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Intelligence, Iraq, and Weapons of Mass Destruction

Main Report and Supporting Annex

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The last year has seen several key developments in proliferation:

- The US and Britain have led a coalition to invade Iraq, under conditions where most of the world's intelligence services agreed that Iraq was actively developing weapons of mass destruction. After some nine months of one of the most massive search efforts in history, the US has found evidence Iraq was continuing research and development on both forbidden missiles and weapons of mass destruction. These programs included four missile designs with nominal ranges of 1,000 kilometers, the development of dry storage Botulinum, and efforts to import equipment to produce key chemicals for nerve gases. However, it found no evidence of an active weapons program, or that Iraq had any capability to use weapons of mass destruction against the invading coalition forces.

- North Korea has both admitted and denied having a centrifuge program, has claimed to have fissile material and a deterrent, and to be processing Plutonium. At the same time, it has mixed ambiguity with denial in discussing whether it has deployed nuclear forces. This has led the world to virtually ignore its longstanding chemical weapons program. There is no meaningful unclassified intelligence reporting on its biological weapons programs.

- Libya continued to deny it had weapons of mass destruction programs until December. It then suddenly agreed to allow inspection of all of its programs and to cease the development of both weapons of mass destruction and long-range missile forces. This followed the intercept of a ship carrying centrifuge parts to Libya.

- Iran agreed to sign the protocol allowing full International Atomic Energy Agency (IAEA) inspection of its nuclear facilities under the NNPT, including challenge inspection. It did so, however, only after an opposition group made the fact Iran was developing underground centrifuge and heavy water plants for the production of Uranium and the creation of a fuel cycle for its reactors. It also only did so after a preliminary set of inspections by the IAEA found evidence it had failed to report on -- or misreported on -- relevant research and development activity. While Iran said it would not develop one long-range missile – the Shehab 4 – it also stated it was developing a longer-range version of the Shehab 3. As is the case with North Korea, the focus on Iranian nuclear weapons has led to near indifference to Iran's failure to fully declare its chemical weapons holdings and the lack of knowledge regarding its biological weapons.

- Israel is increasingly reported to have developed short-range cruise missiles with nuclear warheads for its new submarines and to be developing longer-range cruise missiles for them.

- Syria has declared it has the right to develop and deploy weapons of mass destruction, including chemical and biological weapons and long-range missiles.

- While no evidence has surfaced of a terrorist movement making major progress in acquiring weapons of mass destruction, it is clear that movements like Al Qai'da have actively sought to acquire such weapons and have purchased at least some equipment and technology to do so.

- There have been reports for years that Pakistan was exporting nuclear weapons technology. These reports have been confirmed for centrifuge technology, and key Pakistani scientists involved in the Pakistani nuclear weapons program have been "questioned" by the government. The Pakistani government's denial of involvement in such activity, however, has uncertain credibility at best. Long-standing CIA reporting has warned of possible links between Pakistan, North Korea, and China and complex deals involving both weapons and missile technology

No one outside the intelligence community can fully assess the quality of intelligence coverage of Iraq's WMD programs. Similarly, no one can fully assess the level of understanding intelligence did or did not have of proliferation in Iran, Israel, Libya, North Korea, and Syria; or of the complex supply chains coming out of key sellers like China, North Korea, Pakistan, and Russia. It is clear, however, that proliferation does pose a critical security challenge to the world, and that there are serious problems in intelligence coverage.

The Iraq Case

Iraq is the most obvious case of the problems involved, although it is a case that has become so politicized that few go back to examine the detailed of what the US and British governments said, or the content of UNMOVIC and IAEA reporting. This material is provided in Annex A. It shows that most of the content of US and British reporting did, in fact, track closely with the earlier inspection and analysis efforts of UNSCOM. It also shows that most of the content tracked closely with intelligence estimates made long before the war, and that did not differ significantly from those made under the Clinton Administration. Furthermore, interviews with French, German, and other officials indicate that their intelligence services made very similar estimates before the Iraq War.

This does not mean that the Bush and Blair governments did not "spin" intelligence analysis to support their cases for war. In several key cases, relating to Iraqi imports of uranium, the import of aluminum tubes for possible uses in centrifuges, and assessments that Iraqi weapon could be deployed in a matter of minutes, they also went further and used highly suspect material.

Nevertheless, the material in Annex A makes it clear that much of the problem lay in the inability of the intelligence community to assess Iraqi capabilities.

It may be months or years before it will be possible to locate and analyze the data the war makes available on Iraq's history of proliferation, its imports and domestic programs, its capabilities at the time of the war, and its goals or objectives.

It has become clear, however, that the U.S. and British governments had only a tenuous understanding of the threat they faced from Iraqi weapons of mass destruction—and were unable to characterize the scale of the Iraqi effort they described as a key motive for the conflict—during the period before the war began.[11]

It is also clear from the previous chapters that Coalition commanders had little intelligence on Iraq's WMD programs and warfighting capabilities as they advanced. A wide range of reports during the war make clear that there were many false alarms—when elements of the advancing forces thought they had found weapons of mass destruction or the facilities to produce them; when Coalition forces donned chemical protection gear they later turned out not to need; or when Coalition commanders, lacking the tactical intelligence support that would give them a clearer picture of the risks involved, had to ignore the risk that Iraq might use such weapons.

Key Points in the U.S. and British White Papers

President Bush, Prime Minister Blair, and many U.S. and British officials made numerous charges before the war that Iraq was actively developing weapons of mass destruction that it had probably deployed combat-ready chemical and biological weapons; that it had an active nuclear weapons program; and that it was developing new delivery systems, including missiles and UAVs. The British government issued two white papers on Iraq, and the United States issued one. U.S. officials like Deputy Secretary of Defense Paul Wolfowitz made additional charges, and Secretary of State Colin Powell presented a detailed briefing to the United Nations setting forth additional U.S. charges against Iraq.

Most of the attention since the war regarding the prewar charges against Iraq has focused on the fact that both British and U.S. speeches and briefings included unvalidated statements that Iraq had sought uranium ore and was ready to use weapons of mass destruction, that the British paper on WMD stated that Iraq could deliver such weapons with only 45 minutes warning, and that one of the British white papers paraphrased unattributed material from a graduate student.

In reality, U.S. and British intelligence made a long series of complex charges, only some of which were properly qualified. To understand the true scale of the intelligence problems involved and the need for improvement in this intelligence, it is necessary to understand that the charges issued in the British Joint Intelligence Committee and CIA white papers involved the following detailed points:[2]

Summary Conclusions

- **British Summary**

Intelligence shows that Iraq is preparing plans to conceal evidence of these weapons, including incriminating documents, from renewed inspections. And it confirms that despite sanctions and the policy of containment, Saddam has continued to make progress with his illicit weapons programs.

As a result of the intelligence, we judge that Iraq has:

- Continued to produce chemical and biological agents;

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- Military plans for the use of chemical and biological weapons, including against its own Shia population. Some of these weapons are deployable within 45 minutes of an order to use them;
- Command and control arrangements in place to use chemical and biological weapons. Authority ultimately resides with Saddam Hussein. (There is intelligence that he may have delegated this authority to his son Qusai);
- Developed mobile laboratories for military use, corroborating earlier reports bout the mobile production of biological warfare agents;
- Pursued illegal programmes to procure controlled materials of potential use in the production of chemical and biological weapons programmes; tried covertly to acquire technology and materials which could be used in the production of nuclear weapons;
- Sought significant quantities of uranium from Africa, despite having no active civil nuclear power program that could require it; recalled specialists to work on its nuclear program;
- Illegally retained up to 20 al-Hussein missiles, with a range of 650km, capable of carrying chemical or biological warheads;
- Started deploying its al-Samoud liquid propellant missile, and has used the absence of weapons inspectors to work on extending its range to at least 200km, which is beyond the limit of 150km imposed by the United Nations;
- Started producing the solid-propellant Ababil-100, and is making efforts to extend its range to at least 200km, which is beyond the limit of 150km imposed by the United Nations;
- Constructed a new engine test stand for the development of missiles capable of reaching the UK Sovereign Base Areas in Cyprus and NATO members Greece and Turkey), as well as all Iraq's Gulf neighbors and Israel;
- Pursued illegal programmes to procure materials for use in its illegal development of long range missiles;
- Learnt lessons from previous UN weapons inspections and has already begun to conceal sensitive equipment and documentation in advance of the return of inspectors.
- **U.S. Summary**

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.

- Baghdad hides large portions of Iraq's WMD efforts. Revelations after the Gulf war starkly demonstrate the extensive efforts undertaken by Iraq to deny information.
- Since inspections ended in 1998, Iraq has maintained its chemical weapons effort, energized its missile program, and invested more heavily in biological weapons; most analysts assess Iraq 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.
- Iraq largely has 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 Saddam probably does not yet have nuclear weapons or sufficient material to make any, he remains intent on acquiring them.

- How quickly Iraq will obtain its first nuclear weapon depends on when it acquires sufficient weapons -grade fissile material.
- If Baghdad acquires sufficient weapons- grade fissile material from abroad, it could make a nuclear weapon within a year.
- Without such material from abroad, Iraq probably would not be able to make a weapon until the last half of the decade.
- Iraq's aggressive attempts to obtain proscribed high-strength aluminum tubes are of significant concern. All intelligence experts agree that Iraq is seeking nuclear weapons and that these tubes could be used in a centrifuge enrichment program.
- Most intelligence specialists assess this to be the intended use, but some believe that these tubes are probably intended for conventional weapons programs.
- Based on tubes of the size Iraq is trying to acquire, a few tens of thousands of centrifuges would be capable of producing enough highly enriched uranium for a couple of weapons per year.

Baghdad has begun renewed production of chemical warfare agents, probably including mustard, sarin, cyclosarin, and VX. Its capability was reduced during the NSCOM inspections and is probably more limited now than it was at the time of the Gulf war, although VX production and agent storage life probably have been improved.

- ·Saddam probably has stocked a few hundred metric tons of CW agents.
- The Iraqis have experience in manufacturing CW bombs, artillery rockets, and projectiles, and probably possess CW bulk fills for SRBM warheads, including for a limited number of covertly stored, extended-range Scuds.

All key aspects—R&D, production, and weaponization—of Iraq's offensive BW program are active and most elements are larger and more advanced than they were before the Gulf war.

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, including potentially against the U.S. Homeland.

- Baghdad has established a large-scale, redundant, and concealed BW agent production capability, which includes mobile facilities; these facilities can evade detection, are highly survivable, and can exceed the production rates Iraq had prior to the Gulf war.

Iraq maintains a small missile force and several development programs, including for a UAV that most analysts believe probably is intended to deliver biological warfare agents.

- 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.
- Baghdad's UAVs—especially if used for delivery of chemical and biological warfare (CBW) agents—could threaten Iraq's neighbors, U.S. forces in the Persian Gulf, and the United States if brought close to, or into, the U.S. Homeland.
- Iraq is developing medium- range ballistic missile capabilities, largely through foreign assistance in building specialized facilities.

Developments Since 1998

- **British Summary of Developments Since in 1998**

Iraq has a useable chemical and biological weapons capability, in breach of UNSCR 687, which has included recent production of chemical and biological agents.

Saddam continues to attach great importance to the possession of weapons of mass destruction and ballistic missiles that he regards as being the basis for Iraq's regional power. He is determined to retain these capabilities.

Iraq can deliver chemical and biological agents using an extensive range of artillery shells, free-fall bombs, sprayers, and ballistic missiles.

Iraq continues to work on developing nuclear weapons, in breach of its obligations under the Non-Proliferation Treaty and in breach of UNSCR 687. Uranium has been sought from Africa that has no civil nuclear application in Iraq.

Iraq possesses extended-range versions of the SCUD ballistic missile in breach of UNSCR 687, which are capable of reaching Cyprus, Eastern Turkey, Tehran, and Israel. It is also developing longer-range ballistic missiles.

Iraq's current military planning specifically envisages the use of chemical and biological weapons.

Iraq's military forces are able to use chemical and biological weapons, with command, control, and logistical arrangements in place. The Iraqi military are able to deploy these weapons within 45 minutes of a decision to do so.

Iraq has learnt lessons from previous UN weapons inspections and is already taking steps to conceal and disperse sensitive equipment and documentation in advance of the return of inspectors.

Iraq's chemical, biological, nuclear and ballistic missiles programmes are well funded.

- **CIA Estimate of Developments Since 1998**

Since December 1998, Baghdad has refused to allow UN 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. Baghdad prohibits Security Council- mandated monitoring overflights of Iraqi facilities by UN aircraft and helicopters. Similarly, Iraq has curtailed most IAEA [International Atomic Energy Agency] inspections since 1998, allowing the IAEA to visit annually only a very small number of sites to safeguard Iraq's stockpile of uranium oxide.

In the absence of inspectors, Baghdad's already considerable ability to work on prohibited programs without risk of discovery has increased, and there is substantial evidence that Iraq is reconstituting prohibited programs. Baghdad's vigorous concealment efforts have meant that specific information on many aspects of Iraq's WMD programs is yet to be uncovered. Revelations after the Gulf War starkly demonstrate the extensive efforts undertaken by Iraq to deny information.

Limited insight into activities since 1998 clearly show that Baghdad has used the absence of UN inspectors to repair and expand dual-use and dedicated missile development facilities and to increase its ability to produce WMD.

Chemical Warfare Program

- **UK: Chemical Warfare Program**

Since the withdrawal of the inspectors the JIC has monitored evidence, including from secret intelligence, of continuing work on Iraqi offensive chemical and biological warfare capabilities. In the first half of 2000 the JIC noted 17 reports of intelligence on Iraqi attempts to procure dual-use chemicals and on the reconstruction of civil chemical production at sites formerly associated with the chemical warfare programme.

In mid-2001, the JIC assessed that Iraq retained some chemical warfare agents, precursors, production equipment and weapons from before the Gulf War. These stocks would enable Iraq to produce significant quantities of mustard gas within weeks and of nerve agent within months. The JIC concluded that intelligence on Iraqi former chemical and biological warfare facilities, their limited reconstruction and civil production pointed to a continuing research and development programme. These chemical and biological capabilities represented the most immediate threat from Iraqi weapons of mass destruction. Since 1998 Iraqi development of mass destruction weaponry had been helped by the absence of inspectors and the increase in illegal border trade, which was providing hard currency.

In the last six months the JIC has confirmed its earlier judgments on Iraqi chemical and biological warfare capabilities and assessed that Iraq has the means to deliver chemical and biological weapons.

Subsequently, intelligence has become available from reliable sources which complements and adds to previous intelligence and confirms the JIC assessment that Iraq has chemical and biological weapons. The intelligence also shows that the Iraqi leadership has been discussing a number of issues related to these weapons. This intelligence covers:

Confirmation that chemical and biological weapons play an important role in Iraqi military thinking: intelligence shows that Saddam attaches great importance to the possession of chemical and biological weapons which he regards as being the basis for Iraqi regional power. He believes that respect for Iraq rests on its possession of these weapons and the missiles capable of delivering them. Intelligence indicates that Saddam is determined to retain this capability and recognizes that Iraqi political weight would be diminished if Iraq's military power rested solely on its conventional military forces.

Iraqi attempts to retain its existing banned weapons systems: Iraq is already taking steps to prevent UN weapons inspectors finding evidence of its chemical and biological weapons programme. Intelligence indicates that Saddam has learnt lessons from previous weapons inspections, has identified possible weak points in the inspections process and knows how to exploit them. Sensitive equipment and papers can easily be concealed and in some cases this is already happening. The possession of mobile biological agent production facilities will also aid concealment efforts. Saddam is determined not to lose the capabilities that he has been able to develop further in the four years since inspectors left.

Saddam's willingness to use chemical and biological weapons: intelligence indicates that as part of Iraq's military planning Saddam is willing to use chemical and biological weapons, including against his own Shia population. Intelligence indicates that the Iraqi military are able to deploy chemical or biological weapons within 45 minutes of an order to do so.

When confronted with questions about the unaccounted stocks, Iraq has claimed repeatedly that if it had retained any chemical agents from before the Gulf War they would have deteriorated sufficiently to render them harmless. But Iraq has admitted to UNSCOM to having the knowledge and capability to add stabilizer to nerve agent and other chemical warfare agents that would prevent such decomposition. In 1997 UNSCOM also examined some munitions which had been filled with mustard gas prior to 1991 and found that they remained very toxic and showed little sign of deterioration.

Intelligence shows that Iraq has continued to produce chemical agent. During the Gulf War a number of facilities which intelligence reporting indicated were directly or indirectly associated with Iraq's chemical weapons effort were attacked and damaged. Following the ceasefire UNSCOM destroyed or rendered harmless facilities and equipment used in Iraq's chemical weapons programme. Other equipment was released for civilian use either in industry or academic institutes, where it was tagged and regularly inspected and monitored, or else placed under camera monitoring, to ensure that it was not being misused.

This monitoring ceased when UNSCOM withdrew from Iraq in 1998. However, capabilities remain and, although the main chemical weapon production facility at al-Muthanna was completely destroyed by UNSCOM and has not been 19 rebuilt, other plants formerly associated

with the chemical warfare programme have been rebuilt. These include the chlorine and phenol plant at Fallujah 2 near Habbaniyah. In addition to their civilian uses, chlorine and phenol are used for precursor chemicals that contribute to the production of chemical agents.

Other dual-use facilities, which are capable of being used to support the production of chemical agent and precursors, have been rebuilt and re-equipped. New chemical facilities have been built, some with illegal foreign assistance, and are probably fully operational or ready for production. These include the Ibn Sina Company at Tarmiyah (see figure 1), which is a chemical research centre. It undertakes research, development and production of chemicals previously imported but not now available and which are needed for Iraq's civil industry. The Director General of the research centre is Hikmat Na'im al-Jalu who prior to the Gulf War worked in Iraq's nuclear weapons programme and after the war was responsible for preserving Iraq's chemical expertise.

Parts of the al-Qa'qa' chemical complex damaged in the Gulf War have also been repaired and are operational. Of particular concern are elements of the phosgene production plant at al-Qa'qa'. These were severely damaged during the Gulf War, and dismantled under UNSCOM supervision, but have since been rebuilt. While phosgene does have industrial uses it can also be used by itself as a chemical agent or as a precursor for nerve agent.

Iraq has retained the expertise for chemical warfare research, agent production and weaponization. Most of the personnel previously involved in the programme remain in country. While UNSCOM found a number of technical manuals (so called "cook books") for the production of chemical agents and critical precursors, Iraq's claim to have unilaterally destroyed the bulk of the documentation cannot be confirmed and is almost certainly untrue. Recent intelligence indicates that Iraq is still discussing methods of concealing such documentation in order to ensure that it is not discovered by any future UN inspections.

Almost all components and supplies used in weapons of mass destruction and ballistic missile programmes are dual-use. For example, any major petrochemical or biotech industry, as well as public health organizations, will have legitimate need for most materials and equipment required to manufacture chemical and biological weapons. Without UN weapons inspectors it is very difficult therefore to be sure about the true nature of many of Iraq's facilities.

For example, Iraq has built a large new chemical complex, Project Baiji, in the desert in north west Iraq at al-Sharqat (. This site is a former uranium enrichment facility that was damaged during the Gulf War and rendered harmless under supervision of the IAEA. Part of the site has been rebuilt, with work starting in 1992, as a chemical production complex. Despite the site being far away from populated areas it is surrounded by a high wall with watchtowers and guarded by armed guards. Intelligence reports indicate that it will produce nitric acid, which can be used in explosives, missile fuel and in the purification of uranium.

Iraq has a variety of delivery means available for both chemical and biological agents. These include: free-fall bombs: Iraq acknowledged possession of four types of aerial bomb with various chemical agent fills including sulphur mustard, tabun, sarin and cyclosarin; artillery shells and rockets: Iraq made extensive use of artillery munitions filled with chemical agents during the Iran-Iraq War. Mortars can also be used for chemical agent delivery. Iraq is known to have tested the use of shells and rockets filled with biological agents. Over 20,000 artillery munitions remain unaccounted for by UNSCOM; helicopter and aircraft borne sprayers: Iraq carried out studies into aerosol dissemination of biological agent using these platforms prior to 1991. UNSCOM was unable to account for many of these devices. It is probable that Iraq retains a capability for aerosol dispersal of both chemical and biological agent over a large area; al-Hussein ballistic missiles (range 650km): Iraq developed chemical agent warheads for al-Hussein. Iraq admitted to producing 50 chemical warheads for al-Hussein that were intended for the delivery of a mixture of sarin and cyclosarin. However, technical analysis of warhead remnants has shown traces of VX degradation product which indicate that some additional warheads were made and filled with VX; al-Samoud/Ababil-100 ballistic missiles (range 150km plus): it is unclear if chemical and biological warheads have been developed for these systems, but given the Iraqi experience on other missile systems, we judge that Iraq has the technical expertise for doing so; L-29 remotely piloted vehicle programme : we know from intelligence that Iraq has attempted to modify the L-29

jet trainer to allow it to be used as an Unmanned Aerial Vehicle (UAV) which is potentially capable of delivering chemical and biological agents over a large area.

The authority to use chemical and biological weapons ultimately resides with Saddam but intelligence indicates that he may have also delegated this authority to his son Qusai. Special Security Organization (SSO) and Special Republican Guard (SRG) units would be involved in the movement of any chemical and biological weapons to military units. The Iraqi military holds artillery and missile systems at Corps level throughout the Armed Forces and conducts regular training with them. The Directorate of Rocket Forces has operational control of strategic missile systems and some Multiple Launcher Rocket Systems.

- **CIA: Chemical Warfare Program**

Iraq has the ability to produce chemical warfare (CW) agents within its chemical industry, although it probably depends on external sources for some precursors.

Baghdad is expanding its infrastructure, under cover of civilian industries, that it could use to advance its CW agent production capability. During the 1980s Saddam had a formidable CW capability that he used against Iranians and against Iraq's Kurdish population. Iraqi forces killed or injured more than 20,000 people in multiple attacks, delivering chemical agents (including mustard agent1 and the nerve agents sarin and tabun2) in aerial bombs, 122mm rockets, and artillery shells against both tactical military targets and segments of Iraq's Kurdish population. Before the 1991 Gulf war, Baghdad had a large stockpile of chemical munitions and a robust indigenous production capacity.

Although precise information is lacking, human rights organizations have received plausible accounts from Kurdish villagers of even more Iraqi chemical attacks against civilians in the 1987 to 1988 time frame—with some attacks as late as October 1988—in areas close to the Iranian and Turkish borders.

UNSCOM supervised the destruction of more than 40,000 chemical munitions, nearly 500,000 liters of chemical agents, 1.8 million liters of chemical precursors, and seven different types of delivery systems, including ballistic missile warheads. More than 10 years after the Gulf war, gaps in Iraqi accounting and current production capabilities strongly suggest that Iraq maintains a stockpile of chemical agents, probably VX,3 sarin, cyclosarin, and mustard.

Iraq probably has concealed precursors, production equipment, documentation, and other items necessary for continuing its CW effort. Baghdad never supplied adequate evidence to support its claims that it destroyed all of its CW agents and munitions. Thousands of tons of chemical precursors and tens of thousands of unfilled munitions, including Scud- variant missile warheads, remain unaccounted for.

UNSCOM discovered a document at Iraqi Air Force headquarters in July 1998 showing that Iraq overstated by at least 6,000 the number of chemical bombs it told the UN it had used during the Iran-Iraq War—bombs that remain are unaccounted for.

Iraq has not accounted for 15,000 artillery rockets that in the past were its preferred means for delivering nerve agents, nor has it accounted for about 550 artillery shells filled with mustard agent.

Iraq probably has stocked at least 100 metric tons (MT) and possibly as much as 500 MT of CW agents.

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

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 such proscribed activities as CW agent production.

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 can be diverted 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.

Biological Warfare Program

- **UK: Biological Warfare**

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Iraq has claimed that all its biological agents and weapons have been destroyed. No convincing proof of any kind has been produced to support this claim. In particular, Iraq could not explain large discrepancies between the amount of growth media (nutrients required for the specialized growth of agent) it procured before 1991 and the amounts of agent it admits to having manufactured. The discrepancy is enough to produce more than three times the amount of anthrax allegedly manufactured.

Iraq had also been trying to procure dual-use materials and equipment that could be used for a biological warfare programme. Personnel known to have been connected to the biological warfare programme up to the Gulf War had been conducting research into pathogens. There was intelligence that Iraq was starting to produce biological warfare agents in mobile production facilities. Planning for the project had begun in 1995 under Dr Rihab Taha, known to have been a central player in the pre-Gulf War programme. The JIC concluded that Iraq had sufficient expertise, equipment and material to produce biological warfare agents within weeks using its legitimate biotechnology facilities.

In mid-2001, the JIC concluded that intelligence on Iraqi former chemical and biological warfare facilities, their limited reconstruction and civil production pointed to a continuing research and development programme. These chemical and biological capabilities represented the most immediate threat from Iraqi weapons of mass destruction. Since 1998 Iraqi development of mass destruction weaponry had been helped by the absence of inspectors and the increase in illegal border trade, which was providing hard currency.

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We know from intelligence that Iraq has continued to produce biological warfare agents. As with some chemical equipment, UNSCOM only destroyed equipment that could be directly linked to biological weapons production. Iraq also has its own engineering capability to design and construct biological agent associated fermenters, centrifuges, sprayer dryers and other equipment and is judged to be self-sufficient in the technology required to produce biological weapons.

Almost all components and supplies used in weapons of mass destruction and ballistic missile programmes are dual-use. For example, any major petrochemical or biotech industry, as well as public health organizations, will have legitimate need for most materials and equipment required to manufacture chemical and biological weapons. Without UN weapons inspectors it is very difficult therefore to be sure about the true nature of many of Iraq's facilities.

Experienced personnel who were active in the programme have largely remained in the country. Some dual-use equipment has also been purchased, but without monitoring by UN inspectors Iraq could have diverted it to their biological weapons programme. This newly purchased equipment and other equipment previously subject to monitoring could be used in a resurgent biological warfare programme. Facilities of concern include:

- The Castor Oil Production Plant at Fallujah: this was damaged in UK/US air attacks in 1998 (Operation Desert Fox) but has been rebuilt. The residue from the castor bean pulp can be used in the production of the biological agent ricin;
- The al-Dawrah Foot and Mouth Disease Vaccine Institute: which was involved in biological agent production and research before the Gulf War;
- The Amariyah Sera and Vaccine Plant at Abu Ghraib: UNSCOM established that this facility was used to store biological agents, seed stocks and conduct biological warfare associated genetic research prior to the Gulf War. It has now expanded its storage capacity.

UNSCOM established that Iraq considered the use of mobile biological agent production facilities. In the past two years evidence from defectors has indicated the existence of such facilities. Recent intelligence confirms that the Iraqi military have developed mobile facilities. These would help Iraq conceal and protect biological agent production from military attack or UN inspection.

Iraq has a variety of delivery means available for both chemical and biological agents. These include:

- free-fall bombs: Iraq acknowledged to UNSCOM the deployment to two sites of free-fall bombs filled with biological agent during 1990–91. These bombs were filled with anthrax, botulinum toxin and aflatoxin.;
- artillery shells and rockets: Iraq is known to have tested the use of shells and rockets filled with biological agents. Over 20,000 artillery munitions remain unaccounted for by UNSCOM;
- helicopter and aircraft borne sprayers: Iraq carried out studies into aerosol dissemination of biological agent using these platforms prior to 1991. UNSCOM was unable to account for many of these devices. It is probable that Iraq retains a capability for aerosol dispersal of both chemical and biological agent over a large area;
- al-Hussein ballistic missiles (range 650km): Iraq told UNSCOM that it filled 25 warheads with anthrax, botulinum toxin and aflatoxin.;
- al-Samoud/Ababil-100 ballistic missiles (range 150km plus): it is unclear if chemical and biological warheads have been developed for these systems, but given the Iraqi experience on other missile systems, we judge that Iraq has the technical expertise for doing so;

- L-29 remotely piloted vehicle programme : we know from intelligence that Iraq has attempted to modify the L-29 jet trainer to allow it to be used as an Unmanned Aerial Vehicle (UAV) which is potentially capable of delivering chemical and biological agents over a large area.

- **CIA: Biological Warfare**

Iraq has the capability to convert quickly legitimate vaccine and biopesticide plants to biological warfare (BW) production and already may have done so. This capability is particularly troublesome because Iraq has a record of concealing its BW activities and lying about the existence of its offensive BW program.

After four years of claiming that they had conducted only "small-scale, defensive" research, Iraqi officials finally admitted to inspectors 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, 6 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.

Baghdad did not provide persuasive evidence to support its claims that it unilaterally destroyed its BW agents and munitions. Experts from UNSCOM assessed that Baghdad's declarations vastly understated the production of biological agents and estimated that Iraq actually produced two-to-four times the amount of agent that it acknowledged producing, including Bacillus anthracis—the causative agent of anthrax—and botulinum toxin.

The improvement or expansion of a number of nominally "civilian" facilities that were directly associated with biological weapons indicates that key aspects of Iraq's offensive BW program are active and most elements more advanced and larger than before the 1990-1991 Gulf war.

- The al-Dawrah Foot-and-Mouth Disease (FMD) Vaccine Facility is one of two known Biocontainment Level-3—facilities in Iraq with an extensive air handling and filtering system. Iraq admitted that before the Gulf war Al-Dawrah had been a BW agent production facility. UNSCOM attempted to render it useless for BW agent production in 1996 but left some production equipment in place because UNSCOM could not prove it was connected to previous BW work. In 2001, Iraq announced it would begin renovating the plant without UN approval, ostensibly to produce a vaccine to combat an FMD outbreak. In fact, Iraq easily can import all the foot-and mouth vaccine it needs through the UN.

- The Amiriyah Serum and Vaccine Institute is an ideal cover location for BW research, testing, production, and storage. UN inspectors discovered documents related to BW research at this facility, some showing that BW cultures, agents, and equipment were stored there during the Gulf war. Of particular concern is the plant's new storage capacity, which greatly exceeds Iraq's needs for legitimate medical storage.

- The Fallujah III Castor Oil Production Plant is situated on a large complex with an historical connection to Iraq's CW program. Of immediate BW concern is the potential production of ricin toxin. Castor bean pulp, left over from castor oil production, can be used to extract ricin toxin. Iraq admitted to UNSCOM that it manufactured ricin and field-tested it in artillery shells before the Gulf war. Iraq operated this plant for legitimate purposes under UNSCOM scrutiny before 1998 when UN inspectors left the country.

- Since 1999, Iraq has rebuilt major structures destroyed during Operation Desert Fox. Iraqi officials claim they are making castor oil for brake fluid, but verifying such claims without UN inspections is impossible. In addition to questions about activity at known facilities, there are compelling reasons to be concerned about BW activity at other sites and in mobile production units and laboratories. Baghdad has pursued a mobile BW research and production capability to better conceal its program.

UNSCOM uncovered a document on Iraqi Military Industrial Commission letterhead indicating that Iraq was interested in developing mobile fermentation units, and an Iraqi scientist admitted to UN inspectors that Iraq was trying to move in the direction of mobile BW production.

Iraq has now established large-scale, redundant, and concealed BW agent production capabilities based on mobile BW facilities.

Nuclear Warfare Program

- **UK: Nuclear Warfare**

Since 1999 the JIC has monitored Iraq's attempts to reconstitute its nuclear weapons programme. In mid-2001 the JIC assessed that Iraq had continued its nuclear research after 1998. The JIC drew attention to intelligence that Iraq had recalled its nuclear scientists to the programme in 1998. Since 1998 Iraq had been trying to procure items that could be for use in the construction of centrifuges for the enrichment of uranium.

It is clear from IAEA inspections and Iraq's own declarations that by 1991 considerable progress had been made in both developing methods to produce fissile material and in weapons design. The IAEA dismantled the physical infrastructure of the Iraqi nuclear weapons program, including the dedicated facilities and equipment for uranium separation and enrichment, and for weapon development and production, and removed the remaining highly enriched uranium. But Iraq retained, and retains, many of its experienced nuclear scientists and technicians who are specialized in the production of fissile material and weapons design. Intelligence indicates that Iraq also retains the accompanying programme documentation and data.

Intelligence shows that the present Iraqi programme is almost certainly seeking an indigenous ability to enrich uranium to the level needed for a nuclear weapon. It indicates that the approach is based on gas centrifuge uranium enrichment, one of the routes Iraq was following for producing fissile material before the Gulf War. But Iraq needs certain key equipment, including gas centrifuge components and components for the production of fissile material before a nuclear bomb could be developed.

Following the departure of weapons inspectors in 1998 there has been an accumulation of intelligence indicating that Iraq is making concerted covert efforts to acquire dual-use technology and materials with nuclear applications. Iraq's known holdings of processed uranium are under IAEA supervision. But there is intelligence that Iraq has sought the supply of significant quantities of uranium from Africa. Iraq has no active civil nuclear power programme or nuclear power plants and therefore has no legitimate reason to acquire uranium.

Intelligence shows that other important procurement activity since 1998 has included attempts to purchase:

- vacuum pumps which could be used to create and maintain pressures in a gas centrifuge cascade needed to enrich uranium;
- an entire magnet production line of the correct specification for use in the motors and top bearings of gas centrifuges. It appears that Iraq is attempting to acquire a capability to produce them on its own rather than rely on foreign procurement;
- Anhydrous Hydrogen Fluoride (AHF) and fluorine gas. AHF is commonly used in the petrochemical industry and Iraq frequently imports significant amounts, but it is also used in the process of converting uranium into uranium hexafluoride for use in gas centrifuge cascades;
- one large filament winding machine which could be used to manufacture carbon fiber gas centrifuge rotors;
- a large balancing machine, which could be used in initial centrifuge balancing work.

Iraq has also made repeated attempts covertly to acquire a very large quantity (60,000 or more) of specialized aluminum tubes. The specialized aluminum in question is subject to international

export controls because of its potential application in the construction of gas centrifuges used to enrich uranium, although there is no definitive intelligence that it is destined for a nuclear programme.

In early 2002, the JIC assessed that UN sanctions on Iraq were hindering the import of crucial goods for the production of fissile material. The JIC judged

Iraq's long-standing civil nuclear power programme is limited to small-scale research. Activities that could be used for military purposes are prohibited by UNSCR 687 and 715.

Iraq has no nuclear power plants and therefore no requirement for uranium as fuel.

Iraq has a number of nuclear research programmes in the fields of agriculture, biology, chemistry, materials and pharmaceuticals. None of these activities requires more than tiny amounts of uranium, which Iraq could supply from its own resources.

Iraq's research reactors are non-operational; two were bombed and one was never completed.

…while sanctions remain effective Iraq would not be able to produce a nuclear weapon. If they were removed or prove ineffective, it would take Iraq at least five years to produce sufficient fissile material for a weapon indigenously. However, we know that Iraq retains expertise and design data relating to nuclear weapons. We therefore judge that if Iraq obtained fissile material and other essential components from foreign sources the timeline for production of a nuclear weapon would be shortened and Iraq could produce a nuclear weapon in between one and two years.

CIA: Nuclear Warfare

More than ten years of sanctions and the loss of much of Iraq's physical nuclear infrastructure under IAEA oversight have not diminished Saddam's interest in acquiring or developing nuclear weapons.

Iraq's efforts to procure tens of thousands of proscribed high-strength aluminum tubes are of significant concern. All intelligence experts agree that Iraq is seeking nuclear weapons and that these tubes could be used in a centrifuge enrichment program. Most intelligence specialists assess this to be the intended use, but some believe that these tubes are probably intended for conventional weapons programs.

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 (EMIS) 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.
- In recent years, Baghdad has diverted goods contracted under the Oil- for-Food Program for military purposes and has increased solicitations and dual- use procurements—outside the Oil- for-Food process—some of which almost certainly are going to prohibited WMD and other weapons programs. Baghdad probably uses some of the money it gains through its illicit oil sales to support its WMD efforts.

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, most analysts assess that Iraq is reconstituting its nuclear program—unraveling the IAEA's hard-earned accomplishments.

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 Baghdad's continued interest in reviving a nuclear program.

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 the last half of this decade. Baghdad could produce a nuclear weapon within a year if it were able to procure weapons grade fissile material abroad.

Baghdad may have acquired uranium enrichment capabilities that could shorten substantially the amount of time necessary to make a nuclear weapon.

Problems in Collecting Data on Iraqi and Other Country WMD Capabilities and Delivery Systems

Even a cursory review of this list of U.S. and British charges about Iraq's WMD capabilities shows that point after point that was made was not confirmed during war or in months of intensive effort following the conflict. Despite all of the advances in their IS&R capabilities, the United States and Britain went to war with Iraq without the level of evidence needed to provide a clear strategic rationale for the war, and without the ability to fully understand the threat that Iraqi weapons of mass destruction posed to U.S., British, and Australian forces. This uncertainty is not a definitive argument against carrying out a war that responded to grave potential threats. It *is* a definitive warning that this intelligence and targeting are not yet adequate to support grand strategy, strategy, and tactical operations against proliferating powers or to make accurate assessments of the need to preempt.

It is difficult to put these problems into perspective without access to classified material. If the material provided on Iraq is compared with past declassified U.S. intelligence reporting on proliferation, however, it becomes clear that proliferation presents very serious problems for intelligence collection and analysis.

An analysis of the long series of UNSCOM, UNMOVIC, and IAEA reports also shows that proliferating nations like Iraq are well aware of these problems and how to exploit them:

- ***Iraq and other developing powers that are sophisticated enough to proliferate are also sophisticated enough to have a good understanding of many of the strengths and limitations of modern intelligence sensors, the timing and duration of satellite coverage, and the methods use to track imports and technology transfer.*** They have learned to cover and conceal, to deceive, and to create smaller and better disseminated activities.
- ***Intelligence collection of relies heavily on finding key imports and technology transfers.*** Such reports, however, only usually cover a small fraction of the actual effort on the part of the proliferating country, and the information collected is often vague and uncertain, in part because importers and smugglers have every incentive to lie and are also familiar with many the ways to

defeat intelligence collection and import controls. When information does become available, it is often impossible to put in context, and a given import or technology transfer can often be used in many difficult ways, often was other than proliferation. Such import data can hint at the character of a proliferation effort, but give no picture of the overall character of the activity.

- ***Even when data are available on given imports or technology transfers, they generally present three serious problems.*** One is that there is no way to know the end destination and use of the import and how it is integrated into the overall effort. The second is there is no way to know if it is integrated into an ongoing research and development effort, a weapons production effort, being procured or stockpiled for later use, or simply an experiment or mistake that is never further exploited. The third is that many imports have civilian or other military uses. These so-called "dual-use" imports may have legitimate use.

- ***In most cases, the problem of technology can be solved through imports or through internal development. The problem of creating effective and well managed programs, however, has often proved to be difficult to impossible, as has the effort to integrate complex mixes of technology into effective systems.*** This is further compounded in many countries by the fact that the managers or heads of such programs lack the experience to objectively analyze their own efforts or deliberately lie to their political superiors. There are few physical indicators, however, that allow intelligence assessment of how effectively a given effort is managed or the level of systems integration involved. The end result is to encourage "worst case" analysis in the absence of any clear evidence and indicators.

- ***There are few reliable benchmarks or measures of effectiveness.*** Even transparent access to a nation's efforts to proliferate would often lead to major uncertainties about the lethality and quality of its chemical, biological, and nuclear weapons activities, and missile and other delivery programs. For example, the level of quality control in producing key weapons components may be so uncertain that it is impossible to determine the outcome. There may be too few tests to know how good a given country's efforts are, and it may rely on engineering and simulation methods whose adequacy simply cannot be accurately assessed. It is almost axiomatic that intelligence cannot collect what the proliferator does not know. In most cases, however, there is no transparency in terms of key issues like nuclear weapons design, quality of biological agent development and/or production, quality of chemical agent development and/or production, and missile reliability, Collection requires a level of access that simply is not credible.

- ***There may be no reliable technical parameters for measuring weapons effectiveness.*** Both the weapons development and arms control communities often take technical measure for granted that may have little or no real-world meaning. Collection is based on the assumption that the proliferator knows its level of effectiveness, or that measures developed for assessing Western programs conducted by the standards of developed countries do, in fact, apply to developing countries. The end result often blurs the distinction between collection and analysis but creates the following kinds of problems:

    - ***Nuclear weapons design and effectiveness:*** No proliferating country has conducted an adequate set of weapons tests to fully characterize its weapons or – in most cases – to allow that country to predict the reliability and yield of its weapons. Countries like India and Pakistan have claimed far higher yields than they have been able to test, and have lied about the yields of the weapons they have tested. Other countries like Israel are credited with thermonuclear or boosted weapons designs of very high efficiency (and low weight) without any know test data. The level of fissile enrichment is often assumed to meet US weapons grade standards, although material with less than one-third of such enrichment could produce a fissile event. The triggering and HE lens design is assumed to have a given level of quality. In short, virtually every aspect of a weapons design and assessments of its effectiveness may have to be based on country claims or mirror imaging.

    - ***Biological weapons design and effectiveness:*** US Army and other studies have indicated that the level of uncertainty surrounding estimates of the lethality of a nuclear weapon

can reach two orders of magnitude because of the inability to know how well a given agent is produced and weaponized, and because of the inherent uncertainties surround the use of weapons that have never had large-scale human testing and whose behavior will not mimic natural outbreaks. These problems are compounded by the fact that the method of delivering wet or dry agents has a major impact on lethality; there often is no way to know what strain of disease is being used, and there are virtually no empirical data for estimating the lethality of mixes (or cocktails) of different biological agents delivered at or near the same time. These problems are compounded because the proliferators probably has no realistic basis for estimating the real-world lethality of the weapon being developed or deployed.

- ***Extremely suspect models are used for infectious diseases, usually based on natural outbreaks that may have little relation to military or terrorist use.*** The nominal data used for such estimates usually are not based on statistically relevant historical data in terms of infectivity and lethality, and tend to use point estimates rather than a range based on sigma. The assumption is made that the disease strain is known or behaves according to prediction. These problems are compounded because the proliferators probably has no realistic basis for estimating the real-world lethality of the weapon being developed or deployed.
- ***Chemical weapons design and effectiveness:*** While chemical weapons are considerably less lethal than biological or nuclear weapons, they present many of the same problems. Without actual testing or empirical experience, lethality estimates are speculative at best, and the problem is compounded by the ability of given countries to handle the complex targeting and meteorological data necessary to achieve high lethality and the sheer randomness of many real world delivery conditions. These problems are again compounded because the proliferators probably has no realistic basis for estimating the real-world lethality of the weapon being developed or deployed.
- ***Radiological weapons:*** The development of crude contaminates is relatively easy, but the technology for distributing lethal material over a wide area is high complex and theoretical. Most devices will produce largely Alpha and Beta effects with limited lethality and decontamination problems. If such weapons are improvised, however, the attacker may use virtually any agent at hand, and the end result could be far more lethal. As a result, radiological weapons tend to have a high degree of randomness, where intelligence collection may be impossible.
- ***Missile/aircraft/UAV range-payload***: The range of a given delivery device is often based on a theoretical calculation based on a nominal payload like 1,000 kilograms (and on the assumption of aerodynamic efficiency). The real world device may be much heavier or lighter, and it is usually impossible to know how much is really the weapon versus other components. A country may never test a real weapon to maximum range or fly such sorties. As a result, range estimates may have little real world validity.
- ***Accuracy vs. reliability vs targeting***: both the proliferators and intelligence tend make estimates that assume the weapon actually works according to design and is properly targeted and then deliveries are the proper point and moment of detonation necessary to achieve the desired effect. These changes of most developing countries doing this with any consistency – if ever – are negligible. There is no clear way, however, to assess the impact of random error.
- ***Misuse of CEP***: Many estimates attempt to apply the term circular error of probability (CEP) to collection and assessment. In practice, this term assumes sufficient data exist to estimate where 50% of the weapons go if the entire delivery system and guidance function perfectly. It then describes the length of the radius from the aim point. Quite aside from the fact most developing countries do not test enough to produce empirical CEPs, this measure ignores the fact that half the weapons will go somewhere else in a far more random pattern along the weapon's vector, and that reliability and targeting may critically degrade actual performance.

- ***Warhead/bomb/device design*:** The actual weapon or agent is only part of the problem of assessing proliferation. The physical nature or a warhead or bomb can be as critical. For example, the timing of height of burst and efficiency of dissemination may be more important in terms of real world lethality than the chemical or biological agent used, and will be critical in determining the level of fall out and trade-offs between radiation-thermal-blast in a nuclear weapon. Reentry effects can have a major impact as can sprayer design.
- ***Production capacity verses actual capability.*** The theoretical or nominal design production capacity is used because no data are available on actual capability.
- ***Deployed forces are active forces, and nominal strength is actual strength.*** Although few developing countries come close to achieving high readiness rates, or ever supply all of their combat units with their fully UE or TO&E, they are assumed to be combat ready and have the required or nominal number of launchers/delivery vehicles and weapons.
- ***Psychological effects are theoretical or unknown.*** Both nations and terrorist may use weapons for demonstrative or psychological effect, but the impact is largely speculative.

- ***For proliferating countries, arms control is an extension of war by other means.*** The very nature of arms control agreements like the Nuclear Non-Proliferation Treaty (NNPT), Biological Weapons Convention (BWC), and Chemical Weapons convention (**C**WC) encourages proliferating nations to lie and conceal as effectively as possible. The same is true of supplier agreements like the Missile Technology Control Regime (MTCR) and Australia List, and any form of sanctions. Arms control only encourages compliance among non-proliferators and non-sellers, and current enforcement efforts are too weak to be effective while their provisions effective license technology transfer to those nations who succeed in lying or concealing.

- ***The technology of proliferation generally permits the research and development effort to be divided up into a wide range of small facilities and projects.*** Some can be carried out as legitimate civil research. Others can be hidden in civil and commercial facilities. As proliferators become more sophisticated, they learn to create dispersed, redundant and parallel programs, and mix high secret covert programs with open civil or dual-use programs. Chemical, biological, and cruise missile programs are particularly easy to divide up into small cells or operations. However, this is increasingly true of nuclear weapons centrifuge programs, plutonium processing and fuel cycles, and the testing and simulation of nuclear weapons that does not involve weapons grade materials. Many key aspects of ballistic missile R&D, including warhead and launch system design fit into this category.

- ***Iraq and most other proliferators have, in the past, focused on creating stockpiles of weapons for fighting theater conflicts against military forces. These stockpiles require large inventories, large-scale deployments, and generally mixes of training and warfighting preparations that create significant intelligence indicators. There are, however, other strategies and many proliferators may now be pursuing them.*** One is to bring weapons to full development, and to wait until a threat becomes imminent to actually produce the weapon. A second is to follow the same course, but create large dual-use civil facilities that can be rapidly converted to the production of weapons of mass destruction. These can include pharmaceutical plants, food-processing plants, breweries, petrochemical plants, and pesticide plants, but key assembly lines can be concealed in a wide range of other commercial activities.[3] Weapons production facilities can be stockpile for a later and sometimes sudden breakout. A third is to focus on creating as few highly lethal biological or nuclear weapons to attack key political or civilian facilities in a foreign country, rather than its military forces. Highly lethal non-infectious or infectious biological agents are one means of such an attack, biological weapons directed at crops or livestock are another.

- ***Countries can pursue very different strategies in dealing with their past inventories of weapons***. They can disclose and destroy them, knowing they do not face an urgent warfighting need, better weapons are coming, and this suits current political objectives. They can claim to destroy and hide the remaining weapons in covert areas known only to a few. They can claim to destroy, or lie, and disperse weapons where they can be used for warfighting purposes. In many cases, intelligence

collection may not be able to distinguish between such strategies, and a given proliferator like Iraq can pursue a mix of such strategies—depending on the value of the weapon.

- ***In many cases, there is no clear way to know whether a program is R&D, production and weapons deployment, or production capable/breakout oriented.*** The problem is further complicated by the fact that Iraq and other countries have learned to play a "shell game" by developing multiple surface and underground military facilities and dual-use facilities and to create relatively mobile mixes of trailer/vehicle mounted and "palletized" equipment for rapid movement. Large special-purpose facilities with hard to move equipment often still exist, but they are by no means the rule. Intelligence collection takes time and may often lag behind country activities.

- ***There is no clear case other than the worst case***. Unless a country keeps extremely accurate records of its programs, it is often far easier to estimate that maximum scale of what it might do than provide an accurate picture of what it has actually done.

- ***In most cases, it is impossible to know how far a given project or effort has gotten and how well it has succeeded.*** The history of proliferation is not the history of proliferators overcoming major technical and manufacturing problems. It is the history of massive management and systems integration problems, political failures, lying technical advocates and entrepreneurs, project managers who do not tell their political masters the truth, and occasional sudden success. Short of an intelligence breakthrough, it is rarely possible to assess the success of a given effort and even on the scene inspection can produce vary wrong results unless a given project can be subjected to detailed technical testing. For example, UNSCOM and the IAEA found that virtually all of their preliminary reporting on Iraq's nuclear effort in 1992-1993 tended to exaggerate Iraqi capabilities once they had had the time to fully assess the efficiency of key efforts like the Calutron and centrifuge programs.

- ***The only definitive way to counter most of these collection problems is to have a reliable mix of redundant human intelligence (HUMINT) sources within the system or as defectors.*** The United States, however, has never claimed or implied it had such capabilities in any proliferating country, and the history of U.S., British, UNSCOM, and UNMOVIC efforts to deal with Iraq makes it painfully clear both that such transparency was totally lacking in Iraq and that most Iraqi defectors and intelligence sources outside Iraq made up information, circulated unsubstantiated information, or simply lied. Breakthroughs do occur, but HUMIMT is normally inadequate, untrustworthy, or a failure, and these shortcomings cannot generally be corrected with data based on other intelligence means. Either inside information is available or it is not. When it is, imagery and signals intelligence generally do far more to indicate that HUMINT is wrong or suspect than to reveal the truth.[4]

- ***In many cases, even the leaders of a proliferating country may not have an accurate picture of the success of their efforts, and most probably do not have a clear picture of the accuracy, lethality and effects, and reliability of their weapons***. U.S. and British research efforts have long shown that even highly sophisticated technical models of the performance and lethality of chemical, biological, and nuclear weapons and delivery systems can be grossly wrong, or require massive levels of human testing that simply are not practical even for closed authoritarian societies. No declassified intelligence report on any proliferation effort in any developing country has yet indicated that Iraq or any other proliferator has sophisticated technical and testing models in these areas. Intelligence cannot collect data that do not exist.

- ***Even if a nation's war plans and doctrine are known – which is unlikely – they may not be relevant.*** Many countries almost certainly acquire and deploy such weapons without developing detailed war plans or doctrines. Leaders may treat such weapons moiré as symbols or deterrents than in terms of actual use. Targeting and escalatory doctrine may be nominal or highly unrealistic. An actual crisis may then lead to efforts to develop a completely different approach to using such weapons that then becomes interact with the enemy's behavior. The resulting "escalation ladder" may then bear no relation to the peacetime intentions on either side, or to any game theoretic model of efficient deterrence and use. Moreover, the inability on both sides to

properly target and predict weapons effects – and simultaneously manage conventional and WMD combat – can give any resulting combat a highly random character.

Problems in Analyzing Iraqi and Other Country WMD Capabilities and Delivery Systems

Many of the resulting problems in the analysis of the WMD capabilities of Iraq and other countries are the result of the previous problems in collection. The details of U.S., British, and allied intelligence analyses remain classified. At the same time, background discussions with intelligence analysts and users reveal the following additional problems in analyzing the WMD threat:

- ***The uncertainties surrounding collection on virtually all proliferation and weapons of mass destruction programs are so great that it is impossible to produce meaningful point estimates.*** As the CIA has shown in some of its past public estimates of missile proliferation, the intelligence community must first develop a matrix of what is and is not known about a given aspect of proliferation in a given country, with careful footnoting or qualification of the problems in each key source. It must then deal with uncertainty by creating estimates that show a range of possible current and projected capabilities—carefully qualifying each case. In general, at least three scenarios or cases need to be analyzed for each major aspect of proliferation in each country—something approaching a "best," "most likely, " and "worst case."[5]

- ***Even under these conditions, the resulting analytic effort faces serious problems. Security compartmentation within each major aspect of collection and analysis severely limits the flow of data to working analysts.*** The expansion of analytic staffs has sharply increased the barriers to the flow of data, and has brought large number of junior analysts into the process that can do little more than update past analyses and judgments. Far too little analysis is subjected to technical review by those who have actually worked on weapons development, and the analysis of delivery programs, warheads and weapons, and chemical, biological, and nuclear proliferation tends to be compartmented. Instead of the free flow of data and exchange of analytic conclusions, or "fusion" of intelligence, analysis is "stovepiped" into separate areas of activity. Moreover, the larger staffs get, the more stovepiping tends to occur.

- ***Analysis tends to focus on technical capability and not on the problems in management and systems integration that often are the real world limiting factors in proliferation.*** This tends to push analysis towards exaggerating the probable level of proliferation, particularly because technical capability is often assumed if collection cannot provide all the necessary information.

- ***Where data are available on past holdings of weapons and the capability to produce such weapons—such as data on chemical weapons feedstocks and biological growth material—the intelligence effort tends to produce estimates of the maximum size of the possible current holding of weapons and WMD materials***. While ranges are often shown, and estimates are usually qualified with uncertainty, this tends to focus users on the worst case in terms of actual current capability. In the case of the Iraq, this was compounded by some 12 years of constant lies and a disbelief that a dictatorship obsessed with record keeping could not have records if it had destroyed weapons and materials. The end result, however, was to assume that little or no destruction had occurred whenever UNSCOM, UNMOVIC, and the IAEA reported that major issues still affected Iraqi claims.

- ***Intelligence analysis has long been oriented more towards arms control and counterproliferation rather than war fighting, although DIA and the military services have attempted to shift the focus of analysis.*** Dealing with broad national trends and assuming capability is not generally a major problem in seeking to push nations towards obeying arms control agreements, or in pressuring possible suppliers. It also is not a major problem in analyzing broad military counterproliferation risks and programs. The situation is very different in dealing with war fighting choices, particularly issues like preemption and targeting. Assumptions of capability can lead to preemption that is not necessary, overtargeting, inability to prioritize, and a

failure to create the detailed collection and analysis necessary to support warfighters down to the battalion level. This, in turn, often forces field commanders to rely on field teams with limit capability and expertise, and to overreact to any potential threat or warning indicator.

- ***The intelligence community does bring outside experts into the process, but often simply to provide advice in general terms rather than cleared review of the intelligence product.*** The result is often less than helpful. The use of other cleared personnel in U.S. laboratories and other areas of expertise is inadequate and often presents major problems because those consulted are not brought fully into the intelligence analysis process and given all of the necessary data.
- ***The intelligence community does tend to try to avoiding explicit statements of the short comings in collection and methods in much of its analysis and to repeat past agreed judgments on a lowest common denominator level—particularly in the form of the intelligence products that get broad circulation to consumers.*** Attempts at independent outside analysis or "B-Teams," however, are not subject to the review and controls enforced on intelligence analysis, and the teams, collection data, and methods used are generally selection to prove given points rather than provide an objective counterpoint to finished analysis.[6]
- ***Time or bureaucratic momentum and poor supervision lead to a failure to proper review or "zero-base" analysis***. Any review of unclassified reports shows a tendency to endlessly repeat prior assessments and conclusions without reviewing their content and with any effort to comprehensively review past judgments.

More broadly, the users of intelligence are at best intolerant of analysis that consists of a wide range of qualifications and uncertainties even at the best of times, and the best of times do not exist when urgent policy and warfighting decisions need to be made. Users inevitably either force the intelligence process to reach something approaching a definitive set of conclusions, or else they make such estimates themselves.

Intelligence analysts and managers are all too aware of this fact. Experience has taught them that complex intelligence analysis—filled with alternative cases, probability estimates, and qualifications about uncertainty --generally go unused or make policy makers and commanders impatient with the entire intelligence process. In the real world, hard choices have to be made to provide an estimate that **can** actually be used and acted upon, and these choices must either by the intelligence community or the user.[7]

The Politics of Characterizing and Targeting WMD Capabilities and Delivery Systems

All of these points have obvious importance in assessing the political and policy-level use of intelligence during the Iraq War. It is easy to focus on the extent to which the intelligence that the United States and Britain provided before the war was or was not "politicized" as part of the effort to make the case for the war. Yet, far broader issues are involved that are scarcely specific to the Iraq War. Rather, these issues are almost certain to apply to future crises and conflicts. The same problems that limited U.S. and British intelligence capabilities during the Iraq War—and which will limit them for the foreseeable future—necessarily apply to other countries and to any international organizations.

There also are no peers with superior capabilities. No other state can compete with the United States in intelligence collection and analysis resources, although a growing number of states do have significant satellite and other technical means and any state can score a human intelligence breakthrough. Organizations like the UN have no independent intelligence collection capability other than the reporting and inspection provisions

provided by international agreements. UNSCOM and UNMOVIC showed during their inspection efforts in Iraq that direct inspection can often provide important discoveries. But such search techniques also provide only limited and time-consuming coverage and cannot function effectively without intelligence data and analytic inputs from other countries.

No one who focuses on the specific case of the Iraq War can afford to ignore the fact that future threats of proliferation posed by states or terrorist movements may again seem so great that it may not be possible to wait to take military action until many key uncertainties are resolved. Moreover, it is difficult to see how leaders can lead if they communicate all of the uncertainties involved in the intelligence assessment of most proliferating countries.

In practical terms, any political effort to try to communicate the true level of uncertainty and probable outcomes inherent in most estimates of proliferation seems almost certain to make it difficult or impossible to gain a political consensus for timely and effective domestic or international action. Communicating uncertainty may be a good way of arguing against action, but only because its impact is to create nearly endless discussion and debate on any policy that requires broad political agreement on a single course of action or the use of military force. In practical terms, the United States and its allies may again have to act on the basis of something approaching "worst case" assumptions. This is a risk that proliferating nations and extremist movements may have to learn they take when they proliferate.

Dealing with a Proven Proliferator

It is also necessary to put any U.S. or British politicization of intelligence in context. Whatever mistakes may have been made in the intelligence assessments before and during the war, Saddam Hussein's regime was clearly proliferating. During the period of 1991–1998, UNSCOM found that Iraq had concealed major chemical, biological, and nuclear programs, and it continued to lie about them until it expelled UNSCOM. These lies affected many detailed aspects of the Iraqi nuclear and missile program. They also, however, succeeded in concealing the existence of a biological weapons program until 1995—four years after the Gulf War was over and a massive inspection effort was under way. And they succeeded in concealing a major VX nerve gas weaponization program until 1997–1998—seven years after the war was over.

Iraq clearly failed to meet the requirements of the UN Security Council's Resolution 1441 that established the ground rules for the resumption of UN inspections under UNMOVIC. Iraq's declaration to the UN did virtually nothing to resolve immense uncertainties about the remaining scale of the Iraqi proliferation effort, which could still have involved massive stocks of chemical and biological weapons. UNMOVIC found that Iraq continued to try to conceal major violations of the ceasefire limits on the development of long-range missiles, and it was anything but forthcoming in making its scientists available for interviews and in implementing most other aspects of cooperation with the UN. When it did improve its cooperation, it almost always did so because the threat of U.S. and British military action had become more imminent.[8]

The Issues Left By Iraqi Compliance with the UN Effort

Whatever the problems in the U.S. and British statements and white papers may have been, virtually all of the reports on the material, weapons, and equipment that Iraq had not accounted for were taken from reporting by UNSCOM during the period between 1991 and 1998. Interviews with French, German, Russian, and other experts before the war also indicate that few Western nations did not think that Iraq was actively proliferating, and most Western intelligence agencies saw similar risks—although some felt that Iraq's war-fighting capabilities were lower and its production capabilities were much more uncertain.

Hans Blix—the executive chairman of UNMOVIC before and during the war and a man who disagreed with many of the U.S. and British assessments of Iraqi capabilities issued to make the case for war—expressed serious concerns in his reports to the UN during 2003 about Iraq's failures to comply with UN Security Council Resolution 1441 as well as about the U.S. and British assessments of the Iraqi WMD threat. The UNMOVIC report to the Security Council of January 27, 2003, stated as follows:[9]

- Resolution 687 (1991), like the subsequent resolutions I shall refer to, required cooperation by Iraq but such was often withheld or given grudgingly. Unlike South Africa, which decided on its own to eliminate its nuclear weapons and welcomed inspection as a means of creating confidence in its disarmament, Iraq appears not to have come to a genuine acceptance—not even today—of the disarmament, which was demanded of it and which it needs to carry out to win the confidence of the world and to live in peace.
- As we know, the twin operation 'declare and verify', which was prescribed in resolution 687 (1991), too often turned into a game of 'hide and seek'. Rather than just verifying declarations and supporting evidence, the two inspecting organizations found themselves engaged in efforts to map the weapons programmes and to search for evidence through inspections, interviews, seminars, inquiries with suppliers and intelligence organizations. As a result, the disarmament phase was not completed in the short time expected. Sanctions remained and took a severe toll until Iraq accepted the Oil for Food.
- While Iraq claims—with little evidence—that it destroyed all biological weapons unilaterally in 1991, it is certain that UNSCOM destroyed large biological weapons production facilities in 1996. The large nuclear infrastructure was destroyed and the fissionable material was removed from Iraq by the IAEA.
- One of three important questions before us today is how much might remain undeclared and intact from before 1991; and, possibly, thereafter; the second question is what, if anything, was illegally produced or procured after 1998, when the inspectors left; and the third question is how it can be prevented that any weapons of mass destruction be produced or procured in the future.
- For nearly three years, Iraq refused to accept any inspections by UNMOVIC. It was only after appeals by the Secretary-General and Arab States and pressure by the United States and other Member States, that Iraq declared on 16 September last year that it would again accept inspections without conditions.
- It would appear from our experience so far that Iraq has decided in principle to provide cooperation on process, notably access. A similar decision is indispensable to provide cooperation on substance in order to bring the disarmament task to completion through the peaceful process of inspection and to bring the monitoring task on a firm course. An initial minor step would be to adopt the long-overdue legislation required by the resolutions.
- In this updating I am bound, however, to register some problems. Firstly, relating to two kinds of air operations.

- …I am obliged to note some recent disturbing incidents and harassment. For instance, for some time farfetched allegations have been made publicly that questions posed by inspectors were of intelligence character. While I might not defend every question that inspectors might have asked, Iraq knows that they do not serve intelligence purposes and Iraq should not say so.
- On a number of occasions, demonstrations have taken place in front of our offices and at inspection sites.
- The other day, a sightseeing excursion by five inspectors to a mosque was followed by an unwarranted public outburst. The inspectors went without any UN insignia and were welcomed in the kind manner that is characteristic of the normal Iraqi attitude to foreigners. They took off their shoes and were taken around. They asked perfectly innocent questions and parted with the invitation to come again.
- Shortly thereafter, we receive protests from the Iraqi authorities about an unannounced inspection and about questions not relevant to weapons of mass destruction. Indeed, they were not. Demonstrations and outbursts of this kind are unlikely to occur in Iraq without initiative or encouragement from the authorities. We must ask ourselves what the motives may be for these events. They do not facilitate an already difficult job, in which we try to be effective, professional and, at the same time, correct. Where our Iraqi counterparts have some complaint they can take it up in a calmer and less unpleasant manner.
- Paragraph 9 of resolution 1441 (2002) states that this cooperation shall be "active". It is not enough to open doors. Inspection is not a game of "catch as catch can". Rather, as I noted, it is a process of verification for the purpose of creating confidence. It is not built upon the premise of trust. Rather, it is designed to lead to trust, if there is both openness to the inspectors and action to present them with items to destroy or credible evidence about the absence of any such items.
- On 7 December 2002, Iraq submitted a declaration of some 12,000 pages in response to paragraph 3 of resolution 1441 (2002) and within the time stipulated by the Security Council. In the fields of missiles and biotechnology, the declaration contains a good deal of new material and information covering the period from 1998 and onward. This is welcome.
- One might have expected that in preparing the Declaration, Iraq would have tried to respond to, clarify and submit supporting evidence regarding the many open disarmament issues, which the Iraqi side should be familiar with from the UNSCOM document S/1999/94 of January1999 and the so-called Amorim Report of March 1999 (S/1999/356). These are questions that UNMOVIC, governments and independent commentators have often cited.
- While UNMOVIC has been preparing its own list of current "unresolved disarmament issues" and "key remaining disarmament tasks" in response to requirements in resolution 1284 (1999), we find the issues listed in the two reports as unresolved, professionally justified. These reports do not contend that weapons of mass destruction remain in Iraq, but nor do they exclude that possibility. They point to lack of evidence and inconsistencies, which raise question marks, which must be straightened out, if weapons dossiers are to be closed and confidence is to arise.
- They deserve to be taken seriously by Iraq rather than being brushed aside as evil machinations of UNSCOM. Regrettably, the 12,000 page declaration, most of which is a reprint of earlier documents, does not seem to contain any new evidence that would eliminate the questions or reduce their number. Even Iraq's letter sent in response to our recent discussions in Baghdad to the President of the Security Council on 24 January does not lead us to the resolution of these issues.
- When we have urged our Iraqi counterparts to present more evidence, we have all too often met the response that there are no more documents. All existing relevant documents have been presented, we are told. All documents relating to the biological weapons programme were destroyed together with the weapons.
- However, Iraq has all the archives of the Government and its various departments, institutions and mechanisms. It should have budgetary documents, requests for funds and reports on how they

have been used. It should also have letters of credit and bills of lading, reports on production and losses of material.

- In response to a recent UNMOVIC request for a number of specific documents, the only new documents Iraq provided was a ledger of 193 pages which Iraq stated included all imports from 1983 to 1990 by the Technical and Scientific Importation Division, the importing authority for the biological weapons programme. Potentially, it might help to clear some open issues.
- The recent inspection find in the private home of a scientist of a box of some 3,000 pages of documents, much of it relating to the laser enrichment of uranium support a concern that has long existed that documents might be distributed to the homes of private individuals. This interpretation is refuted by the Iraqi side, which claims that research staff sometimes may bring home papers from their work places. On our side, we cannot help but think that the case might not be isolated and that such placements of documents is deliberate to make discovery difficult and to seek to shield documents by placing them in private homes.
- Any further sign of the concealment of documents would be serious. The Iraqi side committed itself at our recent talks to encourage persons to accept access also to private sites. There can be no sanctuaries for proscribed items, activities or documents. A denial of prompt access to any site would be a very serious matter.
- When Iraq claims that tangible evidence in the form of documents is not available, it ought at least to find individuals, engineers, scientists and managers to testify about their experience. Large weapons programmes are moved and managed by people. Interviews with individuals who may have worked in programmes in the past may fill blank spots in our knowledge and understanding. It could also be useful to learn that they are now employed in peaceful sectors. These were the reasons why UNMOVIC asked for a list of such persons, in accordance with resolution 1441.
- Some 400 names for all biological and chemical weapons programmes as well as their missile programmes were provided by the Iraqi side. This can be compared to over 3,500 names of people associated with those past weapons programmes that UNSCOM either interviewed in the 1990s or knew from documents and other sources. At my recent meeting in Baghdad, the Iraqi side committed itself to supplementing the list and some 80 additional names have been provided.
- In the past, much valuable information came from interviews. There were also cases in which the interviewee was clearly intimidated by the presence of and interruption by Iraqi officials. This was the background of resolution 1441's provision for a right for UNMOVIC and the IAEA to hold private interviews "in the mode or location" of our choice, in Baghdad or even abroad.
- To date, 11 individuals were asked for interviews in Baghdad by us. The replies have invariably been that the individual will only speak at Iraq's monitoring directorate or, at any rate, in the presence of an Iraqi official. This could be due to a wish on the part of the invited to have evidence that they have not said anything that the authorities did not wish them to say. At our recent talks in Baghdad, the Iraqi side committed itself to encourage persons to accept interviews "in private", that is to say alone with us. Despite this, the pattern has not changed. However, we hope that with further encouragement from the authorities, knowledgeable individuals will accept private interviews, in Baghdad or abroad.

The International Atomic Energy Agency report of January 27, 2003, noted the following:[10]

> Little progress has been made in resolving the questions and concerns that remained as of 1998. On the question of external assistance to the past nuclear programme, Iraq has provided a letter that summarizes information provided by it during earlier discussions and which reiterates Iraq's previous statements that it had never followed up on offers of such assistance. On the issue of the abandonment of the programme, Iraq has indicated its intention to adopt, as required in paragraph 34 of the OMV Plan, laws prohibiting the conduct of proscribed activities in Iraq.

Blix reported a more favorable situation to the UN on February 14 in his last report before the war began. He also warned that the intelligence provided to UNMOVIC had been found to be flawed in some aspects:[11]

> International organizations need to analyze such information critically and especially benefit when it comes from more than one source. The intelligence agencies, for their part, must protect their sources and methods. Those who provide such information must know that it will be kept in strict confidence and be known to very few people. UNMOVIC has achieved good working relations with intelligence agencies and the amount of information provided has been gradually increasing. However, we must recognize that there are limitations and that misinterpretations can occur.
>
> Intelligence information has been useful for UNMOVIC. In one case, it led us to a private home where documents mainly relating to laser enrichment of uranium were found. In other cases, intelligence has led to sites where no proscribed items were found. Even in such cases, however, inspection of these sites were useful in proving the absence of such items and in some cases the presence of other items—conventional munitions. It showed that conventional arms are being moved around the country and that movements are not necessarily related to weapons of mass destruction.
>
> The presentation of intelligence information by the U.S. Secretary of State suggested that Iraq had prepared for inspections by cleaning up sites and removing evidence of proscribed weapons programmes. I would like to comment only on one case, which we are familiar with, namely, the trucks identified by analysts as being for chemical decontamination at a munitions depot. This was a declared site, and it was certainly one of the sites Iraq would have expected us to inspect. We have noted that the two satellite images of the site were taken several weeks apart. The reported movement of munitions at the site could just as easily have been a routine activity as a movement of proscribed munitions in anticipation of imminent inspection. Our reservation on this point does not detract from our appreciation of the briefing.

Nevertheless, UNMOVIC's last report to the Security Council before the Iraq War, which was published on February 28, 2003, noted that UNMOVIC had found a small stock of mustard gas and some surviving bombs designed to carry weapons of mass destruction. The report also confirmed that Iraq had developed and deployed two missiles—the Al Samoud 2 and Al Fatah—in violation of UN Security Council resolutions.[12]

> UNMOVIC experts have found little new significant information in the part of the declaration relating to proscribed weapons programmes, nor much new supporting documentation or other evidence. New material, on the other hand, was provided concerning non-weapons-related activities during the period from the end of 1998 to the present, especially in the biological field and on missile development.
>
> The part that covers biological weapons is, in UNMOVIC's assessment, essentially a reorganized version of a previous declaration provided by Iraq to the United Nations Special Commission (UNSCOM) in September 1997. In the chemical weapons area, the basis of the current declaration was a declaration submitted by Iraq in 1996 with subsequent updates and explanations. In the missile field, the declaration follows the same format, and has largely the same content as Iraq's 1996 missile declaration and updates.
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> …As there is little new substantive information in the weapons part of Iraq's declaration, or new supporting documentation, the issues that were identified as unresolved in the Amorim report (S/1999/356) and in UNSCOM's report (S/1999/94) remain. In most cases, the issues remain unresolved because there is a lack of supporting evidence. Such supporting evidence, in the form of documentation, testimony by individuals who took part in the activities, or physical evidence, would be required.
>
> …Under resolution 1284 (1999), Iraq is to provide "cooperation in all respects" to UNMOVIC and the IAEA. While the objective of the cooperation under this resolution, as under resolution 1441 (2002), is evidently the attainment, without delay, of verified disarmament, it is the cooperation that must be immediate, unconditional and active. Without the required cooperation, disarmament and its

verification will be problematic. However, even with the requisite cooperation it will inevitably require some time.

… During the period of time covered by the present report, Iraq could have made greater efforts to find any remaining proscribed items or provide credible evidence showing the absence of such items. The results in terms of disarmament have been very limited so far. The destruction of missiles, which is an important operation, has not yet begun. Iraq could have made full use of the declaration, which was submitted on 7 December. It is hard to understand why a number of the measures, which are now being taken, could not have been initiated earlier. If they had been taken earlier, they might have borne fruit by now. It is only by the middle of January and thereafter that Iraq has taken a number of steps, which have the potential of resulting either in the presentation for destruction of stocks or items that are proscribed or the presentation of relevant evidence solving long-standing unresolved disarmament issues.

Blix made the following points about the problems in assessing Iraq's WMD programs in his last report to the UN, after the Iraq War was over.[13]

…the Commission has not at any time during the inspections in Iraq found evidence of the continuation or resumption of programmes of weapons of mass destruction or significant quantities of proscribed items—whether from pre-1991 or later. I leave aside the Al Samoud 2 missile system, which we concluded was proscribed. As I have noted before, this does not necessarily mean that such items could not exist. They might—there remain long lists of items unaccounted for—but it is not justified to jump to the conclusion that something exists just because it is unaccounted for.

…we note that the long list of proscribed items unaccounted for has not been shortened by inspections or Iraqi declarations, explanations or documentation. It was the task of the Iraqi side to present items unaccounted for, if they existed, or to present evidence—records, documents or other—convincing the inspectors that the items do not exist.

If—for whatever reason—this is not done, the international community cannot have confidence that past programmes or any remaining parts of them have been terminated. However, an effective presence of international inspectors will serve as a deterrent against efforts aimed at reactivating or developing new programmes of weapons of mass destruction.

Although during the last month and a half of our inspections, the Iraqi side made considerable efforts to provide explanations, to begin inquiries and to undertake exploration and excavations, these efforts did not bring the answers needed before we withdrew. We did not have time to interview more than a handful of the large number of persons who were said by Iraq to have participated in the unilateral destruction of biological and chemical weapons in 1991. Such interviews might have helped towards the resolution of some outstanding issues, although one must be aware that the totalitarian regime in Iraq continued to cast a shadow on the credibility of all interviews.

The report before you gives details of the Commission's supervision of the destruction of 50 Al Samoud 2 missiles out of the 75 declared deployed and of other items in the missile sphere.…Fifty per cent of the declared warheads and 98% of the missile engines remained intact. Also, there was no time to assess whether the Al Fatah missile programme stayed within the range allowed by Security Council resolutions.

In the context of destruction of proscribed items, I should like also to draw the attention of the Council to the information… that the *weapons* that were destroyed before inspectors left in 1998, were in almost all cases declared by Iraq and that the destruction occurred before 1993 in the case of missiles, and before 1994 in the case of chemical weapons. The existence and scope of the biological weapons programme was uncovered by UNSCOM in 1995 despite Iraq's denials and concealment efforts. As to items, only a few remnants of the biological weapons programme were subsequently found. A great deal—Iraq asserts all—was unilaterally destroyed in 1991.

Thus, in the main, UNSCOM supervised destruction of actual weapons and agents took place during the early years of the Commission, and had regard mainly to items declared by Iraq or, at least, found at sites declared by Iraq. Subsequent UNSCOM disarmament activities dealt almost exclusively with the destruction of equipment and facilities for the production of weapons connected to past

> programmes. In addition, of course, UNSCOM was able, with great skill, to map large parts of Iraq's WMD programmes.
>
> While we are all aware of the large amounts of proscribed items, which still remain unaccounted for, we should perhaps take note of the fact that for many years neither UNSCOM nor UNMOVIC made significant finds of weapons. The lack of finds could be because the items were unilaterally destroyed by the Iraqi authorities or else because they were effectively concealed by them. I trust that in the new environment in Iraq, in which there is full access and cooperation, and in which knowledgeable witnesses should no longer be inhibited to reveal what they know, it should be possible to establish the truth we all want to know.

Before one places too much blame on the United States and Britain for faulty intelligence, it is important to note that Iraq could have resolved the issues involved simply by complying with the UN security council resolution. The United States and Britain may have been wrong, but Saddam Hussein played an almost suicidally stupid game in failing to immediately declare Iraq's true holdings and comply with UNSCR 1441's demand for immediate and comprehensive compliance. As Rolf Ekeus, executive chairman of UNSCOM from 1991 to1997, pointed out after the war, Iraq never gave up the basic core of its chemical, biological, or nuclear weapons efforts or the effort to find dual-use and other production equipment.[14]

The Costs of Politicizing Intelligence

That said, one key lesson of the Iraq War is still that it is dangerous to overpoliticize intelligence and to not provide a picture of the threat and reasons for warfighting that is properly qualified. Overselling the threat before a war leads to overreacting during a conflict, and to major credibility problems in the aftermath of the conflict that can interfere with nation building and limit domestic and international support in future conflicts.

It is now all too clear that the United States and Britain did not find the right balance of persuasion and objectivity in their public analyses of the threat before the war and in their arguments in favor of the conflict. The fact that no evidence surfaced during or soon after the war that tracked with the previous U.S. and British intelligence assessments—evidence showing that Iraq had the capability to use weapons of mass destruction in warfighting, or indicated that it had active programs for the production of weapons of mass destruction that were creating an imminent threat—has been a source of major embarrassment for the Bush and Blair governments, as well as for allied governments like Australia. It also seriously undermines U.S. and British credibility in dealing with future cases of proliferation.

Postwar reports and interviews make it clear that the United States and Britain presented worst-case estimates to the public and the UN without sufficient qualification. They also make clear that their intelligence communities came under serious political pressure to make something approaching a worst-case interpretation of the evidence, and to interpret the inability to account for missing weapons of mass destruction, delivery systems, and production capabilities as meaning that Iraq had something approaching matching inventories of deployed weapons.

As has been mentioned, there are also many indications that the U.S. intelligence community came under pressure to accept reporting by Iraqi opposition sources that had

limited credibility and, in some cases, a history of actively lying to exaggerate their own importance or push the United States toward a war to overthrow Saddam Hussein.

In the US, this pressure seems to have come primarily from the Office of the Vice President and the Office of the Secretary of Defense. The Vice President and his assistant Scooter Libby seem to have made repeated personal efforts to intervene in the intelligence process and push for the selection of material that would make a case for war. There also are reports that the Office of Special Plans (OSP) within the Office of the Secretary of Defense assembled a staff with strong biases in favor of war that sifted through intelligence data and pushed for the "worst case" interpretation of the data on Iraqi weapons of mass destruction and possible Iraqi ties to terrorist groups like Al Qaida. In what bore a striking resemblance to similar worst-case interpretations of the global threat from the proliferation of ballistic missiles under the Rumsfeld Commission, U.S. policymakers seem to have pushed for the interpretation that would best justify military action and to have focused on this as if it were a reality rather than a possibility.[15]The Bush administration as a whole sought intelligence that would support its case in going to war, and that this had a significant impact on the intelligence community from 2002 onward.[16]

There are at least two cases where charges were made that should never have been made public. One such charge was the assertion by both the U.S. and British governments that there was evidence that Iraq had imported uranium from Africa**.** This assertion was made when the key source relating to Niger was already known to be fraudulent, and there was no credible evidence of supply by the Congo or Somalia.[17] Part of the problem may have arisen because British and US intelligence did not share all of the data they had on this possibility.[18] However, the key cause was political choices about the way in which uncertain indicators and warnings of forgery that overrode the recommendations of intelligence professionals note to use the material. Similarly, British claims that Iraq was able to deploy chemical and biological weapons within 45 minutes, including against its own Shi'ite population, later turned out to be based on a single unvalidated report from an Iraqi officer of very uncertain credibility.[19]

Senator Carl Levin, however, provided a much broader indictment of the US analysis in a speech to the Senate on July 15, 2003:[20]

> Last week, CIA Director George Tenet accepted responsibility for having gone along with the African uranium statement in the President's State of the Union address. His acknowledgment that it should not have been included in the address and his acceptance of responsibility were appropriate. But his explanation of the CIA's acquiescence in allowing the use of a clearly misleading statement raises more questions than it answers, and statements by other administration officials, particularly National Security Adviser Condoleezza Rice, compound the problem.
>
> Even more troubling, however, is the fact that the uranium statement appears to be but one of a number of several questionable statements and exaggerations by the Intelligence Community and Administration officials that were issued in the buildup to the war. The importance of objective and credible intelligence cannot be overstated. It is therefore essential that we have a thorough, open and bipartisan inquiry into the objectivity, credibility and use of U.S. intelligence before the Iraq War.
>
> First, relative to the uranium issue: the President in his State of the Union message said that the British government had learned that Iraq recently sought to purchase significant quantities of uranium from Africa. The sole purpose of that statement was to make the American people believe that the American government believed the statement to be true and that it was strong

evidence of Iraq's attempt to obtain nuclear weapons. But the truth was that, at the very time the words were spoken, our government did not believe it was true. Condoleezza Rice's effort to justify the statement on the grounds that it was "technically accurate" doesn't address the heart of the matter, which is that the statement was calculated to create a false impression. It is simply wrong to make a statement whose purpose is to make people believe something when you do not believe it yourself.

It is all well and good that the CIA has acknowledged its role in caving in to pressure from the National Security Council to concur in something which it did not believe. But Director Tenet's acknowledgment raises further questions of who was pushing the false impression at the National Security Council. The

NSC should not misuse intelligence that way. The President's statement that Iraq was attempting to acquire African uranium was not a "mistake." It was not inadvertent. It was not a slip. It was negotiated between the CIA and the NSC. It was calculated. It was misleading. And what compounds its misleading nature is that the CIA not only "differed with the British dossier on the reliability of the uranium reporting."

To use Director Tenet's words, but the CIA had also "expressed [its] reservations," again using Director Tenet's words, to the British in September 2002, nearly five months before the State of Union address. Furthermore, the CIA pressed the White House to remove a similar reference from the President's speech on October 7, 2002, and the White House did so - nearly four months before the State of the Union address.

The uranium issue is not just about sixteen words. It is about the conscious decisions that were made, apparently by the NSC and concurred in by the CIA, to create a false impression. And it is not an isolated example. There is troubling evidence of other dubious statements and exaggerations by the Intelligence Community and Administration officials.

Aluminum tubes: In a speech before the UN General Assembly on September12th, 2002, President Bush said "Iraq has made several attempts to buy high-strength aluminum tubes used to enrich uranium for a nuclear weapon." In fact, an unclassified intelligence assessment in October acknowledged that some intelligence specialists "believe that these tubes are probably intended for conventional weapons programs," and on February 5th, 2003, Secretary of State Colin Powell told the UN Security Council that "we all know there are differences of opinion," and that "there is controversy about what these tubes are for." The International Atomic Energy Agency, after conducting an inquiry into the aluminum tubes issue concluded they were not for uranium enrichment.

Iraq-al Qaeda connection: On September 27 of last year, Secretary of Defense Donald Rumsfeld described the Administration's search for hard evidence for a connection between Iraq and al Qaeda. He said, "we ended up with five or six sentences that were bullet-proof. We could say them, they are factual, they are exactly accurate. They demonstrate that there are in fact al Qaeda in Iraq." While Secretary Rumsfeld later went on to say, "they are not beyond a reasonable doubt," he did not say there was considerable uncertainty in the Intelligence Community about the nature and extent of ties, if any, between Iraq and al Qaeda. It was certainly never a "bullet- proof" case.

Nuclear reconstitution: Last Sunday, Ms. Rice said, "we have never said that we thought he [Saddam] had nuclear weapons." But Vice President Cheney said on March 16 "we believe he [Saddam] has, in fact, reconstituted nuclear weapons."

Certainty that Iraq possesses chemical and biological weapons: On August 26, 2002, Vice President Cheney said: "Simply stated, there is no doubt that Saddam Hussein now has weapons of mass destruction. There is no doubt he is amassing them to use against our friends, against our allies, and against us."

On September 26, 2002, President Bush said, "The Iraqi regime possesses biological and chemical weapons." On March 17, 2003, President Bush told the nation that "intelligence gathered by this and other governments leaves no doubt that the Iraq regime continues to possess and conceal some of the most lethal

weapons ever devised." And on March 30, 2003, Secretary of Defense Donald Rumsfeld said, "We know where they [weapons of mass destruction] are. They're in the area around Tikrit and Baghdad and east, west, south and north somewhat." The fruitless search to date for Saddam Hussein's weapons of mass destruction

during and after our entry into Iraq suggests that our intelligence was either way off the mark or seriously stretched.

Mobile biological warfare labs: On May 28, 2003, the CIA posted on its website a document it prepared with the Defense Intelligence Agency entitled "Iraqi Mobile Biological Warfare Agent Production Plants." This report concluded that the two trailers found in Iraq were for biological warfare agent production, even though other experts and intelligence community members do not agree with that conclusion, or believe there is not enough evidence to reach such a conclusion. None of these alternative views were posted on the CIA's web page.

White House Web Site Photos: On October 8, 2002, the White House placed three sets of satellite photos on its web site, with the headline "Construction at three Iraqi nuclear weapons-related facilities". Although one of the facilities was not nuclear-related, the captions of the photos gave the impression that Iraq was proceeding with work on weapons of mass destruction at these facilities, although UNMOVIC and IAEA inspections at these facilities found no prohibited activities or weapons. For the Al Furat Manufacturing

Facility, the caption notes that "the building was originally intended to house a centrifuge enrichment cascade operation supporting Iraq's uranium enrichment efforts," and that after construction resumed in 2001, "the building appears operational."

So the misleading statement about African uranium is not an isolated issue. There is a significant amount of troubling evidence that it was part of a pattern of exaggeration and misleading statements. That is what a thorough, open and bipartisan investigation should examine.

Finally, Mr. President, again relative to the uranium statement, I am deeply troubled by Ms. Rice's continuing justification of the use of the statement in the President's State of the Union address. She repeatedly says it was "accurate," despite the fact that its clear aim was to create a false impression. Her statement and Director Tenet's statement raise more questions than they answer. Here are some of those questions:

1. Who in the Administration was pressing the CIA to concur in a statement that the CIA did not believe was true, and why did they do so even after the CIA objected to the text?

2. Who at the CIA was involved in pressing the White House to remove the similar reference from the October 7th speech, and what reasons did they givefor removing it?

3. Who in the White House was involved in removing a similar reference from the President's speech on October 7th, nearly four months before the State of the Union speech?

4. Who at the CIA knew about the decision to tell the British intelligence service in September, 2002 of CIA's "reservations" about the inclusion of references to Iraqi efforts to obtain uranium from Africa in the British intelligence service's September 24 dossier?

5. Given the doubts of the U.S. Intelligence Community, why didn't the President say in his State of the Union speech not only that "The British government has learned that Saddam Hussein recently sought significant quantities of uranium from Africa," but that "our U.S. Intelligence Community has serious doubts about such reporting"?

6. How and when did the US government receive the forged documents on Niger, and when did it become aware that they might be bogus?

7. What role did the Office of the Vice President have in bringing about an inquiry into Iraq's purported efforts to obtain uranium from Africa? Was the Vice President's staff briefed on the results of Ambassador Wilson's trip to Africa?

> These and many other questions underscore the critical importance of a thorough, open and bipartisan inquiry into the objectivity and credibility of intelligence concerning the presence of weapons of mass destruction in Iraq immediately before the war and the alleged Iraq-al Qaeda connection, and the use of such intelligence by the Department of Defense in policy decisions, military planning and the conduct of operations in Iraq.

Like many similar speeches by members of the Australian and British Parliaments, Senator Levin's speech clearly had the motive of politicizing the politicization of intelligence. Both the issues and questions that Senator Levin raised were valid, however, even if they did focus on politics rather than the problems in intelligence analysis and capability. They also illustrate the "backlash" effect that is almost inevitable when short-term political priorities ignore long-term consequences.

In Britain, much of the political character of what was said came as the result of more direct interference in the reporting of the British intelligence community by the Prime Minister's office, and particularly by Alastair Campbell and other special advisors to the Prime Minister who sought to create the strongest possible political case. A report by the House of Commons Foreign Affairs Committee noted enough problems in the way the British estimate of Iraqi capabilities were generated to call it the "dodgy dossier." [21]

The report cleared Campbell of a direct role in British claims that Iraq could use weapons of mass destruction with only 45 minutes notice, but noted deep concerns about the fact this claim was ever made and the way in which the British government made and defended claims relating to Iraq's attempts to purchase Uranium ore. It also noted that Alastair Campbell chaired intelligence meetings for which he had no background or qualifications, and that placing the review of the data under Campbell and the Iraqi Communications Group he chaired, and the Coalition Information Centre, "were contributory factors to the affair of the 'dodgy dossier'." [22]

The British reporting on the Iraqi threat presented further problems because the intelligence report presented by the British government copied text from the work of a graduate student.[23] The House of Commons Foreign Affairs Committee report stated that we, "conclude that it is wholly unacceptable for the Government to plagiarize work without attribution and to amend it without either highlighting the amendments or gaining the assent of the original author." [24]

Moreover, a detailed comparisons of the British and CIA reports shows that the British document often implied that intelligence had more certainty than the US document, although both governments shared virtually the same intelligence. It is clear from the investigation by the British parliament that this was partly because the British report had a much heavier degree of editing by the Prime Minister's office.

In general, political spin artists and public relations experts have zero background in the details of intelligence, and are among the last people who can ensure the credibility of the product. This is a lesson confirmed by less serious problems in the speeches on the subject by President Bush, Secretary Powell, National Security Advisor Rice, and Deputy Secretary Wolfowitz.

The Need for Rapid and Reliable Characterization of Chemical and Biological Agents and the Coalition Intelligence Effort

The problems in the intelligence efforts of the United States and other Coalition members affected warfighting as well as the politics of the war. Despite all of the advances in IS&R capabilities, and despite more than a decade of additional intelligence collection and targeting experience, the United States and its allies were just as unable to characterize and target Iraq's capabilities to use, produce, and deliver weapons of mass destruction during military operations as they had been during Desert Storm and Desert Fox. If anything, the United States was more successful in the Gulf War, although many of its limited successes during that war were more the accidental result of hitting secondary targets than the product of intelligence analysis and military planning.

Each of the military services had to plan before and throughout the Iraq War for the risk that Iraq would use weapons of mass destruction. General John P. Abizaid, General Franks' deputy during the war and the new commander of USCENTCOM, described the situation as follows to the Senate Armed Services Committee:[25]

> Intelligence was the most accurate I've ever seen on the tactical level, probably the best I've ever seen on the operational level, and perplexingly incomplete on the strategic level with regard to weapons of mass destruction. It is perplexing to me…that we have no found weapons of mass destruction, when the evidence was so pervasive that it would exist…I can't offer a reasonable explanation.…

Lt. Gen. James Conway, commander, First Marine Expeditionary Force describes the problems created by such uncertainties as follows:[26]

> …we were… not hit with weapons of mass destruction—I think we had four triggers that we were prepared to defend ourselves against—different times when we thought that the regime might try to employ the weapons of mass destruction against us. And we truly thought that they were distributed—not to everybody, not to the regular army divisions that we saw in the south. But my personal belief was that they probably did reside in the Republican Guard units, and we encountered, arguably, three, maybe four, Republican Guard divisions on the way to Baghdad. But my personal belief was that the Republican Guard corps commander probably had release authority, and that we might well see them when we started to encounter his force or enter his area.
>
> It was a surprise to me then, it remains a surprise to me now, that we have not uncovered weapons, as you say, in some of the forward dispersal sites. Again, believe me, it's not for lack of trying. We've been to virtually every ammunition supply point between the Kuwaiti border and Baghdad, but they're simply not there. Now, what that means in terms of intelligence failure, I think, is too strong a word to use at this point. What the regime was intending to do in terms of its use of the weapons, we thought we understood or we certainly had our best guess, our most dangerous, our most likely courses of action that the intelligence folks were giving us. We were simply wrong. But whether or not we're wrong at the national level, I think, still very much remains to be seen.

It is important to note that from an operational point of view, no commander could know whether weapons of mass destruction could or would be used until the end of the war. There were many cases where units had to use protective gear, and the speed of maneuver involved significant potential risk in the face of any sudden Iraqi escalation to the use of such weapons.

In many cases, more sophisticated and quicker reacting detectors and grids could have reduced the strain on U.S. and British forces. It is also clear from the results of the search

for weapons of mass destruction during and after the war that **current** field equipment cannot rapidly and accurately characterize some chemical and biological threats and can produce serious false alarms. In case after case, units encountering suspect facilities and weapons produced a false positive finding that could be disproved only after further testing in the rear.

Problems also still exist in using protection suits in combat. While reporting to date is anecdotal, several field reports indicate the equipment produced significant fatigue and interfered in operations. One typical field report states:

> We had guys tripping over their floppy MOPP boots trying to attack trench lines. One guy tripped, fell into a trench, and found himself fighting with a Republican Guardsman. Shot him in the head, by the way, and then took his MOPP boots off and tossed them out of frustration. Regardless of what people say, you can't do fire and movement effectively in the shit for extended periods.

This point is further illustrated in the report on the lessons of the war by the commanding general of the 1 Marine Division:[27]

> During the planning phase for offensive operations in Iraq, it became apparent that the Division had insufficient decontamination capability to free us from contamination without siphoning off combat capability. The doctrine for NBC decontamination states that the NBC section needs augmentation from combat engineers, motor transport, and other Division elements. We assigned this task to 3rd AA Battalion along with the additional task of traffic management control. The Division NBC Platoon augmented the battalion to provide expertise and support. Decontamination sites were placed by water sources because the Division does not have the organic capability to transport the volume of water necessary to conduct decontamination operations.
>
> Recommendation: … Adopt the doctrinal roles of operational decontamination and traffic management and control. The Division possesses a more robust capability, in both personnel and equipment, to achieve the ability to conduct decontamination at the rate of one company per hour. CSS assets should be tasked with providing the water for the decontamination site to keep the location independent of local water sources.

Assessing proliferation is not simply an intelligence or policy problem, it is an operational problem. The greater the uncertainty, the greater the operational dilemma in choosing between protective and defensive measures and in maintaining the tempo and focus of combat. If the Iraq War provides a lesson in this area, it is that the United States and its allies have no reliable way as yet to reduce this dilemma, reduce the risks involved, or reliably deal with this aspect of asymmetric warfare.

Organized Searches for Weapons of Mass Destruction in Proliferating Countries: The Search During and After the War

The Iraq War provides important lessons about the need to search for possible weapons of mass destruction and sensitive facilities during a war, and the need to secure such facilities as soon as possible. The United States did carry out an ongoing effort to find and secure Iraqi weapons of mass destruction and related facilities as it advanced into Iraq. But this effort had limited manning and uncertain intelligence support, and could provide only limited coverage. The United States lacked an effective plan and coordinated effort to secure Iraq's WMD and missile facilities as U.S. forces advanced, and some—including nuclear facilities—were looted as a result.

The United States was so convinced that it would find large stocks of Iraqi weapons and/or major ongoing proliferation efforts that it failed to formulate a clear strategy for

dealing with the almost inevitable charges that it would conceal the facts. It was similarly unprepared for challenges in the UN over the lifting of sanctions[28]

The initial mix of biologists, chemists, nuclear experts, arms control experts, computer and document experts, and special forces troops put together by the United States to search for Iraq's weapons of mass destruction and delivery systems was tailored around the case that Saddam had deployed WMD and had given his commanders authority to use them under certain circumstances.[29] It did not really have the scale, expertise, or language skills to deal with other types of Iraqi proliferation activity—such as covert research and development efforts, tracking down complex patterns of illegal imports, locating and interviewing scientists, searching out concealed and dispersed facilities, and analyzing possible destruction sites.

The United States made little preparation for conducting a timely disarmament and inspection effort with a credible audit trail. It relied on U.S. teams operating without international support and observers. It did not aggressively seek to include the UN. The inclusion of UNMOVIC and the IAEA would certainly have created political problems, but the United States does not seem to have been sensitive to the need to create teams that would have a high degree of international credibility.[30]

The Initial Search Effort

During the war, the U.S. military tasked various elements of Special Forces and other units to search for weapons of mass destruction as U.S. forces advanced into Iraq. The overall level of equipment and training was limited, however, and many units overreacted to suspected sites and failed to properly characterize the weapons, equipment, facilities, and substances they found.[31] Task Force 20, the U.S. Army Special Forces team that had a key mission in this search, was deployed in March, evidently before the actual fighting began. However, the team in Task Force 20 was relatively small and had the much broader mission of looking for key figures in the Iraqi leadership. Similar problems in resources and mission focus affected many of the other special purpose teams involved.[32]

The main initial U.S. effort was conducted by a 600-person group called the 75th Exploitation Task Force. It was supported by the 513th military intelligence brigade and a smaller effort sent in by the Defense Threat Reduction Agency. These specialists spent most of their time at first going through known facilities slowly and by the numbers. They focused on the facilities most likely to have been vacated months earlier because they were known to be targets both for UNMOVIC and U.S. military action. But they failed to ensure that the United States secured key declared facilities like the nuclear facilities subject to IAEA inspection. [33]

There are conflicting reports about the pace of the initial search effort. One source reports that as of early May, the United States "had secured only 44 of the 85 top potential weapons sites in the Baghdad area and 153 of the 372 considered most important to rebuilding Iraq's government and economy."[34] Another states that the U.S. inspections teams had visited 19 top weapons sites, with two left for investigation, and that they had surveyed another 45 out of 68 top "non-WMD sites"—sites without known links to weapons of mass destruction, but suspect as potential sites.[35] In still another report, the 75th Exploitation Task Force was reported to have visited some 300 facilities by the end of May.[36] The true scale of the targeting and search problem may best be indicated by the

fact that Stephen A. Cambone, the under secretary of defense for intelligence, announced on May 30 that only 70 of roughly 600 potential weapons facilities on an "integrated master site list" prepared by U.S. intelligence agencies before the war had been examined.[37]

Expanding the Effort and Creating the Iraq Survey Group (ISG)

As time went on, the growing political and military problems created by the lack of an effective wartime and early postwar search effort forced the United States to greatly expand its search team and give it far more capability. In late May, the United States announced it would supplement the 75th Exploitation Task Force with a much larger Iraq Survey Group (ISG) that included elements from the U.S., British, and Australian intelligence communities. The search effort expanded to the point where the ISG was manned by between 1,300 and 1,400 people from the U.S. government and from the United Kingdom and Australia.

The way the United States initially approached the postwar effort to survey Iraq's weapons of mass destruction, and the reasons for creating the ISG, are described as follows in a Department of Defense briefing on May 7, 2003:[38]

> The command, USCENTCOM, has a command inside of Iraq known as the Coalition Land Component Commander—Coalition Forces Land Component Commander or CFLCC...And each day, within that organization in what they have as their operation center, which is known as the C3, they sit down and work through their priorities. That priority list itself has been pulled together as a consequence of information that we had going into the conflict of sites that we thought important. As you know, there are some thousand sites that we identified; those sites included not just weapons of mass destruction sites, but also prisoner of war—prisoner camps—prisons, rather, prisoner of war locations, terrorist camps and facilities, as well as regime and leadership targets. So there are some thousand of them, roughly, of which about half are related to weapons of mass destruction..
>
> ...As it stands now, we have been to about 70 sites that we were looking to cover. Now, what's interesting about that is that those are the 70 sites that were on the list when we started. Since then, we have been to about another 40 which have come to light as a consequence of this process that I have been describing to you here. And the way this works is with respect to a WMD site in particular, once it's been identified, there is a survey team, which may have been there already, having come up with the troops as they came through the countryside, or sent out in advance. And they will go to the site, they will do a survey and determine whether or not it's important for more advanced units to come in and take a look at what's there. So, it's a site survey team. And so their job is done.
>
> Next would come in a mobile exploitation team, an MET, as they're being called, which would do a much more thorough assessment of the site and also inspect any additional sites that USCENTCOM might have recommended.
>
> And then, to the extent you need disablement of a facility or a capability in the site, there are disablement teams that are sent out to disarm, or render safe or destroy those—any delivery systems, weapons, agents or facilities that might be found.
>
> Now, the organization that currently is assigned this mission is...known as the 75th Group. It is assigned this discovery and exploitation mission. It, in turn, is supported by a military intelligence brigade, the 513th. These units have been, by the by, in theater for a very long period of time.
>
> The expertise within the 75th Group extends across some 600 people, and they are distributed across interrogators, interviewers, people who do the document exploitations, the material exploitation and the analysts; that is, the people who each day sort of come together, take the information that's come on board and try then to make recommendations about what might be

> done next. The expertise within the group is made up of people from the Central Intelligence Agency, the Defense Intelligence Agency, from the individual services, from DTRA, the Defense Threat Reduction Agency, the FBI, and then there are coalition partners who, themselves, are part of this ongoing effort.
>
> That group, the 75th, will soon, toward the end of this month, begin to have an augmentation take place, and that will be done under the auspices of what we're calling the Iraq Survey Group. That group will be headed by a two-star general, a major general, Keith Dayton, who, as it turns out, is a member of Admiral Jacoby's staff. He will take the lead for the discovery and the exploitation that we have been talking about. And in particular, its mission is to discover, take custody of, exploit and disseminate information on individuals, records, materials, facilities, networks and operations as appropriate relative to individuals associated with the regime, weapons of mass destruction, terrorists and terrorist ties and their organizations, information having to do with the Iraqi Intelligence, Security and Overseas Services, and those accused of war crimes and crimes against humanity, and POWs. So it's a very large undertaking of which the weapons of mass destruction effort is a part in an important part of that effort, but only a part.
>
> The organization will pretty much double or triple in size. There'll be some 1,300 experts who will be associated with this organization, plus another support element of maybe another 800. So you're talking about 2,000 people, more or less, who will begin arriving with the lead elements of the command starting toward the end of this month and the expertise, again, from the organizations I described a moment ago and will include, as well, people from Treasury, some of whom are already in theater, by the way, as well as U.S. citizens who had been in the past UNSCOM inspectors, some other contractors, and again, our coalition partners.
>
> Now, that effort is going to be supported by a fusion cell that is being constructed here in Washington, again under the executive agency of the Defense Intelligence Agency. It is made up of experts from around the United States government. And they receive information from the 75th Group now, and they will receive it from the ISG as it stands up. And their job is going to be to do that kind of in-depth analysis that's necessary in order to make this a successful effort over time.
>
> ...When one comes across a site where we think that we need to be taking samples, for example, there are roughly four sets of samples taken, one for processing in-theater, two are sent here to the United States, and another one is sent to a non-U.S. laboratory for independent analysis and the verification of the results of those tests. And there is a very strict chain of custody process that is put in place to assure that those samples are not tampered with either in the theater, in transit, when they're in the laboratories, or when the results come back to us here. That's all supplemented, then, as I said a moment ago, by interviewing the personnel who we think are involved. I made mention to you that the subordinate scientists as well as the lead scientists are being interviewed. The regime figures are interviewed. We go through the documents and so forth. And then, if we find we've got to dispose of materials, we do so in a way that is safe for all concerned.

Conversion to a Forensic Search Effort

Somewhat ironically, the Coalition's search for Iraqi weapons of mass destruction was forced to take on much of the character of the previous UNMOVIC effort. It had had to shift from a search for warfighting capability to a much more forensic effort to search through Iraqi records and facilities, a task greatly complicated by its inability to safeguard many key facilities from looting.

Douglas Feith, the under secretary of defense for policy, and Lt. General Norman Schwartz, director of operations of the Joint Staff, testified to the House International Relations Committee in May 2003 that the Bush administration now estimated that the process of determining Iraq's true level of proliferation could take years, and that no new chemical and biological weapons had yet been found.[39] Moreover, the United States was forced to allow the International Atomic Energy Agency to resume its inspection efforts.[40]

In late June, U.S. officials were talking about the need to go through tons of documents, They noted that the United States had taken custody of only 69 of some 255 top Iraqi officials who might know something about Iraq's WMD effort, and only 7 of some 3,152 lower-ranking officials. They also stated that the United States had conducted meaningful inspections of 157 of 578 suspect sites.[41]

As of November 2003, David Kay had made some discoveries, but none that indicated Iraqi had any meaningful war fighting capability to use CBRN weapons are the time the US and British-led coalition attacked. In a discussion in Baghdad, David Kay made the following points:

General:

-- Iraq was actively violating accords during later 1999-2003.

-- Tariq Aziz unreliable but said that Saddam became convinced could renew missile programs without provoking attack as long as did not matter to WMD warheads.

Missile Efforts:

--Were serious new Iraqi missile efforts:

--Two liquid fuel efforts with 1,000 KM range.

--Two solid fuel efforts with 1,000 KM range.

--Converting SAM with 250 KM range even while UNMOVIC in action.

--Converting Silkworm anti-ship missiles to land attack missiles in two forms. Converted 11 to land attack missile and fired one at Kuwait; Worked on another version using a new Soviet engine to push range to 1,000 KM.

Chemical Weapons:

--No evidence of weapons production.

--Could do Sarin in two years and Mustard in two months. Were trying to synthesize key chemical to stabilize VX for further production. Ironically, troop interviews indicate most Iraqi commanders thought other units did have chemical weapons. Still looking for chemical weapons in areas like Special Republican Guard areas.

--Found some strange things. For example, a 10,000 pound Soviet bunker buster that no Iraqi aircraft could lift and deliver.

--More detail on North Korean relations with Iraq. Paid for 1,300 KM No Dong type technology, with $10 million down. Refused to refund when could not deliver because of US pressure, but have recently found later negotiations to buy whole missiles.

Biological Weapons:

--Still search for data on biological warhead design. Situation is complicated by shift of bio program from Al Hakim to Tuwiatha in 96, which fooled the UN because Tuwaitha was seen as a nuclear sight at looked at by IAEA and not UNSCOM.

--Located under cover of new agricultural facility.

--Made two generations of advances in developing dry storable power forms of Botulinum Toxin and could have applied to Anthrax. Major progress in weapons design.

Nuclear Weapons:

--Kay said people still misunderstand the aluminum tube issue. Never able to track overall progress in centrifuge design after 1991. Knew Iraq used aluminum tubes for rockets, but Iraq steadily upgraded specifications after 1999 for tubes that were never delivered but could be used for centrifuges. Said government that opposed war (Germany or France) blocked the shipment and warned US could be used for centrifuges.

--Did order nuclear equipment from 1999 on, but no evidence of new major facility to use it. Some real problems because one key research facility was found with all servers burnet out. Only now beginning to read.

--Are getting better cooperation from Iraqi scientists, particularly in biological area. Many talking are not in detention. Some in detention are. Have names of 12 biological weapons scientists working under Taha.

--No evidence of any Iraqi effort to transfer weapons of mass destruction technology or weapons to terrorists. Only possibility was Saddam's Fedayeen, and talk only.

--Feel did seek to use Aflatoxin as a genocide weapon against Iranians and Kurds. Slow, untraceable killer. Feels tried to weaponize Ricen as more than assassination weapon because did not realize US and Russia have tried and failed.

--Kay denied reports of major transfer of his team to other missions. Said they simply did not have the expertise to take over in counterterrorism effort. Have 50 WMD case officers not useful for CT. Same true of 100 experts. 300 translators now trained to work WMD documents, not CT.

--Noted that efforts to use keywords for WMD analysis failed. Experts and translators must work together on entire document. Must rethink this aspect of intelligence analysis. Keywords are not adequate to deal with complex technical issues.

In October 2003, David Key made an interim report to the House Permanent Selection Committee on Intelligence. This report is interesting for several reasons. It lists some of the practical problems in analyzing proliferation that affect both intelligence and inspection. It shows that the ISG did not find the active military capabilities and weapons that the US and Britain expected to find. And finally, it also shows that the ISG did find that Iraq actively continued to proliferation at the procurement and research and development levels:[42]

We have not yet found stocks of weapons, but we are not yet at the point where we can say definitively either that such weapon stocks do not exist or that they existed before the war and our only task is to find where they have gone. We are actively engaged in searching for such weapons based on information being supplied to us by Iraqis.

Why are we having such difficulty in finding weapons or in reaching a confident conclusion that they do not exist or that they once existed but have been removed? Our search efforts are being hindered by six principal factors:

1. From birth all of Iraq's WMD activities were highly compartmentalized within a regime that ruled and kept its secrets through fear and terror and with deception and denial built into each program;

2. Deliberate dispersal and destruction of material and documentation related to weapons programs began pre-conflict and ran trans-to-post conflict;

3. Post-OIF looting destroyed or dispersed important and easily collectable material and forensic evidence concerning Iraq's WMD program. As the report covers in detail, significant elements of this looting were carried out in a systematic and deliberate manner, with the clear aim of concealing pre-OIF activities of Saddam's regime;

4. Some WMD personnel crossed borders in the pre/trans conflict period and may have taken evidence and even weapons-related materials with them;

5. Any actual WMD weapons or material is likely to be small in relation to the total conventional armaments footprint and difficult to near impossible to identify with normal search procedures. It is important to keep in mind that even the bulkiest materials we are searching for, in the quantities we would expect to find, can be concealed in spaces not much larger than a two car garage;

6. The environment in Iraq remains far from permissive for our activities, with many Iraqis that we talk to reporting threats and overt acts of intimidation and our own personnel being the subject of threats and attacks. In September alone we have had three attacks on ISG facilities or teams: The ISG base in Irbil was bombed and four staff injured, two very seriously; a two person team had their vehicle blocked by gunmen and only escaped by firing back through their own windshield; and on Wednesday, 24 September, the ISG Headquarters in Baghdad again was subject to mortar attack.

What have we found and what have we not found in the first 3 months of our work?

We have discovered dozens of WMD-related program activities and significant amounts of equipment that Iraq concealed from the United Nations during the inspections that began in late 2002. The discovery of these deliberate concealment efforts have come about both through the admissions of Iraqi scientists and officials concerning information they deliberately withheld and through physical evidence of equipment and activities that ISG has discovered that should have been declared to the UN. Let me just give you a few examples of these concealment efforts, some of which I will elaborate on later:

* A clandestine network of laboratories and safehouses within the Iraqi Intelligence Service that contained equipment subject to UN monitoring and suitable for continuing CBW research.

* A prison laboratory complex, possibly used in human testing of BW agents, that Iraqi officials working to prepare for UN inspections were explicitly ordered not to declare to the UN.

* Reference strains of biological organisms concealed in a scientist's home, one of which can be used to produce biological weapons.

* New research on BW-applicable agents, Brucella and Congo Crimean Hemorrhagic Fever (CCHF), and continuing work on ricin and aflatoxin were not declared to the UN.

* Documents and equipment, hidden in scientists' homes, that would have been useful in resuming uranium enrichment by centrifuge and electromagnetic isotope separation (EMIS).

* A line of UAVs not fully declared at an undeclared production facility and an admission that they had tested one of their declared UAVs out to a range of 500 km, 350 km beyond the permissible limit.

* Continuing covert capability to manufacture fuel propellant useful only for prohibited SCUD variant missiles, a capability that was maintained at least until the end of 2001 and that cooperating Iraqi scientists have said they were told to conceal from the UN.

* Plans and advanced design work for new long-range missiles with ranges up to at least 1000 km - well beyond the 150 km range limit imposed by the UN. Missiles of a 1000 km range would

have allowed Iraq to threaten targets through out the Middle East, including Ankara, Cairo, and Abu Dhabi.

* Clandestine attempts between late-1999 and 2002 to obtain from North Korea technology related to 1,300 km range ballistic missiles --probably the No Dong -- 300 km range anti-ship cruise missiles, and other prohibited military equipment.

In addition to the discovery of extensive concealment efforts, we have been faced with a systematic sanitization of documentary and computer evidence in a wide range of offices, laboratories, and companies suspected of WMD work. The pattern of these efforts to erase evidence - hard drives destroyed, specific files burned, equipment cleaned of all traces of use - are ones of deliberate, rather than random, acts. For example,

* On 10 July 2003 an ISG team exploited the Revolutionary Command Council (RCC) Headquarters in Baghdad. The basement of the main building contained an archive of documents situated on well-organized rows of metal shelving. The basement suffered no fire damage despite the total destruction of the upper floors from coalition air strikes. Upon arrival the exploitation team encountered small piles of ash where individual documents or binders of documents were intentionally destroyed. Computer hard drives had been deliberately destroyed. Computers would have had financial value to a random looter; their destruction, rather than removal for resale or reuse, indicates a targeted effort to prevent Coalition forces from gaining access to their contents.

* All IIS laboratories visited by IIS exploitation teams have been clearly sanitized, including removal of much equipment, shredding and burning of documents, and even the removal of nameplates from office doors.

* Although much of the deliberate destruction and sanitization of documents and records probably occurred during the height of OIF combat operations, indications of significant continuing destruction efforts have been found after the end of major combat operations, including entry in May 2003 of the locked gated vaults of the Ba'ath party intelligence building in Baghdad and highly selective destruction of computer hard drives and data storage equipment along with the burning of a small number of specific binders that appear to have contained financial and intelligence records, and in July 2003 a site exploitation team at the Abu Ghurayb Prison found one pile of the smoldering ashes from documents that was still warm to the touch.

I would now like to review our efforts in each of the major lines of enquiry that ISG has pursued during this initial phase of its work.

With regard to biological warfare activities, which has been one of our two initial areas of focus, ISG teams are uncovering significant information - including research and development of BW-applicable organisms, the involvement of Iraqi Intelligence Service (IIS) in possible BW activities, and deliberate concealment activities. All of this suggests Iraq after 1996 further compartmentalized its program and focused on maintaining smaller, covert capabilities that could be activated quickly to surge the production of BW agents.

Debriefings of IIS officials and site visits have begun to unravel a clandestine network of laboratories and facilities within the security service apparatus. This network was never declared to the UN and was previously unknown. We are still working on determining the extent to which this network was tied to large-scale military efforts or BW terror weapons, but this clandestine capability was suitable for preserving BW expertise, BW capable facilities and continuing R&D - all key elements for maintaining a capability for resuming BW production. The IIS also played a prominent role in sponsoring students for overseas graduate studies in the biological sciences, according to Iraqi scientists and IIS sources, providing an important avenue for furthering BW-applicable research. This was the only area of graduate work that the IIS appeared to sponsor.

Discussions with Iraqi scientists uncovered agent R&D work that paired overt work with nonpathogenic organisms serving as surrogates for prohibited investigation with pathogenic agents. Examples include: B. Thurengiensis (Bt) with B. anthracis (anthrax), and medicinal plants with ricin. In a similar vein, two key former BW scientists, confirmed that Iraq under the guise of legitimate activity developed refinements of processes and products relevant to BW agents. The scientists

discussed the development of improved, simplified fermentation and spray drying capabilities for the simulant Bt that would have been directly applicable to anthrax, and one scientist confirmed that the production line for Bt could be switched to produce anthrax in one week if the seed stock were available.

A very large body of information has been developed through debriefings, site visits, and exploitation of captured Iraqi documents that confirms that Iraq concealed equipment and materials from UN inspectors when they returned in 2002. One noteworthy example is a collection of reference strains that ought to have been declared to the UN. Among them was a vial of live C. botulinum Okra B. from which a biological agent can be produced. This discovery - hidden in the home of a BW scientist - illustrates the point I made earlier about the difficulty of locating small stocks of material that can be used to covertly surge production of deadly weapons. The scientist who concealed the vials containing this agent has identified a large cache of agents that he was asked, but refused, to conceal. ISG is actively searching for this second cache.

Additional information is beginning to corroborate reporting since 1996 about human testing activities using chemical and biological substances, but progress in this area is slow given the concern of knowledgeable Iraqi personnel about their being prosecuted for crimes against humanity.

We have not yet been able to corroborate the existence of a mobile BW production effort. Investigation into the origin of and intended use for the two trailers found in northern Iraq in April has yielded a number of explanations, including hydrogen, missile propellant, and BW production, but technical limitations would prevent any of these processes from being ideally suited to these trailers. That said, nothing we have discovered rules out their potential use in BW production.

We have made significant progress in identifying and locating individuals who were reportedly involved in a mobile program, and we are confident that we will be able to get an answer to the questions as to whether there was a mobile program and whether the trailers that have been discovered so far were part of such a program.

Let me turn now to chemical weapons (CW). In searching for retained stocks of chemical munitions, ISG has had to contend with the almost unbelievable scale of Iraq's conventional weapons armory, which dwarfs by orders of magnitude the physical size of any conceivable stock of chemical weapons. For example, there are approximately 130 known Iraqi Ammunition Storage Points (ASP), many of which exceed 50 square miles in size and hold an estimated 600,000 tons of artillery shells, rockets, aviation bombs and other ordinance. Of these 130 ASPs, approximately 120 still remain unexamined. As Iraqi practice was not to mark much of their chemical ordinance and to store it at the same ASPs that held conventional rounds, the size of the required search effort is enormous.

While searching for retained weapons, ISG teams have developed multiple sources that indicate that Iraq explored the possibility of CW production in recent years, possibly as late as 2003. When Saddam had asked a senior military official in either 2001 or 2002 how long it would take to produce new chemical agent and weapons, he told ISG that after he consulted with CW experts in OMI he responded it would take six months for mustard. Another senior Iraqi chemical weapons expert in responding to a request in mid-2002 from Uday Husayn for CW for the Fedayeen Saddam estimated that it would take two months to produce mustard and two years for Sarin.

We are starting to survey parts of Iraq's chemical industry to determine if suitable equipment and bulk chemicals were available for chemical weapons production. We have been struck that two senior Iraqi officials volunteered that if they had been ordered to resume CW production Iraq would have been willing to use stainless steel systems that would be disposed of after a few production runs, in place of corrosive-resistant equipment which they did not have.

We continue to follow leads on Iraq's acquisition of equipment and bulk precursors suitable for a CW program. Several possibilities have emerged and are now being exploited. One example involves a foreign company with offices in Baghdad, that imported in the past into Iraq dual-use equipment and maintained active contracts through 2002. Its Baghdad office was found looted in August 2003, but we are pursuing other locations and associates of the company.

Information obtained since OIF has identified several key areas in which Iraq may have engaged in proscribed or undeclared activity since 1991, including research on a possible VX stabilizer, research and development for CW-capable munitions, and procurement/concealment of dual-use materials and equipment.

Multiple sources with varied access and reliability have told ISG that Iraq did not have a large, ongoing, centrally controlled CW program after 1991. Information found to date suggests that Iraq's large-scale capability to develop, produce, and fill new CW munitions was reduced - if not entirely destroyed - during Operations Desert Storm and Desert Fox, 13 years of UN sanctions and UN inspections. We are carefully examining dual-use, commercial chemical facilities to determine whether these were used or planned as alternative production sites.

We have also acquired information related to Iraq's CW doctrine and Iraq's war plans for OIF, but we have not yet found evidence to confirm pre-war reporting that Iraqi military units were prepared to use CW against Coalition forces. Our efforts to collect and exploit intelligence on Iraq's chemical weapons program have thus far yielded little reliable information on post-1991 CW stocks and CW agent production, although we continue to receive and follow leads related to such stocks. We have multiple reports that Iraq retained CW munitions made prior to 1991, possibly including mustard - a long-lasting chemical agent - but we have to date been unable to locate any such munitions.

With regard to Iraq's nuclear program, the testimony we have obtained from Iraqi scientists and senior government officials should clear up any doubts about whether Saddam still wanted to obtain nuclear weapons. They have told ISG that Saddam Husayn remained firmly committed to acquiring nuclear weapons. These officials assert that Saddam would have resumed nuclear weapons development at some future point. Some indicated a resumption after Iraq was free of sanctions. At least one senior Iraqi official believed that by 2000 Saddam had run out of patience with waiting for sanctions to end and wanted to restart the nuclear program. The Iraqi Atomic Energy Commission (IAEC) beginning around 1999 expanded its laboratories and research activities and increased its overall funding levels. This expansion may have been in initial preparation for renewed nuclear weapons research, although documentary evidence of this has not been found, and this is the subject of continuing investigation by ISG.

Starting around 2000, the senior Iraqi Atomic Energy Commission (IAEC) and high-level Ba'ath Party official Dr. Khalid Ibrahim Sa'id began several small and relatively unsophisticated research initiatives that could be applied to nuclear weapons development. These initiatives did not in-and-of themselves constitute a resumption of the nuclear weapons program, but could have been useful in developing a weapons-relevant science base for the long-term. We do not yet have information indicating whether a higher government authority directed Sa'id to initiate this research and, regretfully, Dr. Said was killed on April 8th during the fall of Baghdad when the car he was riding in attempted to run a Coalition roadblock.

Despite evidence of Saddam's continued ambition to acquire nuclear weapons, to date we have not uncovered evidence that Iraq undertook significant post-1998 steps to actually build nuclear weapons or produce fissile material. However, Iraq did take steps to preserve some technological capability from the pre-1991 nuclear weapons program.

* According to documents and testimony of Iraqi scientists, some of the key technical groups from the pre-1991 nuclear weapons program remained largely intact, performing work on nuclear-relevant dual-use technologies within the Military Industrial Commission (MIC). Some scientists from the pre-1991 nuclear weapons program have told ISG that they believed that these working groups were preserved in order to allow a reconstitution of the nuclear weapons program, but none of the scientists could produce official orders or plans to support their belief.

* In some cases, these groups performed work which could help preserve the science base and core skills that would be needed for any future fissile material production or nuclear weapons development.

* Several scientists - at the direction of senior Iraqi government officials - preserved documents and equipment from their pre-1991 nuclear weapon-related research and did not reveal this to the UN/IAEA. One Iraqi scientist recently stated in an interview with ISG that it was a "common

understanding" among the scientists that material was being preserved for reconstitution of nuclear weapons-related work.

The ISG nuclear team has found indications that there was interest, beginning in 2002, in reconstituting a centrifuge enrichment program. Most of this activity centered on activities of Dr. Sa'id that caused some of his former colleagues in the pre-1991 nuclear program to suspect that Dr. Sa'id, at least, was considering a restart of the centrifuge program. We do not yet fully understand Iraqi intentions, and the evidence does not tie any activity directly to centrifuge research or development.

Exploitation of additional documents may shed light on the projects and program plans of Dr. Khalid Ibrahim Sa'id. There may be more projects to be discovered in research placed at universities and private companies. Iraqi interest in reconstitution of a uranium enrichment program needs to be better understood through the analysis of procurement records and additional interviews.

With regard to delivery systems, the ISG team has discovered sufficient evidence to date to conclude that the Iraqi regime was committed to delivery system improvements that would have, if OIF had not occurred, dramatically breached UN restrictions placed on Iraq after the 1991 Gulf War.

Detainees and co-operative sources indicate that beginning in 2000 Saddam ordered the development of ballistic missiles with ranges of at least 400km and up to 1000km and that measures to conceal these projects from UNMOVIC were initiated in late-2002, ahead of the arrival of inspectors. Work was also underway for a clustered engine liquid propellant missile, and it appears the work had progressed to a point to support initial prototype production of some parts and assemblies. According to a cooperating senior detainee, Saddam concluded that the proposals from both the liquid-propellant and solid-propellant missile design centers would take too long. For instance, the liquid-propellant missile project team forecast first delivery in six years. Saddam countered in 2000 that he wanted the missile designed and built inside of six months. On the other hand several sources contend that Saddam's range requirements for the missiles grew from 400-500km in 2000 to 600-1000km in 2002.

ISG has gathered testimony from missile designers at Al Kindi State Company that Iraq has reinitiated work on converting SA-2 Surface-to-Air Missiles into ballistic missiles with a range goal of about 250km. Engineering work was reportedly underway in early 2003, despite the presence of UNMOVIC. This program was not declared to the UN. ISG is presently seeking additional confirmation and details on this project. A second cooperative source has stated that the program actually began in 2001, but that it received added impetus in the run-up to OIF, and that missiles from this project were transferred to a facility north of Baghdad. This source also provided documentary evidence of instructions to convert SA-2s into surface-to-surface missiles.

ISG has obtained testimony from both detainees and cooperative sources that indicate that proscribed-range solid-propellant missile design studies were initiated, or already underway, at the time when work on the clustered liquid-propellant missile designs began. The motor diameter was to be 800 to 1000mm, i.e. much greater than the 500-mm Ababil-100. The range goals cited for this system vary from over 400km up to 1000km, depending on the source and the payload mass.

A cooperative source, involved in the 2001-2002 deliberations on the long-range solid propellant project, provided ISG with a set of concept designs for a launcher designed to accommodate a 1m diameter by 9m length missile. The limited detail in the drawings suggest there was some way to go before launcher fabrication. The source believes that these drawings would not have been requested until the missile progress was relatively advanced, normally beyond the design state. The drawing are in CAD format, with files dated 09/01/02.

While we have obtained enough information to make us confident that this design effort was underway, we are not yet confident which accounts of the timeline and project progress are accurate and are now seeking to better understand this program and its actual progress at the time of OIF.

One cooperative source has said that he suspected that the new large-diameter solid-propellant missile was intended to have a CW-filled warhead, but no detainee has admitted any actual knowledge of plans for unconventional warheads for any current or planned ballistic missile. The suspicion expressed by the one source about a CW warhead was based on his assessment of the unavailability of nuclear warheads and potential survivability problems of biological warfare agent in ballistic missile

warheads. This is an area of great interest and we are seeking additional information on warhead designs.

While I have spoken so far of planned missile systems, one high-level detainee has recently claimed that Iraq retained a small quantity of Scud-variant missiles until at least 2001, although he subsequently recanted these claims, work continues to determine the truth. Two other sources contend that Iraq continued to produce until 2001 liquid fuel and oxidizer specific to Scud-type systems. The cooperating source claims that the al Tariq Factory was used to manufacture Scud oxidizer (IRFNA) from 1996 to 2001, and that nitrogen tetroxide, a chief ingredient of IRFNA was collected from a bleed port on the production equipment, was reserved, and then mixed with highly concentrated nitric acid plus an inhibitor to produce Scud oxidizer. Iraq never declared its pre-Gulf War capability to manufacture Scud IRFNA out of fear, multiple sources have stated, that the al Tariq Factory would be destroyed, leaving Baghdad without the ability to produce highly concentrated nitric acid, explosives and munitions. To date we have not discovered documentary or material evidence to corroborate these claims, but continued efforts are underway to clarify and confirm this information with additional Iraqi sources and to locate corroborating physical evidence. If we can confirm that the fuel was produced as late as 2001, and given that Scud fuel can only be used in Scud-variant missiles, we will have strong evidence that the missiles must have been retained until that date. This would, of course, be yet another example of a failure to declare prohibited activities to the UN.

Iraq was continuing to develop a variety of UAV platforms and maintained two UAV programs that were working in parallel, one at Ibn Fernas and one at al-Rashid Air Force Base. Ibn Fernas worked on the development of smaller, more traditional types of UAVs in addition to the conversion of manned aircraft into UAVs. This program was not declared to the UN until the 2002 CAFCD in which Iraq declared the RPV-20, RPV-30 and Pigeon RPV systems to the UN. All these systems had declared ranges of less than 150km. Several Iraqi officials stated that the RPV-20 flew over 500km on autopilot in 2002, contradicting Iraq's declaration on the system's range. The al-Rashid group was developing a competing line of UAVs. This program was never fully declared to the UN and is the subject of on-going work by ISG. Additional work is also focusing on the payloads and intended use for these UAVs. Surveillance and use as decoys are uses mentioned by some of those interviewed. Given Iraq's interest before the Gulf War in attempting to convert a MIG-21 into an unmanned aerial vehicle to carry spray tanks capable of dispensing chemical or biological agents, attention is being paid to whether any of the newer generation of UAVs were intended to have a similar purpose. This remains an open question.

ISG has discovered evidence of two primary cruise missile programs. The first appears to have been successfully implemented, whereas the second had not yet reached maturity at the time of OIF.

The first involved upgrades to the HY-2 coastal-defense cruise missile. ISG has developed multiple sources of testimony, which is corroborated in part by a captured document, that Iraq undertook a program aimed at increasing the HY-2's range and permitting its use as a land-attack missile. These efforts extended the HY-2's range from its original 100km to 150-180km. Ten modified missiles were delivered to the military prior to OIF and two of these were fired from Umm Qasr during OIF - one was shot down and one hit Kuwait.

The second program, called the Jenin, was a much more ambitious effort to convert the HY-2 into a 1000km range land-attack cruise missile. The Jenin concept was presented to Saddam on 23 November 2001 and received what cooperative sources called an "unusually quick response" in little more than a week. The essence of the concept was to take an HY-2, strip it of its liquid rocket engine, and put in its place a turbine engine from a Russian helicopter - the TV-2-117 or TV3-117 from a Mi-8 or Mi-17helicopter. To prevent discovery by the UN, Iraq halted engine development and testing and disassembled the test stand in late 2002 before the design criteria had been met.

In addition to the activities detailed here on Iraq's attempts to develop delivery systems beyond the permitted UN 150km, ISG has also developed information on Iraqi attempts to purchase proscribed missiles and missile technology. Documents found by ISG describe a high level dialogue between Iraq and North Korea that began in December 1999 and included an October 2000 meeting in Baghdad. These documents indicate Iraqi interest in the transfer of technology for surface-to-surface missiles with a range of 1300km (probably No Dong) and land-to-sea missiles with a range of 300km. The

document quotes the North Koreans as understanding the limitations imposed by the UN, but being prepared "to cooperate with Iraq on the items it specified". At the time of OIF, these discussions had not led to any missiles being transferred to Iraq. A high level cooperating source has reported that in late 2002 at Saddam's behest a delegation of Iraqi officials was sent to meet with foreign export companies, including one that dealt with missiles. Iraq was interested in buying an advanced ballistic missile with 270km and 500km ranges.

The ISG has also identified a large volume of material and testimony by cooperating Iraq officials on Iraq's effort to illicitly procure parts and foreign assistance for its missile program. These include:

* Significant level of assistance from a foreign company and its network of affiliates in supplying and supporting the development of production capabilities for solid rocket propellant and dual-use chemicals.

* Entities from another foreign country were involved in supplying guidance and control systems for use in the Al-Fat'h (Ababil-100). The contract was incomplete by the time of OIF due to technical problems with the few systems delivered and a financial dispute.

* A group of foreign experts operating in a private capacity were helping to develop Iraq's liquid propellant ballistic missile RDT&E and production infrastructure. They worked in Baghdad for about three months in late 1998 and subsequently continued work on the project from abroad. An actual contract valued at $10 million for machinery and equipment was signed in June 2001, initially for 18 months, but later extended. This cooperation continued right up until the war.

* A different group of foreign experts traveled to Iraq in 1999 to conduct a technical review that resulted in what became the Al Samoud 2 design, and a contract was signed in 2001 for the provision of rigs, fixtures and control equipment for the redesigned missile.

* Detainees and cooperative sources have described the role of a foreign expert in negotiations on the development of Iraq's liquid and solid propellant production infrastructure. This could have had applications in existing and planned longer range systems, although it is reported that nothing had actually been implemented before OIF.

Uncertainty remains about the full extent of foreign assistance to Iraq's planned expansion of its missile systems and work is continuing to gain a full resolution of this issue. However, there is little doubt from the evidence already gathered that there was substantial illegal procurement for all aspects of the missile programs.

I have covered a lot of ground today, much of it highly technical. Although we are resisting drawing conclusions in this first interim report, a number of things have become clearer already as a result of our investigation, among them:

1. Saddam, at least as judged by those scientists and other insiders who worked in his military-industrial programs, had not given up his aspirations and intentions to continue to acquire weapons of mass destruction. Even those senior officials we have interviewed who claim no direct knowledge of any on-going prohibited activities readily acknowledge that Saddam intended to resume these programs whenever the external restrictions were removed. Several of these officials acknowledge receiving inquiries since 2000 from Saddam or his sons about how long it would take to either restart CW production or make available chemical weapons.

2. In the delivery systems area there were already well advanced, but undeclared, on-going activities that, if OIF had not intervened, would have resulted in the production of missiles with ranges at least up to 1000 km, well in excess of the UN permitted range of 150 km. These missile activities were supported by a serious clandestine procurement program about which we have much still to learn.

3. In the chemical and biological weapons area we have confidence that there were at a minimum clandestine on-going research and development activities that were embedded in the Iraqi Intelligence Service. While we have much yet to learn about the exact work programs and capabilities of these activities, it is already apparent that these undeclared activities would have at

> a minimum facilitated chemical and biological weapons activities and provided a technically trained cadre.

As of January 25, 2004, the ISG search effort still had not shown that any suspect site was a valid military target. It also had not found any valid evidence that a significant Iraqi capability to use weapons of mass destruction existed before the war, or that Iraq had any major imminent capability to produce such weapons. The only meaningful discoveries were buried plans and parts for a centrifuge design dating back to 1991 and what appeared to be two trailers designed to produce biological weapons.[43]

David Kay made the following statements on NPR's "Weekend Edition" in leaving his assignment at the ISG:

> "My summary view, based on what I've seen, is we're very unlikely to find large stockpiles of weapons…I don't think they exist.
>
> " Based on the intelligence that existed, I think it was reasonable to reach the conclusion that Iraq posed an imminent threat…We have to remember that this view of Iraq was held during the Clinton administration and didn't change in the Bush administration…. They're coming back to haunt me in the sense of why could we all be so wrong? ... It's an issue of the capabilities of one's intelligence service to collect valid, truthful information….I actually think the intelligence community owes the president rather than the president owing the American people. ..It is not a political 'gotcha' issue. It is a serious issue of 'How you can come to a conclusion that is not matched in the future?'"

It seems certain, given the results of the UNSCOM and UNMOVIC effort, that the United States will find more evidence of an ongoing WMD research and development program. But it is still far from clear what kind of Iraqi program and effort will emerge. The centrifuge discovery did nothing to shed significant light on recent Iraqi efforts.[44] The trailers once seemed to be a more significant discovery, and the CIA made a strong case to this effect. But experts within the U.S. intelligence community—particularly within the State Department—disputed whether the trailers were really being used for biological weapons purposes at the time, and they since seem to have been exactly what Iraqis claimed – hydrogen manufacturing facilities for weather balloons.[45] This again illustrates the inherent uncertainty surrounding estimates of proliferation and foreign WMD capabilities.

Looking Beyond Iraq

As has been mentioned earlier, Iraq is simply the case the world knows best – although scarcely all that well. Iran, Israel, Libya, North Korea, and Syria are all major proliferators where there is far more uncertainty than in Iraq. Moreover, India and Pakistan are nuclear powers where virtually all of the same uncertainties discussed under intelligence collection and analysis apply to existing forces.

Developments in Iran, Libya, North Korea, and the Sudan

The latest unclassified CIA assessment of these developments dates back to mid-2003, and precedes the Iranian and Libyan agreement to allow inspection. It also only covers those countries the US sees as relatively hostile. It does, however, provide a list of developments which both illustrate the continuing impact of proliferation, and which often bear a striking relation to the agency's prewar assessments of Iraq:[46]

Iran

Iran continued to vigorously pursue indigenous programs to produce WMD-nuclear, chemical, and biological-and their delivery systems as well as ACW. To this end, Iran continued to seek foreign materials, training, equipment, and know-how. During the reporting period, Iran still focused particularly on entities in Russia, China, North Korea, and Europe.

Nuclear. The United States remains convinced that Tehran has been pursuing a clandestine nuclear weapons program, in violation of its obligations as a party to the Nuclear Nonproliferation Treaty (NPT). To bolster its efforts to establish domestic nuclear fuel-cycle capabilities, Iran sought technology that can support fissile material production for a nuclear weapons program.

Iran tried to use its civilian nuclear energy program to justify its efforts to establish domestically or otherwise acquire assorted nuclear fuel-cycle capabilities. In August 2002, an Iranian opposition group disclosed that Iran was secretly building a heavy water production plant and a "nuclear fuel" plant. Press reports later in the year confirmed these two facilities using commercial imagery and clarified that the "fuel" plant was most likely a large uranium centrifuge enrichment facility located at Natanz. Commercial imagery showed that Iran was burying the enrichment facility presumably to hide it and harden it against military attack. Following the press disclosures, Iran announced at the International Atomic Energy Agency (IAEA) September 2002 General Conference that it had "ambitious" nuclear fuel cycle plans and intended to develop all aspects of the entire fuel cycle. By the end of 2002, the IAEA had requested access to the enrichment facility at Natanz, and the IAEA Director General (DG) for the first time visited the facility in February 2003. The IAEA is investigating the newly disclosed facilities, and previously undisclosed nuclear material imports to determine whether Iran has violated its NPT-required IAEA safeguards agreement in developing these facilities and their related technologies. At the June 2003 Board of Governors meeting, the IAEA DG presented a report on the Iranian program noting Tehran had failed to meet its safeguards obligations in a number of areas. The DG's report described a pattern of Iranian safeguards failures related to the undeclared import and processing of uranium compounds in the early 1990s, expressed concern over the lack of cooperation from Iran with IAEA inspections, and identified a number of unresolved concerns in Iran's program that the IAEA will continue to investigate. The IAEA Board on 19 June welcomed the report and called on Iran to answer all IAEA questions, cooperate fully with IAEA inspectors, and sign and implement an Additional Protocol immediately and unconditionally.

Although Iran claims that its nascent enrichment plant is to produce fuel for the Russian-assisted construction projects at Bushehr and other possible future power reactors, we remain concerned that Iran is developing enrichment technology to produce fissile material for nuclear weapons under the cover of legitimate fuel cycle activities. Iran appears to be embarking on acquiring nuclear weapons material via both acquisition paths—highly enriched uranium and low burn-up plutonium. Even with intrusive IAEA safeguards inspections at Natanz, there is a serious risk that Iran could use its enrichment technology in covert activities. Of specific proliferation concern are the uranium centrifuges discovered at Natanz, which are capable of enriching uranium for use in nuclear weapons. Iran claims its heavy water plant is for peaceful purposes. In June, Iran informed the IAEA that it is pursuing a heavy water research reactor that we believe could produce plutonium for nuclear weapons. We also suspect that Tehran is interested in acquiring fissile material and technology from foreign suppliers to support its overall nuclear weapons program.

Ballistic Missile. Ballistic missile-related cooperation from entities in the former Soviet Union, North Korea, and China over the years has helped Iran move toward its goal of becoming self-sufficient in the production of ballistic missiles. Such assistance during the first half of 2003 continued to include equipment, technology, and expertise. Iran's ballistic missile inventory is among the largest in the Middle East and includes some 1,300-km-range Shahab-3 medium-range ballistic missiles (MRBMs) and a few hundred short-range ballistic missiles (SRBMs)—including

the Shahab-1 (Scud-B), Shahab-2 (Scud C), and Tondar-69 (CSS-8)—as well as a variety of large unguided rockets. Already producing Scud SRBMs, Iran announced that it had begun production of the Shahab-3 MRBM and a new solid-propellant SRBM, the Fateh-110. In addition, Iran publicly acknowledged the development of follow-on versions of the Shahab-3. It originally said that another version, the Shahab-4, was a more capable ballistic missile than its predecessor but later characterized it as solely a space launch vehicle with no military applications. Iran is also pursuing longer-range ballistic missiles.

Chemical. Iran is a party to the Chemical Weapons Convention (CWC). Nevertheless, during the reporting period it continued to seek production technology, training, and expertise from Chinese entities that could further Tehran's efforts to achieve an indigenous capability to produce nerve agents. Iran likely has already stockpiled blister, blood, choking, and probably nerve agents—and the bombs and artillery shells to deliver them—which it previously had manufactured.

Biological. Even though Iran is part of the Biological Weapons Convention (BWC), Tehran probably maintained an offensive BW program. Iran continued to seek dual-use biotechnical materials, equipment, and expertise. While such materials had legitimate uses, Iran's biological warfare (BW) program also could have benefited from them. It is likely that Iran has capabilities to produce small quantities of BW agents, but has a limited ability to weaponize them.

Advanced Conventional Weapons. Iran continued to seek and acquire conventional weapons and production technologies, primarily from Russia, China, and North Korea. Tehran also sought high-quality products, particularly weapons components and dual-use items, or products that proved difficult to acquire through normal governmental channels.

North Korea

Nuclear. In December 2002, North Korea announced its intention to resume operation of nuclear facilities at Yongbyon, which had been frozen under the terms of the 1994 US-North Korea Agreed Framework. IAEA seals and monitoring equipment were removed and disabled, and IAEA inspectors expelled from the country.

On 10 January 2003, North Korea announced its intention to withdraw from the Treaty on Non-Proliferation of Nuclear Weapons (the NPT Treaty). In late February 2003, North Korea restarted its 5 Mwe reactor which could produce spent fuel rods containing plutonium.

In late April 2003, North Korea told US officials that it possessed nuclear weapons, and signaled its intent to reprocess the 1994 canned spent fuel for more nuclear weapons. On 9 June, North Korea openly threatened to build a nuclear deterrent force. We continued to monitor and assess North Korea's nuclear weapons efforts.

Ballistic Missile. North Korea also has continued procurement of raw materials and components for its extensive ballistic missile programs from various foreign sources. In the first half of 2003, North Korea continued to abide by its voluntary moratorium on flight tests adopted in 1998, but announced it may reconsider its September 2002 offer to extend the moratorium beyond 2003. The multiple-stage Taepo Dong-2—capable of reaching parts of the United States with a nuclear weapon-sized payload—may be ready for flight-testing. North Korea is nearly self-sufficient in developing and producing ballistic missiles, and has demonstrated a willingness to sell complete systems and components that have enabled other states to acquire longer range capabilities earlier than would otherwise have been possible and to acquire the basis for domestic development efforts.

Chemical. North Korea is not a party to the Chemical Weapons Convention (CWC). During the reporting period, Pyongyang continued to acquire dual-use chemicals that could potentially be used to support Pyongyang's long-standing chemical warfare program. North Korea's chemical warfare capabilities included the ability to produce bulk quantities of nerve, blister, choking and

blood agent, using its sizeable, although aging, chemical industry. North Korea possesses a stockpile of unknown size of these agents and weapons, which it could employ in a variety of delivery means.

Biological. North Korea has acceded to the Biological and Toxin Weapons Convention, but nonetheless has pursued biological warfare (BW) capabilities since the 1960s. Pyongyang acquired dual-use biotechnical equipment, supplies, and reagents that could be used to support North Korea's BW efforts. As of the first half of 2003, North Korea was believed to have possessed a munitions production infrastructure that would have allowed it to weaponize BW agents, and may have such weapons available for use.

Libya

Nuclear. An NPT party with full-scope IAEA safeguards, Libya continued to develop its nuclear infrastructure. The suspension of UN sanctions provided Libya the means to enhance its nuclear infrastructure through foreign cooperation and procurement efforts. Tripoli and Moscow continued talks on cooperation at the Tajura Nuclear Research Center and a potential power reactor deal. Such civil-sector work could have presented Libya with opportunities to pursue technologies also suitable for military purposes. In addition, Libya participated in various technical exchanges through which it could have tried to obtain dual-use equipment and technology that could have enhanced its overall technical capabilities in the nuclear area. Although Libya made political overtures to the West in an attempt to strengthen relations, Libya's assertion that Arabs have the right to nuclear weapons in light of Israel and its nuclear program—as Qadhafi stated in a televised speech in March 2002, for example—and Tripoli's continued interest in nuclear weapons and nuclear infrastructure upgrades raised concerns.

Ballistic Missile. The suspension of UN sanctions in 1999 allowed Libya to expand its efforts to obtain ballistic missile–related equipment, materials, technology, and expertise from foreign sources. During the first half of 2003, Libya continued to depend on foreign assistance—particularly from Serbian, Indian, Iranian, North Korean, and Chinese entities—for its ballistic missile development programs. Libya's capability therefore may not still be limited to its Soviet-origin Scud-B missiles. With continued foreign assistance, Libya will likely achieve an MRBM capability—a long-desired goal—probably through direct purchase from North Korea or Iran.

Chemical and Biological. Libya also remained heavily dependent on foreign suppliers for CW precursor chemicals and other key related equipment. Following the suspension of UN sanctions, Tripoli reestablished contacts with sources of expertise, parts, and precursor chemicals abroad, primarily in Western Europe. Libya has indicated—as evidenced by its observer status at the April 2003 Chemical Weapons Convention Review Conference and previous Convention Conferences of States Parties—a willingness to accede to the CWC. Such efforts are consistent with steps that Tripoli is taking to improve its international standing. Tripoli still appeared to be working toward an offensive CW capability and eventual indigenous production. Evidence suggested that Libya also sought dual-use capabilities that could be used to develop and produce BW agents.

Advanced Conventional Weapons. Libya continued to seek new advanced conventional weapons and received assistance from other countries in maintaining its inventory of Soviet-era weapons.

Syria

Nuclear. Syria—an NPT signatory with full-scope IAEA safeguards—has a nuclear research center at Dayr Al Hajar. Russia and Syria have continued their long-standing agreements on cooperation regarding nuclear energy, although specific assistance has not yet materialized. Broader access to foreign expertise provides opportunities to expand its indigenous capabilities and we are looking at Syrian nuclear intentions with growing concern.

Ballistic Missile. During the first half of 2003, Damascus continued to seek help from abroad to establish a solid-propellant rocket motor development and production capability. Syria's liquid-propellant missile program continued to depend on essential foreign equipment and assistance—primarily from North Korean entities. Damascus also continued to manufacture liquid-propellant Scud missiles. In addition, Syria was developing longer-range missile programs such as a Scud D and possibly other variants with assistance from North Korea and Iran.

Chemical and Biological. Syria continued to seek CW-related expertise from foreign sources during the reporting period. Damascus already held a stockpile of the nerve agent sarin, but apparently tried to develop more toxic and persistent nerve agents. Syria remained dependent on foreign sources for key elements of its CW program, including precursor chemicals and key production equipment. It is highly probable that Syria also continued to develop an offensive BW capability.

Advanced Conventional Weapons. Syria continued to acquire limited quantities of ACW, mainly from Russia. Damascus's Soviet-era debt to Moscow and inability to fund large purchases continued to hamper efforts to purchase the large quantity of equipment Syria requires to replace its aging weapons inventory.

Sudan

Chemical and Biological. Although Sudan has aspired to a CW program, the US is working with Sudan to reconcile concerns about its past attempts to seek capabilities from abroad.

Advanced Conventional Weapons. During the reporting period, Sudan sought a variety of military equipment from various sources and received Mi-24 attack helicopters from Russia. In the long-running civil war, as well as for a general military modernization campaign, Khartoum has generally sought older, less expensive ACW and conventional weapons that nonetheless offered more advanced capabilities than the weapons of its opponents and their supporters in neighboring countries. We continued to remain concerned that Sudan might seek a ballistic missile capability in the future.

Chemical, Biological, Radiological, and Nuclear Terrorism

The threat of terrorists using chemical, biological, radiological, and nuclear (CBRN) materials remained high. Many of the 33 designated foreign terrorist organizations and other nonstate actors worldwide have expressed interest in CBRN. Although terrorist groups probably will continue to favor long-proven conventional tactics such as bombings and shootings, the arrest of ricin plotters in London in January 2003 indicated that international mujahidin terrorists were actively plotting to conduct chemical and biological attacks.

Increased publicity surrounding the anthrax incidents since the September 11 attacks has highlighted the vulnerability of civilian and government targets to CBRN attacks.

One of our highest concerns is al-Qa'ida's stated readiness to attempt unconventional attacks against us. As early as 1998, Usama Bin Ladin publicly declared that acquiring unconventional weapons was "a religious duty."

Individuals from terrorist groups worldwide undertook poison training at al-Qa'ida-sponsored camps in Afghanistan and have ready access to information on chemical, biological, radiological, and to some extent, even nuclear weapons, via the Internet, publicly available scientific literature, and scientific conferences, and we know that al-Qa'ida was working to acquire some of the most dangerous chemical agents and toxins. A senior Bin Ladin associate on trial in Egypt in 1999 claimed his group had chemical and biological weapons. Documents and equipment recovered

from al-Qa'ida facilities in Afghanistan show that Bin Ladin had a more sophisticated unconventional weapons research program than was previously known.

We also know that al-Qa'ida has ambitions to acquire or develop nuclear weapons and was receptive to any outside nuclear assistance that might become available. In February 2001, during the trial on the al-Qa'ida bombings of the American Embassies in Tanzania and Kenya, a government witness—Jamal Ahmad Fadl—testified that al-Qa'ida pursued the sale of a quantity of purported enriched uranium (which in fact probably was scam material) in Sudan in the early 1990s.

We assess that terrorist groups are capable of conducting attacks using crude radiological dispersal devices—i.e., ones that would not cause large-scale casualties, even though they could cause tremendous psychological effects, and possibly create considerable economic disruption as well. This type of threat first appeared in November 1995 when Chechen rebels placed a package containing radioactive cesium on a bench in Moscow's Izmailovo Park. In addition, we are alert to the very real possibility that al-Qa'ida or other terrorist groups might also try to launch conventional attacks against the chemical or nuclear industrial infrastructure of the United States to cause panic and economic disruption.

Assessments of Suppliers

The supplier problem is equally uncertain, particularly in terms of the exact role of major suppliers that – at a minimum – include entities in China, North Korea, Pakistan, and Russia. Once again, the CIA assessment both illustrates the importance of the problem and contains language almost identical to the language it used in describing possible supplies to Iraq in the period before the Iraq War:[47]

Russia

During the first half of 2003, Russia's cash-strapped defense, biotechnology, chemical, aerospace, and nuclear industries continued to be eager to raise funds via exports and transfers. Some Russian universities and scientific institutes also showed a willingness to earn much-needed funds by providing WMD or missile-related teaching and training for foreign students. Given the large potential proliferation impact of such exports, transfers, and training, monitoring the activities of specific entities as well as the overall effectiveness of the Russian Government's nonproliferation regime remained an important element of the US bilateral dialogue with Russia on nonproliferation.

Nuclear. During the first half of 2003, Russia continued to play a key role in constructing the Bushehr Nuclear Power Plant project in Iran. However, President Putin has insisted that all Iranian programs in the nuclear field be placed under IAEA control.

President Putin in May 2000 amended the presidential decree on nuclear exports to allow Russia in exceptional cases to export nuclear materials, technology, and equipment to countries that do not have full-scope IAEA safeguards. For example, Russia supplied India with material for its civilian nuclear program in 2001.

Ballistic Missile. Russian entities during the reporting period continued to supply a variety of ballistic missile-related goods and technical know-how to countries such as Iran, India, and China. Iran's earlier success in gaining technology and materials from Russian entities helped to accelerate Iranian development of the Shahab-3 MRBM, and continuing Russian entity assistance has supported Iranian efforts to develop new missiles and increase Tehran's self-sufficiency in missile production.

Chemical and Biological. During the first half of 2003, Russian entities remained a key source of dual-use biotechnology equipment, chemicals and related expertise for countries of concern with active CBW programs. Russia's well-known biological and chemical expertise made it an attractive target for countries seeking assistance in areas with CBW applications.

Advanced Conventional Weapons. Russia continued to be a major supplier of conventional arms. Following Moscow's abrogation of the Gore-Chernomyrdin agreement in November 2000, Russian officials stated that they saw Iran as a significant source of potential revenue from arms sales and believed that Tehran could become Russia's third-largest conventional arms customer after China and India. In 2001, Russia was the primary source of ACW for China, Iran, Libya, and Sudan, and one of the largest sources for India. As an example, Russia actively marketed its thermobaric weapons at international arms shows, which likely increases the availability of this type of weapon in the open market.

Russia continued to be the main supplier of technology and equipment to India's and China's naval nuclear propulsion programs. In addition, Russia discussed leasing nuclear-powered attack submarines to India.

Export Controls. The Duma enacted new export control legislation in 1999, and Putin in 2000 and 2001 reorganized the export control bureaucracy to establish an interdepartmental export control coordinating body, the Export Control Commission of the Russian Federation. This organization was to establish federal oversight over export control, including compliance with international export control standards. Further, in 2001, Putin signed into effect several of the new law's implementing decrees, which updated export control lists for biological pathogens, chemicals, missiles, and related dual-use technologies and equipment. In May 2002, Russia amended its criminal code to allow for stricter punishment for violations involving the illegal export of material, equipment, and scientific-technical information that may be used in creating WMD or military equipment. The Code of Administrative Violations was also updated and became law as of July 2002. This enactment provided the Department for Export Control (under the Ministry of Economic Development and Trade) with significant administrative enforcement authority. In May 2003, President Putin signed the new Customs Code of the Russian Federation that simplifies customs rules and procedures with the ultimate goal of reducing red tape and arbitrary actions of customs officers. The Code also brings Russia in compliance with the Kyoto Convention on Simplification and Harmonization of Customs Procedures.

Despite progress in creating a legal and bureaucratic framework for Russia's export controls, lax enforcement remained a serious concern. To reduce the outward flow of WMD and missile-related materials, technology, and expertise, top officials must make a sustained effort to convince exporting entities—as well as the bureaucracy whose job it is to oversee them—that nonproliferation is a top priority and that those who violate the law will be prosecuted.

North Korea

Nuclear. In late April 2003 during the Beijing talks, North Korea privately threatened to export nuclear weapons.

Ballistic Missile. Throughout the first half of 2003, North Korea continued to export significant ballistic missile–related equipment, components, materials, and technical expertise to the Middle East, South Asia, and North Africa. Pyongyang attached high priority to the development and sale of ballistic missiles, equipment, and related technology. Exports of ballistic missiles and related technology were one of the North's major sources of hard currency, which supported ongoing missile development and production.

China

Over the past several years, Beijing improved its nonproliferation posture through commitments to multilateral arms control regimes, promulgation of export controls, and strengthened oversight mechanisms, but the proliferation behavior of Chinese companies remains of great concern.

Nuclear. In October 1997, China agreed to end cooperation with Iran on supplying a uranium conversion facility (UCF), not to enter into any new nuclear cooperation with Iran, and to bring to conclusion within a reasonable period of time the two existing projects. We remained concerned that some interactions of concern between Chinese and Iranian entities were continuing. China also made bilateral pledges to the United States that go beyond its 1992 NPT commitment not to assist any country in the acquisition or development of nuclear weapons. For example, in May 1996, Beijing pledged that it would not provide assistance to unsafeguarded nuclear facilities. We cannot rule out, however, some continued contacts subsequent to the pledge between Chinese entities and entities associated with Pakistan's nuclear weapons program.

Ballistic Missile. In November 2000, China committed not to assist, in any way, any country in the development of ballistic missiles that could be used to deliver nuclear weapons, and in August 2002, as part of its commitment, promulgated a comprehensive missile-related export control system, similar in scope to the Missile Technology Control Regime (MTCR) Annex. China is not a member of the MTCR, but on several occasions has pledged not to sell MTCR Category I systems.

Although Beijing has taken some steps to educate firms and individuals on the new missile-related export regulations—offering its first national training course on Chinese export controls in February 2003—Chinese entities continued to work with Pakistan and Iran on ballistic missile-related projects during the first half of 2003. Chinese entity assistance has helped Pakistan move toward domestic serial production of solid-propellant SRBMs and supported Pakistan's development of solid-propellant MRBMs. Chinese-entity ballistic missile-related assistance helped Iran move toward its goal of becoming self-sufficient in the production of ballistic missiles. In addition, firms in China provided dual-use missile-related items, raw materials, and/or assistance to several other countries of proliferation concern—such as Iran, Libya, and North Korea.

Chemical. Since 1997, the US imposed numerous sanctions against Chinese entities for providing material support to the Iranian CW program. Evidence during the current reporting period showed that Chinese firms still provided dual-use CW-related production equipment and technology to Iran. In October 2002, China promulgated new controls on biological items and updated chemical-related regulations, and now claims to control all major items on the Australia Group lists.

Advanced Conventional Weapons. During the first half of 2003, China remained a primary supplier of advanced conventional weapons to Pakistan and Iran. Islamabad also continued to negotiate with Beijing for China to build up to four frigates for Pakistan's navy and to develop the FC-1 fighter aircraft.

Other Countries

Countries of proliferation concern continued to approach entities in Western Europe, South Asia, and the US to provide needed acquisitions for their WMD and missile programs. Proliferators and associated networks continued to seek machine tools, spare parts for dual-use equipment, and widely available materials, scientific equipment, and specialty metals. Although western European countries strove to tighten export control regulations, Iran continued to successfully procure dual-use goods and materials from Europe. In addition, several Western European countries remained willing to negotiate ACW sales to Libya, India, Pakistan, and other countries in order to preserve their domestic defense industries. North Korea approached Western European entities to obtain acquisitions for its uranium enrichment program. A shipment of aluminum tubing—enough for 4,000 centrifuge tubes—was halted by German authorities.

Western European countries were still an important source for the proliferation of WMD- and missile-related information and training. The relatively advanced research of European institutes, the availability of relevant dual-use studies and information, the enthusiasm of scientists for sharing their research, and the availability of dual-use training and education may have shortened development time for some WMD and missile programs.

Emerging State and Non-State Suppliers

As nuclear, biological, chemical, and ballistic missile-applicable technologies continued to be more available around the world, new sources of supply emerged that made the challenge of stemming WMD and missile proliferation even more complex and difficult. Nuclear fuel-cycle and weapons-related technologies have spread to the point that, from a technical view, additional states may be able to produce sufficient fissile material and to develop the capability to weaponize it. As developing countries expanded their chemical industries into pesticide production, they also advanced toward at least latent chemical warfare capability. Likewise, additional non-state actors became more interested in the potential of using biological warfare as a relatively inexpensive way to inflict serious damage. The proliferation of increasingly capable ballistic missile designs and technology posed the threat of more countries of concern developing longer-range missiles and imposing greater risks to regional stability.

In this context, there was a growing concern that additional states that have traditionally been recipients of WMD and missile-related technology might have followed North Korea's practice of supplying specific WMD-related technology and expertise to other countries or by going one step further to supply such expertise to non-state actors. Even in cases where states took action to stem such transfers, there were growing numbers of knowledgeable individuals or non-state purveyors of WMD- and missile-related materials and technology, who were able to act outside government constraints. Such non-state actors were increasingly capable of providing technology and equipment that previously could only be supplied directly by countries with established capabilities.

The Intelligence Challenges Posed by the Post Iraq War Risks of Proliferation

All of these developments create new uncertain ties intelligence assessments of war fighting and arms control. They also raise the risk of sudden and drastic escalation. Nations that are just beginning to acquire a few nuclear weapons or serious biological weapons tend to see wars involving such weapons in terms of threats to enemy population centers and have little option other than to strike or concede if intimidation fails. They also tend to try to keep their capabilities covert, and remove them from their normal political decision making process. This can lead to rapid massive escalation or surprise attacks -- particularly if a given side fears preemption, structures its forces to launch under attack, and/or seeks to strike before its opponent can bring its retaliatory forces and air and missile defenses to full readiness. Fewer weapons do not mean greater stability and security, and they almost inevitably mean counter-value targeting.

As the East-West arms race has shown, there is easily definable stopping point. Broadening the number and type of weapons to allow strikes against military targets creates an incentive to be able to strike as many targets as possible. Obtaining the option to strike at tactical military targets lowers the threshold of escalation and may lead a given side to be more willing to attack. Reducing the vulnerability of steadily larger inventories of weapons and delivery systems may lead to a loss of control, or more lethal plans to preempt or launch under attack. Larger forces potentially increase the risk that

weapons directed against military targets will hit population centers, and while the Middle East may not be filled with “one bomb” states, it is definitely filled with “few bomb” states. Further, a state under existential attack by one neighbor may lash out against other states -- a pattern Iraq has already exhibited by launching missile attacks against Israel during the Gulf War.

Intelligence and “Superterrorism”

The intelligence problems involving proliferating states are further compounded by the fact that it is dangerous to view proliferation in terms of advanced weapons and regular military forces. The advances in proliferation also aid terrorists, states in conducting covert attacks, and the potential use of extremist or terrorist movements as proxies for regional powers. Moreover, the kind of scenarios outlined in Figure 10.10 illustrate how difficult it could be to identify the attacker in some scenarios, and the risk deception and false flags will be used to try to direct any response towards other movements or states.

Recent CIA Reports on the Terrorist Threat

The CIA has issued several unclassified reports that make it clear that such threats are not theoretical and pose a further major challenge to intelligence coverage. The CIA reported in June 2003 that,[48]

> Al-Qa'ida and associated extremist groups have a wide variety of potential agents and delivery means to choose from for chemical, biological, radiological, or nuclear (CBRN) attacks. Al-Qa'ida's end goal is the use of CBRN to cause mass casualties; however, most attacks by the group—and especially by associated extremists—probably will be small scale, incorporating relatively crude delivery means and easily produced or obtained chemicals, toxins, or radiological substances. The success of any al-Qa'ida attack and the number of ensuing casualties would depend on many factors, including the technical expertise of those involved, but most scenarios could cause panic and disruption.
>
> * Several groups of mujahidin associated with al-Qa'ida have attempted to carry out "poison plot" attacks in Europe with easily produced chemicals and toxins best suited to assassination and small-scale scenarios. These agents could cause hundreds of casualties and widespread panic if used in multiple simultaneous attacks.
>
> * Al-Qa'ida is interested in radiological dispersal devices (RDDs) or "dirty bombs." Construction of an RDD is well within its capabilities as radiological materials are relatively easy to acquire from industrial or medical sources. Usama Bin Ladin's operatives may try to launch conventional attacks against the nuclear industrial infrastructure of the United States in a bid to cause contamination, disruption, and terror.
>
> * A document recovered from an al-Qa'ida facility in Afghanistan contained a sketch of a crude nuclear device.
>
> * Spray devices disseminating biological warfare (BW) agents have the highest potential impact. Both 11 September attack leader Mohammad Atta and Zacharias Moussaoui expressed interest in crop dusters, raising our concern that al-Qa'ida has considered using aircraft to disseminate BW agents.
>
> * Analysis of an al-Qa'ida document recovered in Afghanistan in summer 2002 indicates the group has crude procedures for making mustard agent, sarin, and VX.

The CIA reported in November 2003 that,[49]

The threat of terrorists using chemical, biological, radiological, and nuclear (CBRN) materials remained high. Many of the 33 designated foreign terrorist organizations and other nonstate actors worldwide have expressed interest in CBRN. Although terrorist groups probably will continue to favor long-proven conventional tactics such as bombings and shootings, the arrest of ricin plotters in London in January 2003 indicated that international mujahidin terrorists were actively plotting to conduct chemical and biological attacks.

Increased publicity surrounding the anthrax incidents since the September 11 attacks has highlighted the vulnerability of civilian and government targets to CBRN attacks.

One of our highest concerns is al-Qa'ida's stated readiness to attempt unconventional attacks against us. As early as 1998, Usama Bin Ladin publicly declared that acquiring unconventional weapons was "a religious duty."

Individuals from terrorist groups worldwide undertook poison training at al-Qa'ida-sponsored camps in Afghanistan and have ready access to information on chemical, biological, radiological, and to some extent, even nuclear weapons, via the Internet, publicly available scientific literature, and scientific conferences, and we know that al-Qa'ida was working to acquire some of the most dangerous chemical agents and toxins. A senior Bin Ladin associate on trial in Egypt in 1999 claimed his group had chemical and biological weapons. Documents and equipment recovered from al-Qa'ida facilities in Afghanistan show that Bin Ladin had a more sophisticated unconventional weapons research program than was previously known.

We also know that al-Qa'ida has ambitions to acquire or develop nuclear weapons and was receptive to any outside nuclear assistance that might become available. In February 2001, during the trial on the al-Qa'ida bombings of the American Embassies in Tanzania and Kenya, a government witness—Jamal Ahmad Fadl—testified that al-Qa'ida pursued the sale of a quantity of purported enriched uranium (which in fact probably was scam material) in Sudan in the early 1990s.

We assess that terrorist groups are capable of conducting attacks using crude radiological dispersal devices—i.e., ones that would not cause large-scale casualties, even though they could cause tremendous psychological effects, and possibly create considerable economic disruption as well. This type of threat first appeared in November 1995 when Chechen rebels placed a package containing radioactive cesium on a bench in Moscow's Izmailovo Park. In addition, we are alert to the very real possibility that al-Qa'ida or other terrorist groups might also try to launch conventional attacks against the chemical or nuclear industrial infrastructure of the United States to cause panic and economic disruption.

Scenarios Illustrating the Scale of the Intelligence Problem

To put these threats in context, there are a wide range of credible scenarios for such terrorist or proxy attacks, and if any one of them is put in the context of the intelligence problems the US, Britain, and the world had in covering Iraq, it becomes obvious that intelligence faces even greater challenges that in dealing with the efforts of nation states:

- A radiological powder is introduced into the air conditioning systems of Saudi high-rise buildings or tourist hotels. Symptoms are only detected over days or weeks and public warning is given several weeks later. The authorities detect the presence of such a power, but cannot estimate its long-term lethality and have no precedents for decontamination. Tourism collapses, and the hotels eventually have to be torn down and rebuilt.
- A Country X-backed terrorist group smuggles parts for a crude gun-type nuclear device into Israel or bought in the market place. The device is built in a medium sized commercial truck. A physics student reading the US Department of Defense weapons effects manual maps Tel Aviv to maximize fall out effects in an area filled with buildings with heavy metals and waits for a wind maximizing the fall out impact. The bomb explodes with a yield of only 8 kilotons, but with an extremely high level of radiation. Immediate casualties are limited but the long-term death rate mounts steadily with time. Peace becomes impossible and security measures become Draconian. Immigration halts and emigration reaches crisis proportions. Israel as such ceases to exist.
- Several workers move drums labeled as cleaning agents into a large shopping mall, large public facility, subway, train station, or airport. They dress as cleaners and are wearing what

appear to be commercial dust filters or have taken the antidote for the agent they will use. They mix the feedstocks for a persistent chemical agent at the site during a peak traffic period. Large-scale casualties result, and Draconian security measures become necessary on a national level. A series of small attacks using similar "binary" agents virtually paralyze the economy, and detection is impossible except to identify all canisters of liquid.

- Immunized terrorists visit a US carrier or major Marine assault ship during the first hours of visitor's day during a port call in the Middle East. They are carrying Anthrax powder in bags designed to make them appear slightly overweight. They slowly scatter the powder as they walk through the ship visit. The immediate result is 50% casualties among the ship's crew, its Marine complement, and the visitors that follow. The US finds it has no experience with decontaminating a large ship where Anthrax has entered the air system and is scattered throughout closed areas. After long debates over methods and safety levels, the ship is abandoned.

- A Country X-backed terrorist group seeking to "cleanse" a nation of its secular regime and corruption introduces a modified type culture of Ebola or a similar virus into an urban area. It scatters infectious cultures in urban areas for which there is no effective treatment. By the time the attack is detected, it has reached epidemic proportions. Medical authorities rush into the infected area without proper protection, causing the collapse of medical facilities and emergency response capabilities. Other nations and regions have no alternative other than to isolate the nation or center under attack, letting the disease take its course.

- A Country X-backed terrorist group modifies the valves on a Japanese remote-controlled crop-spraying helicopter which has been imported legally for agricultural purposes. It uses this system at night or near dawn to spray a chemical or biological agent at altitudes below radar coverage in a line-source configuration. Alternatively, it uses a large home-built RPV with simple GPS guidance. The device eventually crashes undetected into the sea or in the desert. Delivery of a chemical agent achieves far higher casualties than any conventional military warhead. A biological agent is equally effective and the first symptoms appear days after the actual attack — by which time treatment is difficult or impossible.

- A truck filled with what appears to be light gravel is driven through the streets of Riyadh, Kuwait City, Tehran, or Tel Aviv during rush hour or another maximum traffic period. A visible powder does come out through the tarpaulin covering the truck, but the spread of the powder is so light that no attention is paid to it. The driver and his assistant are immunized against the modified form of Anthrax carried in the truck which is being released from behind the gravel or sand in the truck. The truck slowly quarters key areas of the city. Unsuspected passersby and commuters not only are infected, but also carry dry spores home and into other areas. By the time the first major symptoms of the attack occur some 3-5 days later, Anthrax pneumonia is epidemic and some septicemic Anthrax has appeared. Some 40-65% of the exposed population dies and medical facilities collapse causing serious, lingering secondary effects.

- A Country X-backed terrorist group scatters high concentrations of a radiological, chemical, or biological agent in various areas in a city, and trace elements into the processing intakes to the local water supply. When the symptoms appear, the terrorist group makes its attack known, but claims that it has contaminated the local water supply. The authorities are forced to confirm that water is contaminated and mass panic ensues.

- Immunized terrorists carry small amounts of Anthrax or a similar biological agent onto a passenger aircraft like a B-747, quietly scatter the powder, and deplane at the regular scheduled stop. No airport detection system or search detects the agent. Some 70-80% of those on the aircraft die as a result of symptoms that only appear days later.

- Several identical nuclear devices are smuggled out of the FSU through Afghanistan or Central Asia. They do not pass directly through governments. One of the devices is disassembled to determine the precise technology and coding system used in the weapon's PAL. This allows users to activate the remaining weapons. The weapon is then disassembled to minimize

detection with the fissile core shipped covered in lead. The weapon is successfully smuggled into the periphery of an urban area outside any formal security perimeter. A 100 kiloton ground burst destroys a critical area and blankets the region in fall out.

- The same device is shipped to Israel or a Gulf area in a modified standard shipping container equipped with detection and triggering devices that set it off as a result of local security checks or with a GPS system that sets it off automatically when it reaches the proper coordinates in the port of destination. The direct explosive effect is significant, but "rain out" contaminates a massive local area.
- Country X equips a freighter or dhow to spread Anthrax along a coastal area in the Gulf. It uses a proxy terrorist group, and launches an attack on Kuwait City and Saudi oil facilities and ports. It is several days before the attack is detected, and the attacking group is never fully identified. The form of Anthrax involved is dry and time encapsulated to lead to both massive prompt casualties and force time-consuming decontamination. Country X not only is revenged, but also benefits from the resulting massive surge in oil prices.
- A Country X-backed terrorist group scatters small amounts of a biological or radiological agent in a Jewish area during critical stages of the final settlement talks. Near panic ensures, and a massive anti-Palestinian reaction follows. Israeli security then learns that the terrorist group has scattered small amounts of the same agent in cells in every sensitive Palestinian town and area, and the terrorist group announces that it has also stored some in politically sensitive mosques and shrines. Israeli security is forced to shut down all Palestinian movement and carry out intrusive searches in every politically sensitive area. Palestinian riots and exchanges of gunfire follow. The peace talks break down permanently.
- Country X equips dhows to spread Anthrax. The dhows enter the ports of Kuwait as commercial vessels — possibly with local or other Southern Gulf registrations and flags. It is several days before the attack is detected, and the resulting casualties include much of the population of Abu Dhabi and government of the UAE. The UAE breaks up as a result, no effective retaliation is possible, and Iran achieves near hegemony over Gulf oil policy.
- A Country X-backed terrorist group attempting to drive Western influence out of Saudi Arabia smuggles a large nuclear device into Al Hufuf on the edge of the Ghawar oil field. It develops a crude fall out model using local weather data which it confirms by sending out scouts with cellular phones. It waits for the ideal wind, detonates the devices, shuts down the world's largest exporting oil field, and causes the near collapse of Saudi Arabia.
- Alternatively, the same group takes advantage of the security measures the US has adopted in Saudi Arabia, and the comparative isolation of US military personnel. It waits for the proper wind pattern and allows the wind to carry a biological agent over a Saudi airfield with a large US presence from an area outside the security perimeter. The US takes massive casualties and has no ability to predict the next attack. It largely withdraws from Saudi Arabia.
- A freighter carrying fertilizer enters a Middle Eastern port and docks. In fact, the freighter has mixed the fertilizer with a catalyst to create a massive explosion and also carries a large amount of a chemical, radiological, and/or biological agent. The resulting explosion destroys both the immediate target area and scatters the chemical or biological weapon over the area.
- A large terrorist device goes off in a populated, critical economic, or military assembly area — scattering mustard or nerve gas. Emergency teams rush in to deal with the chemical threat and the residents are evacuated. Only later does it become clear that the device also included a biological agent and that the response to this "cocktail" killed most emergency response personnel and the evacuation rushed the biological agent to a much wider area.

Intelligence and "Superterrorism"

In short, the risk of "superterrorism" forces intelligence to expand its coverage of proliferation to deal with the following additional issues:

- The role of covert warfare, proxy warfare, independent non-state actors.
- The dangers posed by the fact that the conventional military strength of the US and its allies creates a growing incentive for both proliferation and covert/indirect attack.
- The ability of both states and non-state actors to use CBRN weapons in a variety of new methods of attack.
- The risk that terrorist and extremist movements may develop or gain access to weapons of mass destruction.
- While many analysts focus on the nuclear worst case, chemical and biological weapons are easier to manufacture and obtain.
- Commercial technologies like cell phones, GPS navigation systems, advanced timers, and local weather models can greatly increase the effectiveness and lethality of covert and terrorist attacks.
    - What forms of superterrorism are possible that do not involve weapons of mass destruction?
    - Information warfare attacks on critical systems?
- Man-portable and light precision weapons attacks on critical facilities like power plants, water/desalination plants/grids, high-rise closed buildings and mall complexes?
- What form of arms control is relevant in dealing with covert, proxy, and terrorist attacks?
- Can a regime be established to monitor the possible use of CBRN and superterrorist weapons and attacks, limit the ability to conduct covert attacks, and identify the state or non-state attacker?
- What level of control on technology transfer is possible and relevant? To what extent can the flow of relevant technologies be controlled to either state or non-state actors.

Evolving Technology and the Need for New Forms of Intelligence and Net Technical Assessment

These intelligence challenges are bad enough, but they also are far from being the full story. Both intelligence and arms control tend to focus on the past and the present, rather than make net technical assessments of how the nature and technology of proliferation may change over the coming decade. Iraq, however, was an exception in that the UN sanctions following the Gulf War largely cut it off from the access to dual use and controlled technology available to other proliferators. Moreover, intrusive UNSCOM, UNMOVIC, and IAEA inspection ensured that it could not easily change and modernize its path towards proliferation.

It is not possible to address all of the emerging technical challenges to intelligence in this report, but no discussion of such challenges can ignore the following developments – each of which will steadily complicate the problems the intelligence community faces:

Chemical Weapons

- The steady dissemination of civil and dual- use equipment that can be used to produce chemical weapons, ranging from insecticides to industrial chemicals.
- Dissemination of technology for advanced persistent nerve gases and fourth generation chemical weapons.

- Creation of civil production facilities with legitimate civil uses that can be rapidly or covertly converted to weapons production.

- Improved tunneling, excavation, and construction capabilities for the creation of underground or covert facilities.

- Dissemination of civil and dual-use environmental and safety equipment that can be used to better conceal trace activities that might reveal proliferation.

- Broad dissemination of satellite weather and other data that can be use to improve the employment of chemical weapons.

Biological Weapons

- The steady dissemination of civil and dual- use equipment that can be used to produce biological weapons, including large-scale biomedical facilities, pharmaceutical plants, fermentation facilities, etc.

- Dissemination of technology for genetic engineering.

- Better understanding in developing countries of methods of "tailoring" diseases to alter their level of infectivity, cycles of infection, and resistance to standard treatments.

- Creation of civil production facilities with legitimate civil uses that can be rapidly or covertly converted to weapons production.

- Improved tunneling, excavation, and construction capabilities for the creation of underground or covert facilities.

- Dissemination of civil and dual-use environmental and safety equipment that can be used to better conceal trace activities that might reveal proliferation and reduce the risk of biological contamination.

- Broad dissemination of satellite weather and other data that can be use to improve the employment of biological weapons.

Nuclear Weapons

- Major advances in computers and commercial or dual-use test equipment that can be used to design weapons and to carry out non-fissile tests and simulations, greatly reducing the need for the actual testing of fission and possibly boosted weapons.

- Dissemination of difficult to control components that can be adapted for triggering nuclear weapons and manufacturing high explosive lens.

- Dissemination of centrifuge technology and dual use materials, and advances in centrifuge designs providing steadily greater capacity.

- Option of creating small dispersed centrifuge facilities and small fold centrifuges.

- Better understanding in developing countries of the ability to use materials not normally classed as weapons grade materials to produce fissile events.

- Improved tunneling, excavation, and construction capabilities for the creation of underground or covert facilities.

- Dissemination of civil and dual-use environmental and safety equipment that can be used to better conceal trace activities that might reveal proliferation.

Delivery Systems

- Growing commercial availability of components for cruise missiles, UAVs, and aircraft conversions.
- Growing availability of GPS and other civilian-use components that can be used to provide guidance systems.
- Dissemination of civilian technology that can be used to detonate weapons automatically at a given location while in transit.
- Better understanding in developing countries of transmission methods for the use of infectious biological weapons.
- Production of conventional explosive bomblets that can be adapted to disseminate chemical and biological agents.
- Civil production of items that can be used as non-destructive dissemination devices – like sprayers and air bags.

The Growing Lethality of Biological Weapons and Growing Ease of Manufacture

Biological weapons represent the area where the rapid pace of technical change now seems likely to create the greatest ability to make far more effective weapons and the most serious challenges to intelligence. Biotechnology can offer many benefits.[50] At the same time, genetic engineering and other new technologies can now be employed to overcome product deficiencies in the classic agents and toxins normally addressed in such discussions.

Moreover, toxins that exist in nature in small amounts were once considered not to be potential threat agents because of their limited availability. Today, the Department of Defense estimates that a number of natural toxins could be produced through genetic engineering techniques in sufficient quantities for an adversary to consider producing them as an offensive weapon. There are many microorganisms, or their metabolic byproducts (toxins) that can now meet all of the criteria for effective BW agents.[51]

Studies like those of the Jason project indicate that this situation will become much worse in the future. Genetically engineered pathogens can be designed to have any or all of the following attributes:[52]

- *Safer handling and deployment,* including the elimination of risks from accidents or misuse – the "boomerang effect".
- *Easier propagation and/or distribution* eliminating the need for a normally-hydrated bioagent or any use of aerosols. Microorganisms with enhanced aerosol and environmental stability.
- *Improved ability to target the host,* including the possible targeting of specific races or ethnic groups with given genetic characteristics.

- *Greater transmissivity and infectivity:* Engineering a disease like Ebola to be as communicable as measles. Microorganisms resistant to antibiotics, standard vaccines, and therapeutics.
- *New weapons:* Benign microorganisms, genetically altered to produce a toxin, venom, or bioregulator.
- *Increased problems in detection:* Immunologically altered microorganisms able to defeat standard identification, detection, and diagnostic methods. Problems in diagnosis, false diagnosis, lack of detection by existing detectors, long latency, binary initiation.
- *Greater toxicity, more difficult to treat:* Very high morbidity or mortality, resistant to know antibacterial or antiviral agents; defeats existing vaccines; produces symptoms designed to saturate available specialized medical treatment facilities.
- *Combinations of some or all of the above.*

New Types of Biological Weapons

While any analysis is speculative, scientists postulate that the following new types of biological weapons are now deployable or can be manufactured during the coming decade:[53]

- *Binary biological weapons* that use two safe to handle elements which can be assembled before use. This could be a virus and helper virus like Hepatitis D or a bacterial virulence plasmid like E. coli, plague, Anthrax, and dysentery.
- *Designer genes and life forms,* which could include synthetic genes and gene networks, synthetic viruses, and synthetic organisms. These weapons include DNA shuffling, synthetic forms of the flu – which killed more people in 1918 than died in all of World War I and which still kills about 30,000 Americans a year – and synthetic microorganisms.
- *"Gene therapy" weapons* that use transforming viruses or similar DNA vectors carrying Trojan horse genes (retrovirus, adenovirus, poxvirus, HSV-1). Such weapons can produce single individual (somatic cell) or inheritable (germline) changes. It can also remove immunities and wound healing capabilities.
- *Stealth viruses* can be transforming or conditionally inducible. They exploit the fact that humans normally carry a substantial viral load, and examples are the herpesvirus, cytomegalovirus, Epstein-Barr, and SV40 contamination which are normally dormant or limited in infect but can be transformed into far more lethal diseases. They can be introduced over years and then used to blackmail a population.
- *Host-swapping diseases:* Viral parasites normally have narrow host ranges and develop an evolutionary equilibrium with their hosts. Disruption of this equilibrium normally produces no results, but it can be extremely lethal. Natural examples include AIDS, hantavirus, Marburg, and Ebola. Tailoring the disruption for attack purposes can produce weapons that are extremely lethal and for which there is no treatment. A tailored disease like AIDS could combine serious initial lethality with crippling long-term effects lasting decades.
- *Designer diseases* involve using molecular biology to create the disease first and then constructing a pathogen to produce it. It could eliminate immunity, target normally dormant genes, or instruct cells to commit suicide. Apoptosis is programmed cell death, and specific apoptosis can be used to kill any mix of cells.

Changes in Disease: Piggybacking on the Threat from Nature

Alternatively, an attacker might take advantage of the fact that the world – and Americans – are under constant natural attack from evolution. A recent national intelligence estimate found that at least 20 well-known diseases had emerged in resistant form during the last 20 years, including tuberculosis, malaria, and cholera.[54] The strains

of streptococcus pnemoniae, staphylococcus aureus, and mycobacterium tuberculosis in the US are now 10-35% immune to treatment.

At least 30 previously unknown diseases have emerged since 1973, including HIV, Ebola, Hepatitis C, and Nipah virus for which there are no known cures. As a result, the annual deaths from infectious diseases in the US have doubled to 170,000 a year from their historic low in 1980. Many have been caused by new immigrants such as West Nile virus. Europe continues to suffer from new zoonotic diseases like Creutzfeldt-Jakob or "mad cow disease," which have had massive economic consequences even with minor human losses. (A total of 70 deaths have occurred over a period of six years, with some seven additional cases still alive.)[55]

To put these trends in perspective, 890,000 Americans are now infected with HIV/AIDS, 4 million are chronic carriers of Hepatitis C, 27,000 a year now catch TB – which is 32-52% resistant to established drugs – and 14,000 a year die of streptococcus pnemoniae and staphylococcus aureus. The flu now kills about 30,000 Americans a year – twice the number as in 1972-1984. Experts at the US Center for Disease Control predict a new epidemic – similar to the one that killed 500,000 Americans in 1918 – could kill 197,000-227,000 in spite of improvements in medical treatment.[56]

Much more massive outbreaks of resistant diseases are taking place outside the US, and TB, malaria, hepatitis, and HIV/AIDS continue to surge. For example, roughly 700,000 died from AIDS in 1993, and 2.3 million in 1998. There were an estimated 5.8 million infections and many in developed countries: the HIV population in Russia could reach one million by 2000, and double by 2002. There were 33.4 million people infected with AIDS in 1998, and there will probably be 40 million by the end of 2000.

The inability to predict the impact of even a well-established disease is illustrated by the fact that the World Health Organization (WHO) predicted that deaths from HIV/AIDS would peak in 2006 with 1.7 million deaths, and the death rate was already 2.3 million in 1998. The cumulative global economic cost of AIDS is already estimated to have reach $500 billion.[57]

The WHO has warned that “globalism” means that developed countries like the US are becoming progressively more vulnerable to the new variants of disease emerging in the developing world,[58] This illustrates the fact that Homeland defense cannot be separated from public health policy. The effectiveness of treatment for most of these diseases is now forecast to decline over the near to mid-term, and humanitarian crises are projected to create a further problem. There were 24 major humanitarian crises in 1999, involving at least 35 million refugees and displaced people. Further, immigration had reached the point where 180 million people lived outside the country of their birth. Roughly 88% of the population growth in Europe in the 1990s came from immigration.[59]

Future attackers could piggyback on the natural evolution of disease to use new or resistant weapons, or genetically engineer diseases that might not be distinguished from a natural outbreak – at least not quickly and in a form where the attacker could not be identified. They could also use stealth attacks and proxies to deliver new or resistant diseases, and the previous data show that some attacks on the US might take years to mature – which makes detection and retaliation extremely difficult.

Agricultural and Ecological Attacks

As has been touched upon earlier, the uncertainties surrounding biological attacks on human beings are compounded by the risk of biological attacks on crops and livestock, which could be combined with attacks on human beings. Agriculture accounts for 13% of the US GNP, and 17% of total employment (860,000 jobs) although less than 2% of the US work force is on farms. [60] The US exports well over $140 billion worth of agricultural goods annually. The US also has special regional and local vulnerabilities. Some 84% of its cattle are in the southwest, 60% of swine are in the northeast, and 78% of chickens are in the southeast Atlantic region. Some feedlots hold 150,000 to 300,000 cattle and 78% of all cattle pass through only 2% of the feedlots. Some pig farms hold 10,000 hogs and chicken farms pen over 100,000 birds.[61]

Nature has already shown how easy it might be for a sophisticated, technically informed state, group, or individual to attack crops and livestock by introducing a new parasite, predator, or disease. There is no clear record of how many times such problems have occurred naturally in the US since World War II, but instances like the introduction of the Mediterranean Fruit Fly (which involved a group called the Breeders protesting the use of insecticides in California), cross breeding of "killer bees," poisoning of Chilean grapes, importation of mosquitoes with West Nile fever, and mere rumors that US apples might be covered in carcinogens are examples of cases involving millions of dollars. There are a host of "rusts" and "smuts" that can attack grain crops. Wheat rust, for example, can affect must of the Western and Great Plains wheat crop and some 12% of the California wheat crop was lost to this rust in one recent year. The following pathogens already threaten US crops as a result of natural causes: Soybean Rust (Soybean Plant), Ear Rot (Corn), Karnal Bunt (Wheat), Ergot (Sorghum), Bacterial Blight (Rice), Ring Rot (Potatoes) and Wirrega Blotch (Barley).

There is an even longer list of threats to US livestock. They include Animal Disease Plant Disease, Foot and Mouth Disease, Vesicular Stomatitis, Rinderpest Gibberella, African Swine Fever, Highly Pathogenic Avian Influenza, Rift Valley Fever, Lumpy Skin Disease, Bluetongue, Sheep and Goat Pox, Swine Vesicular Disease, Contagious Bovine Pleuropneumonia, Newcastle Disease, African Horse Sickness, and Classical Swine Fever

Anthrax, Foot and Mouth Disease, Rinderpest, and Swine Fever are well researched ways to attack live stock.[62] In the case of "mad cow disease," less than 200 cases of sickness over more than 10 years caused billions of dollars. In contrast, foot and mouth disease is extremely contagious, has seven variants and 70 sub-variants, and airborne infections have been spread up to 150 kilometers by winds. Even single cases of foot and mouth disease have halted all exports of meat products from cloven-hoofed animals from some countries. The March 1997 outbreak of Foot and Mouth Disease in Taiwan forced the immediate destruction of 900,000 animals and an eventual total of up to 1.6 million, affecting exports which made up 41% of Japan's pork supply. The cost to the Taiwanese economy was one billion dollars a year. Alternatively, African Swine Fever is non-virulent against its natural hosts in Africa (ticks and warthogs), but is lethal enough against US pigs to act as the equivalent of a swine Ebola. [63]

While agricultural and ecological attacks do not offer quick results or the kind of shock impact that can decide the outcome of short wars or achieve high immediate visibility, the other side of the coin is that they may also be extremely difficult to trace to any deliberate cause, have long-term effects that are very difficult to deal with and offer a potential means of revenge and punishment even to weak movements and states.

This risk explains why the Department of Agriculture has the mission of detecting and defending against such attacks. As is the case with human biological weapons, however, it is far from clear how genetic engineering will change the balance between defense and attack. Virtually all of the advances in biotechnology that can affect human diseases can be applied to the agents to attack crops and livestock and with far fewer risks in handling the materials and in weapons development.

Lessons for the Future

If the US, Britain, and the world are to come to grips with the problem of proliferation, they are going to have to do a much better job of coming to grips with the problem of intelligence. This is vital for arms control, diplomacy, and military planning. It is also vital to developing coalitions that can deal with the emerging problems of new technologies and terrorism. In many cases, however, the intelligence challenges outlined earlier cannot be solved with today's collection and analysis methods, and require honest portrayals of high levels of uncertainty.

Improving collection, strengthening the analytic effort, and improving intelligence management and quality control can solve part of the problem. In the future, it may be possible to couple improvements in human intelligence with new technical aids in terms of improved satellites, UAVs, and unmanned sensors – although many of the technologies involved make far more promises than seem credible either technically or in terms of cost effectiveness. Nothing, however, can substitute for honesty in admitting what intelligence can and cannot do. This honesty is equally critical at the policy level and particularly in admitting the limits to the inspection and verification of arms control agreements and the ability to conduct military options. The fact is that proliferation is a duel where the proliferators has certain advantages that neither improved intelligence nor improved arms control inspections can credibly overcome, and the world must learn to live with uncertainty.

The US and Britain must also frankly and honestly address the credibility problems that have grown out of the assessments they issued before the war with Iraq. The end result so far of the entire intelligence and search effort relating to Iraqi weapons of mass destruction has so far been to strengthen those who argued against the war and who have since sought to discredit or block a Coalition-led nation-building effort. It also threatens to become a specter that will haunt any future U.S. and allied efforts to deal with the threat of proliferation, particularly in winning domestic and international political support for military or preemptive action.

The solution to some extent is to admit the scale of problems that exist in the collection and analytic effort and then make major efforts to reduce them. It is also to lay the groundwork for any future action in a crisis by systematically educating decisionmakers, the media, and the public about the inevitable level of uncertainty in such assessments; this can be done through a series of classified and unclassified intelligence products that

are as detailed and objective as possible. Credibility and understanding have to be created over a period of years, not in a crisis. Moreover, the United States and Britain need to understand that the Iraq War has left a heritage of distrust that must be overcome.

As for the US, a preemptive strategy can never be rejected, but it will always have major real world limitations. The key argument for preemptive attack must be that it is in fact preemptive and that the potential threat is real enough to justify a major war. Legalistic arguments over whether threats must be imminent may have only secondary value in the real world. The need to unambiguously resolve the kind of uncertainties that surrounded the Iraqi effort in weapons of mass destruction in both the Gulf War and Iraq War is a critical national priority, however. So is the need to examine far more intrusive methods of data gathering, such as unattended ground sensors. If the choice is between infractions of national sovereignty, on the one hand, and war or unacceptable risks on the other, aggressive intelligence gathering and infractions of national sovereignty are by far the better course,

There are two important corollaries of this lesson. The first is that unless intelligence can be improved and made far more accurate and reliable than now seems credible, the United States, Britain, and other nations must rely on both operational and national defense and response capabilities. Missile defense is only one of these capabilities and currently may have limited cost-effectiveness. The fact the United States could never characterize Iraqi links to terrorism or Iraq's ability to make covert use of weapons like smallpox is a warning that defense and response must look at the full range of threats and possible asymmetric attacks.

The second corollary is that the problems involved go far beyond warfighting and do indeed affect every aspect of arms control. Over a decade of the most intrusive international inspection of a country in history also failed to characterize its efforts in weapons of mass destruction and delivery systems, and failed to disarm it. It is easy to focus on the fact that the United States and Britain may have exaggerated the threat and miss the point,

The United Nations accomplished a great deal, and the work of the IAEA, UNSCOM, and UNMOVIC merits the world's gratitude and respect. What could be done was done. Nevertheless, an intensive international arms control effort by UNSCOM, the IAEA, and UNMOVIC -- using better means of inspection and arms control to deal with Iraq than now cover any other nation in the world -- was still inadequate. This is a grim warning that major improvements are needed in the scope, intrusiveness, technology, and intelligence support provided for international arms control efforts if they are to be effective, and if they are ever to be an effective substitute for preemptive or other military action.

[1] Many of the comments mage in this section are based on interviews with U.S., British, and Australian officials, officers, and experts after the war, and the author's prior experience in analyzing proliferation. There are many useful press reports that have emerged since the war. In addition to those referenced later in this chapter, these include Warren P. Strobel and John Walcott, "CIA Lack Info To Counter Claims About Iraqi Weapons, *Miami Herald*, June 3, 2003; James Risen, "Word that US Doubted Iraq Would Use Gas," *New York Times*, June 18, 2003, Bruce Auster, Mark Mazetti, and Edward Pound, "Truth and Consequences," *U.S. News and World Report*, June 9, 2003; Evan Thomas, Richard Wolffe, and Michael Isikoff, "Where are Iraq's WMDs?" *Newsweek*, June 9, 2003; Michael Duffy, "Weapons of Mass Disappearance," Time, June 9, 2003; James Risen, "Iraq Arms Report Now the Subject of A CIA review," *New York Times*, June 4, 2003; Maggie Farley, "Blix's Final Words to Security Council are Words of Caution," *Los Angeles Times*, June 6, 2003; Tony Capaccio, "Pentagon 2002 Study Reported No Reliable Data on Iraq Weapons, Bloomberg.com, June 6, 2003;

[2] All of the following points are quoted, with minor editing and reformatting, from the British ("Iraq's Weapons of Mass Destruction—The assessment of the British Government," September 24, 2002 - http://www.pmo.gov.uk/output/page271.asp) and U.S. (CIA, "Iraq's Weapons of Mass Destruction Programs, "October 4, 2002- http://www.governmentguide.com/govsite.adp?bread=*Main&url=http%3A//www.governmentguide.com/ams/clickThruRedirect.adp%3F55076483%2C16920155%2Chttp%3A//www.cia.gov) White Papers. Additional British charges against Iraq for concealing evidence of its weapons of mass destruction can be found in a second white paper: "Iraq: Its Infrastructure of Concealment, Deception and Intimidation," October 7, 2002, http://www.number-10.gov.uk/output/Page1470.asp.

[3] For an interesting discussion of the problems in assessing dual-use facilities in Iraq, see Walter Pincus, "Weapons Linked to Dual Use Facilities in Iraq," *Washington Post*, June 2, 2003.

[4] For some additional data on this aspect of these assessments made of Iraq, see Bill Gertz, "Iraqi Group Aid CIA Intelligence," *Washington Times*, June 12, 2003; John Diamond, "Broad Purges Wiped Out Most Iraqis Helping CIA," *USA Today*, June 17, 2003; John Diamond, "Weak Spy Network Hurt Hunt for Arms," *USA Today*, June 17, 2003.

[5] Earlier unclassified CIA reports on problems like the ballistic missile threat often projected alternative levels of current and future capability. The qualifications and possible futures are far less well defined in more recent reports. For example, see CIA, Unclassified Summary of a National Intelligence Estimate, Foreign Missile Developments and the Ballistic Missile Threat Through 2015," National Intelligence Council, December 2001, http://www.cia.gov/nic/pubs/other_products/Unclassifiedballisticmissilefinal.htm.

[6] There is no way to determine just how much the Special Plans Office team set up within the office of the Secretary of Defense to analyze the threat in Iraq was designed to produce a given conclusion or politicized intelligence. The Department has denied this, and stated that the team created within its policy office was not working Iraqi per se, but on global terrorist interconnections. It also stated that the Special Plans Office was never tied to the Intelligence Collection Program—a program to debrief Iraqi defectors—and relied on CIA inputs for its analysis. It states that simply conducted a review, presented its findings in August 2002, and its members returned to other duties. See Jim Garamone, "Policy Chief Seeks to Clear Intelligence Record," American Forces Information Service, June 3, 2003; and Briefing on policy and intelligence matters, Douglas J. Feith, under secretary of defense for policy, and William J. Luti, deputy under secretary of defense for special plans and Near East and South Asian affairs, June 4, 2003, http://www.defenselink.mil/transcripts/2003/tr20030604-0248.html.

Some intelligence experts dispute this view, however, and claim the team's effort was used to put press on the intelligence community. Such "B-teams" also have a mixed history. They did help identify an intelligence community tendency to underestimate Soviet strategic nuclear efforts during the Cold War. The threat analysis of missile threats posed to the United States by the "Rumsfeld Commission," however, was a heavily one-sided assessment designed to justify national missile defense. Also see Greg Miller, "Pentagon Defends Role of Intelligence Unit on Iraq," *Los Angeles Times*, June 5, 2003; and David S. Cloud, "The Case for War Relied on Selective Intelligence," *Wall Street Journal*, June 5, 2003..

[7] Some press sources cite what they claim is a deliberate effort to ignore a September 2002 DIA report on Iraqi chemical weapons capabilities called "Iraq-Key WMD Facilities-An Operational Support Study." See James Risen, "Word that US Doubted Iraq Would Use Gas," *New York Times*, June 18, 2003 and Tony Capaccio, "Pentagon 2002 Study Reported No Reliable Data on Iraq Weapons," *USA Today*, June 6, 2003.
In fact, the unclassified excerpts from the DIA report, show that DIA was not stating that Iraqi did not have chemical weapons, but rather that it had, No reliable information on whether Iraq is producing and stockpiling chemical weapons, or where Iraq has—or will—establish its chemical weapons facilities." The report went on to say that, "although we lack any direct information, Iraq probably possess CW agent in chemical munitions, possibly include artillery rockets, artillery shells, aerial bombs, and ballistic missile warheads. Baghdad also probably possess bulk chemical stockpiles, primarily containing precursors, but that also could consist of some mustard agent of stabilized VX."
If anything, the report is a classic example of what happens when intelligence reports do state uncertainty and of how the user misreads or misuses the result.

[8] See Felicity Barringer, "UN Inspectors Say Baghdad Never Resolved Arms Issues," *New York Times*, June 3, 2003; Maggie Farley, "Blix's Final Words top Security Council on Iraq are of Caution," *Los Angeles Times*, June 6, 2003; Bob Drogan, "UN Nuclear Experts Back In Iraq," *Los Angeles Times*, June 6, 2003; "UN Nuclear Team Heads for Iraq," BBC News, June 4, 2003, 0943 GMT.

[9] "The Executive Chairman provides the Security Council with an update required by the Security Council 60 days after the resumption of inspections in Iraq," http://www.un.org/Depts/unmovic/. Taken from transcript provided by ABC News.

[10] http://www.iaea.org/worldatom/Documents/. Transcript provided by ABC News.

[11] "The Executive Chairman provides the Security Council with an update on UNMOVICs work, http://www.un.org/Depts/unmovic/. Taken from transcript provided by ABC News.

[12] "Twelfth Quarterly Report," Note by the Secretary General, February 28, 2003, S/2003/232, http://www.un.org/Depts/unmovic/.

[13] Hans Blix, Executive Chairman of UNMOVIC, "Notes for briefing of the Security Council on the thirteenth quarterly report of UNMOVIC, "June 5, 2003, http://www.un.org/Depts/unmovic/.

[14] Rolf Ekeus, "Iraq's Real Weapons Threat," *Washington Post*, June 29, 2003, p. B7. For the full text of the report, see the thirteenth report of the Executive Chairman of the UN Monitoring, Verification, and Inspection Commission, S/2003/580, May 30, 2003.

[15] In addition to the previous sources, see James Risen, CIA Studying Prewar Reports on Iraqi Threat," *New York Times*, May 22, 2003, p. 1; Walter Pincus, "Officials Defend Iraq Intelligence, *Washington Post*, June 9, 2003; Walter Strobel and John Walcott, "CIA Lacked Info To Counter Claims About Iraq Weapons, *Miami Herald*, June 3, 2003; David S. Cloud, "Case for War Relied on Selective Intelligence," *Wall Street Journal*, June 5, 2003; James Risen, "Iraq Arms Report Now the Subject of A CIA Review," *New York Times*, June 4, 2003; Dan Plesch and Richard Norton Taylor, "Straw, Powell Has Serious Doubts Over Their Iraqi Weapons Claims," *The Guardian*, May 31, 2003; Julian Borger, "The Spires Who Pushed for War," *The Guardian*, July 17, 2003; Glenn Frankel, "Blair Accused of Exaggerating Claims About Iraqi Weapons, *Washington Post*, May 30, 2003; John Diamond, "Uranium Reports Doubted Early On," *USA Today*, June 13, 2003; Walter Pincus, "CIA Says It Cabled Key Data to White House, Washington Post, June 13, 2003; Walter Pincus, "Bush Recantation of Iraq Claim Stirs Calls for Probes," Washington Post, July 9, 2003; Dana Milbank and Mike Allen, "Bush Skirts Queries on Iraq Nuclear Allegation," *Washington Post*, July 10, 2003; Walter Pincus, "Tenet Says He Didn't Know Abpout Claim," *Washington Post*, July 17, 2003..

[16] In addition to the previous sources, see Walter Pincus and Dana Priest, "Analysts Cite Pressure on Iraq Judgments," *Washington Post*, June 5, 2003; and Warren P. Strobel and John Walcott, "CIA lacked Info to Counter Claims About Iraqi Weapons," *Miami Herald*, June 3, 2003.

[17] Bill Gertz, "Iraqi Group Aided CIA Intelligence," *Washington Times*, June 12, 2003,; Warren Hoge, "Iraq Report Mishandled, Blair Aide Concedes in Letter," *New York Times*, June 9, 2003; Mark Huban and Mark Turner, "Evidence About Iraqi Uranium Not Fake," *London Financial Times*, June 6, 2003, p. 3; Walter Pincus, "Officials Defend Iraq Intelligence, *Washington Post*, June 9, 2003; Andrew Sparrow and Benedict Brogan, "Blair: I have Weapons Proof," *London Daily Telegraph*, June 2, 2003; Glenn Frankel, "Blair Accused of Exaggerating Claims About Iraqi Weapons, *Washington Post*, May 30, 2003; John Diamond, "Uranium Reports Doubted Early On," *USA Today*, June 13, 2003; Walter Pincus, "CIA Says It Cabled Key Data to White House, Washington Post, June 13, 2003; Walter Pincus, "Bush Recantation of

Iraq Claim Stirs Calls for Probes," Washington Post, July 9, 2003; Dana Milbank and Mike Allen, "Bush Skirts Queries on Iraq Nuclear Allegation," *Washington Post*, July 10, 2003; Walter Pincus, "Tenet Says He Didn't Know Abpout Claim," *Washington Post*, July 17, 2003.

[18] Glern Frankel, "Allies Didn't Share All Intelligence on Iraq," Washington Post, July 17, 2003; Mike Allen and Jim Vandhei, "Uranimum Flap Dims Brief Visit by Blair," Washington Post, July 17, 2003.

[19] "Serving Officer was 45-Minute claim Source," Times On Line, June 15, 2003.

[20] Statement by Senator Carl Levin Regarding Iraq Intelligence, Office of Senator Carl Levin, July 15, 2003, Tara_Andringa@levin.senate.gov

[21] For the full details, see House of Commons Foreign Affairs Committee, the Decision to Go to War in Iraq," Ninth Report of Session 2003-03, House of Commons, London, July 3, 2003.

[22] House of Commons Foreign Affairs Committee, the Decision to Go to War in Iraq," Ninth Report of Session 2003-03, House of Commons, London, July 3, 2003.

[23] House of Commons Foreign Affairs Committee, the Decision to Go to War in Iraq," Ninth Report of Session 2003-03, House of Commons, London, July 3, 2003.

[24] House of Commons Foreign Affairs Committee, the Decision to Go to War in Iraq," Ninth Report of Session 2003-03, House of Commons, London, July 3, 2003.

[25] John Hendren, "Weapons Reports Called Lacking," *Los Angeles Times*, June 26, 2003.

[26] Lt. Gen. James Conway, commander, First Marine Expeditionary Force, "Live Briefing From Iraq, May 30, 2003, http://www.defenselink.mil/transcripts/2003/tr20030530-0229.ht.

[27] Commanding General, 1st Marine Division, "Operation Iraqi Freedom (OIF): Lessons Learned," MEF FRAGO 279-03, May 29, 2003.

[28] For example, see Seymour M. Hersh, "Annals of National Security: Selective Intelligence," New Yorker, May 12, 2003.

[29] Barton Gellman, "Frustrated, U.S. Arms Team to Leave Iraq: Task Force Unable To Find Any Weapons," *Washington Post*, May 11, 2003, p. A1.

[30] Bob Drogan, "New Hunt for Iraqi Arms Resembles Old," *Los Angeles Times*, June 18, 2003.

[31] William J. Broad, "U.S. Civilian Experts Say Bureaucracy and Infighting Jeopardize Search for Weapons," *New York Times*, April 16th, 2003; Dan Morse, "U.S. Troops Go House to House in Search of Chemical Weapons, "*Wall Street Journal*, April 16, 2003; Judith Miller, "U.S. Inspectors Find No Forbidden Weapons at Iraqi Arms Plants," *New York Times*, April 16, 2003

[32] Barton Gellman, "Covert Unit Hunted for Iraqi Arms," *Washington Post*, June 13, 2003;

[33] John J. Fialka, "U.S. Readies A Different Army to Search for Weapons in Iraq," *Wall Street Journal*, April 17, 2003,

[34] Barton Gellman, "Frustrated, U.S. Arms Team to Leave Iraq: Task Force Unable To Find Any Weapons," *Washington Post*, May 11, 2003, p. A1.

[35]See Seymour M. Hersh, "Annals of National Security: Selective Intelligence," *New Yorker*, May 12, 2003, and Barton Gellman, "Frustrated, U.S. Arms Team to Leave Iraq: Task Force Unable To Find Any Weapons," *Washington Post*, May 11, 2003, p. A1.

[36] "Briefing on the Iraq Survey Group," Stephen A. Cambone, under secretary of defense for intelligence, and Army Maj. Gen. Keith W. Dayton, director for operations, Defense Intelligence Agency, May 30, http://www.defenselink.mil/transcripts/2003/tr20030530-0231.html.

[37] Seymour M. Hersh, "Annals of National Security: Selective Intelligence," *New Yorker*, May 12, 2003. The best reporting on the issue at this writing, however, can be found in Barton Gellman, "Frustrated, U.S. Arms Team to Leave Iraq: Task Force Unable To Find Any Weapons," *Washington Post*, May 11, 2003, p. A1.

[38] Department of Defense Briefing, Stephen A. Cambone, USD (Intelligence) presenter, May 7, 2003, http://www.defenselink.mil/transcripts/2003/tr20030507-0158.html

[39] Bill Nichols, "Weapons Search Could Take Years," *USA Today*, May 16, 2003, p. 1; Judith Miller, "Radioactive Material Found at Test Site Near Baghdad," *New York Times*, May 12, 3003; Barton Gellman, "Seven Nuclear Sites Looted," *Washington Post*, May 10, 2003, p. 1.

[40] Bob Drogan, "UN Nuclear Experts Back In Iraq," *Los Angeles Times*, June 6, 2003; "UN Nuclear Team Heads for Iraq," BBC News, June 4, 2003, 0943 GMT; Bob Drogan, "New Hunt for Iraqi Arms Resembles Old," *Los Angeles Times*, June 18, 2003. The U.S. Department of Defense spokesman explained the role of the IAEA by stating that, "The purpose of the inspection is to inventory and assess the condition of the material that is under IAEA safeguards at the Baghdad yellow-cake storage facility. The material at this

facility includes approximately 500 metric tons of safeguarded uranium and several non-fissile radioisotope sources that are not under IAEA safeguards. The uranium is mostly in the form of yellow cake, an isotopically natural form that is an impure oxide. There is a small quantity of low-enriched and depleted uranium. Typically, the IAEA would conduct an NPT safeguards inspection at this location annually. The last inspection was conducted in December of 2002. Given the changed circumstances, the United States has determined it would be helpful to have the IAEA reinventory this location. I would like to underscore, though, that this is a cooperative effort. The coalition will be providing necessary transportation, security and other minimal logistics to the team, which will consist of seven IAEA experts. The safeguards activity will be led by the IAEA under the protection and auspices of coalition forces. To ensure safety and protection, coalition forces will accompany the IAEA at all times. Coalition nuclear experts will also participate in the inspection and the inventory. Upon completion of the inventory, the IAEA will repackage the material as necessary, reseal all safeguarded rooms, buildings and containers as appropriate, and the coalition will, as appropriate, assist in this effort. I want to note that this access to the IAEA is not an IAEA inspection pursuant to the U.N. Security Council resolutions and does not set any precedent for future IAEA involvement in Iraq in any disarmament or UNSCR-related activity. And lastly, we expect that the IAEA will share their findings with us as we work cooperatively on this effort. " U.S. Department of Defense spokesman explained the looting problem as follows: "Tuwaitha, as has been stated earlier, is about a 23,000-acre facility that's about 20 kilometers to the southeast of Baghdad. And Site Charlie, where radiological materials, principally yellow cake were stored, consists of three buildings, and they're surrounded by a fence and a wall of concrete barriers about 12 feet tall on three sides. According to reports from civilians in the area, on or about the 10th of March, Iraqi army forces who were guarding the site reportedly left their weapons—some of their weapons with the local civilians—and abandoned the site. We also believe, from talking to the local civilians, that on or about 20 March, the 20th of March, the civilians guarding the site abandoned it also. And, of course, we were conducting our attack across the Kuwaiti border on the 21st. On the 7th of April, U.S. Marines from our land component first arrived at Tuwaitha Site Charlie and assumed the security, and remained there until the 20th of April, when they turned over control of the facility to U.S. Army soldiers from another unit. And Tuwaitha Site Charlie has been secured and under the positive control of U.S. forces since the 7th of April. When the U.S. forces first arrived, they found the Tuwaitha site facility, Tuwaitha Charlie facility, in disarray. The front gate was open and unsecured, and the fence line and barrier wall on the back side of the facility had been breached. And the troops reported that there were no seals on the exterior doors of the buildings. But since taking control of Tuwaitha Site Charlie, no thieves or looters have been allowed inside the facility. We have taken several positive steps to try to mitigate any risks from Tuwaitha Charlie to either the soldiers or the population in the surrounding area or to the environment. And I'll list of a couple of those. Between the 8th and 10th of April, a team conducted an initial survey outside the buildings at Tuwaitha Charlie, and they determined that additional exploitation was required beyond their capability. And so the exploitation task force, the folks responsible for that operation, decided to keep the security at the site and to deny access to anyone except properly trained personnel. On the 18th of April, some Iraqi scientists from the Iraqi Atomic Energy Commission, who had worked at the facility, were allowed in to check the site and to mitigate any radiological hazards within their capability. And they moved some sources into a building from the concrete outside. On the 12th of May, our Threat Reduction Agency personnel arrived in Iraq and began planning for its operation at Tuwaitha Charlie. And between the 15th and 20th of May, our task force disablement and elimination team conducted its technical assessment and an inventory of what was there. And from what we know at this time, the quantity of materials we have found at the site exceeds the quantity of materials that we had assessed would be present at the site. On the 18th of May, a direct support team teamed up with the Coalition Provisional Authority personnel and some additional people from IAEC, the Iraqi Atomic Energy Commission, and they decided to conduct a buy-back operation because the troops were starting to hear stories that some of the barrels—there were barrels in the local community that resembled those that were at the site. The team went to two villages and offered to pay $3 a piece for any items that may have come from the facility, and they pointed out what these items might look like. The team recovered over 100 barrels of various sizes and shapes and condition, as well as five radioactive sources and some other items. But virtually none of the people admitted to having taken the items from the facility. They said they had bought them. And indeed, barrels like these are ubiquitous around Iraq. And although there are some similar containers available in markets—and the same type barrels are sometimes found in people's homes. The team checked the items for radioactivity and also checked the people to

reassure them. None of the people registered any radiation above normal background levels. And these barrels of various sizes and shapes and colors—none of them registered more than background level or slightly above normal background radiation. They then transported the items to Tuwaitha Charlie and secured them. And so, there's no way to tell at this point if they came from Tuwaitha, but they were taken back there just in case, for safety. The technical assessment also determined that outside the fence line at Tuwaitha Charlie, there was negligible risk to the soldiers guarding the site and to the population within a wide area out to a kilometer from the fence line. But the site had apparently been looted before U.S. soldiers arrived. Uranium materials and some other stored materials had been dumped on the floor in places, and in one building, there were a number of radiological sources scattered around the floor. Radiological readings measured only background levels out at the fence line, and readings at the buildings and inside were somewhere between two and 10 times background readings—background readings. We've been conducting weekly meetings with the Iraqi Atomic Energy Commission, with our coalition forces experts and with the Coalition Provisional Authority experts to continue the way ahead in a joint manner. We've developed a plan and objectives for improvement of the site. This week, the Center for Health Promotion and Preventive Medicine, commonly called CHPPM, arrives from the United States. And they'll conduct a risk assessment on the soldiers and Marines who were there and those who are still there. And the purpose of that is to reassure those soldiers and Marines, but also to determine what, if any, risks they might have occurred—incurred, rather, from being at—near the site. Together with the Iraqi Atomic Energy Commission and the Iraqi Ministry of Health, CHPPM will also help to conduct a wider search and a health risk assessment of the surrounding civilian area, out to about five kilometers. Iraqi scientists and physicians began that work this week by conducting an initial assessment and a census of those people out there. We also formed a joint team with the Iraqi experts and repaired and sealed the buildings as a further measure of safety, so that even if the weather changed to something severe that we hadn't expected, the buildings would still be secure. We've also recruited a 100-man Iraqi guard force. And we're in the process of training them so that once they meet standards, they'll eventually take over the security. And of course, IAEA arrives in Baghdad this weekend to begin its work. And that's about all I have for opening comments." (Senior Defense Official, "Background briefing on the upcoming IAEA nuclear safeguards inspection and the Tuwaitha Nuclear Facility in Iraq," June 5, 2003, http://www.defenselink.mil/transcripts/2003/tr20030605-0250.html.

[41] Judy Keen, "U.S.: Weapon Search has Barely Begun," *USA Today*, June 20, 203.

[42] STATEMENT BY DAVID KAY ON THE INTERIM PROGRESS REPORT ON THE ACTIVITIES OF THE IRAQ SURVEY GROUP (ISG) BEFORE THEHOUSE PERMANENT SELECT COMMITTEE ON INTELLIGENCE, THE HOUSE COMMITTEE ON APPROPRIATIONS, SUBCOMMITTEE ON DEFENSE, AND THE SENATE SELECT COMMITTEE ON INTELLIGENCE. October 2, 2003; http://www.cia.gov/cia/public_affairs/speeches/2003/david_kay_10022003.html.

[43] See William J. Broad, "US, In Assessment, Terms Trailers Germ Laboratories," *New York Times*, May 29, 2003.

The CIA summarized the importance of this discovery as follows in a report on Iraqi Mobile Biological Warfare Agent Production Plants dated May 28, 2003 (http://www.cia.gov/cia/reports/iraqi_mobile_plants/index.html)

> "Coalition forces have uncovered the strongest evidence to date that Iraq was hiding a biological warfare program.
>
> - Kurdish forces in late April 2003 took into custody a specialized tractor-trailer near Mosul and subsequently turned it over to U.S. military control.
> - The U.S. military discovered a second mobile facility equipped to produce BW agent in early May at the al-Kindi Research, Testing, Development, and Engineering facility in Mosul. Although this second trailer appears to have been looted, the remaining equipment, including the fermentor, is in a configuration similar to the first plant.
> - U.S. forces in late April also discovered a mobile laboratory truck in Baghdad. The truck is a toxicology laboratory from the 1980s that could be used to support BW or legitimate research.
>
> The design, equipment, and layout of the trailer found in late April is strikingly similar to descriptions provided by a source who was a chemical engineer that managed one of the mobile plants. Secretary of State Powell's description of the mobile plants in his speech in February 2003 to the United Nations (see inset below) was based primarily on reporting from this source.

Secretary Powell's speech to the UN in February 2003 detailed Iraq's mobile BW program, and was primarily based on information from a source who was a chemical engineer that managed one of the mobile plants.

- Iraq's mobile BW program began in the mid-1990s—this is reportedly when the units were being designed.
- Iraq manufactured mobile trailers and railcars to produce biological agents, which were designed to evade UN weapons inspectors. Agent production reportedly occurred Thursday night through Friday when the UN did not conduct inspections in observance of the Muslim holy day.
- An accident occurred in 1998 during a production run, which killed 12 technicians—an indication that Iraq was producing a BW agent at that time.

Analysis of the trailers reveals that they probably are second- or possibly third-generation designs of the plants described by the source. The newer version includes system improvements, such as cooling units, apparently engineered to solve production problems described by the source that were encountered with the older design. The manufacturer's plates on the fermentors list production dates of 2002 and 2003—suggesting Iraq continued to produce these units as late as this year.

The source reported to us that Iraq in 1995 planned to construct seven sets of mobile production plants—six on semitrailers and one on railroad cars—to conceal BW agent production while appearing to cooperate with UN inspectors. Some of this information was corroborated by another source.

- One of the semitrailer plants reportedly produced BW agents as early as July 1997.
- The design for a more concealable and efficient two-trailer system was reportedly completed in May 1998 to compensate for difficulties in operating the original, three-trailer plant.
- Iraq employed extensive denial and deception in this program, including disguising from its own workers the production process, equipment, and BW agents produced in the trailers.

Examination of the trailers reveals that all of the equipment is permanently installed and interconnected, creating an ingeniously simple, self-contained bioprocessing system. Although the equipment on the trailer found in April 2003 was partially damaged by looters, it includes a fermentor capable of producing biological agents and support equipment such as water supply tanks, an air compressor, a water chiller, and a system for collecting exhaust gases.

The trailers probably are part of a two- or possibly three-trailer unit. Both trailers we have found probably are designed to produce BW agent in unconcentrated liquid slurry. The missing trailer or trailers from one complete unit would be equipped for growth media preparation and postharvest processing and, we would expect, have equipment such as mixing tanks, centrifuges, and spray dryers.

These other units that we have not yet found would be needed to prepare and sterilize the media and to concentrate and possibly dry the agent, before the agent is ready for introduction into a delivery system, such as bulk-filled munitions. Before the Gulf war, Iraq bulk filled missile and rocket warheads, aerial bombs, artillery shells, and spray tanks.

The majority of our information on Iraq's mobile program was obtained from a chemical engineer that managed one of the plants. Three other sources, however, corroborated information related to the mobile BW project. The second source was a civil engineer who reported on the existence of at least one truck-transportable facility in December 2000 at the Karbala ammunition depot. The third source reported in 2002 that Iraq had manufactured mobile systems for the production of single-cell protein on trailers and railcars but admitted that they could be used for BW agent production. The fourth source, a defector from the Iraq Intelligence Service, reported that Baghdad manufactured mobile facilities that we assess could be used for the research of BW agents, vice production.

Our analysis of the mobile production plant found in April indicates the layout and equipment are consistent with information provided by the chemical engineer, who has direct knowledge of Iraq's mobile BW program. The source recognized pictures of this trailer, among photographs of unrelated equipment, as a mobile BW production plant similar to the one that he managed, even pointing out specific pieces of equipment that were installed on his unit.

Common elements between the source's description and the trailers include a control panel, fermentor, water tank, holding tank, and two sets of gas cylinders. One set of gas cylinders was reported to provide clean gases—oxygen and nitrogen—for production, and the other set captured exhaust gases, concealing signatures of BW agent production.

The discovered trailers also incorporate air-stirred fermentors, which the source reported were part of the second-generation plant design. Externally, the trailers have a ribbed superstructure to support a canvas covering that matches the source's description. Data plates on the fermentors indicate that they were manufactured at the same plant the source said manufactured equipment for the first generation of mobile plants. The plant also was involved in the production of equipment used in Iraq's pre-Gulf war BW program.

Employees of the facility that produced the mobile production plants' fermentor revealed that seven fermentors were produced in 1997, one in 2002 and one in 2003. The seven fermentors appear to corroborate the source's reporting that Iraq in the mid-1990s planned to produce seven mobile production plants. The two fermentors produced in 2002 and 2003 reportedly were sent to the al-Kindi Research, Testing, Development, and Engineering facility in Mosul—the site where the second trailer was found—and probably are the fermentors found on the trailers in U.S. custody.

There are a few inconsistencies between the source's reporting and the trailers, which probably reflect design improvements. The original plants were reported to be mounted on flatbed trailers reinforced by nickel-plate flooring and equipped with hydraulic support legs. The discovered plants are mounted on heavy equipment transporters intended to carry army tanks, obviating the need for reinforced floors and hydraulic legs. The trailers have a cooling unit not included in the original plant design, probably to solve overheating problems during the summer months as described by the source. The original design had 18 pumps, but the source mentioned an effort to reduce the number to four in the new design. The trailer discovered in late April has three pumps.

Coalition experts on fermentation and systems engineering examined the trailer found in late April and have been unable to identify any legitimate industrial use—such as water purification, mobile medical laboratory, vaccine or pharmaceutical production—that would justify the effort and expense of a mobile production capability. We have investigated what other industrial processes may require such equipment—a fermentor, refrigeration, and a gas capture system—and agree with the experts that BW agent production is the only consistent, logical purpose for these vehicles.

The capability of the system to capture and compress exhaust gases produced during fermentation is not required for legitimate biological processes and strongly indicates attempts to conceal production activity. The presence of caustic in the fermentor combined with the recent painting of the plant may indicate an attempt to decontaminate and conceal the plant's purpose. Finally, the data plate on the fermentor indicates that this system was manufactured in 2002 and yet it was not declared to the United Nations, as required by Security Council Resolutions.

Some coalition analysts assess that the trailer found in late April could be used for bioproduction but believe it may be a newer prototype because the layout is not entirely identical to what the source described.

A *New York Times* article on 13 May 2003 reported that an agricultural expert suggests the trailers might have been intended to produce biopesticides near agricultural areas in order to avoid degradation problems. The same article also reported that a former weapons inspector suggests that the trailers may be chemical-processing units intended to refurbish Iraq's antiaircraft missiles.

Biopesticide production requires the same equipment and technology used for BW agent production; however, the off-gas collection system and the size of the equipment are unnecessary for biopesticide production. There is no need to produce biopesticides near the point of use because biopesticides do not degrade as quickly as most BW agents and would be more economically produced at a large fixed facility. In addition, the color of the trailer found in mid-April is indicative of military rather than civilian use.

Our missile experts have no explanation for how such a trailer could function to refurbish antiaircraft missiles and judge that such a use is unlikely based on the scale, configuration, and assessed function of the equipment. The experts cited in the editorial are not on the scene and probably do not have complete access to information about the trailers.

Senior Iraqi officials of the al-Kindi Research, Testing, Development, and Engineering facility in Mosul were shown pictures of the mobile production trailers, and they claimed that the trailers were used to chemically produce hydrogen for artillery weather balloons. Hydrogen production would be a plausible cover story for the mobile production units.

The Iraqis have used sophisticated denial and deception methods that include the use of cover stories that are designed to work. Some of the features of the trailer—a gas collection system and the presence of caustic—are consistent with both bioproduction and hydrogen production.

The plant's design possibly could be used to produce hydrogen using a chemical reaction, but it would be inefficient. The capacity of this trailer is larger than typical units for hydrogen production for weather balloons. Compact, transportable hydrogen generation systems are commercially available, safe, and reliable.

We continue to examine the trailer found in mid-April and are using advanced sample analysis techniques to determine whether BW agent is present, although we do not expect samples to show the presence of BW agent. We suspect that the Iraqis thoroughly decontaminated the vehicle to remove evidence of BW agent production. Despite the lack of confirmatory samples, we nevertheless are confident that this trailer is a mobile BW production plant because of the source's description, equipment, and design.

- The initial set of samples, now in the United States, was taken from sludge from inside the fermentor, liquid that was in the system and wipes from the equipment. A sample set also was provided to a coalition partner for detailed laboratory analysis.
- As we expected, preliminary sample analysis results are negative for five standard BW agents, including Bacillus anthracis, and for growth media for those agents. In addition, the preliminary results indicate the presence of sodium azide and urea, which do not support Iraqi claims that the trailer was for hydrogen production.
- Additional sample analysis is being conducted to identify growth media, agent degradation products, and decontamination chemicals that could be specific for BW agents, as well as to identify a chemical associated with hydrogen production.

Although individuals often interchangeably use the terms production plant and laboratory, they have distinct meanings. The mobile production plants are designed for batch production of biological material and not for laboratory analysis of samples. A truck-mounted mobile laboratory would be equipped for analysis and small-scale laboratory activities. U.S. forces discovered one such laboratory in late April.

The mobile laboratory—installed in a box-bodied truck—is equipped with standard, dual-use laboratory equipment, including autoclaves, an incubator, centrifuges, and laboratory test tubes and glassware. These laboratories could be used to support a mobile BW production plant but serve legitimate functions that are applicable to public heath and environmental monitoring, such as water-quality sampling."

One Iraqi defector has made claims of a much more serious ongoing biological weapons effort, but these have not been validated. See Bob Drogin, "Iraq Had Secret Labs, Officer Says," *Los Angeles Times*, June 8, 2003.

The CIA issued the following statement on the discovery of the centrifuge on June 26, 2003 (http://www.cia.gov/cia/wmd/iraqi_centrifuge_equipment.htm):

- The head of Iraq's pre-1991 centrifuge uranium enrichment program, Dr. Mahdi Shukur Ubaydi, approached U.S. officials in Baghdad and turned over a volume of centrifuge documents and components he had hidden in his garden from inspectors since 1991. Dr. Ubaydi said he was interviewed by IAEA inspectors—most recently in 2002—but did not reveal any of this.
- Dr. Ubaydi told us that these items, blue prints and key centrifuge pieces, represented a complete template for what would be needed to rebuild a centrifuge uranium enrichment program. He also claimed this concealment was part of a secret, high-level plan to reconstitute the nuclear weapons program once sanctions ended.
- This case illustrates the extreme challenge we face in Iraq as we search for evidence of WMD programs that were designed to elude detection by international inspectors.
- We are working with Dr. Ubaydi to evaluate the equipment and documents he provided us.
- We are hopeful that Dr. Ubaydi's example will encourage other Iraqis with knowledge of Saddam's WMD programs to come forward.

[44]Joby Warrick, "Iraqi Scientist Turns Over Nuclear Plans, Parts," *Washington Post*, June 26, 2003, p. 14.

[45]Douglas Jehl, "Agency Disputes View of Trailers as Labs," *New York Times*, June 26, 2003.

[46] CIA, Unclassified Report to Congress on the Acquisition of Technology Relating to Weapons of Mass Destruction and Advanced Conventional Munitions,1 January Through 30 June 2003, November 2003, http://www.cia.gov/cia/reports/index.html.

[47] CIA, Unclassified Report to Congress on the Acquisition of Technology Relating to Weapons of Mass Destruction and Advanced Conventional Munitions,1 January Through 30 June 2003, November 2003, http://www.cia.gov/cia/reports/index.html.

[48] CIA, "Terrorist CBRN: Materials and Effects," Washington, Director of Central Intelligence, June 2003, http://www.cia.gov/cia/reports/terrorist_cbrn/terrorist_CBRN.htm

[49] CIA, "Unclassified Report to Congress on the Acquisition of Technology Relating to Weapons of Mass Destruction and Advanced Conventional Munitions, 1 January Through 30 June 2003." Washington, November 2003, http://www.cia.gov/cia/reports/721_reports/jan_jun2003.htm.

[50] See the forecast in National Intelligence Council, "Global Trends 2015: A Dialogue About the Future With Nongovernment Experts, Washington, CIA, December 2000, http://www.odci.gov/cia/publications/globaltrends2015/index.html

[51] For a good technical summary of the issues involved in making such weapons, see Office of Technology Assessment, "Background Paper: Technologies Underlying Weapons of Mass Destruction," Washington, US Congress, OT A-BP-ISC-115, December 1993.

[52] Briefing on the Jason 1997 summer study, Study Lear Steven Block, "Biological Warfare Threats Enabled by Molecular Biology;" Malcolm R. Dando, "The Impact of Biotechnology," in Brad Roberts, ed., Hype or Reality? The New Terrorism and Mass Casualty Attacks, Alexandria, Chemical and Biological Arms Control Institute, 2000, pp. 193-206.

[53] Briefing on the Jason 1997 summer study, Study Lear Steven Block, "Biological Warfare Threats Enabled by Molecular Biology."

[54] National Intelligence Council, "The Global Infectious Disease Threat and Its Implications for the United States, CIA NIE-99-17D, January2000 http://WWW.cia.gov/cia/publications/nie/report/nie99-17d.htm.

[55] The Economist, July 22, 2000. Pp. 54-55.

[56] National Intelligence Council, "The Global Infectious Disease Threat and Its Implications for the United States, CIA NIE-99-17D, January 2000. http://www.cia.gov/ cia/publications/nie/report/nie99-17d.htm.

[57] National Intelligence Council, "The Global Infectious Disease Threat and Its Implications for the United States, CIA NIE-99-17D, January 2000. http://www.cia.gov/ cia/publications/nie/report/nie99-17d.htm.

[58] World Health Organization, Overcoming Antimicrobial Resistance: World Health Report on Infectious Diseases 2000, Internet Edition, June 2000, WHO.ORG.

[59] National Intelligence Council, "The Global Infectious Disease Threat and Its Implications for the United States, CIA NIE-99-17D, January 2000. http://www.cia.gov/ cia/publications/nie/report/nie99-17d.htm.

[60] S. Koonin, Study Leader, "Civilian Biodefense," Jason 1999, JSR-99-105, July, 1999.

[61] See Jonathan Ban, "Agricultural Biological Warfare: An Overview, The Arena, Alexandria, CBACI, No. 9, June 2000.

[62] S. Koonin, Study Leader, "Civilian Biodefense," Jason 1999, JSR-99-105, July, 1999.

[63] S. Koonin, Study Leader, "Civilian Biodefense," Jason 1999, JSR-99-105, July, 1999.