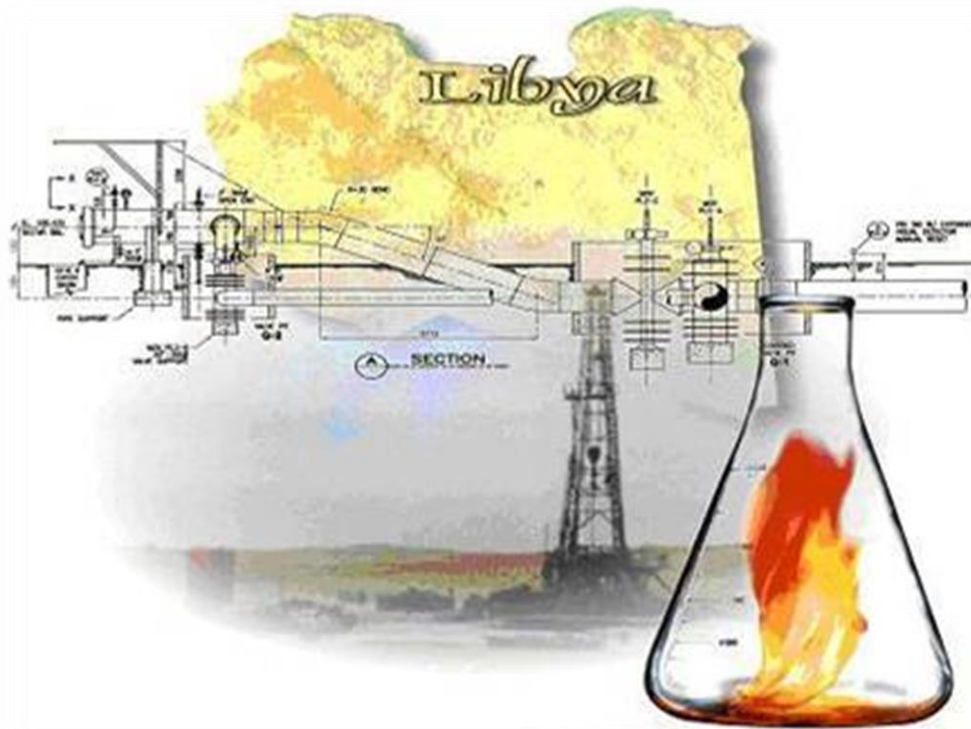
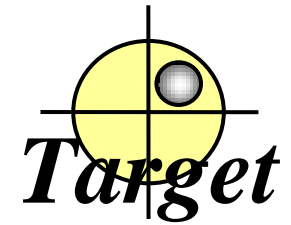


Target Exploration

Energy Geosciences Research & Development

Bapp



Libya's Oil & Gas Resources

**Key Players, Hydrocarbon Laws,
Exploration & Production Records,
Past Lessons, Present Challenges, and
Future Exploration and Production
Potential**

Target Exploration Report Tar73

The Report

For twenty years the existence of UN and US sanctions, only lifted in full in 2012, effectively closed down Libya to international researchers and analysts. Lack of access to primary documents and oilfield data led to serious gaps in knowledge about the characteristics of Libyan hydrocarbon sector, its physical development and the legislative and fiscal architecture supporting it. The purpose of this important new work is to fill in those gaps.

The study is divided into eight chapters.

Chapter One: Historical Perspective: The first Libyan commercial oil discovery, the Zelten field, was made in 1959 in the Sirte Basin, at a production rate of 17,500 b/d. By 1970 the country had become the fourth largest producer in OPEC, with 7.5 % of world output and production peaking at 3.3mm b/d. By 2005 this had dropped to around 1.6 mmb/day. Underlying the Libyan oil experience and this dramatic decline were a range of factors, related to internal politico-social developments in Libya, the US and UN sanctions, and major changes in global investment opportunities available to IOCs owing to the demise of the Soviet Union. Significant also were the negative perceptions of IOCs towards the post-1970s fiscal regime for oil investment in Libya, and a heightening of Libya's investment risk profile, especially after the nationalisations of the early 1970's.

Chapter Two: Key Players, Essential Facts: In this key chapter extensive primary data and detailed information on each operating company in Libya is presented, identifying each operator's producing fields, present and projected daily rates of production, company reserves, prospects and leads, and summaries of on-going and future projects. These do not include the new entrants signed up after the first two EPSA-IV rounds, which are discussed in detail in Chapter Five. This section is characterised by the presentation of this data in the form of a series of tables and figures.

Chapter Three: Characteristics of the Libyan Upstream Oil Sector: The author identifies the unique characteristics underlying the development of the Libyan sedimentary basins. After the first discoveries of the 1960's, the main players concentrated their efforts in the Sirte basin where the giant discoveries had been made. Thereafter, until the 1980's, the potential of the remaining onshore sedimentary basins such as Murzuq and Ghadames was not seriously

considered, although offshore potential had at least been realised by Agip, who developed the El-Bouri field in 1990. This led to a situation where, in the writer's view, the other Libyan sedimentary basins have been erroneously perceived as inherently "risky" when compared to the Sirte basin, resulting in their presently grossly unexplored status. The unique characteristics of Libyan upstream development are broken down and analysed separately, including seismic activities and geological prospectivity, exploration and discovery risks, infrastructure development, risks and uncertainties associated with individual Libyan sedimentary basins, reserve risks, technical and capital risks, and crude oil production and its relationship to Libya's OPEC quota.

Chapter Four: Evaluating Risk in the Libyan Petroleum Agreements: An understanding of the evolution and unique characteristics of the various Libyan petroleum fiscal agreements is necessary to fully understand the current Libyan PSC, the EPSA IV model. A thorough analysis of all the Libyan Petroleum Agreements, from the Concessions of the 1950's to the present EPSA-IV, is undertaken. The author concludes with two authoritative and comprehensive tables. The first relates each of the Libyan fiscal agreements, from the 1955 Petroleum Law to the 2004 EPSA-IV, to a series of risk factors, such as duration, surrender, exploration obligations, management and supervision factors, exploration and development expenditure, recompense of Capex to LNOC, production allocation, and royalty and taxes, enabling the reader to readily understand the advantages and drawbacks of each type of agreement. The second table is an evaluation of the effectiveness of all the Libyan petroleum agreements, and appraises and relates each agreement to a series of parameters, such as their contributions to exploration and discoveries, reserves, field development and infrastructure by the IOCs. It also highlights levels of acceptance of their fiscal terms by the IOCs, future prospects, and required fiscal changes to attract IOCs by reducing and spreading risk.

Chapter Five: EPSA IV: Measuring its Success: Initially the author presents and analysis key features of EPSA-IV, ranging from obligations and rights of both parties with respect to exploration and exploitation durations and areas, signature bonuses, royalty and income taxes, ownership of equipment, abandonment, assignment, and the pre-emption rights of the LNOC. A complete analysis of EPSA-IV, Bidding Rounds One and Two is delivered. By critically analysing the defects of both rounds, especially regarding financial commitments for exploration, he concludes that the first two EPS-IV rounds can only be seen as a partial success for the Libyan government. The author then describes the salient

features of the Third Bidding Round, in which a points system, will determine the selection of the winners, using three criteria. The first is allocation of production share, the second the amount of the signature bonus, and the third the value of exploration commitments. He concludes, after using a deterministic model that in global terms EPSA-IV still provides a respectable rate of return for the IOCs, and presents a comprehensive table and charts which compare IOC/LNOC returns for each of the Libyan sedimentary basins under three A and B factor scenarios.

Chapter Six: The Libyan Gas Sector: Maximising the Potential: The author notes that the gas sector is emerging as an important force in Libya as domestic and global demand accelerate. Libyan domestic consumption trends have risen steadily over the period 1989-2005, from a tiny usage of 11 MMcuf/d in 1989 to 348 MMcuf/d in 2005. Moving from the domestic consumption scenario, the author then critically examines the Libyan policy vacuum for attracting FDI in gas developments, due largely to the fact that in Libya gas has historically been regarded as the poor sister of oil. Although EPSA-IV contains promising changes with regard to exploitation non-associated gas, the author believes that the Libyan policy makers must address this problem with much more urgency and focus. One of the major drawbacks of EPSA-IV is issues related to the monetization of natural gas which are poorly dealt with or understood by the Libyan policymakers. In order to co-ordinate future gas policy, the Libyan policymakers should consider establishing a body, detached from the LNOC, and similar to the previous Gas Projects Administration, to develop both the Libyan upstream and downstream gas sectors in a comprehensive and coordinated manner. The impressive manner in which Egypt, through the establishment of Egyptian Natural Gas (Egas), which took over control of the country's gas sector from the Egypt General Petroleum Corporation in 2001, has catapulted its gas industry into the global market, is a case in point. In the final section of this chapter, the author undertakes and critically examines, through a case study, the Western Libya Gas Project, the largest gas development project undertaken in Libya, as a 50:50 JV between ENI as operator, and the Libyan National Oil Corporation (LNOC).

Chapter Seven: Key Issues and Future Trends: In this chapter the author examines a wide range of key issues and identifies future trends in the development of the Libyan economy and the role of the hydrocarbon sector in achieving these. The first section he poses and comprehensively answers a key question about the Libyan economy – why has Libya been unable to reduce its reliance on income from petroleum and diversify its economy? In the second section the

writer discusses the conflict relating to control over the Libyan Hydrocarbon sector, and examines which Libyan body actually holds this, since most observers automatically assume that it is the LNOC. This conflict of power has led directly to two undesirable consequences. Firstly, the LNOC itself has emerged in the post-sanctions era as a massively complex organization which is not only inefficient and unprofitable, but appears to lack accountability to any other Libyan government institution to benchmark or judge its performance. Secondly, this situation poses major risks to IOCs should they fail to understand where authority over the Libyan hydrocarbon sector ultimately resides. In the third section, the key economic and legal issues surrounding the return, in 2005-2006 of the US companies to their assets, frozen by the “Standstill Agreements” of 1986, are discussed critically. A fourth section deals with the much misunderstood question of the development of the 135 so-called Libyan marginal fields. Discovered largely during the first intensive exploration phase in the 1960s, but sidelined due to the economic, fiscal and strategic priorities of both the Libyan National Oil Corporation (LNOC) and the international oil companies (IOCs), their development is long overdue. Holding an aggregate of around 3.6 billion bbl of reserves, they represent a major Libyan hydrocarbon resource with the potential to significantly boost the Libyan hydrocarbon sector. In the fifth section the author discusses the future direction that the LNOC, the largest company in Libya, will take. Its deregulation and privatisation would signal to the international community the seriousness of the Libyan government in bringing about economic reform, and would be a powerful driver for the Libyan economy, leading to dynamic growth and diversification of the oil, petrochemical, transportation, distribution, marketing and service sectors, in replacing an inefficient monopoly with competitive and market-driven entities.

Chapter Eight: Future Prospects: In one very important respect, based fundamentally on geography, Libya now finds itself in an extremely advantageous position. As the Israel-Lebanese Hezbollah conflagration of September 2006 has emphasised yet again, the Middle East region can be described as a time-bomb. Should any regional escalation involve Iran and Saudi Arabia, the situation has the potential to cripple oil supplies to the West and with it the entire Western economic system. In such a situation, the importance of oil and gas supplies from Libya, far removed from the Arab-Israeli nexus, simply cannot be overestimated. The author concludes, therefore, that for the IOCs, despite the misunderstandings and rancour of the last thirty years, Libya still represents an important target for investment in oil upstream projects. It can be considered by all exploration and development criteria as a virgin country, since extensive exploration and development activities have been carried out since 1955 only in the Sirte basin. This means that most of the

country's sedimentary basins are still unexplored. Even if the first three EPSA-IV bidding rounds are taken into consideration, considerable Libyan acreage still remains. In terms of percentage of the total Libyan basin area of 1,382,500 sq km, 31% had been given out for exploration and production by end-2004. After the first EPSA IV round of February 2005 this figure rose to 38%, while after the second EPSA IV round it rose to 43%. After the proposed third round, when 11 onshore areas totalling 72,146 km² will be on offer, the figure will rise to approximately 48%. After around 50 years of E&P there is 52% (718,900 Km²) of its sedimentary basins still unexplored.

Appendices: The author provides two extremely valuable Appendices. The first is the full text of the current EPSA-IV contractual agreement between the IOC/LNOC covering 50 pages. The second is a comprehensive table which provides details of exploration drillings from the early exploration period to recent time, covering 44 pages.

Table of Contents

| |
|-------------------|
| Table of Contents |
| List of Tables |
| List of Figures |

| |
|---|
| Chapter One: Introduction |
| Executive Summary |
| 1.2. Historical Perspective |
| 1.2.1. The Global Petroleum Industry |
| 1.2.2. Evolution of the Libyan Oil Industry |
| 1.2.3. Libya's Historical Production Profile |
| 1.2.4. The Wind of Change |
| 1.2.5. Libya's Risk Profile |
| 1.2.6. Impact of the Libyan Fiscal Agreements |

| |
|--|
| Chapter Two: Operating Companies – Key Players, Essential Facts |
| 2.1. Introduction. |
| 2.2. Arabian Gulf Company (AGOCO) |
| 2.2.1. Background |
| 2.2.2. Main Oilfields, Terminals and Refineries |
| 2.2.3. Oil and Gas Production by Field, end- 2005 |
| 2.2.4. Company Reserves |
| 2.2.5. Future Developments |
| 2.3. The Waha Oil Company (WOC) |
| 2.3.1. Background |
| 2.3.2. Main Oilfields |
| 2.3.3. Oil and Gas Production by Field, end- 2005 |
| 2.3.4. Company Reserves |
| 2.3.5. Future Developments |
| 2.4. Sirte Oil Company |
| 2.4.1. Background |
| 2.4.2. Main Oilfields |
| 2.4.3. Oil and Gas Production by Field, end- 2005 |
| 2.4.4. Company Reserves |
| 2.4.5. Future Developments |
| 2.5. Zueitina Oil Company (ZOC) |
| 2.5.1. Background |
| 2.5.2. Main Oilfields |
| 2.5.3. Oil and Gas Production by Field |
| 2.5.4. Company Reserves |
| 2.5.5. Future Developments |
| 2.6. Veba Oil Company (VOC) |

| |
|---|
| 2.6.1. Background |
| 2.6.2. Main Oilfields |
| 2.6.3. Oil and Gas Production by Field, end- 2005 |
| 2.6.4. Company Reserves |
| 2.7. Total (Compagnie Des Petroles Total) Libya |
| 2.7.1. Background |
| 2.7.2. Main Oilfields |
| 2.7.3. Oil and Gas Production by Field, end- 2005 |
| 2.7.4. Company Reserves |
| 2.7.5. Future Developments |
| 2.8.Repsol Oil Operations |
| 2.8.1. Background |
| 2.8.2. Main Oilfields |
| 2.8.3. Oil and Gas Production by Field |
| 2.8.4. Company Reserves |
| 2.8.5. Future Developments |
| 2.9. Wintershall AG |
| 2.9.1. Background |
| 2.9.2. Main Oilfields |
| 2.9.3. Oil and Gas Production by Field, end- 2005 |
| 2.9.4. Company Reserves |
| 2.9.5. Wintershall Recent Activities |
| 2.10. Agip Oil Company |
| 2.10.1. Background |
| 2.10.2. Main Oilfields |
| 2.10.3. Oil Production by Field, end- 2005 |
| 2.10.4. Company Reserves |

2.10.5. Future Developments

Chapter Three: Characteristics of the Libyan Upstream Oil Sector

3.1. The Libyan Experience of Oil

3.2. Review of Libyan Upstream Oil Sector

3.3. The Libyan Sedimentary Basins

3.4. Total Onshore Areas Licensed: October, 2005

3.5. Total Offshore Areas Licensed: October, 2005

3.6. Seismic Activities and Geological Prospectivity

3.7. Exploration and Discovery in Libya – Measuring Risk

3.8. Oil Prices and their Effect on Exploration

3.9. Libyan Basins Development and Infrastructure

3.10. A Creative Approach

3.11. The Libyan Basins Pipeline Network

3.12. Libyan Oil Terminals

3.13. Libyan Oil Reserves

3.14. Libyan Oil In Place

3.15. Understanding Libyan Production Trends

3.17. Present Crude Oil Production and Major Producers

3.18. Libyan Crude Oil Production by Basin

3.19. Understanding Libyan Production Decline – Technical and Capital Constraints

3.20. Future Development and Re-development of Oilfields

3.21. Possible Scenarios for Increasing Libyan Crude Oil Production

3.22. Libya's Crude Oil Production Increases and the OPEC Quota

3.23. Classifying Basin Risk

3.24. The Deteriorating Libyan Upstream Oil Sector

3.25. Factors Attracting Investment in the Libyan Oil Sector

3.26. Conclusion

Chapter Four: Evaluating Risks in the Libyan Petroleum Agreements

4.1. The Basic Components of Global Upstream Petroleum Agreements

4.2. Understanding the Libyan Upstream Petroleum Agreements

4.3. The Posted Oil Price and Contractual Risks under the Libyan Concession, 1955 - 1973

4.4. The Significance of the “Taxation Factor Rate”(TFR)

4.4.1. TFR and the Libyan Concession Agreements

4.4.2. TFR and the Participation Agreements

4.5. The Collapse of the Royalty-Taxation System and the Emergence of “Tax Paid Cost” or “Net Profit Agreement”

4.6. The Libyan Exploration and Production Agreements (EPSAs)

4.7. Risk in the Libyan Petroleum Agreements

4.7.1 Risk in EPSA I and II

4.7.2. Risk in EPSA-III

4.7.3 Risk in EPSA IV

4.7.4. Comparative Analysis of Risk Factors

4.7.5. Evaluating the Effectiveness of the Libya Fiscal Agreements

Chapter Five: EPSA-IV: Measuring It Success

5.1. EPSA-IV: An Overview

5.2 EPSA-IV Round Public Bidding Procedures: A Unique Approach

5.3. The Transparency Process

5.4. Rights and Obligations

5.4.1. Exploration/Exploitation Periods and Areas

5.4.2. Bonuses

5.4.3. Royalty and Income Taxes

5.4.4. Ownership of Equipment

| |
|---|
| 5.4.5. Abandonment |
| 5.4.6. Assignment |
| 5.4.7. Pre-emption Rights |
| 5.5. EPSA-IV: Bidding Round One |
| 5.5.1. American Bidding Shock |
| 5.6. The Shell 2005 Deal: A Win-Win Situation? |
| 5.6.1. Shell: The Upstream Deal |
| 5.6.2. The Commerciality of the Shell E and P Deal |
| 6.6.3. Shell: The Downstream LNG Deal |
| 5.7. EPSA-IV: Bidding Round Two |
| 5.7.1. Asian & European-IOCs: Lessons Learned and a New Competitiveness |
| 5.8. Economic Appraisal of the first two EPSA-IV Rounds |
| 5.8.1. Efficiency and Transparency |
| 5.8.2. Signature Bonus |
| 5.8.3. Exploration Commitments |
| 5.8.4. Second Party Allocation |
| 5.8.4. LNOC's Isolation from Global Realities |
| 5.8.5. The Geopolitics of the First Two EPSA-IV Rounds |
| 5.8.5. EPSA-I and II and the 2005 Shell Deal |
| 5.9. EPSA-IV: Bidding Round Three |
| 5.10. EPSA-IV Terms and Project Profitability |

| |
|--|
| Chapter Six: The Libyan Gas Sector: Maximising the Real Potential |
| 6.1. Libyan Gas Reserves in Global and Regional Terms |
| 6.2. Libyan Gas Production |
| 6.3. Libyan: Gas Transportation System |
| 6.4. Libyan Gas Usage |

| |
|--|
| 6.5. Domestic Consumption Trends |
| 6.6. The Libyan Policy Vacuum for Gas Developments |
| 6.6.1. Gas in EPSA - III |
| 6.6.2. Gas in EPSA-IV |
| 6.6.2.1. Gas Development Scenarios in EPSA IV |
| 6.6.2.2. The Relevance of the A and B Factors in Gas Development under EPSA IV |
| 6.6.2.3. Monetizing Gas in EPSA IV |
| 6.7. Future Libyan Gas Policy Imperatives |
| 6.7.1. Present Policy Vacuum |
| 6.7.2. A Dedicated Body for Libyan Gas Development |
| 6.7.2.1. Increasing Libyan Proven Gas Reserves |
| 6.7.2.2. Defining the Gas Reserve/Production (R/P) Ratio |
| 6.7.2.3. Sales of Gas in the Domestic Market |
| 6.7.2.4. Dedicated Fiscal Terms for Gas |
| 6.8. Libyan Master Gas Plan - Linking the Upstream and Downstream Markets |
| 6.9. Case Study: The Western Libya Gas Project |
| 6.9.1. The Financial Structure |
| 6.9.1.1. Importance of the WLGP – Symbolic and Real |
| 6.9.1.2. Analysing Cost Escalations in the WLGP |
| 6.9.1.5. Dealing with Future Gas Shortages in the WLGP |
| 6.10. Financing Major Future Gas Projects |

| |
|---|
| Chapter Seven: The Libyan Hydrocarbon Sector: Key Issues, Future Trends |
| 7.1. Libya’s Petroleum Industry and its Future Role in Economic Diversification |
| 7.1.1. Post Sanctions Libya |
| 7.1.2. Why has Libya Failed to Diversify its Economy? |
| 7.1.3. The Resource Curse |

| |
|---|
| 7.1.4. The Impact of the Sanctions |
| 7.1.5. The New Libyan Petroleum Law as a Driver of Economic Diversification |
| 7.1.5.1. Delays in the Implementation of the New Law |
| 7.1.5.2. Fiscal Concerns |
| 7.1.5.3. Opex and Procurement Policy |
| 7.1.5.4. The Environment and Economic Sustainability |
| 7.1.5.5. Sectorial Diversification in Libya |
| 7.2. Who Controls the Libyan Hydrocarbon Industry? |
| 7.2.1. Divergence of Control within the Libyan Hydrocarbon Sector |
| 7.2.2. Redefining LNOC's Role |
| 7.2.3. Clarifying LNOC's Powers |
| 7.2.4. The Advantages of Eliminating FDI Risk |
| 7.3 The Re-entry of US Oil Companies to Their Assets in Libya |
| 7.3.1. Background |
| 7.3.2. US-Libyan Rapprochement |
| 7.3.3. The Standstill Agreements of 30 th June, 1986 |
| 7.3.4. The Legality of the Re-entry Agreement |
| 7.3.5. The Economic Terms for Re-Entry |
| 7.3.6. Final Remarks |
| 7.4. Developing the Libyan Marginal Fields – Risks and Rewards |
| 7.4.1. No Fiscal Incentives for Marginal Field Development |
| 7.4.2. The Fundamentals of the Libyan Marginal Fields |
| 7.4.3 Economic Notions of Marginal Fields |
| 7.4.4. Characteristics of the Libyan Marginal Fields |
| 7.4.5. The Importance of the Appropriate Contractual Terms |
| 7.4.5.1. Development under EPSA IV |
| 7.4.5.2. The Concession Approach |

| |
|---|
| 7.4.5.3. Development by Indigenous Companies |
| 7.4.5.4. Dedicated Legislation for Marginal Field Development |
| 7.4.5. Not Liabilities but Assets |
| 7.5. The Libyan National Oil Corporation - Quo Vadis? |
| 7.6.1. The Role of National Oil Companies |
| 7.6.2. The LNOC Dilemma |
| 7.6.3 Algeria and Hydrocarbon Industry Deregulation |
| 7.6.4. LNOC- Corporatisation and Privatisation |
| 7.6.5. Consolidating LNOC's Operating Companies |

| |
|--|
| Chapter Eight: Future Prospects |
| 8.1. Libya's New Threshold |
| 8.2. Economic Transformation |
| 8.3. The New Libyan Petroleum Law and Economic Diversification |
| 8.4. The Unexplored Status of the Libyan Basins |
| 8.5. The Future of the Libyan Hydrocarbon Industry |
| 8.6. The Way Ahead for Libya's Gas Sector |
| 8.7. LNOC: Failed Giant or Future Powerhouse? |

Appendix A: Libya: Exploration and Production Sharing Agreement – IV (EPSA-IV), Model

Appendix B: Breakdown Details of Exploration Drilling

List of Tables

| |
|---|
| Table 2. 1: AGOCO: Current and Planned Oil Production by Field, end- 2005 |
| Table 2. 2: AGOCO: Oil Reserves of the Developed Reservoirs, end-2005 |

| |
|--|
| Table 2. 3: AGOCO Gas Reserves of the Developed Reservoirs, end- 2005 |
| Table 2. 4: AGOCO: Discovered and Undeveloped Oil & Gas Reserves |
| Table 2. 5: AGOCO: Oil and Gas Prospects Identified in All Areas |
| Table 2. 6: WOC: Development of Ownership Interests |
| Table 2. 7: WOC: Summary of Producing Fields, 2005 |
| Table 2. 8: WOC: Details of Producing Fields and Wells |
| Table 2. 9: WOC: Reserves of October 2005 |
| Table 2. 10: WOC: Booked and Potential Future Reserves |
| Table 2. 11: WOC: Development of Reserves from 1986 to 2004 |
| Table 2. 12: WOC: Summary of High Potential Prospects & Leads |
| Table 2. 13: WOC: Current Concession & Block Areas |
| Table 2. 14: WOC: Development of New Projects |
| Table 2. 15: WOC: Expected Added Reserves from Oil & Gas from 2006 – 2010 |
| Table 2. 16: SOC: Oil and Gas Fields, 2005 |
| Table 2. 17: SOC: Summary of Producing Fields |
| Table 2. 18: SOC: Oil-Field Discoveries, Production and Reserve Profiles |
| Table 2. 19: SOC: Gas-Field Discoveries, Production and Reserve Profiles |
| Table 2. 20: SOC: Reserves of Crude Oil from Developed Reserves, September, 2005 |
| Table 2. 21: SOC: Reserves of Crude Oil from Undeveloped Reserves, September, 2005 |
| Table 2. 22: SOC: Reserves of Associated & Non-Associated Gas, September,2005 |
| Table 2. 23: ZOC: Historical Development |
| Table 2. 24: ZOC: Oilfield Production Profile |
| Table 2. 25: VOC : Main Oil Fields and Production Profile, 2005 |
| Table 2. 26: VOC Reserves |
| Table 2. 27: Total: Main Oil Fields and Production Profile, 2005 |
| Table 2. 28: Mabruk Oilfield: Status of Supplying Wells |
| Table 2. 29: Al Jurf Oilfield: Status of Supplying Wells |

| |
|--|
| Table 2. 30: Mabruk Oilfield: Status of Reserves |
| Table 2. 31: Al-Jurf Oilfield: Status of Reserves |
| Table 2. 32: Mabruk Phase IV: Contract Details |
| Table 2. 33: Options for Developing Al-Jurf, Phase-II |
| Table 2. 34: Repsol: Main Oil Fields and Production Profile, 2005 |
| Table 2. 35: Repsol: Oilfields Production Details and Facilities |
| Table 2. 36: Repsol: El-Sharara Field Block - NC-115 Reserve Status Profile |
| Table 2. 37: Repsol: Block NC-115 :Leads in Three Reserve Scenarios |
| Table 2. 38: Repsol: Block NC-186: Reserve Status as at 31 st December,2004 |
| Table 2. 39: Repsol: El-Sharara Block NC-115: Exploration Plan, 2005 2009 |
| Table 2. 40: Wintershall: Main Producing Oilfields, 2005 |
| Table 2. 41: Wintershall: Oil Reserves, as 2005 |
| Table 2. 42: Wintershall: Recent Completed Projects |
| Table 2. 43: Agip: Oilfields Production, 2005 |
| Table 2. 44: Agip: Oil Concessions & Blocks: Remaining Reserves, 2005 |
| Table 2. 45: Agip: Expected Additional Reserves from Exploration Activities 2005 - 2009 |
| Table 2. 46: Agip: Expected Additional Reserves from Development Activities 2005 - 2009 |
| Table 3. 1: Libya: A Comparison of Historical with Planned Seismic Activities,1956-2005 |
| Table 3. 2: Libya: Breakdown of Exploration and Appraisal Wells Drilled from 1956 to 2004 |
| Table 3. 3: Libya: Oil Storage Terminals, 2005 |
| Table 3. 4: Libya: Five Scenarios for Estimating Libyan Reserves |
| Table 3. 5: Libya: Five Scenarios for Estimating Future Discoveries. |
| Table 3. 6: Libya: Current Producing Shut-In Wells, 2005 |
| Table 3. 7: Risk Degree Classification within the Libyan Sedimentary Basins |
| Table 3. 8: Comparison of Shipment Distances between Libyan and Gulf Ports to the Traditional Oil Markets |
| Table 4. 1: Concession Terms: The Effect of Improving the Selling Price by 1\$/BBL and TFR Increases both Parties Profit |
| Table 4. 2: Net Take / BBL under Participation Agreement Terms (49:51%) |

| |
|--|
| Table 4. 3: LNOC and IOCs: Net Profit under EPSA-I Terms, |
| Table 4. 4: LNOC and IOCs: Net Profit under EPSA-II Terms, |
| Table 4. 5: Libya: Petroleum Fiscal Models and Risk Factors, 1955-2004 |
| Table 4. 6: Evaluation of the Libyan Petroleum Agreements, 1955-2004 |
| Table 5. 1: EPSA-IV, First Round: Bidders and Winners |
| Table 5. 2: EPSA-IV First Round I: Competitor Parameters |
| Table 5. 3: Prospectivity of the EPSA-IV First Round |
| Table 5. 4: EPSA-IV First Round: Commitments and Obligations by Basins |
| Table 5. 5: EPSA-IV First Round: Commitments and Obligations by Companies |
| Table 5. 6: Shell Agreements: Areas, Blocks, and Seismic and Drilling Programme |
| Table 5. 7: Economic Aspects of the Shell Agreement: |
| Table 5. 8: EPSA-IV Round Two, 3.10.2005 |
| Table 5. 9: EPSA-IV Round Two, Block Prospectivity |
| Table 5. 10: Results of EPSA-IV Round Two |
| Table 5. 11: Signature Bonuses: Comparison of EPSA-IV Rounds I and II |
| Table 5. 12: EPSA-IV Rounds I and II: Energy Ministry and LNOC: Maximum Bidding Factors for each Basin |
| Table 5. 13: EPSA-IV Rounds I and II: Analysis of the Energy Ministry and LNOC of the Maximum Bidding Factors for each Basin |
| Table 5. 14: EPSA-IV Round I and II: Winners by Country |
| Table 5. 15: EPSA-IV Round Three: Areas and Blocks Available |
| Table 5. 16: EPSA-IV Round Three: Minimum Exploration Commitments |
| Table 5. 17: EPSA-IV: Scenarios for “A” and “Factors for 100, 300 and 400 MMBBL Fields, Oil Price US\$40/BBL |
| Table 6. 1: Libyan: Gas Reserves by Company, 2004 |
| Table 6. 2: Libya: Gas Pipelines by Operator, Location, Length and Capacity, 2005 |
| Table 6. 3: The WLGP: Analysis of the Financial Picture, 1998-2005 |
| Table 6. 4: Libya: Block NC-41Offshore Basin Gas Reserves |
| Table 6. 5: Libya: Block NC-41Offshore Gas Development Project: Original Oil & Condensate Reserves |

| |
|--|
| Table 6. 6: Libya: Major Gas Projects with Finance |
| Table 6. 7: Libya: Future Gas Projects Requiring Finance |
| Table 7. 1: Libya: Comparative Demographic and Social Indicators (2005) |
| Table 7. 2: Libya: Revenue from Hydrocarbons as, Percentage of Total Revenue |
| Table 7. 3: Agoco and SOC: Estimated Reserves, Leads and Prospects |

List of Figures

| |
|--|
| Figure 2.1: AGOCO: Projected Oil Production by Field, 2006-2015 |
| Figure 2. 2: AGOCO: Gas Production by Field as at 2005 |
| Figure 2. 3: WOC: Concessions, Blocks and Oil and Gas Producing Fields |
| Figure 2. 4: WOC Concessions: Average Daily Production, 1996 - 2005 |
| Figure 2. 5: WOC: Production in thousand bbl/d, 1962 - 2005 |
| Figure 2. 6: WOC: Area, 1955 to 2005 |
| Figure 2. 7: WOC: Forecast of Future Production Capacity Thousand Bbl Per Day |
| Figure 2. 8: WOC: 2D Seismic Activity Program 2005 – 2032 |
| Figure 2. 9: WOC: 3D Seismic Activity Program 2005 - 2032 |
| Figure 2. 10: WOC: Exploration Drilling Program, 2005 – 2032. |
| Figure 2. 11: WOC: Total Estimated Reserves of N. Gialo |
| Figure 2. 12: WOC: Total Estimated Reserves of Faregh Phase-II Development |
| Figure 2. 13: WOC : Total Estimated Reserves of Block NC98 A/F Structure |
| Figure 2. 14: WOC: Total Estimated Reserves of Dahra/Jofra PL-5 Field |
| Figure 2. 15: WOC: Total Estimated Reserves of Gialo “3V” Area |
| Figure 2. 16: WOC: Total Estimated Reserves of Exploration Prospects Development |
| Figure 2. 17: SOC: Oil Production from 1994 to 2005 |
| Figure 2. 18: SOC: Gas Production from 1994 to 2005 |

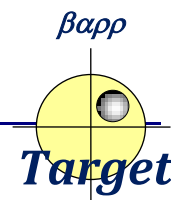
| |
|---|
| Figure 2. 19: ZOC: Average Daily Production of Oil 1996 – 2005 |
| Figure 2. 20: ZOC: Reserves as 2005 |
| Figure 2. 21: ZOC: Forecast of Future Production 2006 - 2011 |
| Figure 2. 22: ZOC: Planned Development Wells 2006 – 2010 |
| Figure 2. 23: Total: Production Output 1995 - 2010 |
| Figure 2. 24: Mabruk: Actual and Projected Outputs, 1995 - 2010 |
| Figure 2. 25: Al-Jurf: Actual and Projected Outputs 2003 - 2010 |
| Figure 2. 26: Repsol: Block NC-115, Production Profile 1996 - 2010 |
| Figure 2. 27: Wintershall: Production Profile, 1996 to 2010 |
| Figure 2. 28: Agip: Oilfields Concessions & Blocks Production |
| Figure 2. 29: Agip: Remaining Reserves, October 2005 |
| Figure 3. 1: Locations of the Libyan Sedimentary Basins |
| Figure 3. 2: Libya: Allocated Areas as October, 2005 |
| Figure 3. 3: Libya: Distribution of the Offshore Areas Granted, to 2005 |
| Figure 3. 4: Libya: 2D Seismic Activity 1956-2004 |
| Figure 3. 5: Libya: 3D Seismic Activity, 1956-2004 |
| Figure 3. 6: 2D and 3D Seismic Activities in the Libyan Sedimentary Basins |
| Figure 3. 7: Libya: Expenditure on Seismic Activities, 1890-2000 |
| Figure 3. 8: LNOC: Targeted and Achieved Seismic, 1999-2003 |
| Figure 3. 9: Libya: Total Exploration and Appraisal Wells Drilled, 1956 to 2004 |
| Figure 3. 10: The Correlation between Exploration Expenditures and Oil Prices in Libyan Upstream Sector from 1980 to 2000 |
| Figure 3. 11: Libya: Pipelines by IOC Owners from 1958 to 1971 |
| Figure 3. 12: Libya: Pipelines by IOC Owner, at Present Period |
| Figure 3. 13: Libya: Oil Reserves in Relation to OPEC, Africa and the rest of the World, 1970-2004 |
| Figure 3. 14: Libya: Proven Oil Reserves, 1961 - 2004 |
| Figure 3. 15: Libya: Discovered Oil-in-Place, 1980 – 2000 |

| |
|--|
| Figure 3. 16: Libya: Discovered Oil, 1956 to 2004 |
| Figure 3. 17: Libya: Hydrocarbon Potential (Oil-in-Place) of the Libyan Basins |
| Figure 3. 18: Libya: Total Oil Reserves, Accumulated Production and Remaining Reserves |
| Figure 3. 19: Libya: Percentage of Proven Oil Reserves by Company |
| Figure 3. 20: Libya: Crude Oil Production Compared with OPEC Countries, African Continent , and World, 1970 - 2005 |
| Figure 3. 21: Libya: Accumulated Production by IOC's, 1961 to 1971 |
| Figure 3. 22: Libya: Crude Oil Production and Change in Daily Production, 1961 -2003 |
| Figure 3. 23: Libya: Crude oil production by Companies, 2005 |
| Figure 3. 24: Libya: Production Share by Producing Companies, 2005 |
| Figure 3. 25: LNOC Affiliate Status of Wells, 2005 |
| Figure 3. 26: Libya: Status of the Upstream Petroleum Producing Wells, 2005 |
| Figure 3. 27: Libya: Number of Abandoned Wells, 2005 |
| Figure 3. 28: Libya: Remaining Proven Reserves, 2005 |
| Figure 3. 29: Libya: Opportunities for IOCs for New Investment and Technology |
| Figure 3. 30: LNOC: Scenarios Projecting Future Oil Production, 2006 to 2014 |
| Figure 3. 31: Distribution of the future production Among LNOC-producers and IOC's |
| Figure 3. 32: LNOC: Second Plan for Increasing Libyan Oil Production |
| Figure 3. 33: Libya: OPEC Quota |
| Figure 3. 34: Libya: Proven Reserves and Production Share by Producer, 2005 |
| Figure 4. 1: Libya: Petroleum Agreements Currently in use in the Upstream Oil Sector |
| Figure 4. 2: Libya: Percentages of Crude Production According to Types of Fiscal Agreement, 2004 |
| Figure 4. 3: Libya: Government and IOC Percentage Shares of Petroleum Revenue, 2005 |
| Figure 4. 4: Libya: Oil Export by IOCs, 1961 - 1964 |
| Figure 4. 5: OPEC: Allowance for Libyan Crude of API 40° |
| Figure 4. 6: Libya: Government and IOC Revenues, 1961 to 1973 |
| Figure 4. 7: Libya: Crude Oil Production and Production Cost, 1961 - 2006 |
| Figure 4. 8: Libya: Government and IOC Share of Revenue, 1961 - 1973 |

| |
|--|
| Figure 4. 9: Libya: Relation between Taxation Factor Rate(TFR) and Oil Prices |
| Figure 4. 10: Libya: Effect of TFR on Government / IOC Profit |
| Figure 4. 11: Libya: Examination of the Concessions Terms under Different Oil Price Scenarios and TRF (1,000 MM BBL Oilfield) |
| Figure 4. 12: Libya: Concession Terms: The Effect of Different Rates of TFR on the Net Profit of LG and IOCs |
| Figure 4. 13: Libya: An Examination of the Participation Agreement (49:51%), under Different Oil Price Scenarios and TRF (1,000 MM BBL Oilfield) |
| Figure 4. 14: Libya: An Examination of the Net Profit Agreements: Wintershall Case |
| Figure 4. 15: Libya: An Examination of the Net Profit Agreements: Oasis Consortium Case (1,000 MM BBL Oilfield) |
| Figure 4. 16: Libya: Comparison Between the Concession Terms and Net Profit Agreements: Wintershall Case |
| Figure 4. 17: Libya: Comparison Between the Participation Terms and Net Profit Agreements: Oasis Consortium Case |
| Figure 4. 18: Libya: EPSA-I Contractual Terms Regarding Production Sharing, 1974 |
| Figure 4. 19: Libya: EPSA-II Contractual Terms Regarding Production Sharing, 1980 |
| Figure 4. 20: LNOC and IOCs: Net Profit under EPSA-I Terms |
| Figure 4. 21: LNOC and IOCs Net Profit under EPSA-II Terms, |
| Figure 5. 1: EPSA-IV Pre-emption Rights |
| Figure 5. 2: EPSA-IV: Round One Areas Offered |
| Figure 5. 3: Shell Blocks, Potential Oil and Gas Reserves |
| Figure 5. 4: Libya: El-Brega LNG Plant, Production 1971 – 2005 |
| Figure 5. 5: EPSA-IV: Round Two: Basins, Areas and Blocks Available |
| Figure 5. 6: EPSA-IV: Round Two: Areas Offered |
| Figure 5. 7: Comparison Between EPSA-IV Rounds I & II and the Shell Deal |
| Figure 5. 8: EPSA-IV: Round One: Distribution of the Second Party Allocation (SPA) for each Basin |
| Figure 5. 9: EPSA-IV: Second Two: Distribution of the Second Party Allocation (SPA) for each Basin |
| Figure 5. 10: EPSA-IV Round One: Actual Bidders by Basin and Energy Ministry and LNOC Maximum Bidding Figures |
| Figure 5. 11: Comparison Between EPSA-IV Rounds I & II and the Shell 2005 Deal |
| Figure 5. 12: EPSA-IV: Round Three: Areas Offered |

| |
|--|
| Figure 5. 13: Worldwide Comparison of PSC Terms |
| Figure 5. 14: Libya: The Case I, II and III Scenarios for the A and B Factors for the Onshore / Offshore Basins |
| Figure 5. 15: EPSA-IV: Net Take to IOC with Three Scenarios of A & B Factor |
| Figure 6. 1: Selected MENA Gas Producers, Growth in Gas Reserves, 1985-2005 |
| Figure 6. 2: Libya: Gas Production as Associated/ Non-Associated Gas by Producing Company, 2004 |
| Figure 6. 3: Libya: El-Brega Gas Gathering and Processing System |
| Figure 6. 4: Libya: Gas Pipelines, 2005 |
| Figure 6. 5: Libya: Daily Gas Production, 1985-2004 |
| Figure 6. 6: Libya: Domestic Demand for Gas by Sector, 2004-2005 |
| Figure 6. 7: Libya: Production and Usage of Gas, 2005 |
| Figure 6. 8: Libya: Demand from Domestic Consumers, 1989 – 2005 |
| Figure 6. 9: EPSA-IV: Development Scenario for Associated Gas |
| Figure 6. 10: EPSA-IV: Development Scenario for Non-Associated or Free Gas |
| Figure 6. 11: Libya: Supply/Demand for Gas, Domestic and Export, 2005-2015 First Option: Heavy Fuel/Natural Gas Mixed Electricity Generation |
| Figure 6. 12: Libya: Supply/Demand for Gas, Domestic and Export, 2005-2015 Second Option: Electricity Generation from Natural Gas |
| Figure 7. 1: WOC: Proposed Future Capital Investment Projects in Million US\$ |

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