

Annex C The Iraqi Industrial Committee

Saddam personally ordered the creation of the Iraqi Industrial Committee (IIC) in September 1995 to coordinate activities of the Iraqi industrial sector, according to documentary and other reporting. The IIC probably never developed formalized procedures for coordinating industrial efforts and its overall strategy and mechanisms for project implementation probably were somewhat nebulous even to its own participants. Looting, vandalism and destruction of documentation have complicated ISG efforts to fully understand the role of the IIC and its subordinate projects. A complex, interdependent web of constantly evolving committees, projects and commissions was responsible for national research and development for indigenous production of chemicals, based on ISG analysis of documents and reporting.

- ISG has been unable to identify the policy direction for the IIC's operations and has obtained conflicting data about operational details.

IIC Subcommittees and Their Responsibilities

The Central Evaluation Research Committee/ Evaluation Research Committee

In the first phase of projects, the Evaluation Research Committee evaluated the initial work carried out and reported to the Central Evaluation Research Committee, which in turn reported to the IIC. After all preliminary research had been reviewed, both the Evaluation Research Committee and the Central Evaluation Research Committee were disbanded and the research was passed to the Technology Transfer Committee, according to reporting.

The Research and Development Committee/ Technology Transfer Committee and Its Subcommittees

Dr. Ja'far chaired both the Research and Development Committee and the Technology Transfer Committee. The Research and Development Committee provided oversight for chemical research for the strategic

research program, according to documents and reporting, and was responsible for prioritizing projects based on economic benefit and feasibility, according to different reporting. Other committee members included Drs. Ahmad and Al Jabburi of the Ministry of Higher Education, Dr. Karim of Al Razi Center, Dr. Al Qurashi of the Iraqi Atomic Energy Commission (IAEC), Drs. Naji and 'Atto of the Chemistry Department at Saddam University, Dr. Asawa of the Ministry of Industry, Dr. Rathman from the Ministry of Industry and Minerals (MIM) and Drs. Hashim and Hamzah Yasin of the Military Industrialization Commission (MIC), according to multiple reports.

The Technology Transfer Committee, established in 1996, was responsible for researching and acquiring strategic technologies from outside Iraq. This committee tracked foreign technological developments by targeting students, attending trade shows and sponsoring educational exchanges, according to reporting. Different reporting indicated the Technology Transfer Committee was responsible for the coordination of all medical and agricultural research in Iraq. The Technology Transfer Committee appeared to share or subsume the responsibilities of the Research and Development Committee probably because Dr. Ja'far chaired both.

The Follow-Up Committee for Pharmaceutical Research

This subcommittee was responsible for reviewing research reports, evaluating scale-up feasibility, and evaluating quality control testing of samples. It reported directly to Dr. Ja'far at the Office of the Presidential Advisor. Once the committee approved the research results, the organization received full payment for the work, according to Dr. Ja'far.

The Distinguished Industrialists Council

This body formed in February 2001 after 18 prominent Iraqi industrialists met Saddam Husayn. The IIC was tasked to carry out several joint activities with this group of industrialists, including the setting up of a study to provide the correct requirements to the industrialists, based on documents recovered by ISG.

The Chemical Industries Committee

This was a joint MIC-MIM oversight group under the IIC established to implement the National Project for Pharmaceuticals and Pesticides, according to reporting.

The National Project for Pharmaceuticals and Pesticides (NPPP)

The NPPP was established in early 1999 in response to a written order from Saddam, who took personal interest in the program's progress. Three types of commercial products were targeted for indigenous production under the NPPP.

- Drugs/pharmaceutical/chemicals
- Pesticide chemicals
- Materials for medical diagnostic kits

According to a former high-ranking employee at Ministry of Higher Education and Scientific Research (MHESR), which was the primary organization responsible for the research, the national drug program consisted of six categories of research focus—medicines, primitive chemicals, active ingredients, kits, pesticides and veterinary medicines. Two categories of required chemical research for the above products were identified.

- Synthesis of active chemicals required for making finished pharmaceutical products and pesticides (“active chemicals” probably refers to biologically active substances).
- R&D on formulation technologies required to produce final drug products. Research on such technologies would focus on formulating products for which Iraq already had the ingredients.

The National Project for Active Chemical Materials probably began in 1999 under the NPPP on the recommendation of the Minister of Higher Education and Scientific Research, Humam ‘Abd-al-Khaliq ‘Abd-al-Ghafur. Humam proposed the project to Saddam in a letter in which he indicated that he had many skilled chemists with little to do, according to

reporting. Humam reported substances were placed on the list based on the need of the Ministry of Health (MOH) and the Ministry of Agriculture.

Ministries and companies from across Iraq’s pharmaceutical and pesticide sectors initially nominated chemicals and materials that Iraq needed for research and development and eventual pilot production under the NPPP. According to a former high-ranking employee of MHESR, the chemicals were needed because Iraq could not obtain them under sanctions after 1996. However, few of the hundreds of chemicals identified were restricted by sanctions.

The IIC, in consultation with technical experts from MIC, MOH, and MIM, evaluated these recommendations. MIM had primary responsibility for identifying priority “active” pharmaceutical chemicals, while MOH advised on final pharmaceutical products to be included on the list and MIC was responsible for evaluating pesticide-related chemicals for the list.

The IIC’s Program for the Indigenous Production of Chemicals probably was more of a boon to Iraqi science than most regime programs, because the program implemented some merit-based competition and methodical science. According to reporting, the work stimulated by the IIC’s Technology Transfer Committee was scientifically credible and was selected on merit.

- The Technology Transfer Committee headed by Dr. Ja’far was involved in promoting research by the private sector and in Universities. The Committee stimulated work which lead to additional areas of research activity, according to the same reporting.

In contrast, other regime programs promoting individual scientific achievement probably were corrupted by special interest groups who stood to gain financially or personally for successfully lobbying chosen projects irrespective of scientific merit.

- If a knowledgeable person did not step in to put a halt to a scientifically invalid project, the project would proceed. After 1998, if a knowledgeable scientist objected to an unsound project that scientist was accused of being entrenched in the system, according to ‘Amir Hamudi Hasan Al Sa’adi.

MIC and MIM: Key Players in Iraq's Chemical Infrastructure

The chief military trade organization—the Military Industrialization Commission (MIC)—and the principal ministry of civilian commerce—the Ministry of Industry and Minerals (MIM)—both had subordinate production facilities which made conventional weapons, equipment and materials for the military.

- *Although the MIC and the MIM were separate ministries, they cooperated on military issues including equipment, spare parts, projects and vehicles. Dr. 'Imad Husayn 'Abdallah Al 'Ani, former VX expert, was the Director of the Office of Technical Cooperation, and was responsible for the cooperation and coordination between these two ministries and the Ministry of Defense as related to matters of supplying materials to the military, according to reporting.*
- *The Research and Development Office of MIM oversaw the Veterinary Center for the Formulation of Drugs for Animals, the Ibn-al-Baytar Center, the Chemicals Research and Development Center, the Ibn-Sina' Center and the Al Razi Center. The MIC's subsidiaries included the Al Majid Company, Al Basil Center, and the Al Raya Center.*

The scientific capabilities of the MIC and the MIM were comparable and most chemical research could be tasked to either, although pharmaceutical work was typically assigned to MIM, while pesticides research and production was usually delegated by MIC, according to reporting.

Prior to OIF, MIM was under less international scrutiny than the MIC, the key organization through which WMD activities were funneled under Husayn Kamil.

- Additionally, the special interest groups found ways to bypass the mechanisms intended to prevent unsound projects by suppressing bad results and evidence of failed tests, and by concurrently highlighting any experiment that was even partially successful.
- One example of a project with a poor scientific basis and no chance of success, according to Al Sa'adi, was a project to use lasers to disrupt weapon systems and computers of attacking aircraft. Although the experiments were conducted with a craft not used by any potential enemies, and only one of several tests was even partially successful, the project was considered a success and the system was ordered into unit production.

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Annex D Tariq Company's Activities

The Tariq Company, also referred to as the Tariq Facility and formerly the Tariq State Establishment, encompassed several facilities near Fallujah including a headquarters complex; Fallujah I, Fallujah II, and Fallujah III (also known as Habbaniyah III, II, and I); a research site in Baghdad referred to as the "Baghdad site"; and several storage locations. Tariq was subordinate to the former Muthanna State Establishment (MSE) chemical weapons (CW) research, production and storage facility near Samarra before it was destroyed. It has a long history of ties to Iraq's CW program, and throughout the 1990s continued to house key CW scientists and maintain basic capabilities to produce at least some CW precursor chemicals. Iraq renovated key processes and reinitiated production of basic chemicals in 2000.

- Tariq chemical facilities were designed to be, and in the case of Fallujah II previously used as, CW precursor production plants.
- Fallujah II, while under previous state ownership, produced nerve agent and sulfur mustard precursors for MSE in the late 1980s.
- Tariq as of 2002 employed some of the more influential personalities associated with Iraq's former CW production programs.

In an effort to determine the nature and extent of Tariq's activities after 1991, ISG conducted a series of site visits, interviews with key personnel, and document exploitation. Teams focused on evaluating activities of the two active Fallujah plants and questioning the former CW scientists, many of whom had held important positions in the former CW program, about their efforts at Tariq after the Gulf war.

Based on these investigations, ISG assesses that the Tariq Company did not provide Iraq with a breakout capability for nerve agent production.

- **Pesticide (Formerly Fallujah III):** Instead of synthesizing precursors and pesticides on site and

in Iraq, Tariq imported concentrated commercial pesticides for formulation, repackaging, and local distribution.

- **Chlorine/Phenol Plant (Formerly Fallujah II):** Leading up to OIF, this plant was not fully operational, and was unlikely to have provided any basic chemicals such as chlorine or phenol to an Iraqi CW effort. Because of technical problems, the plant could not even supply local markets with its products.
- **One of Tariq's labs, the Baghdad Research Laboratory,** was closed at an unknown date, according to interviews with Huwaysh, and he stated its employees did not participate in any CW-related research while it was open. Other ISG interviews indicate that the lab may have engaged in defensive nerve agent detector research.

As of 2001 or 2002, Tariq scientists were still regarded by members of the Regime as CW experts. When Saddam asked in 2001 or 2002 for an estimate of how long it would take to build a production line for CW, Huwaysh approached a team of Tariq scientists to answer the question, according to an ISG interview with Huwaysh.

- Huwaysh's expert team included a number of Tariq employees, such as former directors Ghazi Faisal and Zuhair al-Qazzaz, according to the same interview.

We are considering the possibility that Huwaysh confused the details and actually was referring to a similar incident involving him that occurred in 1997. In the latter case, Huwaysh—not Saddam—reportedly initiated a query about how Iraq's CW capability would be limited by an UNSCOM-ordered destruction of dual-use equipment rather than how quickly production could be restarted.

Former CW Personnel Employed by Tariq

Tariq employed a large number of CW scientists and engineers from Muthanna State Establishment, especially within upper management of the company, throughout the 1990s and up to March 2003:

- **Dr. Ghazi Faysal:** *Worked to build Tariq under the OMI after MSE was destroyed in the first Gulf war. Served as the director of Tariq until moving to al-Basel center.*
- **Dr. Iyad Muhammad Rashid Rauf:** *Deputy General Director for the Tariq facility. Iyad Rashid researched nerve agent production in the Salah ad Din Research Department of MSE.*
- **Husayn Shamki:** *Tariq research scientist.*
- **Ihsen Abd al-Amir:** *Tariq research scientist.*
- **Issam Daud Faysal:** *Formerly of the Al Karama Facility. Involved in quality control at MSE.*
- **Brig.Eng. Hayder Hassan Taha:** *Director of the Chlorine factory at Tariq; previously worked as a chemical engineer in the Project Directorate in Al-Muthana State Co.*
- **Staff Colonel Ra'd Manhal:** *Commercial and Planning director and NMD point of contact at Tariq, former director of the MSE munitions filling station.*

Dual-Use Facilities

Pesticide (Formerly Fallujah III)

Instead of synthesizing precursors and pesticides on site and in Iraq, Tariq imported concentrated commercial pesticides for formulation, repackaging, and local distribution.

- ISG interviews of a senior scientist revealed that around 50 tons per year of the pesticide Nugoz was imported, sometimes using false customs declarations.

- A research scientist stated that while Tariq formulated a large list of commercial pesticides, the company did not produce pesticides at greater than laboratory scale, which he attributed to a lack of glass-lined equipment available in Tariq.

Castor Oil Production (Formerly Fallujah III)

Castor oil was also produced at Tariq from 1992 until 2002, but ISG investigations did not uncover any indication that the ricin-containing mash was further processed or transferred off-site for any purpose. According to interviews with Tariq officials, they complied with UNSCOM regulations by burning the residual castor bean mash in pits near the Fallujah III facility.

Castor oil production ended in 2002 because of rising prices of castor beans and decreasing customer interest. Two companies interested in purchasing Tariq's castor oil were Ibn Al-Baytar and Samarra Drug Industries, but ultimately neither company purchased Tariq's oil because its process used solvent extraction and rendered the oil unfit for pharmaceutical and medical uses, according to the same interviews.

- An ISG site visit indicated that the castor oil extraction plant appeared to be undamaged, but there was no evidence of any current activity. All of the surrounding buildings were empty, possibly because of looters.
- Tariq's castor bean supplier, the Company for Industrial Forests, had raised its prices from 60,000 to 400,000 Iraqi dinars per ton (from US \$38 to \$250) in 2002, and predicted that prices would increase to 700,000 dinars (\$438) the next year, according to the same interviews.

Chlorine (Formerly Fallujah II)

Chlorine, a feedstock for some CW precursors, was produced at Tariq from 1993 to 1996, and sporadically thereafter; however, ISG has not discovered any information that indicates chlorine from the plant was diverted to a CW program. During an ISG site visit, the director of the phenol plant stated that

chlorine production had stopped months before OIF. Reporting indicates the facility was unable to obtain membranes—the key component of the technology at Tariq—to separate the chlorine.

- Members of the site visit team noted that membranes, probably older, used ones, were stacked by the roadside close to the northwest entrance. The director stated that they had been moved here to protect them in the event that the plant was bombed.
- Chlorine from the plant was sold to local sanitation plants and also consumed onsite to produce other commercial water purification compounds such as sodium hypochlorite and calcium hypochlorite, which were sold for water treatment, according to the director.

Technical difficulties with the process resulted in lower production outputs from 1996 until 2000.

According to the director, the chlorine cells had been broken for several months and control valves, main instrumentation control panels and a step down transformer were missing.

In 1999, the Indian firm NEC Engineers Private, Ltd., was recruited to begin repairing the chlorine production lines, according to multiple sources.

The plant director during the interview said NEC constructed the membrane cell equipment that would be used to produce chlorine and caustic soda, but one of the membranes was second-hand and perforated easily, which caused further problems with the operation.

- Once the project was completed, operational training in India was scheduled for the plant engineers in, according to documents recovered by ISG.
- Tariq, along with MIC employees and a representative from Iraqi Intelligence, formed a committee to conceal imports from India's NEC engineers during a chlorine plant repair, according to documents recovered by ISG.

By March 2000, with help from the Indian firm NEC Engineers, the chlor-alkali plant was brought back on-line. On 02 July 2003, neither the chlorine nor the phenol plants at Fallujah II were in working order. With little likelihood of any production in the near future, few employees were at the facility.

Phenol (Formerly Fallujah II)

Since its 1995 commissioning, UNSCOM was suspicious of the true nature of Tariq's phenol plant because of its proximity to Tariq's chlorine plant and a lack of details about modifications performed at the plant. As of OIF, the plant was no longer in operation, according to an ISG site visit and interviews with the director of the plant; the temperature control equipment was broken, as had been the case for some years, and was one of the reasons for the plant's low production levels.

- According to the plant director, the phenol had mostly been for al-Ramadi facility, where it was converted into a resin, used for making molds.
- ISG visited a resin facility north of Baghdad in March 2004, and observed that this large phenol consumer did not use indigenously produced phenol from the Tariq facility; rather, they imported phenol from South Africa, with UN permission.
- Additional processes at the phenol plant included a small azeotropic ethanol distillation unit, recovered from Al Muthanna. The purified ethanol was then sent to SDI and hospitals for pharmaceutical purposes, according to the director.
- In addition to a large list of industrial uses including resin and fiberglass production, phenol could also be used as a starting block for cyclohexanol, one component of cyclosarin, when reacted catalytically with chlorine. Cyclohexanol can also be synthesized from benzene, a much cheaper and more abundant chemical in Iraq, but we have no information that indicates Iraq used either process to produce cyclohexanol.

Research Activities

We assess the bulk of the Tariq's research throughout the 1990s—formulation and stability of pesticides—was legitimate and not CW related; however, a limited amount of defensive work with nerve agent simulants, and even gram-scale synthesis of agent may have occurred.

- A research scientist reported that a typical formulation research project included evaluation of the following factors: literature research on pesticides; availability and ease of import of raw concentrated ingredient, emulsifiers, and stabilizers within Iraq; stability testing and physical properties testing of formulated product over time and temperature ranges; and field testing with 500 kg pilot-scale batches.
- The scientist confirmed to ISG that malathion, dichlorovos and 2,4-D amine, the amine salt of 2,4-D, had all been synthesized on a laboratory scale.

Because of feared repercussions and the awareness of the dual-use nature of Tariq's products, officials at Tariq were often reported as hesitant to allow or support research that could be considered CW-applicable by the international community.

- Ghazi Faisal had instructed the researchers to avoid synthesis of organophosphorus compounds as it might cause them difficulties with the UN, according to ISG interviews with Tariq scientists, and a senior scientist claimed he did not know of any synthesis of phosphorus based compounds.
- Huwaysh stated that he went out of his way to make sure that no CW research was going on, even to the point of canceling the Tariq research center in Baghdad.

Tariq, in addition to its own research for industrial processes, also bid for and won research contracts from the IIC list of 1,000 chemicals, none of which were phosphorus-related. Tariq's research and development department routinely reported the progress of these projects to Hamza Yassin, chief of chemical research and development at the OMI, according to reporting.

- Tariq researchers evaluated scale-up feasibility of the following industrial chemicals: benzyl alcohol, acetyl chloride, sodium hydroxide, aluminum hydroxide, ortho-chloroaniline, calcine, ferrous chloride, and mono-chloro acetic acid.

Tariq scientists have also participated in CW defensive research, including the development of suitable nerve agent simulants for military training purposes and possible gram-scale production of VX standards for testing detectors and studying its degradation products.

- A senior scientist, when asked about military equipment at Tariq, immediately mentioned a Russian-made detection system brought to the site by another senior scientist and used in simulant research.
- A research scientist described larger-scale simulant research project in 2002 that had been directed by a presidential order. The research group produced 1,000 liters of Tariq One—Nogoz as a nerve agent simulant, and Tariq Two—diethyl amine as a nitrogen mustard simulant. The compounds were colored with dye, and thickened with a polymer. He asserted that any symptoms from the formulated pesticides would pass within a half hour, according to ISG interviews with him.

Annex E Al-Abud Network

Summary

Triggered by a series of site exploitations and detentions in March 2004, Iraq Survey Group (ISG) began investigating a network of Iraqi insurgents—referred to as the al-Abud network—who in late 2003 and early 2004 actively sought chemical weapons for use against Coalition Forces. ISG created a team of experts—including operators, analysts, and technical ops officers—to systematically investigate and disrupt the al-Abud network and diffuse the immediate threat posed by the insurgents. The team also focused on identifying links between al-Abud players and former regime CBW experts to determine whether WMD intellectual capital was being tapped by insurgent elements throughout Iraq. By June 2004, ISG was able to identify and neutralize the chemical suppliers and chemists, including former regime members, who supported the al-Abud network. A series of raids, interrogations, and detentions disrupted key activities at al-Abud-related laboratories, safehouses, supply stores, and organizational nodes. However, the insurgent leaders and financiers within the network remain at large and alleged chemical munitions remain unaccounted.

Organization and Preparation

Fallujah-based insurgents—belonging mostly to the Jaysh Muhammad organization—recruited in late 2003 an inexperienced Baghdad chemist to lead the development of chemical agents including tabun, mustard, and other nontraditional agents. The insurgents targeted the chemist because of his background in chemistry—albeit limited and with no ties to former regime CW program—and his access to chemicals in Baghdad’s chemical suk district. The insurgents appear to have recruited the chemist with financial incentives; however, debriefings of detained al-Abud network members suggest that the chemist was sympathetic to the insurgent’s anti-Coalition cause.

After identifying their chemist, the al-Abud network sought chemicals and equipment needed to conduct CW experiments. The al-Abud network had little difficulty in acquiring desired chemicals after OIF, including malathion pesticide and nitrogen mustard precursors. However, it remains unclear if their inability to acquire necessary precursor chemicals is attributed to a lack of supply or CW inexperience.

- The insurgents acquired most of the chemicals from farmers who looted state companies and from shops in Baghdad’s chemical suk.

The last component of the CW project involved dissemination of the agents. The al-Abud network relied on a political member of Jaysh Muhammad to provide the mortar rounds, which the insurgents would fill with agent for planned use against Coalition Forces. It remains unclear how the insurgents intended to utilize the rounds, either fired as mortars or detonated as improvised chemical devices.

Initial CW Experiments

The al-Abud network first attempted to produce the nerve agent tabun in late December 2003, and the experiment was a self-admitted failure because the insurgents lacked the necessary chemicals. The product of the first CW experiment was a mixture of malathion and other chemicals, which by itself is a poisonous compound if disseminated properly.

- The al-Abud network used their malathion mixture to “weaponize” nine mortar rounds. The mortars likely are an ineffective means of dispersing the malathion because the detonation of the mortar will consume the poison.
- Malathion and tabun have similar chemical structures, however it is not possible to create tabun from malathion. The al-Abud chemist understood this limitation, but probably continued with the experiments to appease the insurgents.

The al-Abud chemist abandoned his tabun experiments after initial failures, but months later in March 2004 he considered trying to produce tabun from the

prescribed precursor chemicals, not malathion. Based on ISG investigations, the al-Abud network did not have the necessary chemicals. A lack of resources and insurgent backing probably forced the al-Abud chemist to cease his attempts to produce tabun.

Mustard Experiments and Weaponization

After the initial attempt to produce tabun, the al-Abud network in late January and early February 2004 began acquiring materials for the production of nitrogen mustard. The al-Abud network had the necessary materials, but lacked the expertise, to produce nitrogen mustard.

- They failed to produce nitrogen mustard because the chemist used incorrect amounts of the precursors and inadequate processes.
- Following the mid-March failure to produce mustard, the al-Abud network sought the assistance of a young “chemist-for-hire”—who owned a small chemical lab in Baghdad—to refine their processes. The younger chemist also failed to produce nitrogen mustard.
- The al-Abud network approached the “chemist-for-hire” because of his reputation as a capable chemist in Baghdad. Although he did not have any prior CW experience or previous anti-Coalition tendencies, the young chemist willingly aided the al-Abud network as a profit-seeking mercenary.

With time and experience it is plausible that the al-Abud network could have mastered the processes necessary to produce nitrogen mustard. However, Coalition Forces disrupted the al-Abud network’s ability to produce nitrogen mustard when they detained the younger and more experienced al-Abud chemist and confiscated chemical precursors. Lacking the young chemists’ expertise, the network likely shifted its focus to the production of binary mustard.

In renewed efforts to produce mustard, the al-Abud network returned to the chemical suk in Baghdad to purchase necessary chemicals and began the weaponization of binary mustard rounds. Weaponization of binary mustard in mortar shells is relatively simple, however the insurgents poorly executed this procedure.

Ricin and Nontraditional Agent Production

The younger al-Abud chemist—at the urging of the other al-Abud chemist and motivated by financial gain—successfully produced small quantities of ricin extract in March 2004 using widely distributed terrorist literature. ISG exploited the young chemist’s laboratory to reveal an operational lab setup designed for producing ricin cake—a substance that easily can be converted to poisonous toxin ricin. The production of ricin likely occurred without the direct knowledge of the al-Abud insurgents, but the chemists probably intended to sell the toxin for use against Coalition Forces.

- The lab setup contained the necessary raw materials and equipment to produce small quantities of ricin and was not capable of facilitating a mass-casualty ricin attack. However, the lab could have produced enough ricin to cause a few isolated casualties—if disseminated properly.

Within the same timeframe of the tabun and ricin experiments, the al-Abud chemists prepared two additional agents, napalm and sodium fluoride acetate, for the Jaysh Muhammad insurgents in the al-Abud network. ISG assesses their efforts to produce nontraditional compounds capable of causing mass casualties as highly unlikely.

Jaysh Muhammad

Jaysh Muhammad (JM) is an anti-Coalition group with both politically motivated and religiously motivated elements that ISG began tracking after they produced chemical mortars. The politically motivated members are Ba’athist, pro-Saddam elements who tend to be of the Sufi religious soca. The Sufi enjoyed special status during the Regime and hold Izzat al-Duri, the ex-vice-president, in exceptionally high esteem. They were members of intelligence, security, and police forces from the previous regime.

According to detainee accounts, JM members, along with Fallujah based insurgents planned to use the CW rounds against Coalition Forces. Evidence suggests that JM acquired the rounds, although it remains unclear if they were used. Until we are able to capture the key figures of JM involved with al-Abud, it is unlikely we will determine what happened to the rounds.

Ties to the Former Regime

ISG has found no evidence that the recent chemical weaponization attempts stem from the former regime's CW program or represent a prescribed plan by the former regime to fuel an insurgency. However, many of the known al-Abud personalities have ties to the former regime through either business relationships or political affiliations. Capitalizing on these connections, the al-Abud insurgents—including former Ba'athists—utilized a pre-OIF supply infrastructure to access chemicals and mortars.

- The primary chemical supplier in Baghdad—who had business ties to former regime companies as well as personal relationships with MIC and Iraqi Intelligence Service (IIS) officials—served as a facilitator for the al-Abud network, supplying chemicals and limited financial backing.
- The leadership of Jaysh Muhammad is comprised of mostly Ba'athists with ties to the former regime. Insurgent knowledge of pre-OIF infrastructure enabled the network to source and generate much of its chemical-biological warfare capability. Whether due to previous positions held or personal contacts within the former regime, much of the direct support derived from various former regime means.

Ties to the Insurgency

ISG has found no evidence to confirm or deny that the al-Abud network is an integrated and coordinated piece of a larger insurgency campaign in Iraq. However, the al-Abud network's efforts are likely known to the insurgency because of the proximity in Fallujah of the al-Abud leadership and insurgent Zarqawi network. Additionally, the majority of figures in the al-Abud network are at least sympathetic to the insurgent cause.

Implications

The most alarming aspect of the al-Abud network is how quickly and effectively the group was able to mobilize key resources and tap relevant expertise to develop a program for weaponizing CW agents. If the insurgents had been able to acquire the necessary materials, fine tune their agent production techniques, and better understand the principals behind effectively dispersing CW, then the consequences of the al-Abud network's project could have been devastating to Coalition Forces.

- Despite the fleeting nature of the insurgent's initial attempts, the al-Abud chemists progressively gained experience with CW, and continued different approaches with the same goal.

The al-Abud network is not the only group planning or attempting to produce or acquire CBW agents for use against Coalition Forces. ISG focused on the al-Abud network because of the maturity of the group's CW production, as well as, the severity of the threat posed by its weaponization efforts. Recent reporting from a variety of sources shows insurgent's attempts to acquire and produce CBW agent throughout theatre. The availability of chemicals and materials dispersed throughout the country, and intellectual capital from the former WMD programs increases the future threat to Coalition Forces by groups such as the al-Abud network.

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Annex F Detailed Preliminary Assessment of Chemical Weapons Findings

Chemical Munitions—Other Finds

Introduction

Beginning in May 2004, ISG recovered a series of chemical weapons from Coalition military units and other sources. A total of 53 munitions have been recovered, all of which appear to have been part of pre-1991 Gulf war stocks based on their physical condition and residual components.

The most interesting discovery has been a 152mm binary Sarin artillery projectile containing a 40 percent concentration of Sarin which insurgents attempted to use as an Improvised Explosive Device (IED). The existence of this binary weapon not only raises questions about the number of viable chemical weapons remaining in Iraq and raises the possibility that a larger number of binary, long-lasting chemical weapons still exist.

- ISG has no information to indicate that Iraq produced more binary Sarin rounds than it declared, however, former Iraqi scientists involved with the program admitted that the program was considered extremely successful and shelved for future use. According to the source, General Amer al-Saadi sought to downplay its findings to the UN to avoid heightened attention toward the program.

Under UN Security Resolution 687, Iraq should have destroyed or rendered harmless all CW munitions, but we cannot determine without additional information whether the rounds we have recovered were declared or if their destruction was attempted.

- An Iraqi source indicated that when weapons were forward-deployed in anticipation of a conflict, the CW weapons often became mixed in with the regular munitions, and were never accounted for again. Another source stated that several hundred munitions moved forward for the Gulf war, and never used, were never recovered by retreating Iraqi

troops. A thorough post-OIF search of forward depots turned up nothing—if the weapons were indeed left behind, they were looted over the 12 years between the wars.

- Iraq's unilateral destruction of weapons in 1991 was far from perfect—a February 2003 UNMOVIC inspection at the Al Azziziyah Firing Range to attempt to account for 157 R-400 bombs by inspecting the debris turned up 8 bombs that had survived the 1991 explosions. So it is possible that Iraqi—or even UN—explosion pits could have been looted of a few surviving munitions.
- Because of poor Iraqi inventory accounting, simple pilferage before or after the 1991 Gulf war could have resulted in some lost munitions.

May 04: 155mm Chemical Munitions Used as an Improvised Explosive Device

Military units recovered a 155mm artillery round near Baghdad International Airport. Analysis of the residue at the bottom of the round by ISG field labs returned positive indications for sulfur mustard CW agent. The lab results, type and condition of the round, and the lack of markings indicate it is an Iraqi CW-filled 155mm round left over from the pre-1991 Iraqi program. The lack of a driving band makes it difficult to determine whether the round was fired, where it was acquired, and suggests the band probably was looted (see Figure 1).

Historical context: Iraq purchased thousands of empty 155mm artillery rounds designed to disseminate smoke chemicals. The original markings were generally painted over and the munitions filled with CW agent mustard. Over 10,000 of these rounds were destroyed under UN supervision, but they have not all been accounted for.

One of the key UN unresolved issues involves 550 mustard-filled rounds. An ISG investigation into this issue yielded inconsistent information about the final disposition of the 550 shells, with one official claiming they were retained for future use. The ISG has not been able to confirm these claims.



Figure 1. 155mm sulfur mustard chemical round.

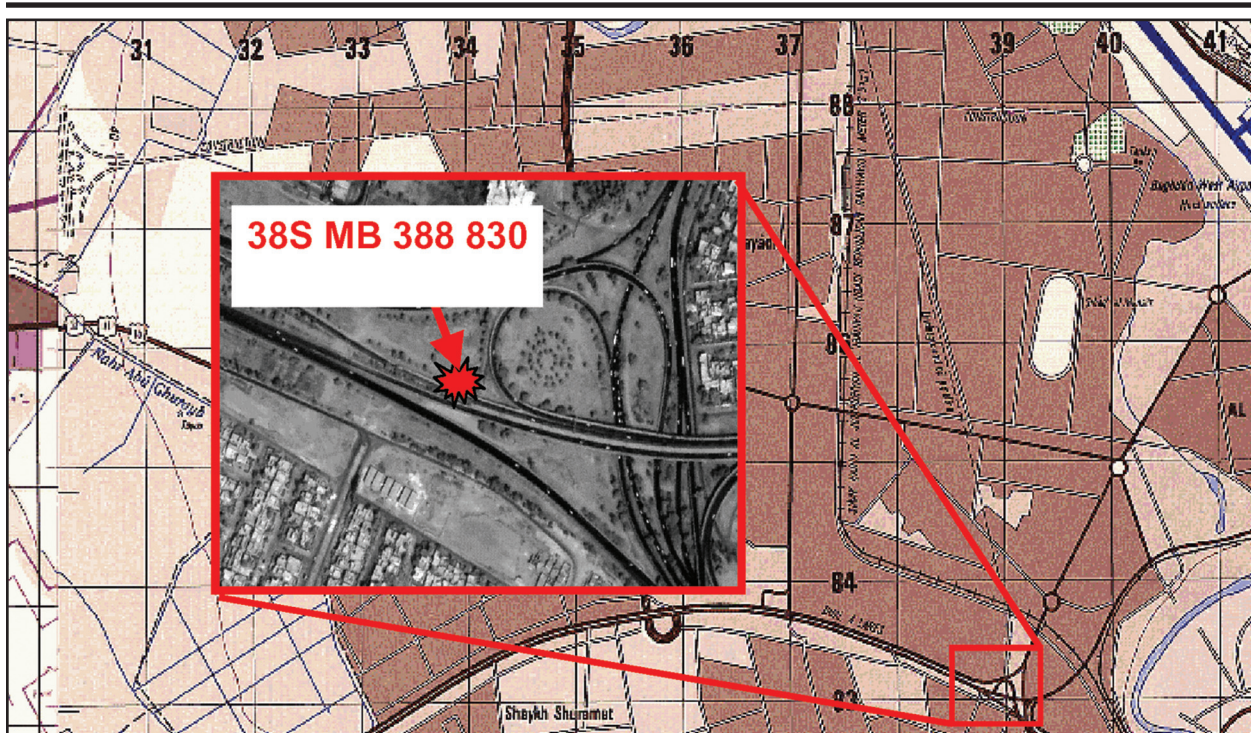


Figure 2. Location of binary Sarin round along airport and road.

16 May 2004: 152mm Binary Chemical Improvised Explosive Device

A military unit near Baghdad Airport reported a suspect IED along the main road between the airport and the Green Zone (see figure 2). The munitions were remotely detonated and the remaining liquid tested positive in ISG field labs for the nerve agent Sarin and a key Sarin degradation product.

The partially detonated IED was an old prototype binary nerve agent munitions of the type Iraq declared it had field tested in the late 1980s. The munitions bear no markings, much like the sulfur mustard round reported on 2 May (see Figure 3). Insurgents may have looted or purchased the rounds believing they were conventional high explosive 155mm rounds. The use of this type of round as an IED does not allow sufficient time for mixing of the binary compounds and release in an effective manner, thus limiting the dispersal area of the chemicals.

Historical context: Iraq only declared its work on binary munitions after Husayn Kamil fled Iraq in 1995, and even then only claimed to have produced a limited number of binary rounds that it used in field trials in 1988. UN investigations revealed a number of uncertainties surrounding the nature and extent of Iraq's work with these systems and it remains unclear how many rounds it produced, tested, declared, or concealed from the UN.

16 May 2004: 10 155mm Chemical Rounds

A military team interrupted a group of Iraqi individuals attempting to bury multiple projectiles at a location near Canal Road in Baghdad (see figure 4). The individuals fled the site when fired upon, and the military team captured multiple artillery rounds and other weapons at the site. ISG's field labs tested the recovered 155mm rounds and found some trace amounts of sulfur mustard and sulfur mustard degradation products in a few of the rounds. Technical experts found that each round contained a ruptured burster tube—inconsistent with UN destruction practices—suggesting that either Iraq unilaterally destroyed the rounds or looters attempted to drain residual agent from them (see figure 5).

Historical context: Iraq declared in its 1996 Full, Final, and Complete Declaration (FFCD) that it produced 68,000 155mm sulfur mustard-filled rounds between 1981 and 1990. Of those produced, Iraq has not been able to account for the location or destruction of 550 155 mm shells. The bulk of 155mm destruction occurred between 1993 and 1994 and many of the log entries show that the mustard was partly polymerized, which is consistent with our findings in the recent sulfur mustard rounds.

16 June 2004: Two 122mm SAKR-18 Artillery Rockets

An Iraqi source turned over to Polish Forces two 122mm rockets obtained at the Khamisiyah Depot—a former CW storage site declared by Iraq to have housed 122mm filled rockets (see Figure 6). Details about the provenance of these rounds remain unclear but the source Sarin/Cyclosarin believes the missiles were housed in a bunker struck during the Gulf war and subsequently hidden in canals and lakes in the area. Analysis of the liquid residue revealed the nerve agents Sarin (GB) and Cyclosarin (GF) as well as a number of impurities and known degradation products of GB and GF. Given the age, leakage, decomposition of nerve agent, and small quantity of remaining liquid, these rounds would have limited, if any, impact if used by insurgents against Coalition Forces (see Figure 7).

Historical context: Iraq declared having produced the following numbers of 122mm nerve agent rockets, but made no distinction in its declaration about the type of sarin fill: GB, GF, or GB/GF mix. We suspect, based on data from the declaration and the UNSCOM 239 Report that GB/GF-filled rockets were included in the 1988 and 1990 declaration figures. Although the origin of these rockets has not been clearly stated, the Khamisiyah Ammunition Storage Depot where the rockets were found has a long history of CW storage, Coalition bombing, and UN investigation.

Origin of the Binary Sarin Round Used on BIAP

The binary chemical round detonated near the Baghdad International Airport (BIAP) probably originated with a batch that was stored in a Al Muthanna CW complex basement during the late 1980s for the purpose of leakage testing. Iraq placed at least 12 filled binary Sarin munitions, either 152 or 155mm projectiles, in the basement of the Salah al-Din laboratory at the Al Muthanna CW complex, according to a report.

- *The same report claims that only 20-30 binary 152mm rounds were produced, and the program switched to 155mm rounds after the 152mm rounds were expended in testing. The report stated that all of the binary munitions with aluminum canister inserts (such as the one used on BIAP) should have been used in field testing, but some may have been set aside for leak testing at Al Muthanna.*
- *A different report stated that as of 1988 no binary chemical rounds were stored at any other location besides the Salah al-Din laboratory, and that the rounds were kept in the basement to test for leakage and chemical degradation.*
- *A third report speculated that binary rounds may either have been buried or moved to one of two bunkers in the mid-1990s when the UN ordered the Al Muthanna complex to relocate a large number of chemicals and munitions. The same report said that Salah al-Din al-Nu'aymi, the manager of the binary Sarin munitions project, frequently stored munitions he was working on but had not tested in the basement of his laboratory at Al Muthanna.*
- *A fourth report said that 20-40 binary shells were kept in the "special stores" at Al Muthanna as of the late 80s, but the source believed that these had been destroyed by UNSCOM. ISG has been unable to verify from UNSCOM reports that any binary shells were destroyed at Al Muthanna.*

The Technical Research Center (TRC) also worked on producing 152mm binary Sarin artillery shells, but we have no reason to believe that they possessed functional chemical munitions.

- *According to the Iraqi FFCD, the TRC conducted lab experiments with 152mm binary munitions using a simulant to test the mixing of the binary components. No binary tests using chemical agent at the TRC were declared.*
- *According to one report, the Iraqi Intelligence service officer Ali Muklif ran the binary program, and the deputy director of the Military Industrialization Commission, Amir al-Sa'adi, ordered the work. The report claimed that al-Sa'adi provided the TRC with chemicals and possibly 152mm rounds, but the report did not elaborate on the work performed by the TRC.*

The disposition of the 152mm and/or the 155mm artillery projectiles after the Gulf war is unknown, although it is possible that the rounds remained at the Al Muthanna complex and were looted after OIF.

- *Even though Al Muthanna has been extensively investigated by UN and ISG teams, the complex covers 10 square miles, which makes it difficult to fully exploit. An ISG team that went to the site in January said that looters appeared to have been at several parts of the Al Muthanna complex.*
- *Several parts of the Al Muthanna complex were bombed or in poor condition throughout the 1990s. These areas pose a health risk to exploitation teams, but looters have shown themselves to be less risk-averse than ISG personnel. It is possible that the round was removed from an area in Al Muthanna that was deemed unsafe to exploit.*
- *An alternate explanation is that rounds were moved out of Al Muthanna and stored at a different location in the early 1990s, where it was later looted after OIF, although we have no reporting to substantiate this possibility.*

The actual number of filled binary artillery shells produced by the Iraqi CW program during the 1980s is unknown, but we assess that only a handful of filled binary rounds would have existed after the Gulf war.

Origin of the Binary Sarin Round Used on BIAP (continued)

- According to a report, the National Monitoring Directorate only asked for the number of binary CW rounds Al Muthanna tested, not the number it actually produced. The Iraqi FFCD from June 1996 states that 10-12 152mm and 160 155mm binary Sarin artillery shells were field-tested.
- If the number of 152mm artillery shells produced by Al Muthanna was a few dozen, as was stated in the aforementioned sensitive report, then the shells which remained in the basement of the Salah al-Din

Laboratory in the late 1980s may have been the only filled binary sarin rounds which existed at the time of the Gulf war.

- Reporting states that the only 152mm binary Sarin rounds produced by Al Muthanna that were not destroyed in field tests were in the basement of the Salah al-Din laboratory. The report stated that at least 12 binary munitions were placed there, although they may have been 152mm, 155mm, or a mixture of both.
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Historical context: Prior to the Gulf war, the Iraqis had stored SAKR munitions in bunkers at the Khamisiyah Depot and moved some of them to a nearby depression near a canal prior to the conflict to avoid combing. During the Gulf Conflict US ground forces captured the Khamisiyah Depot and blew some of the storage bunkers without knowledge of CW munitions there.

UN inspectors have since visited the site and UNSCOM's figures for these 122mm munitions indicate that between 350 and 400 are not accounted for—almost certainly the rounds that remained in Building 71 after its demolition. Between 1991-1998 Iraqi's looted the structure, and in doing so disposed of the contents, including weapons. The likelihood is that the rounds were chucked into nearby piles of earth, which were in turn covered by more debris.

25 June 2004: 17 Additional 122mm SAKR-18 Artillery Rockets. July 2004: 22 Additional 122mm SAKR-18 Artillery Rockets

An additional 17 rockets from the same cache described above (d) were identified at the Khamisiyah Depot by the same source. (See figure 8). Sixteen were returned to ISG for analysis and one was exploded onsite because it retained an intact rocket motor that posed safety concerns. Most of the rounds had been severed, exposed to heat, or were partially destroyed. Four intact rounds were separated for testing and returned a preliminary positive result for G-series nerve agent. None of these rounds retained a liquid fill line, suggesting the agent had degraded over time. 22 more rockets were discovered at Khamisiyah. 21 were in deteriorated condition with only one intact rocket with residual riot control agent present. (See figure 9).

Historical context: These 122mm SAKR-18 rockets were discovered at the Khamisiyah Depot. Please refer to the box above for relevant historical context.



Figure 3. 152mm binary Sarin round used as IED.

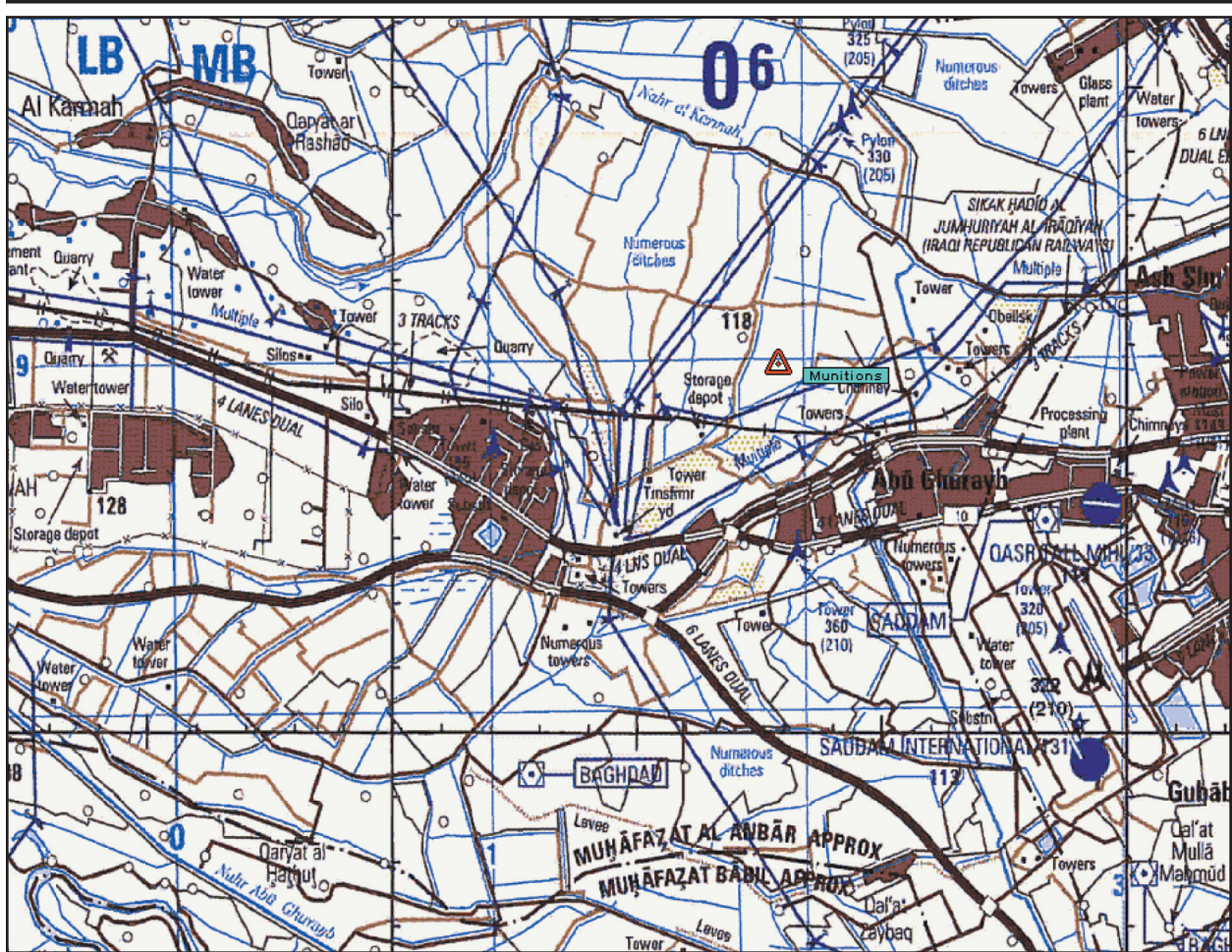


Figure 4. Location of chemical rounds along canal road.



Figure 5. Examples of the 10 155mm chemical rounds and x-rays of ruptured burster tubes.

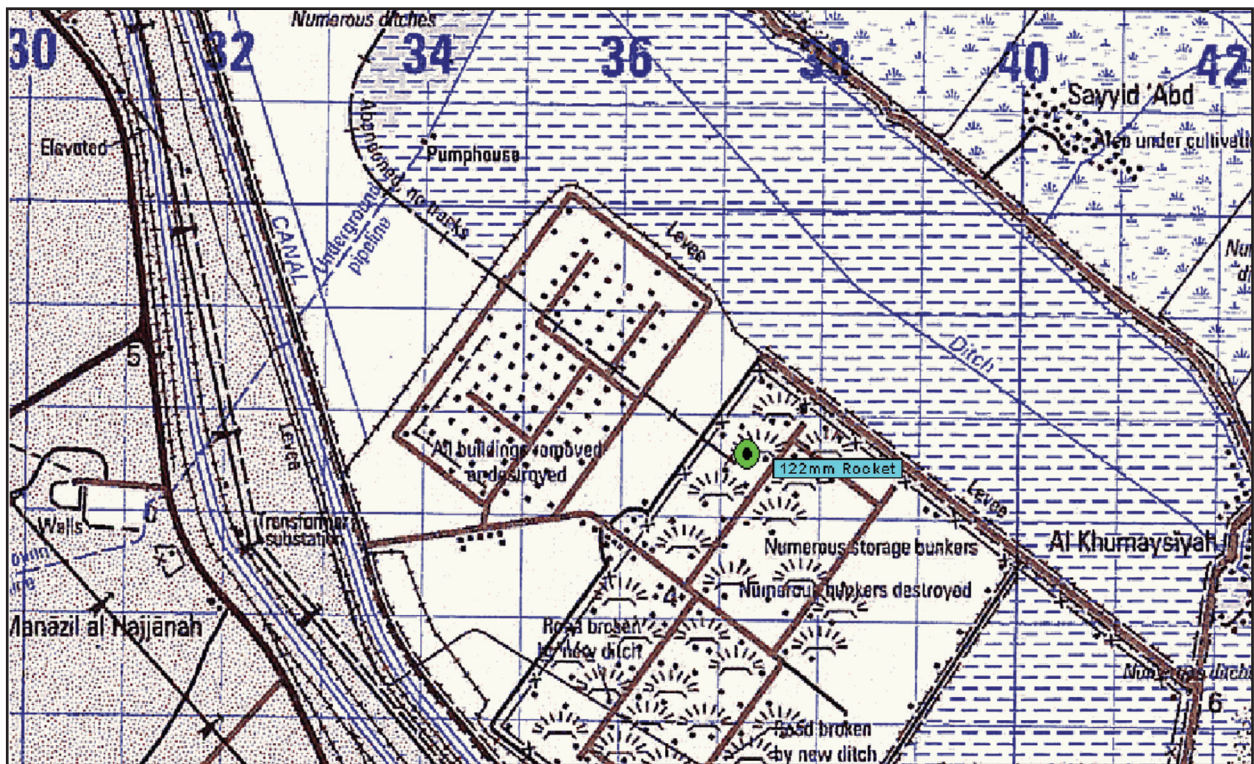


Figure 6. Location of SAKR-18 rockets at Khamisiyah depot.

Chemical



Figure 7. Photos and x-ray of SAKR-18 rockets.



Figure 8. Additional SAKR-18 rockets turned in from Khamisiyah depot.



Figure 9. Additional SAKR-18 rockets turned in from Khamisiyah depot.

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