



# THE CIP REPORT

CRITICAL INFRASTRUCTURE PROTECTION PROGRAM

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This month's edition of *The CIP Report* provides an overview and insight into the work and progress being made on critical infrastructure in Iraq. As pointed out in an interview with Curtiss Jayjohn, little infrastructure hardening or protection was in place under Saddam Hussein. There was little investment made in keeping various infrastructures technologically updated or in following best practices. As a result, a monumental task is faced by the Iraq Transition Assistance Office (ITAO), which became the successor organization to the Iraq Reconstruction Management Office (IRMO) on May 9, 2007 by Executive Order of the President.

Using the \$21 billion allocated in 2003 by Congress to the Iraq Relief and Reconstruction Fund (IRRF), the ITAO has focused on reversing the years of neglect and disrepair of Iraq's infrastructures to improve the lives of the Iraqi people and jumpstart the economic development needed within this country. In the articles and information provided by the ITAO for this issue, we highlight the background programs and projects that have made significant improvements and investment in the future of Iraq's infrastructures. Curtiss Jayjohn, the Senior Consultant and Program Manager for Critical Infrastructure Security at the Iraq Transition Assistance Office (ITAO) in Baghdad, provides insight into his motivation to be a part of this demanding effort, as well as the unique challenges faced by this office working in a war zone.

We greatly appreciate these contributions, as they not only provide incredible insight into protecting and rebuilding critical infrastructures in the worst of scenarios, but serve as a visceral reminder of just how incredibly important these infrastructures and the manpower that supports and drives these complex, integrated systems are to the daily functioning of a nation. We also deeply commend all of those individuals that work in this dangerous environment for their contribution to this critical rebuilding effort and the hope that they offer to the Iraqi people.

As always, we thank you for your continued support of the CIP Program and hope you enjoy this issue of *The CIP Report*.



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CRITICAL INFRASTRUCTURE  
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# Rebuilding Iraq's Critical Infrastructure

## 1. Introduction

The U.S. Government funded reconstruction program undertaken in Iraq is an integral component of the overall mission. Substantial investments have been made to build Iraq's infrastructure and to improve the delivery of essential services to Iraqis nationwide. These services include, for example, the provision of potable water, collection of sewage, and the provision of electricity to e.g. ministries, clinics, police stations, and private households. However, the reconstruction effort is being conducted amidst a challenging security environment and critical infrastructure security programs need to be implemented to protect the gains accomplished to date. The infrastructure security program aims to reduce the number of successful interdictions of Iraq's oil, electricity, and water infrastructure so that Iraq can develop and prosper. This article

**[T]he reconstruction effort is being conducted amidst a challenging security environment and critical infrastructure security programs need to be implemented to protect the gains accomplished to date.**

will briefly outline the extent of the U.S. led reconstruction program and then detail initiatives to protect critical infrastructure sites.

## 2. Reconstruction in Iraq

By Executive Order signed on May 9, 2007, the President created The Iraq Transition Assistance Office (ITAO) as the successor organization to the Iraq Reconstruction Management Office (IRMO). The ITAO has fiduciary oversight over reconstruction funding, is tasked to conclude the remaining infrastructure projects expeditiously in Iraq, and it will facilitate Iraq's transition to self-sufficiency.

The ITAO, along with numerous executive departments and agencies, has been working to reverse the effects of years of neglect and degradation of Iraq's infrastructure, environment, and social services incurred during the Saddam era. In 2003, the Congress appropriated nearly \$21 billion to the Iraq Relief and Reconstruction Fund (IRRF). Approximately 70% of the IRRF monies are allocated to five sectors including: 1) security & law enforcement (24%), 2) electricity (20%), 3) water & resources and sanitation (10%), 4) oil (8%), and 5) justice, public safety, and civil society (6%).

U.S. reconstruction initiatives have repaired or constructed key infrastructure facilities, improved essential service provision, raised the standard of living for ordinary Iraqis, and helped jump start the Iraqi economy. Some reconstruction highlights include the following:

- U.S. electricity sector projects contributed 2,000 MW in new generation capacity, and with rehabilitation and repair, a total of 8,442 MW of feasible capacity is on the system. However, insurgent attacks, maintenance problems, and fuel shortages



*Mussayib Electricity Plant*

*(Continued on Page 3)*

## Rebuilding (Cont. from 2)

are keeping an estimated 4,000 MW offline. Even with this loss, power supplies across Iraq are above pre-invasion levels;

- Water projects have refurbished or expanded 21 major water treatment plants in Iraq to date, increasing the supply of potable water to serve around 5.8 million Iraqis;
- In 2003, none of the sewage treatment plants in Iraq were functioning properly and the sewage collections systems were in poor condition. This resulted in sewage being pooled in neighborhoods and dumped directly into nearby rivers. IRRF-funded projects have refurbished nine sewage treatment plants in seven cities in Iraq providing sewage treatment to a 5.1 million Iraqis; and
- Rebuilding in the oil sector comprised 55 projects. They have resulted in the capacity to produce approximately 2.7 million barrels of oil per day, and liquefied petroleum gas (LPG) production capacity has increased to 1,400 tons per day.

The majority of IRRF projects are now complete, with most of the remaining projects to be finished by the end of 2007. The total IRRF construction projects completed to date is 5,133. Non-construction projects total 12,641; most of these are small miscellaneous assistance projects funded through USAID. A significant amount of completed projects have been transferred to the

Government of Iraq (GoI). The focus of U.S. Government efforts has been shifting from reconstruction to more traditional technical assistance in order to enhance the operating capacity of the GoI, promote political and economic reform, and stimulate private sector growth. The GoI is gradually assuming most of the financial burden for its national recovery and its \$41.1 billion 2007 budget envisages \$10.1 billion for capital investment programs. This budget puts Iraq on the path to strengthen its economy with internal resources, promote capacity development, and foster private sector growth. Nevertheless, efforts must continue to improve the security environment so that meaningful political and economic development can persist.

### 3. Infrastructure Security and Protection

Reconstruction in Iraq is often conducted in perilous conditions and installations such as oil pipelines or power transmission lines unfortunately are exposed to attacks. Iraq's dependence on oil revenues for its development illustrates the importance of protecting critical infrastructure installations. Over 75% of Iraq's national budget in 2007 is projected to derive from oil revenue. Protecting Iraq's linear energy infrastructure and critical nodes to include generation units, transmis-



*Sharq Diyla Water Treatment Plant*

sion facilities, and strategic pipelines that provide fuel for generation is therefore of utmost importance for the positive economic future of the country.

The United States has invested more than \$320 million to improve Iraq's capacity to protect its critical oil and electricity infrastructure. Infrastructure security and protection projects are being implemented in a phased approach with much work underway currently and planned to be completed by spring 2008.

The program's objectives are to:

1. Develop and execute security and integrity projects supporting sustainability of essential services; and
2. Reduce the number of successful interdictions of Iraq's oil, electricity, and water infrastructure.

Funding for this sector derives from two main sources: 1) \$51 million from IRRF monies dedicated to facilities protection, and 2) \$277 million from the fiscal year 2006 Economic Support Fund (ESF) used for infrastructure security  
(Continued on Page 4)



**Baghdad Airport Control Tower**

**Rebuilding** *(Cont. from 3)*

protection in the oil (\$135 million), water (\$7 million), and electricity (\$135 million) sectors. The ESF is a bilateral economic assistance account and part of the U.S. Foreign Operations Budget used to promote economic or political stability in rebuilding and developing countries around the world.

The ITAO’s Infrastructure Integrity Office along with the Gulf Region Division of the U.S. Army Corps of Engineers have established a preliminary list of 44 infrastructure security projects, with \$233 million either committed or obligated. The projects generally fall into the following categories:

- Exclusion Zones which are protected areas to provide security to linear infrastructure;
- Intrusion Detection Systems (IDS) featuring electronic sen-

sors that can detect perimeter breaches;

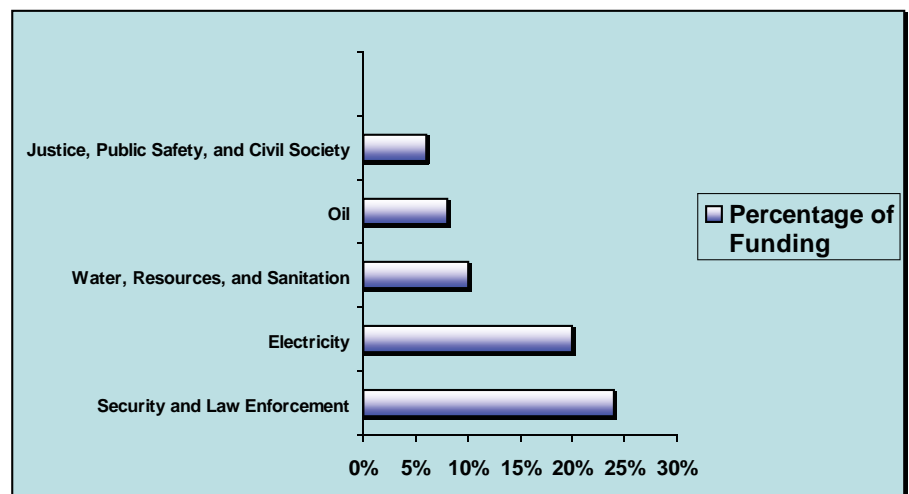
- Identity measures such as biometric vetting and the Iraq national ID Card (INIC) program that will provide a basic foundation to identify and vet all Iraqi citizens and foreign nationals residing in country; and
- Infrastructure hardening (forward operating bases, power lines, water stations) which improves critical infrastructure to withstand interdiction attempts and security breaches.

A significant portion of the budget overseen by ITAO’s Infrastructure Integrity Office goes towards securing assets in the oil sector. Projects in this sector include exclusion zones around oil pipelines valued at approximately \$100 million and protection of oil storage tanks and oil valves are valued at \$95 million and \$7 million, respectively.

Work at the Al Latifiya Oil Storage Facility in Baghdad province exemplifies specific efforts undertaken within the infrastructure security

sector. The contract for this project was awarded on April 13, 2007 and will install a 2.5 meter, steel reinforced, finished masonry wall approximately 3,800 meters long. The purpose of this protective wall is to create an impenetrable deterrent against attacks from snipers, rockets or mortars aimed at injuring or killing employees working at the oil storage facility. The wall will also establish a security perimeter with one entrance and exit point in order to prevent internal or external theft of oil product. Guard towers, razor wire, CCTV and IDS intrusion detection systems will alert security forces at the site to react quickly to unforeseen threats emanating from outside the security perimeter.

The Bayji Oil Refinery in Northern Iraq is one of the largest static security projects and exhibits many of the security measures outlined above, in addition to featuring a significant security force on site. Standard security hardening measures are being implemented such as guard towers, optics, razor wire, etc. Security enhancements are intentionally kept simple, with the use of high *(Continued on Page 8)*



**Iraq Relief Reconstruction Fund**

## Interview with Curtiss Jayjohn Senior Consultant and Program Manager Critical Infrastructure Security in Iraq

### Why did you volunteer to work to Iraq?

I have been a public servant for my entire professional career which began as a Law Enforcement Officer. I spent more than seven years with the United States Department of Energy (DoE) as a security inspector before returning to Law Enforcement. I was never in the military, but have always considered myself a patriot. Coming to Iraq was an opportunity to serve my country in the best way possible.

### What are some of your impressions about working in Iraq?

Working in Iraq and with the Iraqi people is similar to working in small town America, without elements of the combat zone experience of course. For the most part, Iraqis are just like people everywhere. They want what people the world over wish for: a good life for their families and children. However, a minority of extremists create conditions in Iraq which make it very difficult for a civil society to function properly.

Extremists are targeting the very people who are trying to make a difference for their country and therefore progress is slow. Consequently, it takes much more time to complete the mission of rebuilding Iraq. The American culture is not always patient and expects progress quickly. In my experience, we want

everything fast and affordable.

As a technical adviser, I provide Iraqi ministries with expertise and attempt to implement best practices in the area of infrastructure protection. This often entails updating the outdated technology found in Iraq.

### What are the responsibilities of the ITAO Infrastructure Integrity Office?

As the senior security operations officer, I am responsible for all security related hardening and protection projects of critical infrastructure such as oil, water and electricity facilities throughout Iraq. This work includes managing the approximately \$277 million budget allocated to the Infrastructure Integrity & Security Office. I am furthermore responsible for the

design and development of exclusion zones. This work occurs in conjunction with U.S and Government of Iraq officials .

### What strategy is being pursued in implementing infrastructure security and protection projects in Iraq?

There was little, if any, hardening of infrastructure sites under Saddam Hussein. Instead, he relied on his military and secret police to protect static and linear infrastructure throughout the country. People just did not steal or sabotage industrial complexes during Saddam's regime because it would have meant harsh punishment.

Today, however, we even have threats from some extremists within the security forces who should actually  
*(Continued on Page 6)*

Curtiss Jayjohn is the Senior Consultant and Program Manager for Critical Infrastructure Security at the Iraq Transition Assistance Office (ITAO) in Baghdad. He is responsible for the development and execution of more than 30 national security projects that safeguard and protect critical nodes in Iraq. Mr. Jayjohn advises senior U.S. Embassy, Iraqi Ministers, and Coalition Force personnel on issues concerning the effectiveness of the electrical, oil, rail and water infrastructure security measures. He also provides security analysis to deal with violent and non-violent insurgent actions in Iraq. Finally, he advises and coordinates with senior program managers and engineers of the Gulf Region Division of the U.S. Army Corps of Engineers in Iraq.



Mr. Jayjohn is a resident of Jackson, Ohio. He is a former Ohio Chief of Police and Security Inspector for the U.S. Department of Energy with more than 24 years of experience in the field.

Curtiss Jayjohn (*Cont. from 5*)

ally be protecting infrastructure sites. The strategy being implemented is similar to industrial security measures used at U.S. Nuclear sites under Department of Defense and Department of Energy Security Standards. Although Iraqi infrastructure sites do not pose a threat of mass casualties to the civilian population if attacked or sabotaged, they are exposed to a number of threats that can cause major disruptions. In the case of the oil sector, the Government of Iraq (GOI) could lose substantial revenues through interdiction of pipelines or attacks on oil well.

Our overall strategy is to create security zones and protective forces trained and equipped to protect critical infrastructure nodes. The main objective is to protect oil, water and electricity infrastructure critical for the deliver of essential services to Iraqi households. This program has been in the development and assessment stage for more than a year now. Efforts in the past focused on developing specific paramilitary forces called Strategic Infrastructure Battalions (SIBS). These SIBS, 17 in total, never reached their full potential and were never fully integrated into the Iraqi military. The GOI is currently rectifying this situation and taking measures to bring all infrastructure battalions under the legitimate control of the Iraqi military. The new structure creates continuity for the SIBS forces, places SIBS firmly into the military chain of command, and SIBS will receive the same equipment and training as the Iraqi military.

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## Everything that happens in Iraq is magnified in threat potential and occurrence. Most electricity plants in the world do not have a need for armed security personnel trained to engage and defeat terrorist attacks against suicide or car bomb attacks.

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### Can you give us an example of a typical project?

Many of our projects comply with standards found worldwide in the security industry. They utilize T-walls, reinforced concrete walls, tank traps, berms, guard towers and motion sensors, to name a few. The difference in Iraq is that we are protecting critical infrastructure in a war zone. Everything that happens in Iraq is magnified in threat potential and occurrence. Most electricity plants in the world do not have a need for armed security personnel trained to engage and defeat terrorist attacks against suicide or car bomb attacks. Hardening of structures relates to giving the civilian personnel and security officers the ability to react to a threat. Multiple barriers and security devices are placed to give the security forces a chance to observe and react to a threat versus being a target of opportunity.

### How does providing infrastructure security in Iraq compare to efforts in developed countries?

We are basically starting from the ground level in Iraq. As I said earlier, much of Iraq operates on outdated technology compared to Western standards. The use of electronic surveillance and other commonly used tools, which we take for granted in developed countries, are not found in Iraq.

### What challenges do you foresee for completing infrastructure security projects in Iraq?

Our efforts in infrastructure security parallel other projects in Iraq. The inherent danger of attacks on workers, transportation of goods and materials affects every project, sometimes creating delays. Each project requires security protection forces from Iraqi military, Coalition Forces, or Contract Security Forces to protect workers from violent assaults. Many workers have been threatened or intimidated by insurgents to stop working on coalition funded projects. Getting personnel to the job site safely and keeping them safe during construction is a key challenge.

### What contributions to infrastructure security are the Iraqis providing?

Recruitment of trained and trustworthy personnel to draw from is difficult because background security checks of citizens are extremely difficult and dangerous to conduct. Many personnel are taken from local tribes instead of the general public, since they are known and trusted by the village elders within the tribe.

Personnel who are thought to be coop- (*Continued on Page 9*)

## SPECIAL EDITION LEGAL INSIGHTS

## An Overview of the Iraqi Legal System

Colleen Hardy

Senior Research Associate , CIP Program

One of the biggest obstacles confronting the Iraqi people is the reestablishment of their legal system; however, a huge step toward reaching this goal occurred when they adopted the Iraq constitution in late 2005. The constitution of Iraq established three branches of the government: executive, legislative, and judicial. Iraq's judicial branch consists of the Higher Judicial Council, Federal Supreme Court, Federal Court of Cassation, Public Prosecution Department, Judiciary Oversight Commission, as well as other federal courts that are regulated in accordance with the law. The Higher Judicial Council is responsible for managing the Judicial Committee's affairs, including nominating the Chief Justice and members of the Federal Court of Cassation, and the Chief Public Prosecutor. The Council's

nomination must be accepted by the Council of Representatives. The Federal Supreme Court is comprised of a number of judges selected by the members of the Council of Representatives. The Federal Supreme Court has jurisdiction over the management of the constitutionality of the laws, interpretations of Iraq's constitution, settling disputes that may arise between the federal government and the governments of the regions and governorates, municipalities, and local administrations. The Supreme Court's decisions are final and binding for all Iraqi authorities. The federal courts will hear criminal cases, however Article 96 of the constitution specifies that military courts have jurisdiction over crimes of a military nature that are committed by members of the armed forces or security forces and within the limits stipulated by law.

Iraq's constitution also avows that Islam is the official religion of the State and it is a fundamental source of legislation. Accordingly, the constitution recognizes that Iraq's laws

may not contradict established provisions of Islam, principles of democracy, or the rights and basic freedoms created in the constitution. The constitution also protects Iraq's civil and political rights. The constitution states that all Iraqis are equal before the law and cannot be discriminated against based on gender, race, ethnicity, origin, color, religion, creed, belief or opinion, or economic and social status. In addition, every individual has the constitutional right to enjoy life, security and liberty and any deprivation of these rights is strictly prohibited.

If an Iraqi is accused of a crime, they are innocent until proven guilty in a fair legal trial. The accused may not be tried for the same crime for a second time after acquittal, unless new evidence is produced. If an individual is accused of a felony or misdemeanor who cannot afford counsel or does not have counsel, the court will delegate a lawyer, at the state's expense, for the accused.

The constitution implemented several significant changes to the Iraqi legal system. However, before the constitution was adopted, the Iraqi people took several steps to improve the legal system and as a result, several critical steps to remedy the legal system were accomplished. *(Continued on Page 8)*



*A ballot used in the January 30, 2005 elections.*

**Legal Insights** (*Cont. from 7*)

For example, in August 2003, eight Supreme Court Justices, who were wrongfully removed from the bench by Saddam Hussein, were reappointed to the bench. The men were removed from the bench in 1993 because they did not uphold a death sentence from a lower court, despite immense pressure from Saddam Hussein. The case involved a man accused of murdering an associate of Qusay Hussein, one of Saddam's sons. A majority of the justices found that the case against the accused lacked the element of premeditation that was required for the death penalty. The justices ordered the lower court to further investigate the matter. According to one report, Saddam urged the justices to uphold the conviction and removed the justices from the court who failed to do so. After the justices were reappointed to the bench, the Officer in Charge of the Iraqi Ministry of Justice stated,

"[W]ith this action we are reassuring the Iraqi people that we are committed to building a strong, just and independent judiciary."

In May 2004, 28 Iraqi judges attended a conference in the Netherlands and met with several top attorneys from all over the world, including two U.S. Supreme Court judges, the most senior judge in Britain, and the head of a UN war crimes tribunal. The Iraqi judges sought guidance and advice on how to share power in Iraq between the central government in Baghdad as well as in Iraq's diverse regions.

In November 2006 Madhat Al-Mahmood, Chief Justice of the Iraqi Supreme Court, opined that Iraq's judicial system was making progress. Al-Mahmood stated there were only 700 judges under Saddam Hussein's rule and currently Iraq had 1000 judges, including 28 female judges. He also stated that

security for the judges was a big concern and more security officers were needed.

The *New York Times* analyzed Iraq's legal system in December 2006. According to the article, one of the major problems with the legal system is the increasingly large number of prisoners being held and the minute number of prisoners who have actually been charged and tried in the Iraqi court. All involved in the legal process, whether American or Iraqi, are faced with continuing threats against their safety. However, judges face daily threats from militants and most fear for their lives after reaching a verdict.

The constitution of Iraq is one of several steps the Iraqi people have taken to help pave the way for a new and fair legal system. The constitution represents new rights and a more just future for the Iraqi people. ❖

**Rebuilding** (*Cont. from 4*)

tech electronics minimized because they are very hard to maintain in the harsh conditions of Iraq.

Other work underway involves the training and equipping of Strategic Infrastructure Battalions (SIBs) and partnering Coalition Forces with Iraq's various energy infrastructure protection forces. The Ministry of Defense established 17 SIBs of which 11 have been trained and equipped through U.S. funded projects. The current SIBs were

created specifically to protect critical infrastructure sites in Iraq. There has been some level of success using SIBs, although they have been seen by the Iraqi military as being outside their command structure. SIBs never received the required support from the regular Iraqi Army which has resulted in the SIBs being less effective than anticipated. SIBs may have a greater impact if they become part of the regular Iraqi Army and obtain the same training and equipment as regular military forces. ❖



**Curtiss Jayjohn** (*Cont. from 6*)  
erating with Coalition Forces are sometimes threatened or even killed by extremists. In other cases, personnel within the security forces may be acting as informers for the insurgency. Any security personnel, be it police, military or civilian security are viewed by insurgents as being part of the democratically elected Government of Iraq and therefore

are a magnet for insurgent violence.

The move by the GOI to do in-depth security vetting of all government employees is both enormous in scale and scope. It is of critical importance to employ trusted and reliable personnel who secure Iraqi infrastructure sites. No amount of security measures will work, regardless of the institutional effort, if the

human factor cannot be trusted. The GOI recognizes this need and is taking steps to implement the vetting process for all government employees. The central government is also working with advisers from the Ministries of Defense, Interior, Electricity, Oil and Water to create and sustain a viable security plan for critical infrastructure sites around the country. ❖

The CIP Program is directed by John A. McCarthy, a member of the faculty at George Mason University School of Law. The CIP Program works in conjunction with James Madison University and seeks to fully integrate the disciplines of law, policy, and technology for enhancing the security of cyber-networks, physical systems and economic processes supporting the nation's critical infrastructure. The CIP Program is funded by a grant from The National Institute of Standards and Technology (NIST).

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