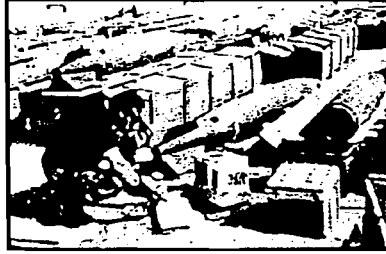
Two R-400A bombs in foreground (with black stripe) photographed by UNSCOM inspectors at Mutasana Airfield near the Al Walid Airbase in late 1991 bear markings indicating they were to be filled with botulinum toxin. Other bombs appear to have markings consistent with binary chemical agent fill. This evidence contradicted Iraq’s declarations that it did not deploy BW munitions to operational airbases and that it destroyed all BW bombs in July 1991—declarations that were subsequently retracted in the face of overwhelming evidence to the contrary.

² An infectious dose of anthrax is about 8,000 spores or less than one-millionth of a gram in a non-immunocompromised person. Inhalation anthrax historically has been 100 percent fatal within five to seven days, although in recent cases aggressive medical treatment has reduced the fatality rate.

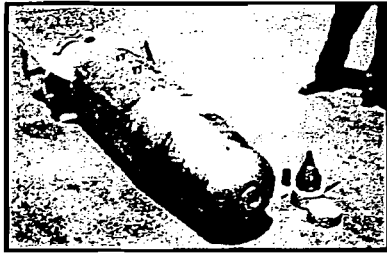
Chemical-Filled Munitions Declared by Iraq



*Iraqi 250-gauge
chemical bomb.*



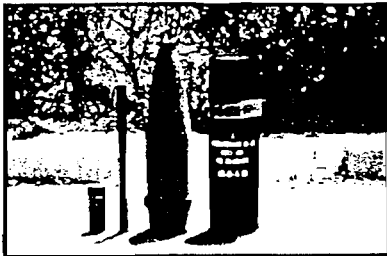
*Iraqi 500-gauge
chemical bombs.*



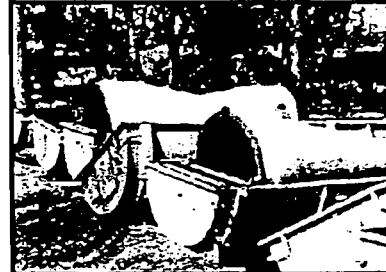
*Iraqi DB-2
chemical bomb.*



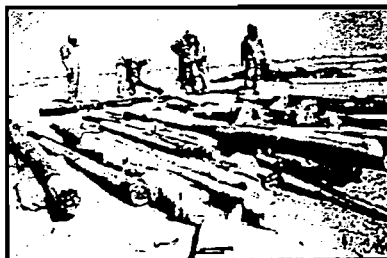
*Iraqi R-400
chemical bombs.*



*Iraqi 155-mm
chemical shell.*

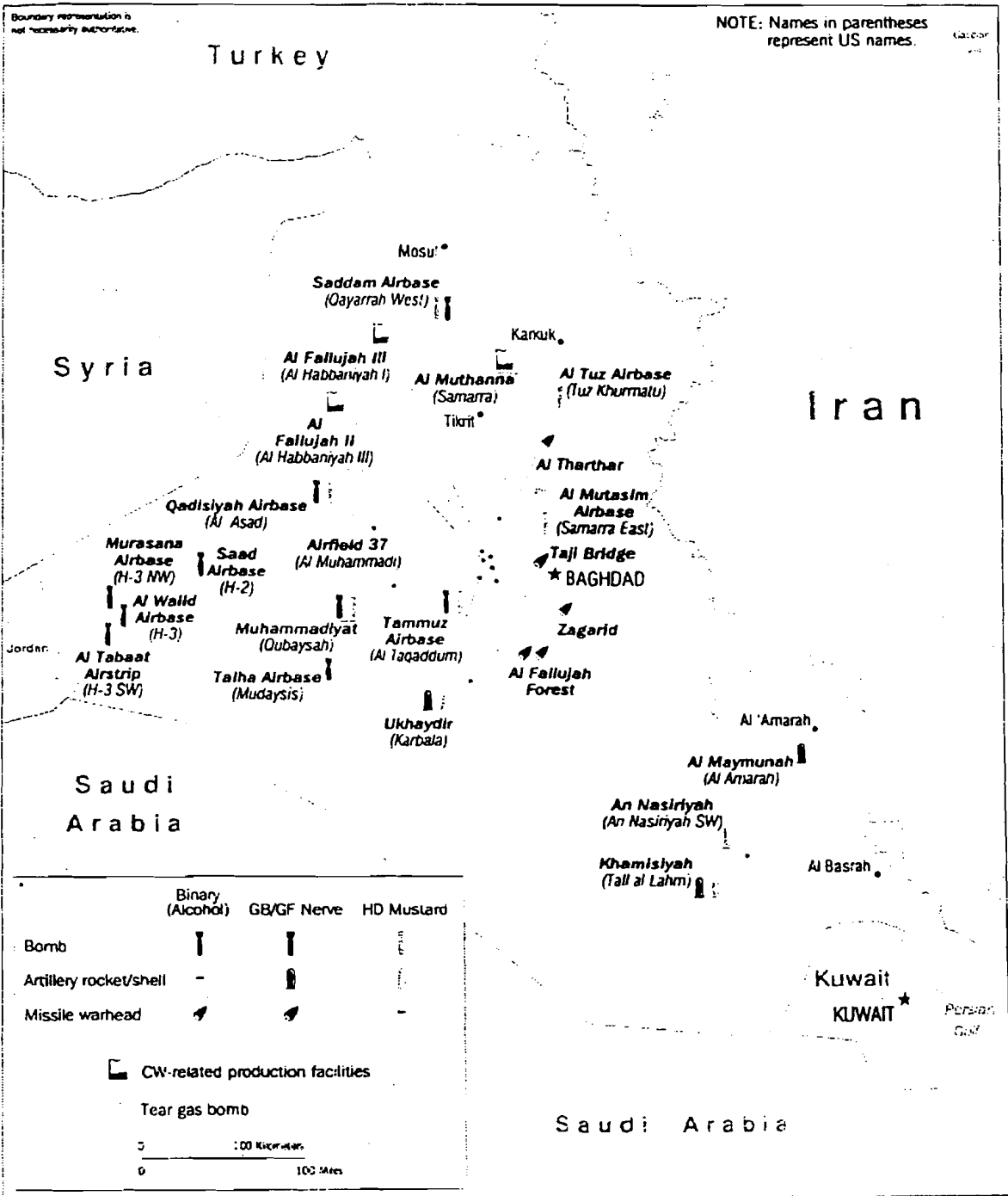


*Iraqi Al Husayn
chemical
warheads.*



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

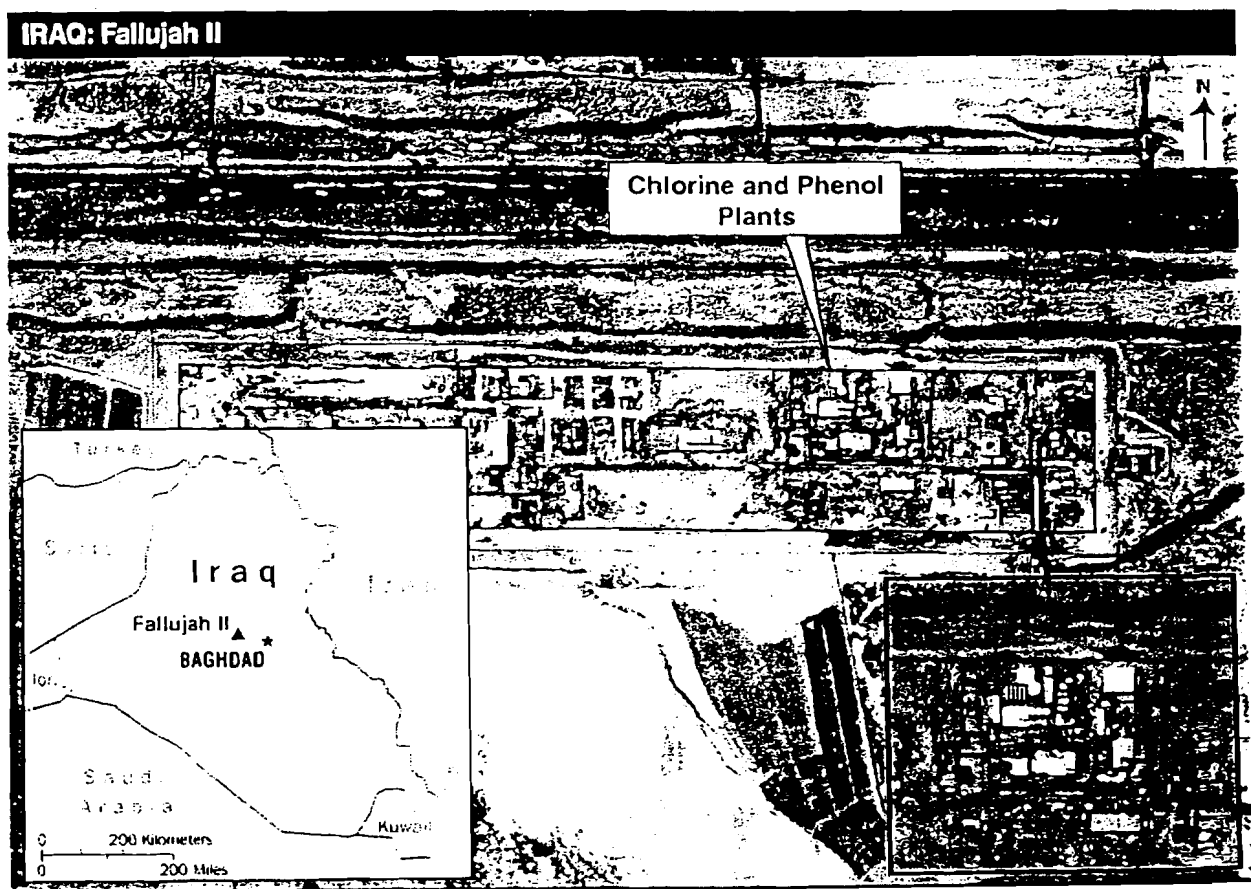
Iraq: CW-Related Production Facilities and Declared Sites of Deployed Alcohol-Filled or Chemical Agent-Filled Munitions During Desert Storm



DI Cartography Center:MPG 760101A1 (R00667) 6-02

Baghdad continues to rebuild and expand dual-use infrastructure that it could divert quickly to CW production. The best examples are the chlorine and phenol plants at the Fallujah II facility. Both chemicals have legitimate civilian uses but also are raw materials for the synthesis of precursor chemicals used to produce blister and nerve agents. Iraq has three other chlorine plants that have much higher capacity for civilian production; these plants and Iraqi imports are more than sufficient to meet Iraq's civilian needs for water treatment. Of the 15 million kg of chlorine imported under the UN Oil-for-Food program since 1997, Baghdad used only 10 million kg and has 5 million kg in stock, suggesting that some domestically produced chlorine has been diverted to proscribed activities.

- Fallujah II was one of Iraq's principal CW precursor production facilities before the Gulf war. In the last two years the Iraqis have upgraded the facility and brought in new chemical reactor vessels and shipping containers with a large amount of production equipment. They have expanded chlorine output far beyond pre-Gulf war production levels—capabilities that they could divert quickly to CW production. Iraq is seeking to purchase CW agent precursors and applicable production equipment and is trying to hide the activities of the Fallujah plant.



Nuclear Weapons Program

More than ten years of sanctions and the loss of much of Iraq's nuclear infrastructure under IAEA oversight have not diminished Saddam's interest in acquiring or developing nuclear weapons. Iraq had an advanced nuclear weapons development program before the Gulf war that focused on building an implosion-type weapon using highly enriched uranium. Baghdad was attempting a variety of uranium enrichment techniques, the most successful of which were the electromagnetic isotope separation and gas centrifuge programs. After its invasion of Kuwait, Iraq initiated a crash program to divert IAEA-safeguarded, highly enriched uranium from its Soviet and French-supplied reactors, but the onset of hostilities ended this effort. Iraqi declarations and the UNSCOM/IAEA inspection process revealed much of Iraq's nuclear weapons efforts, but Baghdad still has not provided complete information on all aspects of its nuclear weapons program.

- Iraq has withheld important details relevant to its nuclear program, including procurement logs, technical documents, experimental data, accounting of materials, and foreign assistance.
- Baghdad also continues to withhold other data about enrichment techniques, foreign procurement, weapons design, and the role of Iraqi security services in concealing its nuclear facilities and activities.

Iraq still has much of the infrastructure needed to pursue its goal of building a nuclear weapon. Iraq retains its cadre of nuclear scientists and technicians, its program documentation, and sufficient dual-use manufacturing capabilities to support a reconstituted nuclear weapons program. Iraqi media have reported numerous meetings between Saddam and nuclear scientists over the past two years, signaling his continued interest in reviving a nuclear program.

- Before its departure from Iraq, the IAEA made significant strides toward dismantling Iraq's nuclear-weapons program and unearthing the nature and scope of Iraq's past nuclear activities. In the absence of inspections, however, Iraq easily could have begun to reconstitute its nuclear program and to unravel the IAEA's hard-earned accomplishments.

Iraq's expanding international trade provides growing access to nuclear-related technology and materials and potential access to foreign nuclear expertise. An increase in dual-use procurement activity in recent years may be supporting a reconstituted nuclear-weapons program.

- The acquisition of sufficient fissile material is Iraq's principal hurdle in developing a nuclear weapon.
- **Iraq is unlikely to produce indigenously enough weapons-grade material for a deliverable nuclear weapon until mid-to-late in the decade. Baghdad could shorten the acquisition timeline significantly if it were able to procure fissile material abroad.**

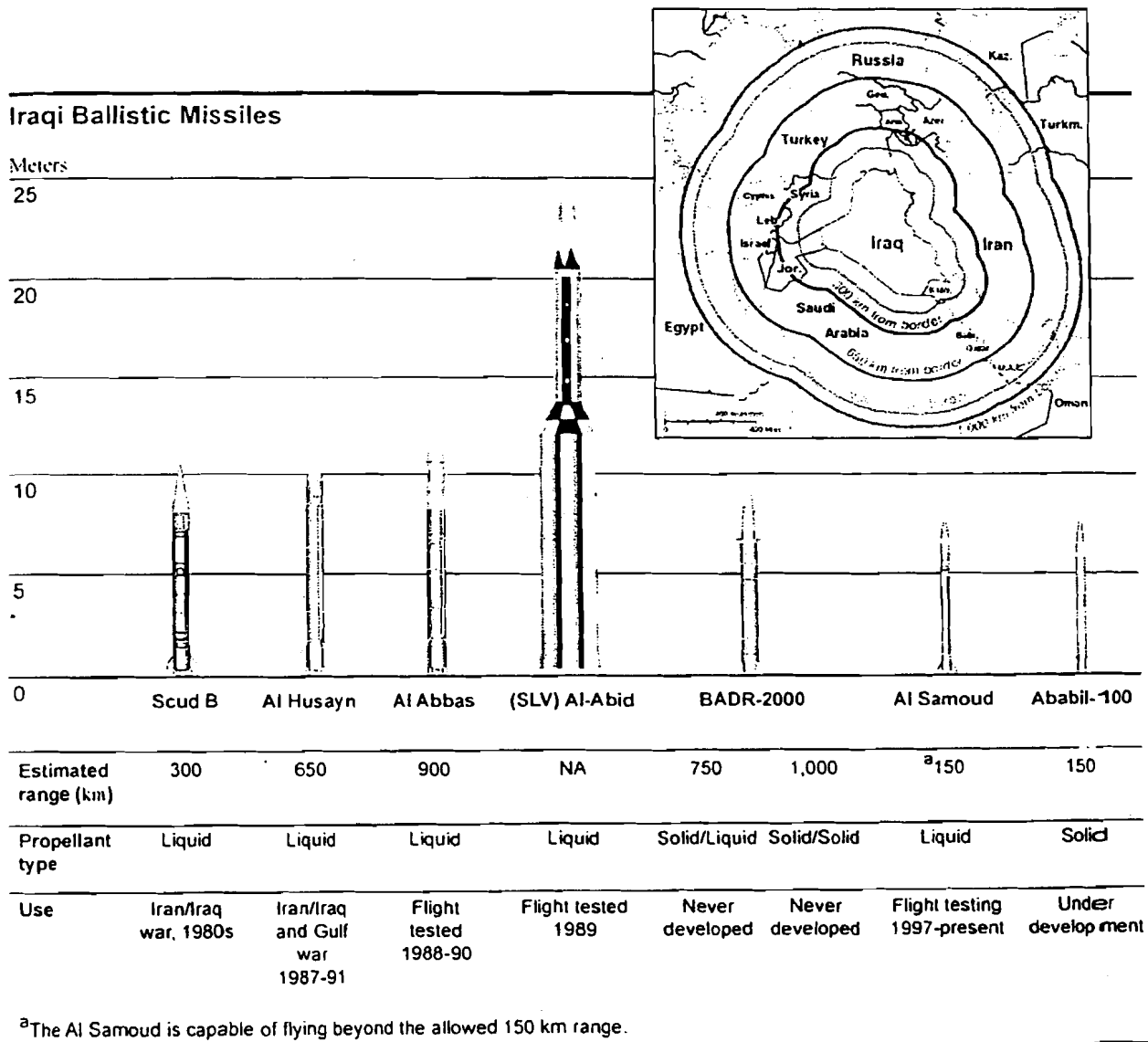
Iraq: Nuclear-Related Facilities



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Ballistic Missile Program

Compelling information reveals that Iraq is developing a ballistic missile capability that exceeds the 150-km range limitation established under UNSCR 687. Iraq had an active missile force before the Gulf war that included 819 Scud-B missiles (300-km range) purchased from the former Soviet Union and a program to extend the Scud's range and modify its warhead. Iraq admitted filling at least 75 of its Scud warheads with chemical or biological agents and deployed these weapons for use against coalition forces and regional opponents including Israel in 1991.



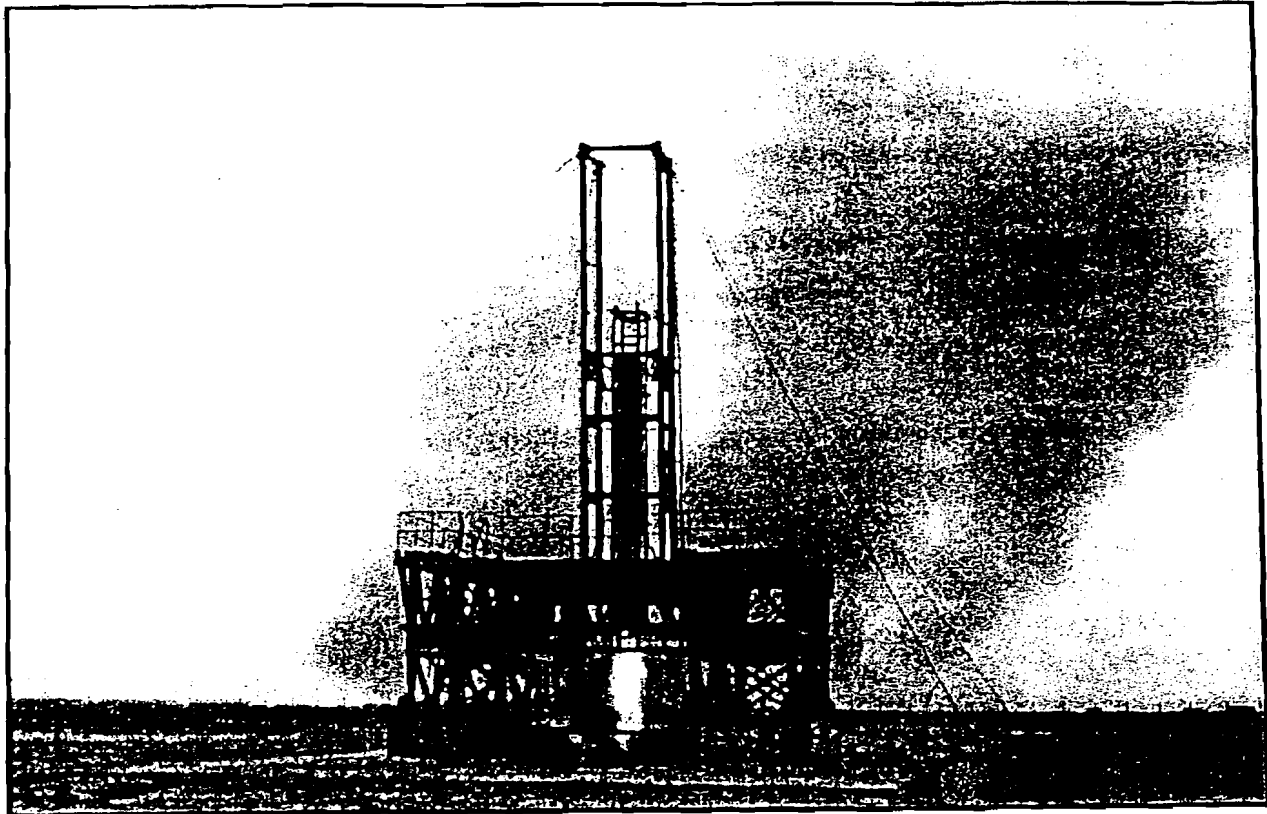
- Most of the approximately 90 Scud-type missiles Saddam fired at Israel, Saudi Arabia, and Bahrain during the Gulf war were al-Husayn variants that the Iraqis modified by lengthening the airframe and increasing fuel capacity, extending the range to 650 km.
- Baghdad was developing other longer-range missiles based on Scud technology, including the 900-km al-Abbas. Iraq was designing follow-on multi-stage and clustered medium-range ballistic missile (MRBM) concepts—some similar to the Al Abid space-launch vehicle (SLV)—with intended ranges up to 3,000 km. Iraq also had a program to develop a two-stage missile called the Badr-2000 using solid-propellants with an estimated range of 750 to 1,000 km.
- Iraq never fully accounted for its existing missile programs. Discrepancies in Baghdad's declarations suggest that Iraq retains a small force of Scud-type missiles and an undetermined number of launchers and warheads. Further, Iraq never explained the disposition of advanced missile components, such as guidance and control systems, that it could not produce on its own and that would be critical to developmental programs.

Iraq continues to work on UN-authorized short-range ballistic missiles (SRBMs)—those with a range no greater than 150 km—that help develop the expertise and infrastructure needed to produce longer-range missile systems. The al-Samoud liquid propellant SRBM is capable of flying beyond the allowed 150 km range. The al-Samoud and the solid-propellant Ababil-100, both of which may be nearing operational deployment, appeared on launchers in a military parade on 31 December 2000 in Baghdad. Other evidence strongly suggests Iraq is modifying missile testing and production facilities to produce even longer-range missiles:

- The Al-Rafah-North Liquid Propellant Engine RDT&E Facility is Iraq's principal site for the static testing of liquid propellant missile engines. Baghdad has been building a new test stand there that is larger than the test stand associated with al-Samoud engine testing and the defunct Scud engine test stand. The only plausible explanation for this test facility is that Iraq intends to test engines for longer-range missiles prohibited under UNSCR 687.
- The Al-Mutasim Solid Rocket Motor and Test Facility, previously associated with Iraq's Badr-2000 solid-propellant missile program, has been rebuilt and expanded in recent years. The al-Mutasim site supports solid-propellant motor assembly, rework, and testing for the UN-authorized Ababil-100, but the size of certain facilities there, particularly those newly constructed between the assembly rework and static test areas, suggests that Baghdad is preparing to develop systems that are prohibited by the UN.
- At the Al-Mamoun Solid Rocket Motor Production Plant and Research, Development, Testing and Evaluation (RDT&E) Facility, the Iraqis, since the December 1998 departure of inspectors, have rebuilt structures damaged in the Gulf War and dismantled by UNSCOM that were originally built to manufacture solid propellant motors for the Badr-2000 program. They also have built a new building and are reconstructing other buildings originally designed to fill large Badr-2000 motor casings with solid propellant.

- Also at al-Mamoun, the Iraqis have rebuilt two structures used to “mix” solid propellant for the Badr-2000 missile. The new buildings—about as large as the original ones—are ideally suited to house large, UN-prohibited mixers. In fact, the only logical explanation for the size and configuration of these mixing buildings is that Iraq intends to develop longer-range, prohibited missiles.

SA-2 (Al Samoud) Engine Test

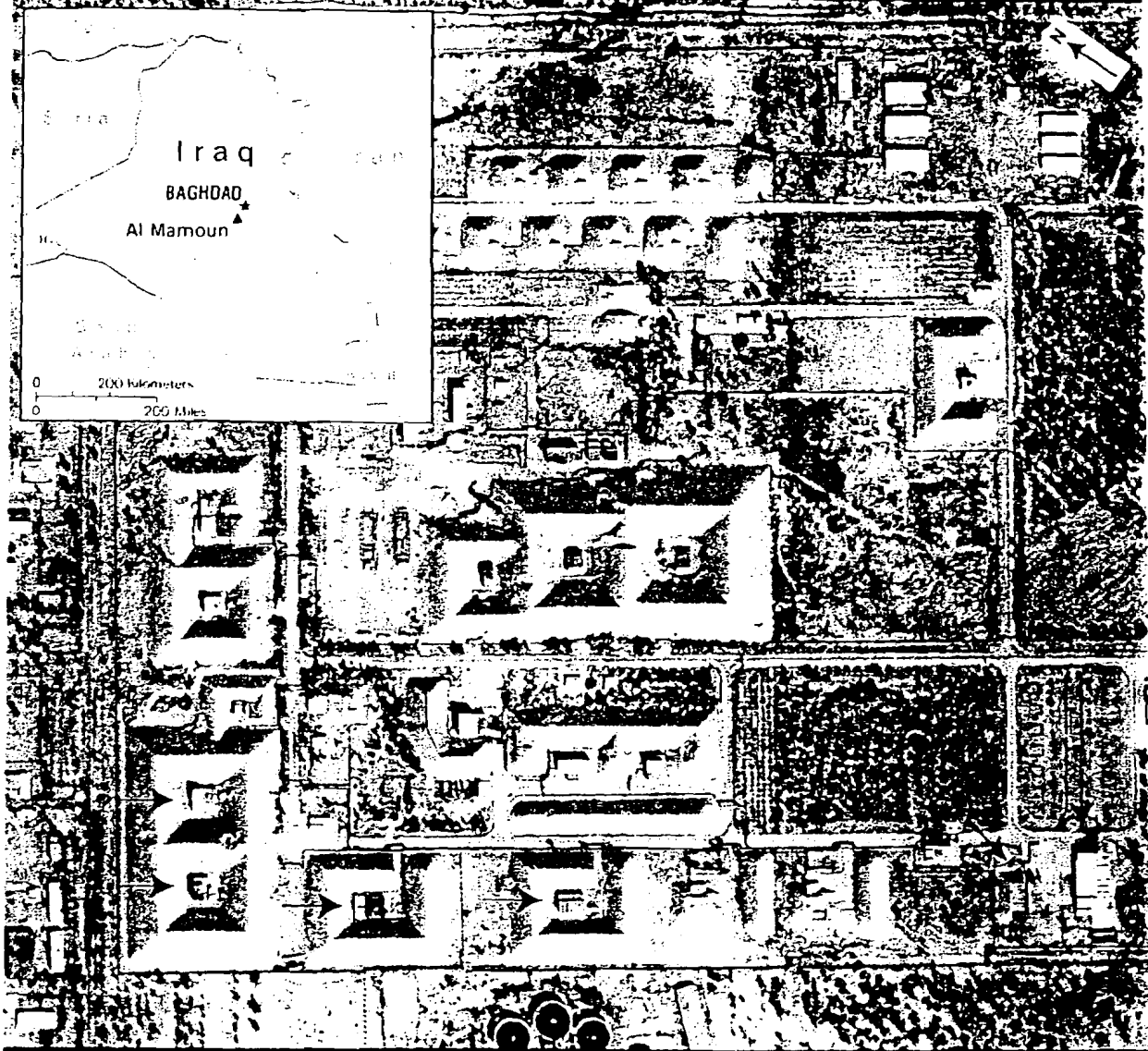


Iraq: Ballistic-Missile-Related Facilities



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**IRAQ: Al Mamoun Solid-Propellant Production Plant, Reconstructed Production Building
March 2002**



Iraq has managed to rebuild and expand its missile development infrastructure under sanctions, suggesting that Baghdad maintains an active procurement network in support of its proscribed programs. Iraqi intermediaries have sought production technology, machine tools, and raw materials in violation of the arms embargo.

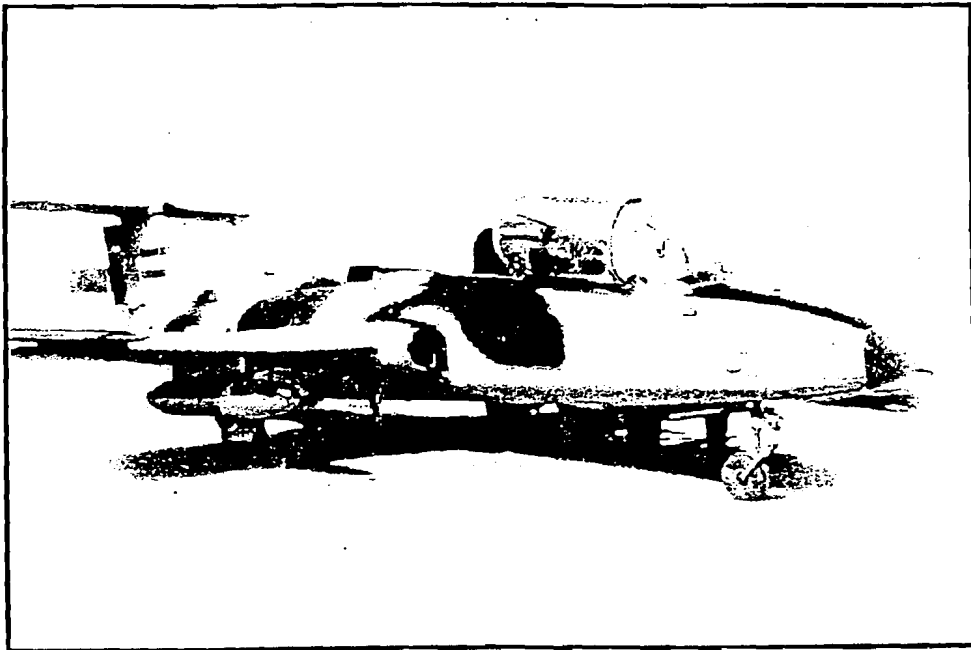
- The Iraqis have completed a new ammonium perchlorate production plant at Mamoun that supports Iraq's solid propellant missile program. Ammunition perchlorate is a common oxidizer used in solid propellant missile motors. Baghdad would not have been able to complete this facility without help from abroad.
- In August 1995, Iraq was caught trying to acquire sensitive, proscribed guidance systems (gyroscopes) for ballistic missiles, demonstrating that Baghdad has been pursuing missile

technology for some time. Iraqi officials admitted that they had received a similar shipment earlier that year.

Unmanned Aerial Vehicle Program and Other Aircraft

Iraq is continuing to develop other platforms capable of delivering chemical and biological agents. Immediately before the Gulf War, Baghdad attempted to convert a MiG-21 into an unmanned aerial vehicle (UAV) to carry spray tanks capable of dispensing chemical or biological agents. UNSCOM assessed that the program to develop the spray system was successful, but the conversion of the MiG-21 was not. More recently, Baghdad has attempted to convert the L-29 jet trainer aircraft into a UAV that can be fitted with the CBW spray tanks, most likely a continuation of previous efforts with the MiG-21. Although much less sophisticated than ballistic missiles as a delivery platform, an aircraft, manned or unmanned, is the most efficient way to disseminate chemical and biological weapons over a large, distant area.

Iraqi L-29 UAV Test-Bed Aircraft at Samarra East Airbase



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- Iraq already has produced modified drop-tanks that can disperse effectively biological or chemical agents. Before the Gulf war, the Iraqis successfully experimented with aircraft-mounted spray tanks capable of releasing up to 2,000 liters of an anthrax simulant over a target area. Iraq also has modified successfully commercial crop sprayers and tested them with an anthrax simulant delivered from helicopters.



Test of dissemination of BW agents from a modified drop tank carried by a Mirage F1. The drop tank was filled with 1000 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.

- Baghdad has a history of experimenting with a variety of unmanned platforms. Iraq's use of newer, more capable airframes would increase range and payload, while smaller platforms might be harder to detect and therefore more survivable. This capability represents a serious threat to Iraq's neighbors and to international military forces in the region.
- Iraq used tactical fighter aircraft and helicopters to deliver chemical agents, loaded in bombs and rockets, during the Iran-Iraq war. Baghdad probably is considering again using manned aircraft as delivery platforms depending on the operational scenario.

Procurement in Support of WMD Programs

Iraq has been able to import dual-use, WMD-relevant equipment and material through procurements both within and outside the UN sanctions regime. **Baghdad diverts some of the \$10 billion worth of goods now entering Iraq every year for humanitarian needs to support the military and WMD programs instead.**

- UN monitors at Iraq's borders do not inspect the cargo—worth hundreds of millions of dollars—that enters Iraq every year outside of the Oil-for-Food program; some of these goods clearly support Iraq's military and WMD programs. For example, Baghdad imports fiber-optic communication systems outside of UN auspices to support the Iraqi military.
- Iraq imports goods using planes, trains, trucks, and ships without any type of international inspections—in violation of UN Security Council resolutions.

Even within the UN-authorized Oil-for-Food program, Iraq does not hide the fact that it wants to purchase military and WMD-related goods. For example, **Baghdad diverted UN-approved trucks for military purposes and construction equipment to rehabilitate WMD-affiliated facilities, even though these items were approved only to help the civilian population.**

- On several occasions, Iraq has asked to purchase goods—such as neutron generators and servo valves—that the UN Monitoring, Verification, and Inspection Commission (UNMOVIC) views as linchpins for Iraqi prohibited programs; alternative, non-dual-use items would serve the stated civilian purpose.
- The UN Iraq Sanctions Committee denied such sales under the former sanctions regime, and UNMOVIC and IAEA will continue to forward these items to the Sanctions Committee for consideration under the revised Goods Review List that began 30 May 2002.
- Iraq has been able to repair modern industrial machine tools that previously supported production of WMD or missile components and has imported additional tools that it may use to reconstitute Baghdad's unconventional weapons arsenal.

UNMOVIC began screening contracts pursuant to UN Security Council Resolution 1284 in December 1999 and since has identified more than 100 contracts containing dual-use items as defined in UNSCR 1051 that can be diverted into WMD programs. UNMOVIC also has

requested that suppliers provide technical information on hundreds of other goods because of potential dual-use concerns. In many cases, Iraq has requested technology that clearly exceeds requirements for the stated commercial end-use when it easily could substitute items that could not be used for WMD.

- On some UN contracts, Baghdad claimed that the requested goods are designed to rehabilitate facilities—such as the Al Qa'im phosphate plant and Fallujah—that in the past were used to support both industrial and WMD programs.