

CLEAN DEVELOPMENT MECHANISM (CDM) PROCESS IN LIBYA FIRST WORKSHOP

Bouri Field Gas Utilization Project

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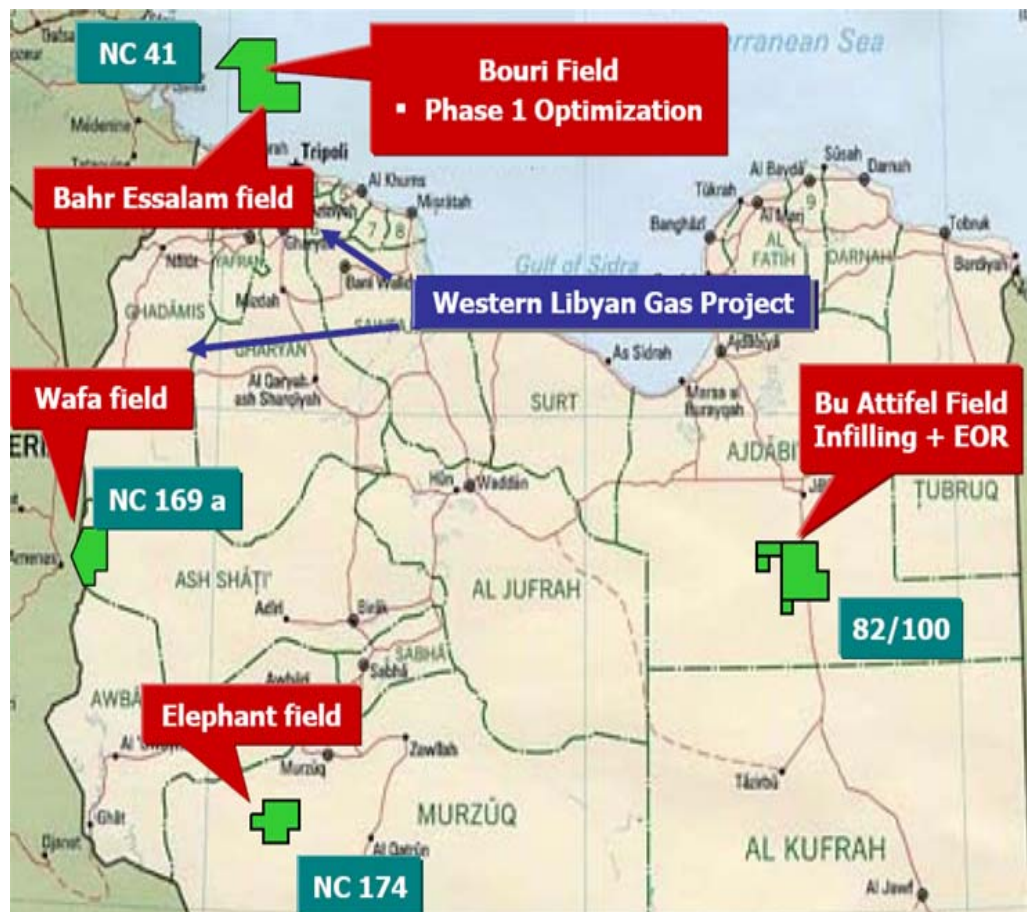
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Contract Area C “Bouri Field” Gas Utilization Project

Introduction

The Bouri field is located in Contract Area ‘C’ (NC-41 block) in the Mediterranean sea, lies 120 km offshore the Libyan coast at a sea depth of 145 to 185 m.

Bouri Field is operated by Mellitah Oil and Gas B.V, Libyan Branch (MOG) and is producing since September 1988.



Contract Area C “Bouri Field” Gas Utilization Project

General Background

The current development of the central section of the field consists of the following primary facilities:

- Satellite Platform, DP3
- Main Production Platform, DP4
- Single point mooring (SPM) and permanently moored storage tanker (FSO) Sloug,
- Three satellite sub sea wells, tied-back to DP3 Platform with individual flow lines and electro-hydraulic umbilicals.
- Four satellite sub sea wells, clustered around a central manifold and tied-back to the DP4 Platform with two flow lines, one service line and one electro-hydraulic umbilical.

Contract Area C “Bouri Field” Gas Utilization Project

General Background

Continued

The current development of the central section of the field consists of the following primary facilities:

➤ **Satellite Platform, DP3**

DP3 is a satellite platform and provides a single stage separation of gas from the produced oil. The separated gas at the present stage is flared while the liquid phase is pumped to the DP4.



Contract Area C “Bouri Field” Gas Utilization Project

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General Background

➤ **Main Production Platform, DP4**

DP4 has two trains for the separation of gas and water. The entire associated gas of DP4 at the present stage is disposed offshore by flaring.

Stabilized oil is sent to the permanently moored storage tanker (FSO) for storage and offloading to shuttle export tankers.



Contract Area C “Bouri Field” Gas Utilization Project

General Background

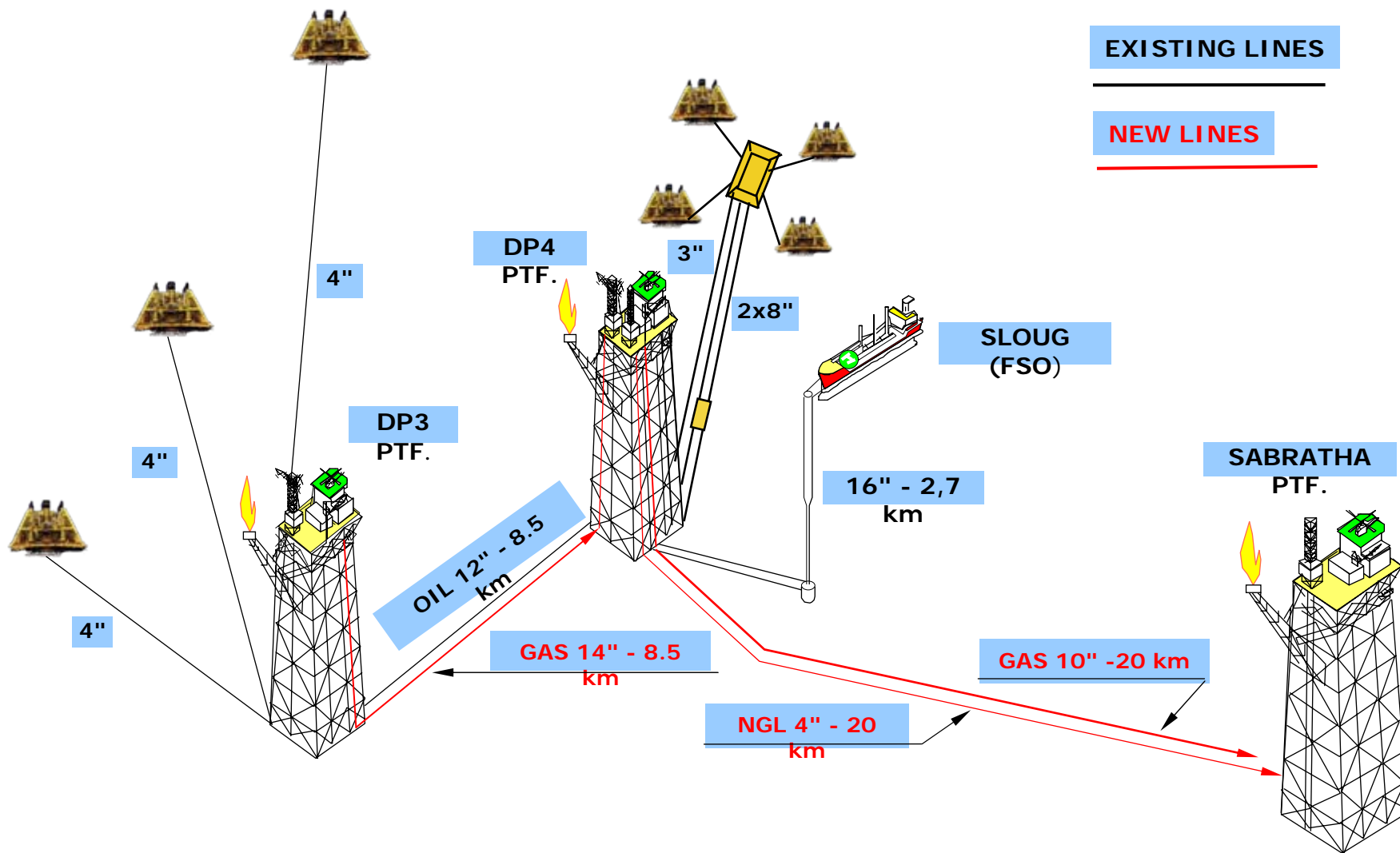
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- **Single point mooring (SPM) and permanently moored storage tanker (FSO),**

Receive stabilized crude oil from DP4 via subsea flowlines for storage and offloading into shuttle export tankers



Contract Area C "Bouri Field" Gas Utilization Project



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Project Objectives

The Bouri Gas Utilization Project (GUP) objectives are: to preserve natural resources, and eliminate the emission of pollutants into the atmosphere. It has also an economic viability with the sales of products (gas and condensate) via Sabratha Platform.

Development Strategy

The Bouri Gas Utilization Project (GUP) will be executed in two phases:

- Phase I:**
 - Gas Recovery Modules (GRM) Project
 - Sealines Project
- Phase II**
 - Acid Gas Re-injection (AGRP) Project

Contract Area C “Bouri Field” Gas Utilization Project

Phase I - Gas Recovery Modules (GRM) Project

Project Scope Of Work

Engineering, procurement, fabrication, installation, hook-up, commissioning and start up for:

- Raw gas gathering and compression.
- Bulk removal of acid gas by membrane separation unit.
- Acid gas flaring in the existing DP4 flare (phase I).
- Treated gas & condensate stream, after dehydration and compression is delivered to Mellitah via Sabratha platform.

Project Status :

- Detail Engineering Almost Completed
- Procurement of Long Lead Items in progress
- Preparation for bidding of Construction, installation, Hook-up, Commissioning and Start-up

Project Budget :

(KUS \$) 295,000



Contract Area C “Bouri Field” Gas Utilization Project

Phase I – Sealines Project

Project Scope Of Work

- Design, Supply, Construction and Installation of three new pipelines and relevant risers for the delivery of:
 - Raw gas from DP3 to DP4 (14” Nominal Diameter – 8 km length)
 - Export Gas from DP4 to Sabratha (10” Nominal Diameter – 20 km length)
 - Condensate from DP4 to Sabratha (4” Nominal Diameter – 20 km length)
- Design, Supply, Construction and Installation of Sea lines SSIVs, Umbilical for SSIV control and Cable from DP3 to DP4 and from DP4 to Sabratha.

Project Status :

- Detail Engineering Almost Completed
- Procurement of Long Lead Items in progress
- Preparation for bidding of Construction, installation, Hook-up, Commissioning and Start-up

Project Budget : (KUS \$) 291,000



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Phase II – Acid Gas Re-inject (AGRP) Project

Project Scope Of Work

Engineering, procurement, fabrication, installation, hook-up, commissioning and start up for:

- Acid gas receiving and handling facilities on DP4 platform.
- Gas compression and re-injection to reservoir cap.

Project Status :

- Basic and FEED design Engineering Completed
- Preparation for bidding EPIC Contract

Project Budget : **(KUS \$) 150,000**

Contract Area C “Bouri Field” Gas Utilization Project

CDM Opportunities in Libya

Possibility to implement CDM projects in Libya becomes feasible after creation of the Environment General Authority (EGA) as **Designated National Authorities** (DNA) and ratifying the Kyoto Protocol.

Categories of potential projects for the oil & gas sector:

- Flaring to market
- Flaring to power generation
- Gas re-injection
- CO2 capture and storage

The Bouri Gas Utilization Project is identified as Gas to Market and Carbon Capture and Storage project

Contract Area C “Bouri Field” Gas Utilization Project

CDM methodology of the Project

- Both Project phases feasibility as CDM Project will be assessed to meet the Clean Development Mechanism under the Kyoto Protocol requirements
- Emissions reductions arising from the project are calculated as the difference between baseline and project emissions, taking into account any adjustment for leakage; where:
 - Baseline emissions represent the emissions that would occur in the absence of the project;
 - Project emissions are those arising from the project activity;
 - Leakage represents additional emissions sources considered outside the control of the project participants but attributable to the project activity.
- Preliminary assessment shows that project Phase I meets the AM0009 methodology applicability criteria

Contract Area C “Bouri Field” Gas Utilization Project

CDM methodology of the Project



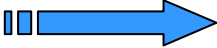
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- The energy required across the Bouri project system for transport and processing of the recovered gas would mainly be provided by the recovered gas.
- In the absence of the project activity, the gas would be mainly flared (with some on-site gas use for energy requirements).
- The required data shall be accessible on the products of the gas processing plant and on the gas recovered from other oil exploration facilities.

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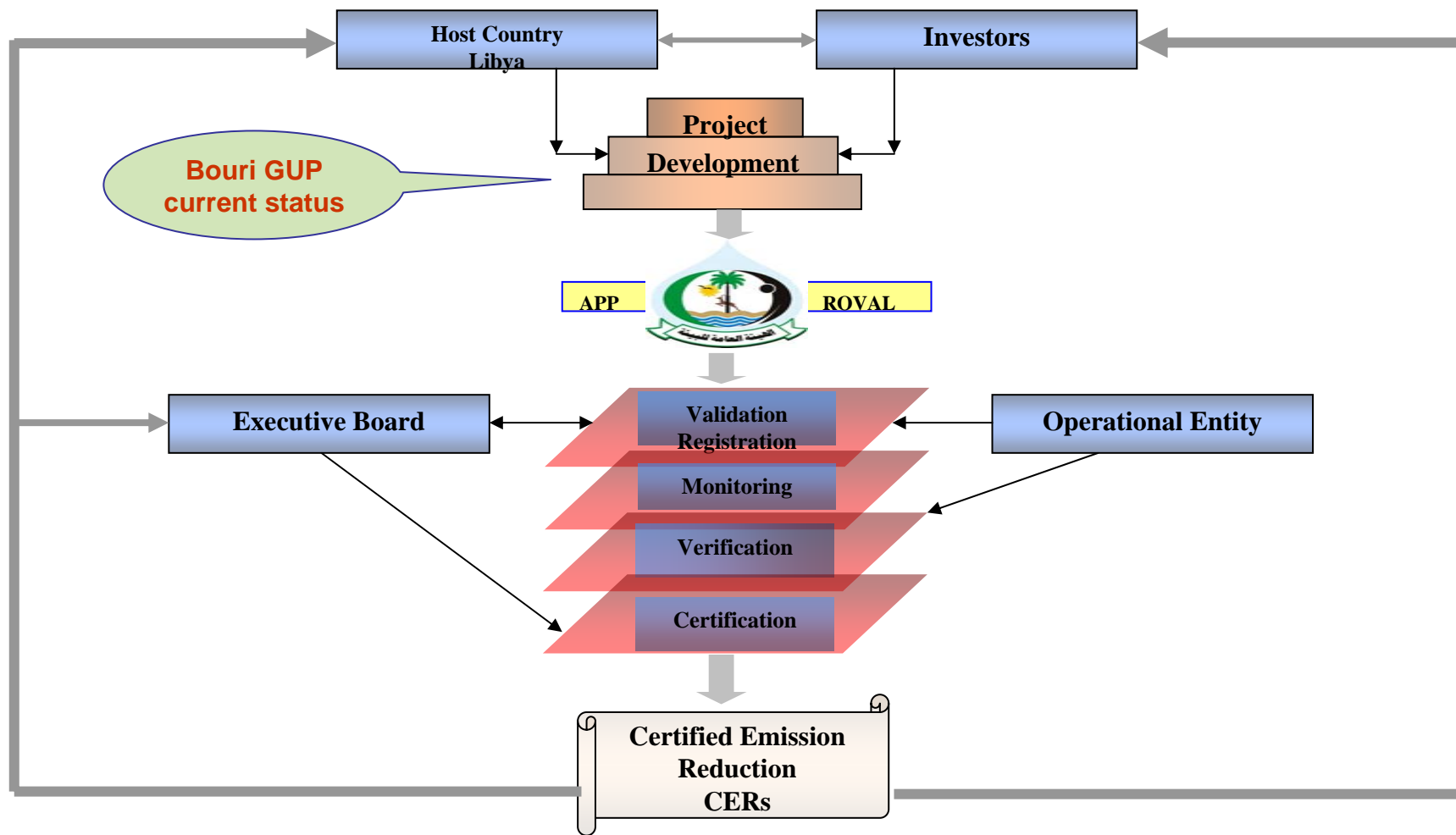
CDM Project Cycle and Involved Parties

Steps involved in a CDM project:

- 1. Project identification**  **Bouri Field Gas Utilization Project**
- 2. Project Development**  **In progress**
- 3. Local Authority endorsement**  **Environment General Authority**
- 4. Validation**
- 5. Registration**
- 6. Monitoring**
- 7. Certification**
- 8. Issuance of CER's**
- 9. Certified Emission Reduction CER's**

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CDM Project Cycle and Involved Parties



Contract Area C “Bouri Field” Gas Utilization Project

DISCUSSION

