

PROJECT SPECIFIC UNDERSTANDING

BETWEEN

**THE DEPARTMENT OF ENERGY OF THE
UNITED STATES OF AMERICA**

AND

THE MINISTRY OF OIL OF THE REPUBLIC OF IRAQ

The Department of Energy of the United States of America and the Ministry of Oil of the Republic of Iraq (Iraq), hereinafter collectively "the Signatories":

Recognizing the importance of protecting critical energy installations in Iraq from potential threats to their physical security;

Seeking to implement Section V (Economic and Energy Cooperation), paragraph 8 of the Strategic Framework Agreement for a Relationship of Friendship and Cooperation Between the United States of America and the Republic of Iraq of November 17, 2008 (hereinafter "the SFA");

Acting pursuant to Section 5 of the Memorandum of Understanding Concerning Energy Cooperation and the Protection of Critical Energy Infrastructure of January 14, 2013 (hereinafter "the MOU"); and

Recognizing the relevance of the Agreement for Economic and Technical Cooperation Between the Government of the United States of America and the Government of the Republic of Iraq, signed at Amman on July 11, 2005 (hereinafter "the Economic and Technical Cooperation Agreement"),

Have reached the following understanding:

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Section 1 PURPOSE AND OBJECTIVES

1.1 The purpose of this Project Specific Understanding (hereinafter "PSU") is to provide a framework, in accordance with Section 5 of the MOU, for the Department of Energy of the United States of America (hereinafter "DOE") to enhance the energy infrastructure security of Iraq, by assisting the Ministry of Oil of Iraq as represented by the South Oil Company (hereinafter "Ministry of Oil") in identifying potential threats to Iraq's critical energy infrastructure, assessing the risks from these threats, evaluating the effectiveness of Iraq's current protection system, and providing recommendations for remedial action to reduce the risk.

1.2 The planned scope of work is described in Section 3 of this PSU and the Annex hereto. Prior to the funding (by the Ministry of Oil) or commencement (by DOE) of the activities contemplated by this PSU, the planned scope of work is to be further detailed, together with schedule, milestones, deliverables, cost breakdowns, and other information necessary to the effective accomplishment of the objective of this PSU, in an implementation plan (hereinafter "the Implementation Plan") to be jointly developed by the Signatories.

Section 2 AUTHORIZATION

2.1 This PSU is concluded pursuant to Section 5 of the MOU and the SFA. This PSU is intended to be, and should be interpreted in a manner that is, consistent with the terms of the SFA.

2.2 The Signatories understand that this PSU and activities undertaken hereunder are within the scope of the Economic and Technical Cooperation Agreement.

Section 3 SCOPE OF WORK

In order to enhance energy infrastructure security in Iraq and subject to Section 5 of this PSU, the following scope of work is planned:

3.1 Under Phase 1 of this PSU, DOE is to develop a "Design Basis Threat" (DBT) to identify and assess potential insider and/or external threats to Iraq's critical energy infrastructure. The cost of this work is estimated at \$468,209USD.

3.2 Upon completion of the DBT, DOE is to conduct a "Systems Effects Analysis" (SEA) of Iraq's offshore oil platforms, and from the Al Fao tank farm and pumping station to the single point moorings. The estimated cost of this work (Phase 2) is \$1,558,416 USD.

3.3 The DBT and SEA are described in the Annex attached to this PSU.

3.4 The United States Government does not assume any liability with respect to any activities conducted pursuant to this PSU. The Government of Iraq is to be solely responsible for the consequences of deciding whether to implement, and implementing, any advice, recommendations, or other technical assistance resulting from execution of the planned scope of work described in the Annex.

Section 4 PROGRAM MANAGEMENT

4.1 DOE is to provide program management for all work conducted under this PSU, including oversight and management of cost accounting, scheduling updates, and periodic reporting to the Ministry of Oil of work performed.

4.2 Any modifications of the Scope of Work (Annex A) or the Implementation Plan, including but not limited to adjustments to estimated costs of project work, are to be made only upon written approval of authorized representatives of both Signatories. Such approval may be communicated via email.

4.3 Authorized representatives of DOE are the Deputy Assistant Secretary of Energy for Infrastructure Security and Energy Restoration and designees of that individual. Authorized representatives of the Ministry of Oil are Fayadh Nima and designees of that individual.

Section 5 PAYMENT TERMS AND CONDITIONS

5.1 The Ministry of Oil, subject to approval by the Minister of Oil, is to pay all costs, on an advance of funds basis, for all services to be performed and expenses incurred by DOE in the execution of this PSU.

5.1.1 Work on the DBT project may commence after payment by the Ministry of Oil of \$ 468,209 USD within 30 days of DOE's written Request for the First Advance Payment.

5.1.2 Work on the SEA project may commence after payment by the Ministry of Oil of \$1,558,416 USD within 30 days of DOE's written Request for the Second Advance Payment.

5.2 The requisite funds for execution of the planned scope of work described in the Annex are to be deposited into DOE's account at the Federal Reserve Bank of New York. Technical details for the routing of payments, such as account number, are to be provided by DOE in writing to the Ministry of Oil.

5.3 DOE is to keep accounts and records of the costs of the activities carried out under this PSU, in accordance with relevant United States regulations and generally accepted government accounting principles.

5.4 Within 60 days of completion of the activities contemplated by this PSU and DOE's receipt of all invoices, or upon discontinuation of this PSU, whichever occurs first, DOE is to provide the Ministry of Oil a final accounting of the amounts paid for activities carried out under this PSU.

5.5 If this PSU is discontinued for any reason, DOE is to retain payment for all financial commitments DOE made prior to the effective date of discontinuation and any costs required for the orderly closeout of the project.

5.6 If upon discontinuation of this PSU and the fulfillment of any financial commitments pursuant to Sections 3 and 4 hereof, there are funds remaining in the DOE account, such funds are to be returned to the Government of Iraq.

Section 6 GENERAL CONSIDERATIONS

6.1 Any questions concerning the interpretation or execution of this PSU should be resolved through consultations between the Signatories, or, as necessary, by the governments of the United States and Iraq through diplomatic channels, and not be referred to any third party for resolution.

6.2 This PSU does not create any legally binding obligations upon either Signatory.

Section 7 DURATION, MODIFICATION, AND DISCONTINUATION

7.1 This PSU becomes operative upon signature of the Signatories and continues unless discontinued in accordance with Section 7.3 hereof.

7.2 This PSU may be modified at any time in writing with the mutual consent of the Signatories.


7.3 The Signatories may discontinue this PSU by mutual consent in writing at any time. Alternatively, a Signatory that wishes to discontinue its participation in this PSU should endeavor to provide at least 90 days advance notice in writing to the other Signatory.

Signed at Basrah, in two originals, this day of December 2013.

FOR THE DEPARTMENT OF ENERGY
OF THE UNITED STATES OF AMERICA:

FOR THE MINISTRY OF OIL
OF THE REPUBLIC OF IRAQ:


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January 20, 2014

لا تكون الموافقة قطالة لا بعد
مصادقة معالي الوزير

Signed at Basrah , in two originals, this


day of December 2013.

FOR THE MINISTRY OF OIL
OF THE REPUBLIC OF IRAQ:


٢٠١٤ / ١ / ١٤

لا تكون المعاملة قطاعة الد
بعد مصادقة معالي الوزير

FOR THE DEPARTMENT OF ENERGY
OF THE UNITED STATES OF AMERICA:


January 20, 2014

Annex

Planned Scope of Work

Phase 1 – Design Basis Threat (DBT)

Physical protection should be based on the current evaluation of the threat. DBT development includes a description of the attributes and characteristics of potential insider and/or external adversaries and provides a common basis for evaluation of existing physical protection systems, and establishes a standard for evaluating future changes in the threats facing critical infrastructure. A well-developed DBT is critical to implementing effective security because decisions regarding security enhancements should be made based on plausible threats and detailed evaluations of the consequences of successful attacks. An accurate DBT represents the consensus of Subject Matter Expert (SME) input that allows decision-makers to design a security program addressing a known and agreed upon threat baseline.

1.1 Scope

There are only two variables that define each of the different threat levels – the *number* of adversaries, and their *capabilities*: the tools, weapons, and skills they bring with them.

Establishing which harmful acts may be performed, and what would be required to perform them, is accomplished using the following steps:

1.1.1 Threat Assessment DBT Development Workshop (Location: Iraq)

United States and Iraq representatives plan to identify motivations, intentions, and capabilities of those persons or groups posing a threat to Iraq's critical onshore and offshore infrastructure. The representatives are then to jointly analyze infrastructure, threat levels, and capabilities.

Robust Iraq government participation and input is essential for a successful workshop. Iraqi representatives from ministries involved with infrastructure protection (Oil, Defense, Interior, Electricity, and others, as needed) are necessary to participate with DOE experts.

In the DBT Development Workshop, the United States and Iraq team is to:

- Identify Iraq government organizations that possess, operate, and protect the most critical onshore and offshore energy infrastructure (Iraq is to identify their roles and responsibilities);
- Develop asset protection levels and consequence values based on information developed by the United States and Iraq team. This step comprises identifying and ranking assets and consequence of loss of these assets in descending order based on

redundancies, speed of recovery, effect on the government of Iraq, and other relevant factors;

- Develop a set of assumptions, such as the likelihood of attack, who would be capable of attacking, or how well-trained they might be, to be used during the threat evaluation;
- Define the range of possible threats and establish reasonable scenarios to be used in Phase 2, the System Effectiveness Analysis (SEA);
- Identify categories of external and internal threats (i.e., individuals or groups that seek to destroy critical infrastructure), what must be known about the threat (i.e., motivations, intentions, and capabilities) and the sources of threat-related information; and
- Memorialize the threat assessment and gain consensus among responsible Iraqi government agencies.
- Develop the draft national DBT to include the identification of Iraq's most critical energy infrastructure.

1.1.2 Review process

Working from the draft report that was developed in the workshop, the US team will upon returning to the US finalize the report and use as the basis for conducting the Phase 2 SEA of Iraq's most critical energy infrastructure in cooperation with Iraqi ministry participants as appropriate.

1.2 Phase 1 Deliverables

The deliverable for this task is a final report that defines the national DBT for Iraq and identifies the baseline threats that the overall security posture at each site needs to protect against.

1.3 Phase 1 Period of Performance

The estimated period of performance for completion of this task is 8 weeks, including work performed in Iraq and in the United States. This estimate assumes that all necessary logistics, approvals and requested information are provided by Iraq in accordance with the written Implementation Plan to be jointly determined by the Signatories. Delays in coordination will extend completion time and increase project cost.

The DOE project manager is to monitor milestone progress and resource utilization to ensure accomplishment of PSU objectives.

1.4 Phase 1 Cost

The cost of Phase 1 is estimated at \$468,209 USD. The estimate is to be adjusted, as needed, and included in the Implementation Plan.

Phase 2 – System Effectiveness Analysis (SEA)

Upon completion of the DBT, DOE is to conduct a "Systems Effectiveness Analysis" (SEA) of Iraq's offshore oil platforms, and from the Al Fao tank farm and pumping station to the single point moorings (Phase 2). An SEA is a process in which a specific security system's ability to successfully address well-defined threat levels is carefully examined. Analyzing the system's effectiveness, strengths and/or weaknesses to various attack scenarios provides opportunities for improvements that may result in significantly more robust and resilient overall security.

2.1 Scope

The analytical process itself is identical for any type of target. Regardless of which type of infrastructure is being evaluated, analysts are to proceed through the same steps using the same techniques.

The SEA should encompass six separate sites:

Land-based (3) – Al Fao location

- Oil Pumping Station
- Tank Farm
- Pipelines on land

Offshore (3) –

- Sub-sea Pipelines
- Single Point Moorings (SPM)
- Multiple Point Moorings (KAAOT and ABOT)

2.2 Offshore infrastructure (KAAOT, ABOT, SPMs)

It is critical to have an appropriate group of experts create scenarios specific to oil platforms (OPLATS) and sub-sea pipelines. For example, an oil and gas expert on oil pipelines would focus on how the pipelines function at SPMs, KAAOT, and ABOT. This expertise includes knowledge of weather and sea conditions which could be hazardous at OPLATS or provide an advantage to an attacker, operational processes by which oil tanker vessels load crude oil, environmental issues concerning oil spills or other emergency response operations to minimize and/or recover from a contamination event, small boat operations, and protective force response.

2.2.1 Site Characterization (Location: Iraq)

The team is to hold a workshop in Basrah to conduct a site characterization of the critical energy infrastructure. The goal is to accurately characterize and analyze the physical protection systems of the facility. This requires a mixed skill and knowledge set, including depth and breadth of expertise for facility protection, site operations, as-built accuracy, maritime operations, explosives detection and damage prediction, facility

recovery plans, and response forces. A sufficient number of team members should be included to provide the necessary level of expertise for each function. Much of the information needed should be received prior to the first site visit, to minimize the amount of time the team spends at each site. Information to be requested consists of site-specific documents, video, processes and procedures, and contact information.

2.2.2 Site Assessment (Location: Iraq)

The team is to conduct a site visit to ABOT, KAAOT, and SPMs. The team is to collect any information not uncovered during the workshop or the data call, and conduct observational performance evaluations of response times, detection capabilities, and communications during this visit. The performance evaluation scenarios are to be developed utilizing findings from the Phase 1 (Design Basis Threat) workshop.

The team is to use the following methodology to analyze each site:

- Identify the targets;
- Define the threat;
- Characterize the facility (land and maritime);
- Perform limited observational performance evaluations as opportunities arise;
- Determine protection system strategy;
- Determine vulnerable states and most vulnerable paths;
- Evaluate the physical protection system effectiveness (as part of the overall risk equations); and
- Identify potential upgrades, and then re-evaluate the system until desired risk reduction is achieved.

This methodology is the standard applied in the United States for evaluation of ultra high consequence targets against a DBT.

2.2.3 Analysis, Simulations, and Prepare Assessment (Location: United States)

Utilizing information gathered from the site characterization and assessment, the team is to model the facility using DOE-approved methodologies. Detailed analysis and possible performance testing should be focused on access control, detection systems, delay systems, and the ability of the response force to defeat the adversary before it/they successfully complete their mission. These models should be used for upgrade analysis and are expected to be of particular value to Iraq in designing response force tactics and training.

Once sufficient data has been collected and analyzed, the risk associated with the protection system and the defined threat is to be calculated. If the risk is assessed as acceptable, then the analysis is complete. Otherwise, identified system weaknesses and potential upgrades are to be run through the same process until satisfactory upgrades are identified which reduce the risk to an acceptable level.

The team is to use a risk evaluation process based upon the following

- The probability of occurrence of an adversary attack is 1.0;
- Target consequence values and asset protection levels are defined during the DBT process for critical facility sabotage targets; Adversary acts are planned and executed at a time that provides maximum opportunity for adversary success;
- The threat attributes used are to be those identified in the DBT; and
- The protection strategies to be evaluated are to be those determined by the team.

2.2.4 SEA Report (Location: United States)

The SEA Report is to document all site characterization, threat information, existing system analysis, and upgraded system analysis; and provide an overall risk evaluation. The report is also to identify system and component performance testing needed to maintain or achieve effectiveness against the DBT level assaults.

2.3 Al Fao, Tank Farms, and Associated Land-based

The following information is unique to scenario development for land-based sites such as Al Fao, associated tank farm(s), and both land-based pipelines through which crude oil is pumped.

2.3.1 Site Characterization (Location: Iraq)

The United States team is to hold a workshop in Basrah to conduct a site characterization of the critical energy infrastructure. The goal is to accurately characterize and analyze the physical protection systems of the facility. This requires a mixed skill and knowledge set, including depth and breadth of expertise for facility protection, site operations, as-built accuracy, maritime operations, explosives detection and damage prediction, facility recovery plans, and response forces. A sufficient number of team members should be included, to provide the necessary level of expertise for each function.

2.3.2 Site Assessment (Location: Iraq)

The United States team plans to conduct a site visit to the Al Fao pumping facilities, tank farms, and related infrastructure. The team is to collect any information not uncovered during the Site Characterization workshop and conduct observational performance evaluations of response times, detection capabilities, and communications during this visit. The evaluation scenarios are to be developed utilizing findings from the Phase 1 (Design Basis Threat) workshop.

The team is to use the following methodology to analyze each site:

- Identify the targets;
- Define the threat;
- Characterize the facility (land and maritime);
- Conduct observational performance evaluations as opportunities arise;
- Determine protection system strategy;
- Determine vulnerable conditions and most vulnerable paths;
- Evaluate the physical protection system effectiveness (as part of the overall risk equations); and
- Identify potential upgrades, and then re-evaluate the system until desired risk reduction is achieved.

This methodology is the standard applied in the United States for evaluation of ultra high consequence targets against a DBT.

2.3.3 Analysis, Simulations, and Prepare Assessment (Location: United States)

Utilizing information gathered from the site characterization and assessment, the team is to model the facility using DOE-approved methodologies. Detailed analysis should be focused on access control, detection systems, delay systems, and the ability of the response force to defeat the adversary before they successfully complete their mission. These models are to be used for upgrade analysis and are expected to be of particular value to Iraq in designing response force tactics and training.

Once sufficient data has been collected and analyzed, the risk associated with the protection system and the defined threat are to be calculated. If the risk is assessed as acceptable, then the analysis is complete. Otherwise, system weaknesses are identified and potential upgrades are run through the same process until satisfactory upgrades are identified which reduce the risk to an acceptable level.

The risk evaluation process the team is to use is based upon the following:

- The probability of occurrence of an adversary attack is 1.0;
- Target consequence values and asset protection levels are defined during the DBT process for critical facility sabotage targets;
- Adversary acts are planned and executed at a time that provides maximum opportunity for adversary success;
- The threat attributes used are to be those identified in the DBT; and
- The protection strategies to be evaluated are to be those determined by the team.

2.3.4 SEA Report (Location: United States)

The SEA Report is to document all site characterization, threat information, existing system analysis, upgraded system analysis, and an overall risk evaluation. The report

should also identify system and component performance testing needed to maintain or achieve effectiveness against the DBT level assaults.

2.4 Phase 2 Deliverables

The deliverables for this task consist of a preliminary report and associated briefings that reflect the initial findings, recommended compensatory measures, and preliminary rapid and comprehensive upgrades.

A final SEA report and briefing is also to be delivered and contain recommendations based on detailed analysis of upgrades, required performance testing, and review by the team.

2.5 Phase 2 Period of Performance

The estimated period of performance for completion of this task is 4 months, including work performed in Iraq and in the United States. This estimate assumes that all necessary logistics, approvals and requested information are provided by Iraq per the schedule jointly determined in the Implementation Plan. Delays in coordination will extend completion time and increase project costs.

The DOE project manager is to monitor milestone progress and resource utilization to ensure accomplishment of the PSU's objective.

2.6 Phase 2 Cost

The estimated cost of Phase 2 is \$1,558,416 USD. This estimate is to be adjusted, as needed, and included in the Implementation Plan.