



Monitoring and Supervision Procedures for Exploration and Development Activities - Final

Under
Strengthening of Hydrocarbon Unit in the
Energy and Mineral Resources Division (Phase-II)
ADB Grant 0019: GTDP

For
HYDROCARBON UNIT
Energy and Mineral Resources Division
Government of the People's Republic of Bangladesh

May 6, 2011



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Submitted by:



Dr. Mark Cronshaw, Team Leader

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ABBREVIATIONS

| | |
|------------------|---|
| ADB | Asian Development Bank |
| AERC | Audit Exceptions Resolution committee of Petrobangla |
| BAPEX | Bangladesh Exploration Company |
| BCF | Billion Cubic Feet |
| BERC | Bangladesh Energy Regulatory Commission |
| BGSL | Bakhrabad Gas Systems LTD. |
| BMD | Bureau of Mineral Development |
| BMEDC | Bangladesh Mineral Exploration and Development Corporation |
| BMOGC | Bangladesh Mineral, Oil, and Gas Corporation |
| BMOGC | Bangladesh Oil and Gas Corporation |
| BODC | Bengal Oil Development Co. |
| BOE | Barrels of Oil Equivalent |
| CIF | Cost, Insurance, Freight |
| DGPC | Directorate General of Petroleum Concessions |
| DS | Deep Sea |
| EIA | Environment Impact Assessment |
| EMRD | Energy and Mineral Resource Division of the Ministry of Power |
| FMD | Financial Management Division of the Directorate of Finance |
| FOB | Free On Board |
| G & G | Geological and Geophysical survey |
| GPSA | Gas Purchase and Sales Agreement |
| GTCL | Gas and Transmission Company |
| HCU | Hydrocarbon Unit |
| HSFO | High Sulphur Fuel Oil |
| ICISD | International Center for Investment Disputes |
| IOC | International Oil Company |
| JMC | Joint Management Committee |
| JRC | Joint Review Committee |
| LAN | Local Area Network |
| LNG | Liquefied Natural Gas |
| MCF | Millions of Cubic Feet |
| MMBOE | Millions of Barrels of Oil Equivalent |
| MOU | Memorandum of Understanding |
| MPE | Ministry of Petroleum and Energy |
| MPEMR | Ministry of Power, Energy, and Mineral Resources |
| MRMEW | Municipalities and Environment and Water Resources |
| NOC | National Oil Company |
| OGRA | Oil and Gas regulatory Authority |
| PCD | Petroleum Concession Division of Petrobangla |
| PDO | Petroleum Development Oman |

| | |
|-----------------|---|
| PPL | Pakistan Petroleum LTD. |
| PSC | Production Sharing Contract |
| QR | Qatari Riyal |
| R-FACTOR | Ratio of cumulative receipts to cumulative expenditures |
| SCENR | Supreme Council for the Environment and Water Resources |
| SD | Supplementary Duty |
| SS | Shallow Sea |
| SWOT | Strengths, Weaknesses, Opportunities, Threats |
| TFC | Technical and Financial committee of Petrobangla |
| TK | Bangladesh Taka |
| VAT | Value added Tax |
| WPB | Work Program and Budget |
| WU | Work Units |

1 EXECUTIVE SUMMARY

This revision of the report incorporates comments received from the Hydrocarbon Unit and Petrobangla, which were based on the previous report version dated Dec. 23, 2010.

Gas production has increased impressively in Bangladesh, from 392 BCF in 2002 to 704 BCF in 2009-10. The majority of this gas is produced by international oil companies (IOCs), predominantly operating under production sharing contracts (PSCs) that were awarded in four rounds of negotiations and bidding. There is also one joint venture agreement (JVA) between Niko Resources and Bapex. In addition, Petrobangla companies conduct their own exploration, development, and production, and also are the sole purchasers of gas produced by the IOCs.

Besides conducting its own E&P activity, Petrobangla is the main agency for the award, monitoring and supervision of PSCs. In these regulatory roles, Petrobangla has defended an arbitration case concerning gas tariffs that saved about \$240 million, and has uncovered a total of \$80 million in non-allowable costs that IOCs had included as part of the PSC cost recovery provisions.

Petrobangla faces challenges: 1) it operates at a deficit because the price that it receives for gas sales to end-users is low compared to the price that it pays IOCs. The government provides Petrobangla with funds to compensate for the low end-user price. However, Petrobangla has been required to pay interest to the IOCs because of delayed payments for gas. 2) It is not current in its audits of PSCs. 3) There are multi-year delays between the announcement of successful PSC bidders and the signing of finalized PSCs.

Both Petrobangla and the Hydrocarbon Unit (HCU) have several vacant staff positions. The vacancies at Petrobangla may be a partial cause of the delays in auditing of existing PSCs and finalization of new PSCs.

This report describes current PSC monitoring and supervisory activities, and makes recommendations for improvement. Changes are suggested for both the HCU and Petrobangla.

In addition, the report contains suggestions for possible changes to the model PSC based on best practices determined from a review of PSCs in other countries. Finally, the report recommends the formation of a drafting committee between EMRD, Petrobangla, the HCU, and other stakeholders to develop a specific checklist of monitoring activities that can be undertaken according to the 2008 Model PSC, and to draft upstream regulations for the oil & gas industry. This is a step towards enabling Petrobangla to become a highly regarded national oil company, such as Statoil or Petrobras¹, while leaving more of the hydrocarbon regulatory activities to be carried out by the HCU.

¹ Petrobras is actually a publicly traded company whose majority shareholder is the government of Brazil.

2 INTRODUCTION

2.1 PURPOSE

This Monitoring Report is the third report in the ADB-funded project to strengthen the Hydrocarbon Unit (HCU). The first report, the Inception report, described the background and scope of work for the project. The second report, the Summary Report, provided a summary of the hydrocarbon situation in Bangladesh. This report provides additional background information and discusses monitoring and supervision of PSCs in Bangladesh. Section 3 describes hydrocarbon activity in Bangladesh: the government agencies, and exploration and production activity. Section 4 discusses current methods used for monitoring and supervision of PSCs. Section 5 is a survey of best practices in monitoring and supervision. Section 6 contains recommendations for previously signed PSCs and for the one joint venture agreement in Bangladesh. Section 7 makes recommendations for monitoring and supervision that are allowed under the 2008 Model PSC. Section 8 discusses possible PSC fraud and methods for its prevention. Section 9 discusses possible changes to the latest 2008 Model PSC. Section 10 has suggestions for implementation of the report's findings, and Section 11 contains conclusions.

There are four appendices. Appendix A discusses the existing gas price subsidy that exists in Bangladesh, under which end-users of natural gas pay a lower price than Petrobangla pays for its gas purchases. Appendix B contains details of the recently completed arbitration with Chevron concerning a 4% gas tariff. Appendix C has a detailed list of monitoring activities that are allowed according to the 2008 Model PSC, broken out according to the articles of that PSC. Appendix D compares key terms of PSCs in Bangladesh, Pakistan, Malaysia, and India.

2.2 AUTHORITY

International consulting services are being provided by Gustavson Associates in order to assist the HCU with monitoring and supervision of PSCs and other contracts. Specifically, Gustavson is assisting the HCU in performing appropriate technical follow-up and auditing of the activities of the operators working under PSCs and other contracts (JVA, etc.) for oil and gas exploration

and production in Bangladesh. Assistance will also be provided so that the HCU can ensure adherence with the legislation and the contracts and to establish its position to provide views, comments, and suggestions on different issues arising from time to time on contract management. Gustavson was awarded the contract on February 28, 2010 and is performing the services under a Lump Sum Contract funded through a grant agreement with the Asian Development Bank.

The Executing Agency is the HCU in the Energy & Mineral Resources Division of the Ministry of Power, Energy & Mineral Resources. The HCU has assigned staff as counterparts to the Gustavson team to assist in achieving the objectives of the project. We gratefully acknowledge the support of the Director General of the HCU, Engineer Anwar Hossain Khan, and his staff.

3 HYDROCARBON ACTIVITY IN BANGLADESH

3.1 AGENCIES WITH HYDROCARBON RESPONSIBILITIES

There are three agencies with hydrocarbon responsibilities in Bangladesh. The Energy and Mineral Resources Division (EMRD) is part of the Ministry of Power, Energy and Mineral Resources (MPEMR). The EMRD oversees Petrobangla. Petrobangla is the national oil company, with both operational and regulatory functions. The Hydrocarbon Unit supports the EMRD. This sub-section provides information about each of these three agencies.

3.1.1 Energy and Mineral Resources Division

The Energy and Mineral Resources Division (EMRD) is one of two divisions of the MPEMR. It executes general policy related to oil, gas and mineral resources of the country for their efficient and eco-friendly use, and ensures responsible economic development. The EMRD supervises and monitors the activities of all the organizations, offices, institutes and companies working in the exploration, development, production, refining, transporting and distribution activities related to oil, gas and minerals. The EMRD represents the “government” as specified in the Bangladesh Petroleum Act. The functions of the Energy and Mineral Resources Division (EMRD) are²:

- (a) All policies and matters relating to Petroleum, Natural gas, and Mineral Resources.
- (b) Policy relating to mineral resources under the Petroleum and Petroleum products.
- (c) General Policy (Regulating and Development) relating to Petroleum, Gas and Mineral Resources (other than radioactive and nuclear fuels).
- (d) Subjects mentioned in the Petroleum Act, 1974 (XVI of 1974) and Bangladesh Oil, Gas and Mineral Ordinance (Ordinance No. XI of 1986) where the Government is concerned.
- (e) Subjects mentioned in the Bangladesh Mineral Exploration and Development Corporation Order, 1972 (Presidents Order No. 120 of 1972) now merged with Bangladesh Oil, Gas and Mineral Corporation, where the Government is concerned.
- (f) Administration, Planning, Programming and Policy relating to the Geological Survey.

² <http://www.energysector-bpi.org.bd/energyhome.htm>

- (g) Administrative and control of Geological Survey of Bangladesh, Bureau of Mineral Development, Department of Explosives, Bangladesh Petroleum Institute, Bangladesh Oil, Gas and Mineral Corporation and Bangladesh Petroleum Corporation.
- (h) Any other matters relating to:-
 - (i) Bangladesh Petroleum Corporation,
 - (ii) Bangladesh Oil, Gas and Mineral Corporation,
 - (iii) Department of Geological Survey of Bangladesh,
 - (iv) Department of Explosives,
 - (v) Bangladesh Petroleum Institute,
 - (vi) Bureau of Mineral Development.
- (i) All laws on subjects allotted to this Division.
- (j) Preparation of budgets, all administrative matters and control of financial matters of the Division and subordinate Depts./Corporations/Offices etc.
- (k) Inquiries and statistics on any of the subjects allotted to this Division.
- (l) Fees in respect of the subjects allotted to this Division except fees taken in courts.
- (m) Liaison with international organizations and matters relating to treaties and agreements in respect of oil, gas and minerals.

3.1.2 Petrobangla

Since its establishment, Petrobangla has gone through different reforms at different times:

- i. Bangladesh Mineral, Oil and Gas Corporation (BMOGC) was created through the President's Order # 27 on March 26, 1972 which covered the exploration and development of the oil, gas and mineral resources of the country.
- ii. The minerals operation of the Corporation was segregated and vested with a new organization, Bangladesh Mineral Exploration and Development Corporation (BMEDC) through President's Order # 120 of September 27, 1972.
- iii. The reconstituted Bangladesh Oil and Gas Corporation (BOGC) was short-named Petrobangla through Ordinance # XV of August 22, 1974. Through the repeal of Ordinance # LXX of 1974, the Oil and Gas Development Corporation was abolished, and all its asset and liabilities was vested to Petrobangla.

- iv. BOGC and BMEDC were merged into a single entity under the name “Bangladesh Oil, Gas and Mineral Corporation (BOGMC)” by Ordinance # XXI dated April 11, 1985.
- v. In a partial modification of the Ordinance by Act # 11 of February 1989, the Corporation was short-named Petrobangla and given the authority to hold the shares of companies dealing in oil, gas, and mineral exploration and development³.

According to the Bangladesh Petroleum Act dated August 27, 1974, the government has entrusted Petrobangla to:

- enter into Production Sharing Contracts (PSCs) with International Oil Companies (IOCs) for exploration and development of oil and gas.
- supervise, monitor and coordinate the activities under the signed PSCs⁴.

Petrobangla has been carrying out these functions since implementation of the Act. Petrobangla also conducts their responsibilities via BAPEX, BGFCL, SGFL, GTCL, Titas Gas, BGS, Karnafuly Gas, WESGAS, etc.

The Bangladesh Oil, Gas and Mineral Corporation Ordinance, 1985 [Ordinance No. XXI of 1985] states that:

- (1) The functions of the corporation are⁵:
 - i. To undertake research in the field of oil, gas, and minerals.
 - ii. To prepare and implement programmes for the exploration and development of oil, gas and mineral resources.
 - iii. To produce and sell oil, gas and mineral resources.
 - iv. To perform other such functions as the Government may, from time to time, assign to the Corporation.
- (2) Without prejudice to the generality of the foregoing provisions, the Corporation shall in particular, have power-
 - i. To undertake research for alternative use of natural gas;

³ Annual Report 2009, Petrobangla

⁴ Annual Report 2009 Petrobangla

⁵ http://bdlaws.minlaw.gov.bd/pdf_part.php?act_name=&vol=&id=683

- ii. To carry out geological, geophysical, and other surveys for the exploration and development of oil, gas and mineral resources;
- iii. To carry out drilling and other prospecting operations to prove and estimate the reserves of oil, gas, and mineral resources and collect all data required for adopting the most suitable extraction and mining method;
- iv. To set up mining industries and to continue production and sale of the mined commodities;
- v. To plan, promote and develop cement industries in the country;
- vi. To take up, execute and operate any project on mining and mineral development;
- vii. To contribute towards the cost of any studies, experiments or technical research connected with the functions of the corporation and undertaken or done in the interest of the Corporation by any other person, body or agency;
- viii. To undertake, assist or encourage the collection, maintenance and publication of statistics, bulletins and monographs.

3.1.3 HCU

The EMRD has accentuated the need to assume new responsibilities, given developments in the petroleum sector including the arrival of foreign operating companies under production sharing contracts (PSCs), and an increasing commercial role for Petrobangla. Its new responsibilities include petroleum resource assessment at regular intervals, functions relating to planning and monitoring of PSC activities, associated tasks of data management, and formulation of a national depletion policy.

In response to these needs, the government established the Hydrocarbon Unit (HCU) in the MPEMR to (i) implement government policies and upstream regulations for the petroleum sector, and (ii) promote and supervise private sector activities in the petroleum sector⁶. The Natural Resources Wing of EMRD was renamed as the HCU on November 3, 1994.

⁶ <http://www.energysector-bpi.org.bd/energyhome.htm>

The work plan of the HCU contains the following components:-

- i. Institutional model (establishment of the HCU, and defining its roles and responsibilities).
- ii. Monitoring and supervision of PSC activities (attending JRC/JMC meetings, monitoring major activities of PSCs, and reporting to the ministry).
- iii. Petroleum policy and management (such as conducting an optimal gas utilization study, formulation of exploration and field development plans).
- iv. Resource assessment (including establishment of a classification system for resources, reserve estimation and resource assessment).
- v. Data management (establishment of an energy sector mini data bank, development of a cost data base etc.)
- vi. Training and technology transfer.
- vii. Institutional co-operation between the HCU and the Norwegian Petroleum Directorate.

The Energy and Mineral Resources Division entrusted the HCU to perform the following functions⁷:

- (a) To act as the technical arm of the EMRD.
- (b) To support EMRD prior to finalizing PSCs.
- (c) To advise EMRD concerning PSC negotiations.
- (d) To participate in the Joint Review Committee (JRC) and Joint Management Committee (JMC), and submit reports to the EMRD.
- (e) To carry out the following responsibilities related to upstream regulations:
 - (1) Formulate exploration policy;
 - (2) Update gas reserve and resource estimates at regular intervals;
 - (3) Manage an energy database;
 - (4) Monitor exploration and development activities under PSCs and report to EMRD at regular intervals;

⁷ Ministry of Finance (Finance Division)/B.N:6/Energy:-1/2006/115 dated 11-06-2006

- (5) Prepare domestic and regional gas demand forecasts and market analyses;
- (6) Manage production and depletion of natural gas.
- (f) To perform any other task assigned by EMRD.

3.2 EXPLORATION AND PRODUCTION ACTIVITY

3.2.1 Historical Evolution of Petroleum Agreements in Bangladesh

Until 1964 petroleum exploration was conducted by international oil companies. Shell and Pakistan Petroleum Ltd (PPL), a subsidiary of Burmah Oil and STANVAC were engaged in petroleum exploration. Shell and PPL discovered six gas fields (Titas, Habiganj, Rashidpur, Bakhrabad, Chattak and Sylhet (Haripur) and started production in 1961 from Sylhet and Chattack gas fields. Six years later Shell started production from Titas and Habiganj. From 1964 state participation in petroleum exploration started with technical assistance from the former USSR.

Bangladesh inherited a concession system of petroleum agreements from Pakistan. A comprehensive policy review was conducted after Bangladesh's independence. In 1973, the government started setting up a new legal framework to encourage rapid exploration and development of natural gas and oil, and to safeguard the national interest. The government also took initiatives for the development of a national capacity in the oil and gas sector, with assistance from international companies.

The first PSC in the world was introduced in 1966 in Indonesia, inspired by the sharing of agricultural production under a share-cropping system. A PSC is usually carried out with the government through its National Oil Company. There are three basic elements in a PSC: (i) cost recovery, (ii) production sharing and (iii) income tax. In a PSC system, the operator is a contractor and works under the supervision of a State Enterprise (National Oil Company). Contractors assume all financial risks. All assets accrue to the state enterprise. Allowable costs are recovered out of production, with annual upper limits on the amount of production dedicated to covering costs. In 1974, as a newly independent country, the government of Bangladesh

thought of a PSC system administered by its state enterprise as a symbol of power and authority. It decided to adopt a PSC system, after studying the reported successes of Indonesia, Malaysia, Egypt, China, and India.

In 1974, the government invited bids from international oil companies for exploration and development of petroleum in the country under established criteria and ground rules. The bids submitted were evaluated on a 40-point scale, ten points for each of four criteria: financial capability, technical capacity, experience, and work programme. A selected number of qualified companies were invited to negotiate on the basis of the model PSC and seven contracts were concluded for offshore exploration and development. PSCs were signed with Atlantic Richfield, Union Oil of California (later renamed UNOCAL) and Ashland of the USA, Canadian Superior Oil (CSO), and Ina-Naftaplin of Europe, and Bengal Oil Development Co. (BODC), a Japanese company. UNOCAL discovered an offshore gas reservoir at Kutubdia but under some economic considerations, the company did not start its exploitation⁸.

Bengal Oil Development Co. drilled 3 wells during 1976-78 in the Bay of Bengal. INA-Naftaplin from Zagreb drilled 2 exploratory wells (BINA 1 and BINA 2) in the offshore area during the later part of the 1970's. Both were dry holes. Union Oil (Current UNOCAL) discovered a small offshore gas field, but it is still a non-commercial discovery.

In 1981, Shell Oil signed a PSC contract to explore for hydrocarbon in part of the Chittagong Hill Tracts area. After acquisition and evaluation of seismic and surface data, the company drilled their first exploration well (Sitapahar 1) in the Sitapahar anticline. This well turned out to be a dry hole. Shell also had another commitment well to drill and requested Petrobangla for a concession of Block 23, located on the extreme northwest of the country. Geologically this well is part of the Tarai Basin, which extends into Nepal. Petrobangla agreed to Shell's request and Shell commenced drilling Salbanhat well 1 which was also a dry hole.

In 1986, Petrobangla discovered oil below known gas sands in Sylhet (Haripur) structure. Following the oil discovery the area (within Block 13) including the oil pool and a mapped

⁸ The Banglapaedia

prospect (Jalalabad) was awarded to Scimitar Oil. Scimitar's effort to appraise the oil discovery was unsuccessful. The company drilled a well (Surma 1 and 1a) and the result was not encouraging. They drilled the Jalalabad prospect and discovered gas.

In December 1987, a PSC for Block 13 was signed with Scimitar. The company drilled three wells and discovered the Jalalabad Gas Field. However, production from this field was delayed for many years. Petrobangla served an arbitration notice to Scimitar for non-fulfillment of its obligations as an operator. Petrobangla won the arbitration, and the PSC with Scimitar was terminated in 1991.

A review of the policy and legal framework carried out under the World Bank's Petroleum Exploration Promotion Programme in 1987 pointed out that there were bright prospects for gas exploration in Bangladesh. A new model PSC was formulated in 1988 to encourage exploration for gas, and to ensure that the price for gas would have parity with the market price for fuel oil.

Following the World Bank's recommendations, Bangladesh Petroleum Exploration Co. (BAPEX) was created by abolishing the Exploration Directorate of Petrobangla. BAPEX was created as an exploration company without a production function. Years later it was converted into an E and P company.

The Petroleum Policy was approved on July 18, 1993. In 1994, a seminar cum round table conference was held in Houston to attract International Oil Companies (IOCs). MOUs were signed with a few IOCs, which subsequently resulted in the signing of six PSCs for 8 Blocks: 3 offshore (Blocks 16, 17 and 18), and 5 onshore (Blocks 12, 13 / 14, 15, and 22). These six PSCs were finalized during 1994-1997⁹. They are commonly known as the first round of bidding (signifying the first batch of PSCs that were signed after approval of the Petroleum Policy). There was no competitive bidding for selection of the IOCs. The terms of these first round PSCs were determined through negotiation from 1993 to 1997. The Model PSC was not available for public information. An expatriate consultant, Mr. John Stickley, assisted the government team during the negotiations, by assessing different PSC proposals.

⁹ The four year period for finalizing PSC negotiations is long compared to international norms.

There was public criticism for allocating the already discovered Jalalabad gas field in Block 13 to Occidental Exploration through a negotiation process. This criticism did not get momentum. Allocation of the field was justified by explaining that it was done with reference to objective (v) of the Petroleum Policy: “to consider development of gas fields through private sector, as a part of government’s privatization policy”.

The Model Production Sharing Contract-1997 was approved by the Cabinet on March 1, 1997. The model PSC was published by Petrobangla, and made available for public information. A formal bidding process (commonly known as second round bidding) was launched and road shows were organized in London and Houston in March and April 1997. Gustavson Associates of Boulder, CO USA acted as the consultant/promoter for these seminars. Bidding closed on July 15, 1997. 37 bids were received from 23 different companies, both majors and independents. Arthur Andersen of USA provided technical and financial skills to assist the Bangladesh bid evaluation and negotiation team. Four PSCs were awarded for four onshore blocks (Blocks 5, 7, 9 & 10) in 2001. A specific feature was introduced during the negotiation of this bidding round; BAPEX was made a partner in all PSCs with a 10% carried interest.

Gas production is the primary activity in each of these blocks. For each PSC, all gas is sold to Petrobangla under the terms of separate Gas Purchase and Sales Agreements (GPSA). The GPSAs mainly deal with the allocation of daily, maximum, and annual contract quantities of gas, Take-or-Pay volumes of gas, sales gas quality, and delivery points. Gas field development activities start after GPSA signing.

We now provide a summary of the activities that have occurred on the various blocks.

3.2.2 First Round PSCs

Blocks #12 and #13/14

These blocks are now operating under two separate PSC contracts, with Chevron as the operator. The blocks were signed on January 11, 1995 with Occidental of Bangladesh, a corporation

organized under the laws of Bermuda, with its head office at 1200 Discovery Drive, Bakersfield, California, U.S.A. Unocal acquired the blocks from Occidental in 1999. Chevron acquired the entire Unocal company in 2005. Chevron Bangladesh is the current operator of three gas field production areas, while the rest of the block areas have been relinquished.

The terms and conditions of these PSC contracts are identical in nature except that in Block#13 the already discovered Jalalabad gas field, with an area of 63.8 Sq. Km., was included for appraisal and development. Petrobangla was entitled to participate in cost recovery for the Jalalabad field, up to an amount of \$22,603,000 based on the audited accounts of actual expenditures by Petrobangla's previous contractor, Scimitar Exploration Ltd.. The terms of the production sharing for the contractor and Petrobangla were as follows:

1. Contractor will receive seventy-five percent(75%) of the cost recovery petroleum allocated for cost recovery.
2. Petrobangla will receive twenty-five percent(25%) of the cost recovery petroleum allocated for cost recovery.
3. A higher profit share was allocated to Petrobangla upon the start of production from the Jalalabad field.

There was also another 234 sq.km. area, called the Moulavy Bazar Area, that included an identified drillable prospect. A higher profit share was allocated to Petrobangla for this area.

Block #16

This block covers Chittagong, Manpura, Hatia, Sandip and adjacent regions in the Bay of Bengal. The ownership of the block is Cairn Energy Sangu Field Ltd.(37.5%), Santos Bangladesh Ltd(37.5%), and Halliburton Brown and Root(25%).

The Sangu gas field was discovered in 1996. Commercial production started on June 12, 1998 after drilling 4 more wells, installation of an unmanned platform, laying 45km. of 30" marine pipeline, and installation of a 250 mmcf/d process plant with two trains. All of this field development was done on a Fast Track Program, completed within 18 months.

The recoverable reserves (2P) of the field were estimated to be 456 BCF, of which about 442 BCF has already been produced. Several programs have been undertaken to maintain production into 2011, including well intervention and addition of compressors. A detailed list of activity on the block is shown below.

| Period | Activity |
|-----------------------------|--|
| 05-05-1994 to 04-05-1997 | Marine Seismic: 1874.795 km Onshore Seismic: 760.425 km Processed acquired seismic data Gravity Survey: 2543.635 km Drilling: Sangu#1 exploratory well 1995 /96 (gas discovery) Sangu#2 Appraisal well 1996(gas show) |
| 05-05-1997 to 04-05-1999 | Transition zone seismic: 489.325 km Drilling: 1997: Sangu#3,4,5,6 appraisal and development wells 1998: Sonadia#1 exploration well(gas show) |
| 05-05-1999 to 04-05-2001 | Drilling south Sangu#1 step-out appraisal well south Sangu#2 relief well |
| June2005 | Sangu field phase-II development Drill Sangu #7,8,9 development wells |
| 2006-07 | Sangu field phase-III development, Drilling Sangu#10 and south Sangu#3 development wells |
| 2007-10 | Magnama and Hatia Exploration <ul style="list-style-type: none"> - Drilled two wells (Magnama#1 and Hatia#1) with gas shows in in the intervals of 2873m to 3050m and 3764m to 3820m respectively. - 2 April 2008 JMC meeting: A proposal for a 3D seismic survey and for proper well location and also to delineate structural extension of these two gas shows was approved. - 03-07-2008: Cairn Energy proposed to have option to sell their portion of gas to third party buyers in the local market before commencing the 3D seismic survey. - 24-06-2009 JMC meeting: Government agreed in principal to this proposal and Petrobangla has approved their 3D seismic program. - A draft Amendment Agreement is almost complete; finalization was expected by September 2010. |

Relinquished Blocks

Block 15 was relinquished by Cairn Energy in 2005 after it had drilled three exploratory wells without finding any commercial discoveries. Block 22 was awarded to a US firm, United Meridian Corporation. They subsequently assigned the block to Ocean Energy. The PSC was terminated due to non-fulfillment of the work program.

3.2.3 PSCs Based on the 1997 Model PSC

There are two currently active PSCs based on the Model PSC-1997. Block 7 is now operated by Chevron Bangladesh and Block 9 is operated by Tullow Oil with the partnership of NIKO and BAPEX. Exploration and appraisal programs have been completed on Block 9. It is now in the production phase, with gas being produced from the Bangura gas field.

Chevron Bangladesh Block Seven Ltd. is now in the exploration phase for Block 7. A seismic survey was just completed in this year's weather window. Chevron has identified a drillable exploratory prospect on an island called "Kajla" near Golachipa Upozilla of the Patuakhali District in the southern coastal area of Bangladesh. The well is planned to spud during the first quarter of 2011.

Blocks 5 and 10 were also based on the Model PSC-1997. They were relinquished by Cairn Energy Plc. These blocks were surveyed by geophysical methods. The operator found no economical prospects for drilling, and served a notice of relinquishment. Hence the blocks are currently open. The wells drilled in the relinquished areas have been plugged and abandoned. Unused drilling materials have been handed over to Petrobangla, consistent with PSC requirements.

3.2.4 BAPEX/Niko Resources Joint Venture

The BAPEX/Niko Joint Venture Agreement (JVA), is the only petroleum agreement implemented under a joint venture contract in Bangladesh. This JVA has generated considerable controversy. As a result, no further joint venture agreements have been issued. A chronological development of the JVA is presented below.

NIKO participated in the second bidding round in 1997 for a PSC in Block 9, but was technically disqualified. Later, NIKO became a partner of the Block 9 PSC through assignment.

NIKO made a request to the EMRD for development of some non-producing gas fields (Chattak, Fenchuganj, Bianibazar, Kamta) under a joint venture program, describing them as marginal gas fields. The EMRD asked Petrobangla to consider NIKO's Joint Venture Proposal. A joint venture agreement was to be signed before signing the MOU with NIKO. A Swiss Challenge Procedure¹⁰ was to be considered before finalizing the contract.

An agreement between Bangladesh Petroleum Exploration and Production Company (BAPEX) and NIKO titled "Framework of understanding for the study for development and production of hydrocarbon for non-producing marginal gas fields for Chattak, Feni and Kamta" was signed in August 1999. In compliance with the agreement, a joint study was conducted in 1999 to evaluate the Chattak Gas Field along with Feni and Kamta whose production had been suspended previously.

The study report entitled 'Bangladesh Marginal Field Evaluation: Chattak, Feni and Kamta' was submitted in April 2000. The reserve estimated for Chattak West are shown in **Error! Reference source not found.**

Table 1 Reserve Estimate at West Chattak

| Reserve category | Proved | Probable | Possible |
|------------------|--------|----------|----------|
| BCF | 265 | 209 | 254 |

The resources at Chattak East were estimated to be at least 124 BCF with a 90 percent probability, and at least 219 BCF with a 50 percent probability.

A draft Joint Venture Agreement (JVA) was discussed at different levels of BAPEX and Petrobangla. They decided to exclude the Chattak East exploration prospect from the JVA, and to allow other bidders to participate in bidding by adopting the method of Swiss Challenge prior to execution of a JVA and fixing of the wellhead price of gas.

¹⁰ A Swiss Challenge procedure occurs after an initial offer is received. Subsequent bidders have a chance to make improved offers, with full information about the initial offer.

In the meantime EMRD developed a PROCEDURE entitled “Procedure for Development of Marginal/Abandoned Gas Field” that was submitted to the Prime Minister on June 6, 2001 and approved on June 14, 2001. Clause 3 of the PROCEDURE states that in order to declare any gas field as marginal Petrobangla was required to constitute a Technical Committee:

- to evaluate the status of all gas fields on the basis of geological, geo-physical and engineering data, production history, cost effectiveness, size of the fields, remaining reserves, well deliverability, cost of production, access to pipeline and market.
- to determine which gas fields may be considered as marginal/abandoned.
- to send the recommendations to the government (EMRD) for approval.

Clause 10 states that the Chattak, Kamta and Feni gas fields were deemed to have been declared marginal/abandoned gas fields, and the negotiations/discussion conducted to date with approval accorded by the Government in 1999, were deemed to have been in compliance with the PROCEDURE. A summary of the draft Joint Venture Agreement was approved by the then Prime Minister on March 18, 2003.

Petrobangla/BAPEX opined that the approval specifically did not include Chattak East because it was a prospect, not a discovered field, and therefore it should not be included in the JVA. However, on the basis of a legal opinion with reference to the coordinates included for the Chattak field in the previously signed Framework of Understanding, the JVA was finally approved by the Petrobangla Board on July 22, 2003, including Chattak East.

The Joint Venture Agreement (JVA) between BAPEX and NIKO was formally signed on October 16, 2003. The JVA has not proceeded smoothly. NIKO started supplying gas to the national gas pipeline from the Feni Gas Field starting in November 2004 without a Gas Purchase and Sales Agreement (GPSA). NIKO was paid a lump-sum payment of US\$ 4 million by Petrobangla against the gas to be supplied. A GPSA was signed with Petrobangla on December 27, 2006 without fixing the wellhead price of gas. Subsequently, the wellhead price was fixed at US\$ 1.75/mcf.

NIKO started drilling in Chattak (West) at Tangratila in the Doarabazar upazila of the Sunamgonj District on December 31, 2004 without approval of the Joint Management Committee (JMC) as required by the JVA. A blowout occurred on January 7, 2005 and a second blowout occurred on June 24, 2005. Subsequent legal action is discussed below.

3.2.5 Offshore Bidding Based on the Model PSC 2008

On February 24, 2008, Petrobangla announced an offshore bidding round for 28 offshore blocks, with 8 shallow sea (SS) blocks located North of 20 degree latitude (referred to as Type-A blocks), and 20 deep sea (DS) blocks located South of 20 degree latitude (Type-B blocks). The average size of the Type-A shallow sea blocks was 6,000 sq. km. with a maximum water depth of 200m. The average size of the Type-B- deep sea blocks was 3,300 sq. km. with a maximum water depth of 2000m. The bidding process closed on May 7, 2008.

The following bid criteria were declared for the bid round:

- i. To be technically qualified for selection, the bidder (at least one member in the case of a joint venture) was required to operate offshore acreage, with offshore daily production of at least 25,000 BOE.
- ii. A bid not confirming commitment to the Mandatory Work Program might be rejected.
- iii. The bidders were required to commit at least one exploratory well¹¹ in the Initial Exploration Period for the Type - A blocks. Otherwise, the bid was liable to be rejected.
- iv. A bid would be liable for rejection if it contained any conditions, assumptions and/or deviations which were inconsistent or not in compliance with the contract terms.
- v. For a bid to be valid, the bidding company or consortium was required to purchase the Promotional Package before the bid closing date.
- vi. The government could also take into account the past performance of bidders including their track record in respect of court cases. On the basis of this or any other consideration, the Government could accept or reject any or all bids.

¹¹ This requirement was likely unattractive to potential bidders, who might determine that an exploration well was not warranted based on geological and geophysical studies.

The following criteria were declared for evaluation of bids:

- Biddable Work Program: [30 marks]: Seismic Survey, Wells, Other Surveys (Geochemical, Seabed Sampling, Gravity, Magnetic, Sea bed mapping etc.), Bank Guarantee.
- Fiscal Package: [70 marks]: Percentage of Profit Petroleum Allocation: Biddable from the minimum level for each tranche as per PSC Article 14.6. A bidder offering a higher profit petroleum share for the government would be more favorably evaluated.

Seven companies submitted bids for 15 blocks. On the basis of the declared criteria, the evaluation committee recommended two international oil companies (US-based Conoco-Phillips and the Irish company Tullow) for 9 blocks. Because of maritime disputes with neighboring countries concerning some blocks, the Cabinet Committee on economic affairs approved the award of only three offshore blocks to the two companies: one shallow sea block (SS-08-05) to Tullow and two deep sea blocks (DS-08-10 and DS-08-11) to Conoco-Phillips. Discussions were held with the IOCs, and the process of final agreement was completed in October 2010.

3.2.6 Future Bidding

The High Court of Bangladesh vacated an injunction on onshore bidding on November 17, 2009, and Petrobangla is planning to open up 17 Blocks for the next round of bidding. The bidding may be made on the basis of the 2008 Model PSC, or a revised version.

4 CURRENT MONITORING AND SUPERVISION METHODS

This section provides a description of current monitoring and supervision methods. It also discusses the two agencies that are responsible for the monitoring and supervision of PSCs (Petrobangla and the Hydrocarbon Unit), and describes their monitoring and supervisory responsibilities and endeavors.

4.1 MONITORING AND SUPERVISION OF EXISTING PSCS

The PSCs signed in Blocks #12, 13/14, 15 and 16 include several provisions for monitoring and supervision. (The monitoring and supervisory methods of PSCs signed based on model PSC-1997 are generally similar.) Monitoring provisions are included in the following articles:

- Scope (Articles-2.2, 2.3 and 2.4);
- Contract Terms (Article-4);
- Relinquishment (Article-5);
- Minimum Exploration Work Obligation (Article-6);
- Discovery, Appraisal and Determination of Commercial Discovery (Article-8);
- Ancillary Rights of Contractors (Articles-9);
- Contractor's Obligations (Article-10);
- Assistance by Petrobangla and Government(Article-11);
- Joint Management Committee(JMC-Article-12);
- Accounting Procedure.

The general structure of these PSCs is as follows:

- 1) Minimum exploration obligation (7years)- First 3 years, and two optional two year extensions (for a total extension of four years).
- 2) The appraisal phase starts when Petroleum is encountered in an exploratory well. Within 90 days the Contractor shall notify Petrobangla whether it will undertake appraisal of a discovery, and specify the time frame, not exceeding 3 years, within which the appraisal program shall be completed.

- 3) If the contractor declares that the discovery is commercial, it shall submit an evaluation report with a proposed development plan for approval, designating the production area. The development plan shall be deemed approved if no written objections are delivered to the contractor by Petrobangla within 45 days from the submission.
- 4) An Accounting Procedure is annexed to the PSC with articles related to cost and expenditure, cost centers, valuation of materials, receipts, non-recoverable costs, inventories and inventory statements, production statements, and cost recovery statements.
- 5) Within 30 days after the signing of the contract a Joint Review Committee (JRC) will be established (see details below).
- 6) The JRC mainly reviews the exploration and appraisal work program and the budget of the Contractor. Following review by the JRC, the Contractor shall make such revisions as Contractor deems appropriate and shall submit the work program and budget to Petrobangla for approval
- 7) Within 90 days after signing the PSC, the Contractor shall submit a detailed outline of an Accounting System including: i) a comprehensive charts of accounts, ii) an organization chart showing recording and reporting functions and iii) a manual to be used in implementing this Accounting Procedure.
- 8) Within 90 days after the signing PSC, Contractor shall furnish to Petrobangla the procurement procedures to be followed by Contractor for obtaining materials, equipment and services.
- 9) Within 30 days after the date of declaration of the first commercial discovery a Joint Management Committee (JMC) will be established (see details below).
- 10) Once Petrobangla approves a development plan for a commercial discovery, the PSC enters into the production period. The JMC oversees this period. The functions and obligations of the JMC can be summarized as follows:
 - A quorum for transaction of business by the JMC shall be at least four members.
 - Decisions and recommendations of the JMC must be unanimous.
 - If the JMC is unable to reach unanimous agreement, then the matter shall be promptly presented to the Secretary of the EMRD for consultation.

- The opinion of the Secretary shall be used to assist the JMC to arrive at a unanimous decision.
- An ordinary meeting of the JMC must be held in Dhaka at least once every calendar quarter and must deal with following matters, making appropriate decisions and recommendations:
 - i. all works programs, budget and other reports and proposal required by contractor to be submitted to Petrobangla;
 - ii. progress of contractor's work;
 - iii. contractor's statements, books of account, financial reporting and audit, required by specific articles of the accounting procedure;
 - iv. contractor's proposed production levels;
 - v. terms of contracts with subcontractors and performance of subcontractors' work;
 - vi. any major problems arising in petroleum operation;
 - vii. appointment of auditors;
 - viii. any loan agreement for development;
 - ix. such additional subjects as may be requested by either party.

Operators follow the terms and conditions of a GPSA and continue gas production from their respective gas fields according to the gas quantities specified by Petrobangla for delivery to market. Petrobangla also monitors and supervises IOC gas production in accordance with the GPSA. Generally, monthly gas volumes of the Operator are certified by the Gas Transmission Company(GTCL) and Bakhrabad Gas System Ltd.(BGSL) since gas custody transfer occurs in the franchise areas of these two companies. Periodical checking of gas quality and calibration of gas sales meters is carried out by a team of technical personnel from Petrobangla and its companies. On receipt of this certification from GTCL and BGSL, the Financial Management Division (FMD) of the Directorate of Finance, makes payment to the IOCs based on invoices prepared in accordance with the respective GPSAs and PSCs.

4.2 PSC MONITORING SYSTEMS AT PETROBANGLA

Petrobangla has been involved in the monitoring of all PSCs. At present, Petrobangla monitors five PSCs covering six blocks. In line with the past legacy of Concession type agreements carried out during the Pakistan period, the Petroleum Concession Division (PCD) of Petrobangla was responsible for the management of PSCs made from 1994 to 2001. Due to the increased work load of managing IOC activities, Petrobangla established the Directorate of Production Sharing Contracts (PSC) in 2003. The Director (PSC) Petrobangla is the IOC's contact point. All IOC communications and activities are channeled through the Director (PSC). Three divisions report to the Director (PSC): the Contract Division, the Exploration Division, and the Development and Production Division. All financial matters relating to PSCs are managed by the Financial Management Division (FMD), which is part of the Finance Directorate.

The Contract Division is responsible for PSC bidding, assessment of bid documents, negotiation and signing of the contracts. The Exploration Division is responsible for the technical and financial aspects during the exploration phase. It conducts technical evaluation of proposals, assessment of budget proposals requiring approval by the Joint Review Committee (JRC). Any non-technical issues that come out at this phase are referred back to the Contract Division. Activities of the Development and Production Division commence with the commercial discovery of hydrocarbons. The FMD is responsible for making all financial transactions with the IOCs and maintaining their accounts. Technical and financial proposals submitted for the development of fields are scrutinized and sent for the approval of Joint Management Committee (JMC). Data obtained during the exploration and production phases are preserved in Petrobangla for future use.

Petrobangla coordinates the formation of a JRC after the signing of a PSC. It initiates the process of its implementation. The JRC oversees activities until successful discovery of hydrocarbons. The JRC consists of 8 members: one from government, three from Petrobangla, and four from the contractor. The Chairman of the JRC is designated by Petrobangla from among its appointed members (Article 6.8, MPSC 2008). The JRC reviews and makes recommendations

on the proposed work program and budget that is submitted by the contractor in each year of the exploration period.

Within 30 days after the date of declaration of the first commercial discovery, a JMC is established by the government, Petrobangla, and the contractor. The JMC consists of 8 members: one from government, three from Petrobangla, and four from the contractor. The Chairman of the JMC is designated by Petrobangla from its appointed members. Additional representatives of each party may attend the meetings of the JMC as observers or alternate members (Article 12, MPSC 2008). The functional responsibilities of the JMC are:

- Review all Work Programs, Budgets and other reports and proposals submitted by the Contractor to Petrobangla
- Monitor the progress of the Contractor's work
- Address any problems arising in Petroleum Operations
- Appoint auditors
- Create loan agreements for the Development Plan
- Review the annual personnel plan of the Operator.

Generally Petrobangla is represented on the JRC and JMC by three Petrobangla Directors, while a Deputy Secretary of EMRD represents the Government. The most senior Petrobangla Director is designated as the Chairman. The relevant functional divisions of Petrobangla provide technical support to assist the JRC and JMC. Senior officials of different divisions of Petrobangla participate in JRC and JMC meetings as observers.

In addition to their functional responsibilities, each of the divisions is responsible for continuous monitoring of one or more IOCs. Table 2 shows a partial list of the assignment of IOCs to the divisions.

Table 2 Partial List of Monitoring Responsibilities

| Petrobangla Division | Assigned IOCs | Blocks |
|-------------------------------------|----------------------|-------------------|
| Exploration Division | Tullow | 9, BAPEX-NIKO JVA |
| Development and Production Division | Chevron | 7,12 and 13/14 |
| Contract Division | Cairn/Santos | 16 |
| Financial Management Division | All IOCs | All Blocks |

Petrobangla undertakes the following activities for the monitoring of PSCs.

1. Each desk of a Division, maintains a repository of all IOC documents on communication and technical records. Documents from the repository are forwarded to other offices/agencies/Ministries through the Director (PSC) and Chairman, Petrobangla for administration of the Contract.
2. There is also an in-house Petrobangla technical and financial committee(TFC) for each signed PSC. This committee consists of engineering, drilling, geology, geophysics, finance and accounting personnel of Petrobangla and its companies. The TFC is headed by a General Manager, not necessarily from the PSC Directorate but possibly from another Directorate. The formation and functioning of the TFC is an internal Petrobangla arrangement, not related to any PSC provisions.
3. When an IOC submits its annual or appraisal or development work programs and budgets or any program for petroleum operation in accordance with PSC, then the respective desk routes it to the respective TFC.
4. The TFC committee scrutinizes the IOC's proposed work program and budget. Members of the TFC carry out extensive discussion among themselves, match and check with other IOC work programs and budget figures, and submit a report with recommendations. The Director (PSC) discusses the TFC report with the other Petrobangla members of the JRC or JMC before the formal JRC/JMC meetings.
5. Whenever an Appraisal Plan or Development Plan is submitted to Petrobangla in accordance with PSC provisions, it is extensively reviewed/examined/analysed by the TFC and also by the Directors. Then it discussed in the formal JRC/JMC for the establishment of a consensus. Afterwards the PSC Directorate presents the issue/recommendation to the Petrobangla Board. The resolution of the Petrobangla Board is then sent to Energy Ministry for their consent. Petrobangla must complete this process within the time allocated in the PSC, otherwise the contractor's proposal is deemed to be automatically approved, according to the PSC terms.
6. The TFC meets with IOC technical and financial staff to develop a better understanding of their submittals before any formal meetings of the JRC or JMC.
7. Petrobangla's TFC members are also present in the formal JRC/JMC meeting and participate in the deliberations.

8. Petrobangla deutes officials/representatives for monitoring during the execution of IOC's work program. There is no such provision in the PSC for monitoring of IOC seismic surveys or drilling programs.
9. Petrobangla monitors seismic surveys and drilling operations by sending people to the sites. Mostly Bapex geologists, geophysicists, and/or drillers are sent on a roster basis during IOC seismic surveys or drilling. They follow the IOC's rules, regulations and HSE procedures. They do not have decision-making authority, but remain present as observers.
10. Petrobangla also forms another technical committee (separate from the TFC) to scrutinize and analyze reserve estimates submitted by the IOC. This committee is headed by a technical Director with technical personnel from the reservoir study cell, Bapex and the PSC Directorate.

The Financial Management Division (FMD) is responsible for dealing with the financial matters of PSCs. The functional responsibilities of the FMD are as follows:

- (i) works as members of TFCs,
- (ii) scrutinize the invoices received by the IOCs and arrange for their payments through the Accounts Division of Petrobangla,
- (iii) carryout financial audits of IOCs' accounts.

The FMD constitutes a separate team for auditing the accounts of each PSC and submits Annual Audit Reports for approval by Petrobangla. The FMD audit team consists of members from the FMD at Petrobangla, and the three other divisions related to PSCs. Due to a shortage of manpower and expertise it has been unable to carry out up to date audits. For example, currently there are only 8 people working in FMD, although 18 positions are approved. Up to September 2010, FMD has completed audit reports up to the year 2007 and year 2008 is near completion. As per accounting procedure Petrobangla gets 24 months to check the audited accounts of the IOCs and prepare audit reports. Mechanically the FMD teams are typically placed in the IOCs offices on a daily to weekly basis. Most of the IOCs have established separate rooms with duplicates of all files for the purposes of auditor use. IOCs report that auditors are present in that room on a regular basis, and will at irregular intervals produce a report with audit exceptions.

Those exceptions are usually addressed and or answered with little follow up after that from Petrobangla.

The Audit Exception Resolution Committee (AERC) of Petrobangla discusses audit objections made by the IOCs concerning the approved Audit. The AERC provides a very important monitoring function for Petrobangla. At present, the Senior GM, Accounts is the convener of the AERC; the other members are GM, FMD; GM, Contract; GM, Production; GM, Finance; DGM, FMD. The exact composition of the AERC may vary from PSC to PSC. It is reported that AERC has completed the resolution of audit objections on accounts of the following three IOCs (Cairn, Chevron and Tullow) through the 2006 financial year. The objection resolution process for the 2007 financial year is in progress. Timely resolution of disputes has been hindered both by a shortage of manpower at Petrobangla and by delays in getting responses from the IOCs.

4.3 PETROBANGLA'S PSC MONITORING EXPERIENCE

Some observations on Petrobangla's experiences in the monitoring of the PSCs are presented below based on a SWOT analysis. It would be possible to supplement this analysis by studying the minutes of JRC and JMC meetings to provide a systematic assessment of Petrobangla's experiences in monitoring. Such a time-consuming study is considered beyond the scope of the present work.

Strengths

There are several examples that demonstrate how Petrobangla has been successful at monitoring PSCs.

- 1) In 1991, Petrobangla won an arbitration case (ICSID Case No. ARB/92/2 dated 5 April, 1994) against Scimitar at the International Center for Settlement of Investment Disputes (ICSID).
- 2) Petrobangla signed six PSCs during the first negotiation round in 1993 to 1997 and four during the second bidding round from 1997 to 2001. Petrobangla engaged consultants in both cases to assist with the evaluation of bid documents and negotiations. During the

2008 offshore bidding round, Petrobangla completed the bid evaluation and negotiations by themselves. This reflects positive achievements of the professionals of Petrobangla.

- 3) Petrobangla won a lengthy arbitration case (ICSID Case No. ARB/06/10 dated May 17, 2010) against Chevron concerning a gas transportation tariff. According to the terms of the GPSA, Petrobangla had deducted a 4% tariff from its gas payments. Unocal Bangladesh filed a dispute concerning this deduction at the International Center for Settlement of Investment Disputes (ICSID) on March 17, 2006. Chevron became a party to the case when it merged with Unocal in August 2005. The claim was US\$ 15.7 million at the time of the initial application. By 2009, the claim amount was reported to have increased to about US\$ 40 million. The life-time claim for the three GPSAs for the Jalalabad, Maulabibazar, and Bibiyana fields that were all part of the case has been reported as US\$ 240 million. The claim was rejected by ICSID in an award dated May 17, 2010. Details of the dispute are presented in Appendix B.

Petrobangla was firm in its decision to deduct a 4% tariff for the supply of gas from the Jalalabad field, starting in 1999. This tariff was also subsequently applied to gas from the Maulabibazar and Bibiyana gas fields. Persistently continuing its decision for 11 years, and winning the arbitration proceedings against Chevron in 2010 is evidence of Petrobangla's strength in managing PSCs.

- 4) Through a systematic auditing of different PSC accounts, Petrobangla's audit teams have identified a large number of audit objections and listed them in their respective annual audit reports for resolution by the appropriate authority. The AERC team has been successful in resolution of US\$ 60 million with Cairn Energy for the period 1996-2004 and US\$ 20 million with Chevron. Consequently these amounts of money have not been allowed in cost recovery for Block 15.

Weaknesses

- 1) A court order, based on an employee complaint related to promotion, has prevented Petrobangla from recruiting professionals for the last five years. As a result, there is a

shortage of professional staff in almost all of its units. This shortage has affected the quality of monitoring activities.

- 2) Petrobangla faces continuing financial difficulties by acting as the sole buyer of IOC gas, due to a non-transparent method of fixing consumer prices for natural gas, and because the government did not allow for an increase in natural gas prices. Petrobangla's deficits and its payment of interest and income tax paid on behalf of the IOCs from 1998 through 2009 are shown in Table 3. The table also shows amounts paid to Petrobangla by the government via the price deficit fund, in order to subsidize end-users of natural gas.
- 3) While the Chevron, Scimitar, and Niko Joint Venture arbitrations were positive victories for Petrobangla, and provide proof that current monitoring is working on a base level, these should serve as spring boards for earlier identification of problems. International perception of the Chevron arbitration is that Bangladesh has an unpredictable system, even if it is technically legal. Instead of risking such a perception, Bangladesh should focus on finding problems early and resolving them through other mechanisms instead of arbitration. For instance, if an additional downstream tax may be an issue, it should be addressed in the negotiation of the PSC or later in discussion of the pipeline construction, gathering system, or other construction. If it cannot be handled in the preliminary stages, the focus should be to address the issue in mediation or by third party opinion. Arbitration should be viewed as a last resort, and monitoring activities should focus on early stage identification; not identification when the issue is aggravated. While in some cases the attitude of the IOC or NOC make it impossible to avoid arbitration, a more vigilant approach will catch problems before they are subject to costly arbitration proceedings.
- 4) Professional manpower is also a problem, as hands on experience in exploration, production and operations among the officers of Petrobangla is deficient. Experience in exploration and production can often be earned by working for BAPEX, BGFCL and SGFL, but retention issues make this rarely the case. Frequently when Petrobangla is reviewing data submitted by IOCs it must pull employees from BAPEX, BGFCL etc. to aid in the review. It should be the objective of Petrobangla not only to increase staff, but also train personnel up to the necessary professional levels.

Table 3 Petrobangla Deficits, and Interest and IOC Income Tax Payments

| Year | Operating Loss/(Profit) | Interest Expense | Income Tax | Previous Years Adjustment | Price Deficit Fund | Net Deficit |
|--------------|-------------------------|------------------|----------------|---------------------------|--------------------|----------------|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 1998-99 | -372.1 | -4.9 | 0 | | 832.2 | 455.2 |
| 1999-00 | -2672.2 | -37.6 | 0 | | 1420.7 | -1289.1 |
| 2000-01 | -3901.5 | -98.6 | 0 | | 2694.4 | -1305.7 |
| 2001-02 | -5340.8 | -104.2 | 0 | | 3259.1 | -2185.9 |
| 2002-03 | -4113.4 | -123.9 | 0 | | 3707.6 | -529.7 |
| 2003-04 | -230.5 | -71 | -145.9 | | 3854.6 | 3407.2 |
| 2004-05 | -1750.8 | -59.4 | -1026.1 | -707.9 | 4148.3 | 604.1 |
| 2005-06 | -3817.9 | -145.8 | -584.9 | | 4333.5 | -215.1 |
| 2006-07 | -2225.4 | 0 | -1484.7 | | 5316 | 1605.9 |
| 2007-08 | -8150.4 | -12.5 | -1551.3 | | 7113.4 | -2600.8 |
| 2008-09 | 4323.18 | -47.6 | -3081.9 | | 9542.2 | 10735.88 |
| Total | -28251.82 | -705.5 | -7874.8 | -707.9 | 46222 | 8681.98 |

Tk. Million File: HCU-Gustavson-10.xls

The table indicates the following:

- (i) From 1998-99 to 2007-2008, Petrobangla incurred operational losses in every year (column 2). This has occurred because the amount of revenue from selling gas at low end-user prices was less than the amount paid to IOCs for cost recovery and their share of profit gas. Petrobangla had an operating profit in 2008-2009, for the first time in years.
- (ii) In every year, from 1998-99 to 2008-2009, except for 2006-07, Petrobangla was required to pay interest to the IOCs due to delays in making timely payments for their gas. This indicates that Petrobangla was in a weak financial position.
- (iii) Starting from 2003-2004, Petrobangla has experienced an increased financial burden due to payment of the IOCs' income tax. In 2003-2004, the payment made for income tax was Tk. 145.9 million. This increased more than twenty times to Tk. 3081.9 million in 2008-2009 as a result of a substantial increase in IOC profits.
- (iv) The government pays Petrobangla a subsidy, called a price deficit margin in order to enable low prices for gas end-users. It must make such payments because Petrobangla pays a higher price¹² for its gas than it receives from gas sales. Column 6 shows the annual payments made to Petrobangla by the government according to the price deficit

¹² This situation cannot be ameliorated by lowering the price paid to IOCs for gas. For existing fields, GPSAs are in place. If lower prices were proposed for new fields, then IOCs would have less incentive to invest in Bangladesh.

fund. This fund covers losses incurred by Petrobangla as a result of selling gas at low end-user prices, relative to the prices that it pays for gas¹³. Even with this fund, Petrobangla experienced net deficits in almost all years. A notable exception is 2008-09, when Petrobangla had a sizeable positive income, large enough so that they earned a total positive income over the whole period from 1998-99 through 2008-2009.

Opportunities

There is good potential for Petrobangla to realize financial gains through appropriate monitoring of IOCs activities. Petrobangla believes that its PSC monitoring activities are hindered by a lack of staff. It should document this belief, demonstrating how additional staff would improve its monitoring ability, and quantify the financial benefits that would arise as a result. Qualified professionals engaged in PSC monitoring should be chosen directly by the PSC Directorate. He should delegate responsibilities to people with relevant skill sets using a matrix type management structure to ensure the PSC are monitored by people from all functional areas.

Threats

If the quality of monitoring activities suffers due to a lack of appropriate policy and administrative measures, then the country may not realize the optimal financial benefit from its PSCs.

IOCs may find it unattractive to make further investments in Bangladesh. Bangladesh is gas-prone. IOCs generally prefer to find oil, rather than gas. Furthermore, the price of gas in Bangladesh is low compared to the price in some other parts of the world, although it is comparable to the price in India. Administrative delays and delays in payment for gas are not attractive to IOCs. It is unknown whether the IOCs perceive Petrobangla's interest payments to be adequate compensation for payment delays.

¹³ During this period, the IOCs pressured Petrobangla and the government to allow the export of gas to alleviate the financial losses.

4.4 HYDROCARBON UNIT'S PSC MONITORING EXPERIENCE

As per directives of the EMRD, a representative of the HCU has participated in different JRC and JMC meetings and reported their observations to the EMRD. HCU representatives (consultants and deputed professionals) of HCU have made good and constructive observations for consideration of the government. For example, HCU meeting notes include the following comments:

“Prior to meeting, no working paper was enclosed with notice of JMC/JRC meeting for which it becomes difficult for the observer to follow the discussions. During discussions with the Chairman of JMC it was found that the observation was true and was rectified subsequent meetings”.

“It appears that before the formal meeting, both the parties informally discussed to narrow down the differences which helped to take quick decision in the formal JRC meeting. It seems to be a good sign”.

A SWOT analysis of the HCU's experiences with the monitoring of PSCs is presented below.

Strengths

The HCU has brought attention to the issue of regulating the upstream oil & gas industry in Bangladesh, and made positive policy suggestions to the EMRD. In addition to policy suggestions, the establishment of the Unit has also facilitated a discussion on the necessary training of Ministry personnel moving forward.

The HCU has also brought the attention of the international banking community to Bangladesh, yielding a number of positive studies commissioned by those institutions. These technical and policy related reports have helped the HCU establish itself as an advisory body to the EMRD.

The HCU has facilitated an increase in organizational communication between HCU, EMRD and Petrobangla. In recent meeting it was clear that due to communication between the organizations

that the Director of PSC's was now on board with the idea of having upstream regulations. This seems to be a natural result of communication and cooperation between the government and Petrobangla.

Weakness

In 1994, the Natural Resources Wing of EMRD was declared as the Hydrocarbon Unit. It was entrusted to act as the technical arm of EMRD, and assigned various responsibilities with reference to administering PSCs. The HCU is deemed as a government organization. To date the Hydrocarbon Unit has not achieved an efficient system of assisting EMRD in administering PSCs.

For the last 12 years, the HCU has been operated as a project of EMRD. It was manned by temporary consultants and staff recruited directly as well as permanent staff of Petrobangla and EMRD employed on deputation.

Opportunity

EMRD has assigned many important responsibilities to the HCU for better management of PSCs on behalf of the government and the time seems to be ripe to begin drafting regulations and producing regular reports.

Threat

The approved organogram of HCU allows for the following professional staff for the monitoring of PSCs under the leadership of the Director General:

- Director (Exploration and Operation)
- Deputy Director (Exploration and Operation)
- Assistant Director (Exploration)
- Assistant Director (Reservoir)

Considering the number of PSCs now in operation and those in the process of approval, the total number of professionals seems to be inadequate. In recognizing the positive contribution that close monitoring of PSCs can make for the country, increased and appropriate staffing to further strengthen the Exploration and Production unit of the HCU should be considered.

In 2008, the government approved the Hydrocarbon unit as a permanent set up within the EMRD and its Organogram is waiting for approval. The HCU has not yet recruited its professional staff on a permanent basis. As a result the HCU has not accumulated adequate institutional capability. If the recruiting of permanent staff is not made on an urgent basis, the HCU may not be able to fulfill its assigned responsibilities.

4.5 MONITORING AND SUPERVISION OF THE BAPEX/NIKO RESOURCES JOINT VENTURE

Contents of the Joint Venture Agreement (JVA)

The Joint Venture Agreement (JVA) document consists of 28 Articles and 4 Annexures. The articles are similar to those of the articles of the Model PSC except article 23, dealing with Investment Recovery and Allocation of Petroleum Production. The 4 Annexures are: (a) Framework of understanding, (b) Study report, (c) PROCEDURE, (d) Examples of the calculation of the Investment Multiple. Article 7 of the JVA states that “This agreement together with the Annexes constitute the Entire Agreement with respect to the subject matter hereof and hereby cancels and supersedes any and all prior oral or written agreements or understandings between the Parties. This agreement may be varied or amended only by the mutual consent of the Parties in writing”.

Blowouts

NIKO started drilling in Chattak (West) at Tangratila in the Doarabazar Upazila of the Sunamgonj District on December 31, 2004 without approval of the Joint Management

Committee (JMC) as required by the JVA. A blowout occurred on January 7, 2005, and a second blowout occurred on June 24, 2005.

The Government formed a number of enquiry committees to assign responsibilities for the two blowouts and to assess the resources damages (natural gas and other resources). All the committees held NIKO responsible for the blowouts, and for not carrying out drilling operations diligently as warranted by the Petroleum Act. The committees recommended requesting compensation from NIKO for the loss of resources.

Accordingly on May 27, 2008 Petrobangla served a notice demanding justice upon NIKO for payment of an amount of Tk. 7,465 million (about US\$ 108 million at the then current exchange rate). NIKO failed to comply with the notice. At this point, Petrobangla filed a Money Suit against NIKO in the Court of Joint District Judge, Sylhet for realizing the compensation for losses.

Writ Petition against JVA

As mentioned above, two blowouts occurred at Chattak West on 7 January and 24 June, 2005, during drilling operations by NIKO. There were public discussions in the media to claim compensation for environmental damages. On 24th August, 2005, four non-government organizations (Bangladesh Environmental Lawyers Association (BELA), Ain-o-Salish Kendra, Bangladesh Legal Aid Services Trust and Adhikar) served notice upon relevant government officials demanding justice and called upon them to take appropriate steps for the recovery of damages from NIKO. Having received no satisfactory reply, BELA filed a writ petition to the High Court and obtained Rule Nisi on 12 September, 2005, to declare the JVA illegal and recover compensation for the losses. The Honorable Court passed an interim order on 12 September, 2005 and Petrobangla could not make any payment to NIKO as per terms of GPSA.

The Honorable High Court passed judgment on November 11, 2009. The writ petition was partially allowed to the extent of recovery compensation from NIKO. However, legality of the JVA was upheld. NIKO was directed to pay the compensation money as per the decisions to be

taken in the Money Suit pending in the Court of the Joint District Judge or as per mutual agreement among the parties. Petrobangla was restrained from making any payment to NIKO until disposal of the Money Suit or amicable settlement amongst the parties, whichever was earlier.

NIKO's Follow up Actions

NIKO stopped the supply of gas from the Feni gas field in April 2010. NIKO asserted that the total value of delivered gas up to April, 2010 was US\$ 31.3 million of which US\$ 4 million was paid as a lump-sum in 2005.

NIKO is reported to have filed two arbitration suits at the International Center for Settlement of Investment Disputes (ICSID Case No. ARB/10/11, ICSID Case No. ARB/10/18). In the first arbitration suit in May 2010, NIKO has sought a decision from the ICSID on whether NIKO alone is supposed to pay the compensation for the two blowouts under the JVA with BAPEX, and whether Tk. 7,460 million compensation claimed by Petrobangla is realistic. In the second arbitration suit in June 2010, NIKO claimed the outstanding bill for the sale of gas from the Feni gas field.

Observations on the BAPEX-NIKO JVA

- 1) The JVA was signed without transferring the ownership of the Feni and Chattak gas fields to BAPEX. Statement 14 of the preamble of the BAPEX-NIKO JVA states that "BAPEX warrants that it has acquired from Petrobangla and the government the requisite approvals to executive this JVA. The responsibilities and obligations of Petrobangla and the government in all relevant Articles, Annexures and Amendments under this JVA have been assigned to BAPEX". However, the JVA was signed on 16 October, 2003; and on that day BAPEX did not own the Feni and Chattak gas fields. They were owned by BGFCL and SGFL, respectively. Petrobangla initiated the process to transfer the ownership of the Feni and Chattak gas fields to BAPEX on 15 January, 2004. Article 24.9 of the JVA states that "Debt liabilities US\$1.0 million shall be paid to BGFCL out of the sales process of JVA over a

period of seventeen years”. Article 24.8 of JVA states that “Debt liabilities US\$2.0 million shall be paid to BGFCL out of the sales process of JVA over a period of seventeen years”. BAPEX, BGFCL and SGFL are three independent companies of Petrobangla established under the Company’s Act 1994. As per Company’s Act, transfer of Feni and Chattak gas fields to BAPEX with the compensation of US\$1.0 million and US\$2.0 million respectively required prior approval of their respect Management Boards.

- 2) NIKO took an independent decision to start drilling at Chattak without approval from the JMC¹⁴. Two blowouts made the whole process more complicated and ultimately made the JVA inoperable.

¹⁴ Joint Management Committee (JMC) of BAPEX-NIKO JVA consists of members from BAPEX and NIKO. Its composition is different from the JMCs of the PSCs operated by the IOCs.

5 SURVEY OF BEST PRACTICES IN MONITORING AND SUPERVISION

5.1 INTRODUCTION

It can be helpful to learn from the experiences of others, as a means of determining so-called best-practices. This section describes how certain other countries manage PSCs. These findings are synthesized into some recommendations in Section 5.6 and a “Far East” regional analysis in Section 5.7.

The range of management structures and contract types across the international petroleum industry is diverse. We have prepared a short list of countries that have used best practices to both their advantage and also to the advantage of investing companies. The short list is based on a review of relevant literature and industry surveys about countries that conduct the most efficient systems. In surveying a number of industry officials, the following four areas were the primary criteria:

- Financial benefit to the host country.
- Financial benefit to the investing company.
- Efficient administration over the life of the project.
- Absence of significant deterrents to investment.

In addition to those four areas, the study focused on countries where oil and gas development is considered mature, and yet has garnered a great deal of interest from the international community. Bangladesh is a mature producing country and its fiscal system should be designed to attract investors who are not averse to the reality that the most obvious prospects have already been taken. On first cut the following countries were chosen for possible review:

Table 4 Table of Mature O & G Producing Countries

| Country | Fiscal Regime | Contract Type | Bonuses/ Other Payments | State Participation |
|-------------|--|---------------|-------------------------|---------------------|
| Angola | Angola - 2008 Model PSA Terms Offshore (Shelf & Deep Water less than 1000m) | PSA | S*, T*, F* | 65% |
| Angola | Angola - 2008 Model PSA Terms Offshore (Ultra Deep Water more than 1000m) | PSA | S*, T*, F* | 20% |
| Angola | Angola - 2008 Model PSA Terms Onshore | PSA | S*, T*, F* | 50% |
| Bangladesh | Bangladesh - 3rd Bid Round Model PSC Terms Offshore greater than 200m | PSA | D*, P*, T*, F* | None |
| Bangladesh | Bangladesh - 3rd Bid Round Model PSC Terms Offshore less than 200m | PSA | D*, P*, T*, F* | 10% |
| Bangladesh | Bangladesh - 3rd Bid Round Model PSC Terms Onshore | PSA | D*, P*, T*, F* | None |
| Colombia | Colombia - 2010 ANH Acreage Deep Water greater than 300m | R/T | T, F* | None |
| Colombia | Colombia - 2010 ANH Acreage On- & Off-shore less than 300m | R/T | T, F* | None |
| India | India - NELP IX PSC Offshore greater than 400m | PSA | None | None |
| India | India - NELP IX PSC Offshore less than 400m | PSA | None | None |
| India | India - NELP IX PSC Onshore | PSA | None | None |
| Malaysia | Malaysia - 1997 Model Revenue-Cost PSC Terms | PSA | T * | 40%* |
| New Zealand | New Zealand - 2005 Minerals Programme Incentives | R/T | None | None |
| Norway | Norway - Royalty Tax Terms | R/T | None | 0.2 |
| Oman | Oman - 2006 Model PSA | PSA | S*, D*, T* | 0.2 |
| Pakistan | Pakistan - 2009 Petroleum Policy Concession Terms Onshore | R/T | P, T*, F* | None |
| Pakistan | Pakistan - 2009 Petroleum Policy PSA Terms Offshore less than 200m | PSA | P, T*, F* | None |
| Pakistan | Pakistan - 2009 Petroleum Policy PSA Terms Deep Water 200m-1000m | PSA | P, T*, F* | None |
| Pakistan | Pakistan - 2009 Petroleum Policy PSA Terms Ultra Deep Water greater than 1000m | PSA | P, T*, F* | None |
| Qatar | Qatar - Late 1990s PSA Terms | PSA | S*, P* | None |

Table 4 Table of Mature O & G Producing Countries, Cont'd

| Country | Royalty | Cost Recovery/ Tax Depreciation | Cost Recovery Ceiling | Contractor Profit Share |
|-------------|---|---|--|--|
| Angola | None | CRC (4 yrs; 10% uplift) TAX (N/A) | 50% of PDN (rising to 65% after 5 years) | 70% - 10% |
| Angola | None | CRC (4 yrs; 20% uplift) TAX (N/A) | 50% of PDN (rising to 65% after 5 years) | 70% - 20% |
| Angola | None | CRC (4 yrs; 10% uplift) TAX (N/A) | 50% of PDN (rising to 65% after 5 years) | 60% - 10% |
| Bangladesh | None | CRC (XPS) TAX (Intangible: XPS & 10 yrs; Tangible: 30% db) | 55% of PDN | 50% - 25% |
| Bangladesh | None | CRC (XPS) TAX (Intangible: XPS & 10 yrs; Tangible: 30% db) | 55% of PDN | 45% - 20% |
| Bangladesh | None | CRC (XPS) TAX (Intangible: XPS & 10 yrs; Tangible: 30% db) | 55% of PDN | 45% - 20% |
| Colombia | Oil: 8% - 25%; Gas: 4.8% - 15% | TAX (Intangible: 5yrs; Tangible: 10 yrs) | N/A | N/A |
| Colombia | Oil: 8% - 25%; Gas: 6.4% - 20% | TAX (Intangible: 5yrs; Tangible: 10 yrs) CRC (XPS) TAX | N/A | N/A |
| India | 10% (5% years 1 - 7) | (Exploration: Pre-prd - 10 yrs, Post-prd - XPS; Development: Intangible: Pre-prd - 10 yrs, Post-prd - XPS; Tangible: 15% db) CRC (XPS) TAX | 100%* of PDN | 90% - 40%* |
| India | 10% | (Exploration: Pre-prd - 10 yrs, Post-prd - XPS; Development: Intangible: Pre-prd - 10 yrs, Post-prd - XPS; Tangible: 15% db) CRC (XPS) TAX | 100%* of PDN | 90% - 40%* |
| India | Oil: 12.5%; Gas: 10% | (Exploration: Pre-prd - 10 yrs, Post-prd - XPS; Development: Intangible: Pre-prd - 10 yrs, Post-prd - XPS; Tangible: 15% db) CRC (XPS) TAX | 100%* of PDN | 90% - 40%* |
| Malaysia | 10% | (Exploration: 6 yrs (25% year 1, 15% years 2-6); Development: Platform: 10 yrs; Other: 10 yrs (28% year 1, 8% years 2 - 10)) | 70% - 30% of PDN | Excess CRC: 80% - 20%; Profit: 80% - 10% |
| New Zealand | The greater of Oil 5% (Gas 1%) of gross revenue or 15%* net revenue | TAX (7 yrs) | N/A | N/A |
| Norway | None | TAX & SPT (6 yrs) | N/A | N/A |
| Oman | None | CRC (XPS)* TAX (N/A) | Oil (40%)* Gas (60%)* of PDN | Oil: 22% - 20%*; Gas: 30%* |
| Pakistan | 12.50% | TAX (Intangible: 10 yrs; Tangible: 15% db (50% in year 1)) CRC (XPS) TAX | N/A | N/A |
| Pakistan | 0% - 12.5% | (Intangible: 4 yrs; Tangible: 20% db (50% in year 1)) CRC (XPS) TAX | 85% of PDN | Oil: 80% -20%; Gas: 90% - 20% |
| Pakistan | 0% - 12.5% | (Intangible: 4 yrs; Tangible: 20% db (50% in year 1)) CRC (XPS) TAX | 85% of PDN | 95% - 30% |
| Pakistan | 0% - 12.5% | (Intangible: 4 yrs; Tangible: 20% db (50% in year 1)) CRC (XPS) TAX | 85% of PDN | 95% - 40% |
| Qatar | None | CRC (4 yrs)* | 40% - 50%* of PDN | 35% - 10%* |

Table 4 Table of Mature O & G Producing Countries, Cont'd

| Country | Income Tax Rate | Additional Taxes |
|-------------|--|---|
| Country | Income Tax Rate | Additional Taxes |
| Angola | 50% | None |
| Angola | 50% | None |
| Angola | 50% | Price Cap Excess Fee (100% of profit oil in excess of adjusted base price of US\$45/bbl) |
| Bangladesh | 37.5% DA (lesser of 15% gross revenue or 50% taxable income) | DSO (80% of profit oil @ 85% market price; 100% of gas production @ 99% marker price); WTH (15%) |
| Bangladesh | 37.5% DA (lesser of 15% gross revenue or 50% taxable income) | DSO (80% of profit oil @ 85% market price; 100% of gas production @ 93.75% marker price); WTH (15%) |
| Bangladesh | 37.5% DA (lesser of 15% gross revenue or 50% taxable income) | DSO (80% of profit oil @ 85% market price; 100% of gas production @ 75% marker price); WTH (15%) |
| Colombia | 33% | APT (30%-50%) |
| Colombia | 33% | APT (30%-50%) |
| India | 42.23% (7-year holiday) | MAT (15.83625%) |
| India | 42.23% (7-year holiday) | MAT (15.83625%) |
| India | 42.23% (7-year holiday) | MAT (15.83625%) |
| Malaysia | 38% | CESS (0.5%); Oil Export (10%); Excess Profit Payments (70%) |
| New Zealand | 30% | None |
| Norway | 28% | Carbon Dioxide (US\$3.40/MCF); SPT (50%) |
| Oman | PBS | None |
| Pakistan | 40% DA (lesser of 15% gross revenue or 50% taxable income) | Windfall Levy (50%); Import Duty (5%*-15%); WTH (8.75%)* |
| Pakistan | 40% DA (lesser of 15% gross revenue or 50% taxable income) | Windfall Levy (50%); Import Duty (5%*-15%); WTH (8.75%)* |
| Pakistan | 40% DA (lesser of 15% gross revenue or 50% taxable income) | Windfall Levy (50%); Import Duty (5%*-15%); WTH (8.75%)* |
| Pakistan | 40% DA (lesser of 15% gross revenue or 50% taxable income) | Windfall Levy (50%); Import Duty (5%*-15%); WTH (8.75%)* |
| Qatar | PBS | None |

(Source: IHS Energy)

*D – Discovery

P – Production

S – Signing

T – Training

F – First Production

R/T – Royalty/Taxes

CRC– Cost Recovery Calculation

XPS- Multiple of Production Share

DA- Depreciation Adjusted

PBS- Preferential Bidding System

DSO- Domestic Sales Obligation

APT- Additional Profits Tax

SPT- Supplemental Profits Tax

WTH- Withholding Tax

Qatar, Oman, Pakistan and Norway were selected for primary international best practice review after determining that they are most similar in resource maturity to Bangladesh. To narrow the scope of review, only the most important provisions subject to monitoring and supervision were examined. A large emphasis was also placed on organizational structure, as countries with the best practices have a strong regulatory support system to aid the main agencies.

This section will begin with examinations of Qatar and Oman to illustrate the type of provisions that are the building blocks to an efficiently run petroleum business. This is supplemented by summaries of the fiscal systems of Pakistan and Norway that are presented in Table 4.

Finally, the Bangladesh system is compared with the most appealing attributes of Qatar, Oman, Pakistan and Norway. Suggestions for strengthening and simplifying PSC monitoring are included.

Following the sections illustrating international best practices in countries with a mature resource base, a more regional analysis was developed, comparing Bangladesh with other “Far East” countries and pointing out advantages and deficiencies. This regional comparison should be viewed with a great deal of urgency, as the problems directly impact successful block offerings. Adherence to international best practice however can be done more organically, as it will take quite some time to develop into a system akin to Malaysia or Pakistan.

5.2 QATAR¹⁵

5.2.1 General Monitoring, Supervisory and Audit Scheme

A management committee composed of an equal number of representatives appointed by Qatar Petroleum and by the contractor must be formed after signature of the contract. In recent contracts the committee is composed of six members. One of Qatar Petroleum's representatives acts as chairman of the committee. The management committee is given the following obligations:

¹⁵ Research summarized from the most recent model contract and multiple sources including IHS Energy.

- annual work programs and budgets;
- quarterly updates of annual work programs and budgets;
- appraisal programs and budgets;
- development plans;
- methods for measuring production; and
- tariffs for services of the contractor/its affiliates.

Voting provisions are a matter for negotiation. In recent contracts, decisions are made by a majority, with the chairman casting a tie-breaking vote after an agreed period related to the recovery of contractor investment. Recently signed contracts linked the tie-breaker to the R-factor. The R-factor is the ratio of the contractor's cumulative receipts to its cumulative expenditures. The contractor's view prevails if the R-factor is less than one, and Qatar Petroleum's view prevailing if it is more than one.

Regulatory supervision is performed primarily by the Department of Petroleum of the Ministry of Energy and Industry.

5.2.2 Duration

The 1980s model contract specifies that the overall duration of the contract is 25 years, including the exploration period. Subsequent signed contracts are understood to provide that at least one year before expiry the contractor may request an extension of one or more 5- year periods which the government must not unreasonably refuse. Some late 1990s contracts provided that any extensions would be "on such terms and conditions as the parties may agree".

5.2.3 Exploration and Work Program

Exploration obligations are agreed in each contract. Typically work commitments are defined in some detail, including specific target zones and well depths for drilling. Fulfillment of exploration obligations is measured by the performance of work commitments. Failure to fulfill the obligations results in the value of unfulfilled exploration work under the performance

guarantee being forfeited. Work carried out during any phase in excess of the minimum work program is credited against the contractor's work commitments for the subsequent exploration phase.

The contractor must submit annual work programs and budgets to the management committee for approval. Recent contracts have included the definition of when approval is deemed to have been given and methods for making revisions.

Exclusive production rights are conferred by a PSC upon a commercial discovery, whereupon the production period commences. There is no specific definition of a production area in the model contract although the contractor is permitted to retain the area of a commercial discovery when the exploration period expires.

5.2.4 Relinquishment

Recent contracts have provided for 20% to be relinquished at the end of each phase, including but not limited to the exploration phase, extension phases and shortly before the development phase. Areas relinquished must be of a size and shape that permits petroleum operations to be conducted. At the end of the exploration period the contractor may only retain the following areas:

- discovery areas in which appraisal is in progress;
- development areas; and
- producing areas, if any.

Contracts also require the contractor to relinquish a discovery of non-associated gas if it has not submitted a development plan within an agreed period. The contractor may elect not to proceed to the next exploration phase by giving notice prior to or on the date of expiry.

5.2.5 Evaluation and Registration Requirements

There is no specific provision regarding the notification of discoveries and subsequent requirements. A discovery date is defined as the date on which activities relating to the discovery well were suspended. Actual signed contracts provide that within an agreed period from the date of discovery the contractor must submit an appraisal program to the management committee for its approval. After approval, the appraisal work must be completed within an agreed period. If the contractor considers a discovery to be commercial, it must notify the government and submit a development plan to the management committee.

5.2.6 Recoverable Costs

Petroleum costs are defined as all expenditures made and costs incurred by the contractor in conducting petroleum operations and directly related thereto. Some of the cost recoverable items include:

- labor;
- materials;
- transportation of employees and material;
- buildings;
- services;
- damages and losses borne by the contractor other than those arising from risks which the contractor has elected not to insure against;
- legal expenses;
- taxes paid in relation to petroleum operations;
- insurance costs;
- general and administrative expenses directly related to operations.

The contractor's administrative overheads outside Qatar may be included at a rate expressed as a negotiable percentage of the following cost items:

- 2% of exploration expenditure;
- 2% of development expenditure; and
- 0% (zero) of operating costs.

Recent contracts do not specifically address the issue of recovery of decommissioning and abandonment costs, although current international practice is for the contractor to contribute to an abandonment fund during the producing lifetime of the field. Such costs are generally treated as operating costs under the contract and thus recoverable as petroleum operations costs.

Cost recovery is subject to a negotiated ceiling. The cost recovery ceiling has indicatively been in a range between 30% and 50% of hydrocarbon production, although exceptions to this are understood to exist. A different ceiling may apply to non-associated gas. Contracts in the late 1990s included a cost recovery ceiling based on an "R" factor where "R" is the ratio, at the end of the preceding quarter, of the contractor's cumulative revenue (cost recovery, excess cost recovery, and profit share) to the contractor's cumulative expenditures. In such cases the cost recovery ceiling is believed to be around 50% when the "R" factor is less than or equal to one (i.e. contractor's payback) and around 40% when the "R" factor exceeds one. All cost recovery accounting is carried out on a quarterly basis.

Un-recovered costs in any accounting period may be carried forward until fully recovered, but not beyond the termination of the contract.

The remaining balance between the production available for cost recovery and that actually taken by the contractor for cost recovery, if any, is shared between the contractor and the state at a negotiated rate (Profit Oil).

5.2.7 Fiscal Structure

Production net of cost recovery is shared at negotiated rates. In most recent contracts it has been shared based on an incremental sliding scale, based either on the average daily production or on an “R” factor where “R” is the ratio, at the end of the preceding quarter, of the contractor’s cumulative revenue to the contractor’s cumulative expenditures, including bonuses.

5.2.8 Measurement

Crude oil production is valued for each quarter at the weighted average price FOB realized for arm's length sales either by the government or the contractor, whichever is higher. Actual signed contracts provide that adjustments may be made to reflect different qualities of crudes, and in the case of CIF sales, deductions will be made for transport and insurance charges to calculate the FOB point of export price. If the sale of crude oil by either the government or the contractor is not available for any month(s) in any quarter, an assessed level of price for such month(s) will be used to determine the average price for said quarter, taking into account the price achieved by the other party. If no sales have been made in a quarter the price may be determined through mutual agreement.

5.2.9 Taxes, Duties, Levies

The contractor is subject to Qatar income tax law and its requirements with respect to the filing of income tax declarations, the assessment of income tax, and the keeping of records for review by authorized persons. Recent contracts require the contractor to send copies of tax declarations to the government. Although the contractor is liable to pay income tax, its liability is discharged on its behalf by the government. The generally applicable income tax rate is progressive with a maximum of 35% for taxable incomes exceeding Qatari riyals (QR) 5,000,000.

During the term of the contract, the contractor is expressly exempted from any other taxes, royalties, levies, excises or fees in relation to its petroleum operations under the agreement with the exception of customs duties under applicable legislation.

Fiscal stabilization is provided by means of tax exemptions under the contract and payment of the contractor's income tax liability by the state. In addition, signed contracts generally provide that, if the laws and regulations in force on the effective date of the contract, in particular the customs laws are changed and result in a significant change to the economic position of the contractor, the parties will meet to restore the equilibrium. However, there is no guaranteed fiscal stabilization in any extension to the contract period.

5.2.10 Domestic Supply

The contractor has the right to take in kind and export or otherwise dispose of the share of crude oil to which it is entitled. At least some contracts are silent on the disposal of natural gas. There is no domestic supply obligation for crude oil or gas. There are no requirements for emergency supply.

5.2.11 Associated/Non-Associated Gas

Associated gas must be conserved to the greatest possible extent, including use in operations, and may only be flared to the extent which is consistent with good petroleum industry practice.

Excess gas which the contractor does not intend to dispose of must be delivered to the separation point by the contractor where title passes to Qatar Petroleum. Qatar Petroleum has responsibility for gas from the point of delivery but may require the contractor to install gas gathering facilities, the cost of which is recoverable by the contractor.

If the contractor determines that a discovery of non-associated gas is commercial it must deliver a development plan to Qatar Petroleum within an agreed number of years of the discovery. Failure to submit a development plan results in rights to the discovery being relinquished to Qatar Petroleum.

5.2.12 Safety and Environment

The Supreme Council for the Environment and Natural Reserves (SCENR) has wide ranging responsibility for all matters relating to environmental protection. These are set out in *Article 3* of *Decree Law No. 11* and include:

- setting environmental policies;
- devising plans for and supervising the implementation of those policies;
- preparing and following-up the implementation of new environmental legislation;
- evaluating environmental impact assessments for public and private sector, basic development projects and providing its opinion to the relevant national authority prior to project-approval;
- identifying environmental contamination and deterioration and working with other state organizations to study and solve such problems;
- representing the state in connection with international environmental agreements.

Also important is the Environment Department with responsibilities that include:

- establishing principles for environmental impact assessments;
- the evaluation and approval of environmental impact assessments;
- conducting studies on environmental pollution, its effect and methods to combat it;
- supervising and enforcing compliance with environmental laws; and
- preparing emergency response plans and taking measures to combat environmental disasters.

A full environmental impact assessment (EIA) is required for all major development projects and environmental clearance must be obtained for each project. According to EIA policy, SCENR conducts regular inspections during the project construction stage to ensure that the conditions attached to the environmental clearance are satisfied. The environmental clearance may be withdrawn if the conditions are not fully complied with.

5.2.13 Reporting Requirements

Signed contracts provide that copies of all data obtained by the contractor in petroleum operations must be submitted to Qatar Petroleum.

5.2.14 Title and Equipment Control; Procurement

A procurement committee may be established to advise the management committee. However, other than a requirement to give preference to Qatari goods and services, there are no specific contractual provisions relating to procurement procedures and obligations.

The contractor obtains title to its contractual share of crude oil and non-associated gas at the delivery point as defined in the contract, usually the outlet flange of a storage tank or vessel or the inlet flange of the export tanker. As long as the oil or gas remains in the contract area, title continues to rest with the government.

Qatar Petroleum assumes title to fixed and movable assets acquired for petroleum operations when the contractor has recovered the costs of acquisition or on termination of the contract if that is earlier.

5.2.15 Training and Technology Transfer

Recent contracts have required the contractor to give priority to Qatari nationals in employment, as well as preparing training and education programs for nationals. Training costs are recoverable.

5.2.16 Assignment

Recent contracts provide that the contractor may assign the whole or a part of its interest in the contract to an affiliate subject to it guaranteeing the performance of the assignee. Any other assignment may only be made with the approval of the government.

5.2.17 Termination

Recent contracts empower the government to terminate a contract if the contractor fails to:

- deliver the bank/parent company guarantees when required
- make any payment when due
- fulfill any of its obligations, or
- comply with the provisions of any arbitration award or expert determination.

5.3 OMAN¹⁶

5.3.1 General Monitoring, Supervisory and Audit Scheme

The Model Contract provides that the contractor shall conduct all operations pursuant to the general policy guidance and under the general supervision and control of a “Management Committee”. Further, the management committee shall always endeavor to arrive amicably at mutually acceptable policies and decisions based on sound principles and prudent oilfield practices with the intent not to frustrate the purposes of the PSC.

The 2006 model contract specifies the composition and voting rules of the committee prior to and after a commercial discovery. Prior to a commercial discovery the contractor and the government are represented by four and three members respectively and voting is on a majority basis. After a commercial discovery, the government maintains three representatives while the number of contractor representatives drops to two.

After a commercial discovery, unanimity is required to approve the following:

- work programs and budgets;
- determination of allowable production and production rates;
- determination of production areas;
- relinquishment decisions;
- rules and procedures of the management committee; and
- any modification of or matters relating to the above.

¹⁶ Research summarized from the most recent model contract and multiple sources including IHS Energy.

If unanimity cannot be reached on any of the foregoing matters after two meetings of the committee, then the matter may be referred to arbitration as provided for in the contract. For all other matters, voting remains on a majority basis. At least two members of each party must be present for there to be a quorum of the management committee. All meetings are held in Muscat, Oman or any other location agreed upon between the parties.

5.3.2 Duration

The exploration period comprises an initial period (negotiable, but typically of 2 to 4 years) and up to two extensions (negotiable, but typically of 1.5 to 3 years each) as agreed in the PSC. Recent contracts have had three phases totaling 6 to 9 years. In terms of the 2006 model contract, the contractor must pay a negotiable bonus for every extension of the exploration period. A further one-off bonus is payable upon making any commercial discovery.

In the event of a commercial discovery, the term may be extended for 30 years from the discovery date. If petroleum is being produced at the end of thirty years, the contractor may seek a ten year extension, subject to mutual agreement on the extension terms, which shall be no less favorable than those offered to other oil companies operating within Oman.

5.3.3 Exploration and Work Program; Production Control

Minimum work and expenditure obligations are negotiable and linked to each phase of the exploration period. The 2006 model contract provides for seismic and drilling obligations in the initial phase. It also requires at least one exploration well to be drilled in each extension phase. Failure to complete commitments results in the contractor being required to pay the shortfall in expenditure to the government. Excess expenditure in any phase may be credited forward to a subsequent phase.

As soon as practicable after the date of the PSC and thereafter at least one month prior to the beginning of each year, the contractor must prepare and present a Work Program and Budget (WPB) to the Management Committee for its approval. The WPB must set forth in reasonable

detail the operations which the Company proposes to carry out during the following year and showing its best estimate of the total exploration and development expenditures and operating costs of such operations.

The Management Committee has the right to review and approve each WPB based upon prudent oilfield practice, and may make revisions as it deems advisable. As soon as possible after receipt of the Management Committee's proposed revisions, the contractor must either notify the Management Committee that the Work Program and Budget has been revised as proposed by the Management Committee, or call for a meeting of the Management Committee for the purpose of arriving at a mutually acceptable Work Program and Budget.

The contractor must use all reasonable efforts to implement each approved Work Program and Budget in a diligent, efficient and workmanlike manner. However, it is expressly recognized that the contractor may revise and modify details of an approved Work Program and Budget as may be required by the circumstances or as it may appear advisable in the light of the results of exploration, appraisal, development and/or production activities. Any major change in a Work Program and Budget resulting in an increase in expenditures exceeding ten percent (10%) requires the prior approval of the Management Committee.

The Management Committee also has production control rights. Prior to first commercial disposal of petroleum, the contractor must submit production plans and feasibility studies for a five-year period to the management committee. The latter decides the production targets over this period taking into account the studies submitted. The exercise is repeated annually thereafter. In addition, the contractor must propose annual production rates for each type and grade of petroleum on an annual basis for approval of the committee. Once approved, the contractor must try to attain the approved production rates but will not be held liable if production falls short of or exceeds approved levels despite its reasonable efforts.

5.3.4 Relinquishment

Relinquishments are mandatory at the end of each exploration phase with the amount negotiable (typically 25%). Relinquished areas must be of a sufficient size and convenient shape to allow for further exploration. The entire contract area must be relinquished if at the end of the exploration period if no commercial discovery has been made.

The contractor may relinquish the whole or any part of the contract area at any time, provided that it has fulfilled its expenditure obligations and paid bonuses and rents due. Partial relinquishments may be credited towards mandatory relinquishments.

5.3.5 Evaluation and Registration Requirements

The contractor must keep the government notified of all major developments concerning operations. There are no specific procedures set out concerning notification of a discovery and subsequent steps.

The 2006 model contract makes no provision for submission and approval of an appraisal program. The annual work program and budget would, however, contain the details of appraisal proposals and must receive unanimous approval from the management committee.

5.3.6 Recoverable Costs

The following costs may be recovered under the contract:

- all "fair and reasonable" costs and expenses directly or indirectly related to activities under the contract. Fair and reasonable costs are defined as those which represent competitive terms and conditions for comparable arm's length deals. This includes costs for the transportation of petroleum to the point of export;
- costs and expenditures incurred in employing subcontractors. These costs may include overhead expenses charged by the subcontractor;

- acquisition costs and rentals for material, equipment and supplies, and construction costs of facilities as long as costs are competitive with costs charged for similar materials and services in the domestic market of Oman, including customs duties, transportation, insurance and installation costs, but excluding any mark-up or commission which may be payable to the contractor;
- the monthly service fee of 100 Omani riyals; and
- estimated cost of abandonment.

The 2006 model contract does not contain an accounting annex, specifying recoverable costs in greater detail.

Prior to the Funding Commencement Date (as defined below), the contractor must include an abandonment plan in its work program and budgets in accordance with good oilfield practices and update the abandonment plan annually. After the Funding Commencement Date, the contractor must open (and maintain) an interest bearing account with an international bank of good standing which has been approved by the Management Committee. The contractor must fund such account on an annual, cost recoverable, pro rata basis within 30 days of the approval of each relevant work program and budget during the period from the Funding Commencement Date until the earlier of: (a) the date of the production of all petroleum reserves; or (b) the expiration of the contract. The contractor must only apply the proceeds from the abandonment fund in accordance with the final Management Committee approved abandonment plan which must be approved no later than 90 days prior to the earlier of (a) or (b) above.

Costs may be recovered from production net of petroleum used in operations, subject to a negotiable annual ceiling. Separate ceilings apply to crude oil, condensate, associated gas and non-associated gas. Contracts in the 1980s included ceilings of around 25% to 35%. Recent contracts are likely to have higher ceilings (on the order of 40%). Un-recovered costs may be carried forward to subsequent years until fully recovered.

5.3.7 Fiscal Structure

The Omani petroleum fiscal regime is based on production sharing and includes the following main elements:

- negotiable bonuses are payable at signature, contract extension and discovery;
- negotiable annual training fee;
- cost recovery from a negotiable percentage of gross production;
- profit sharing at negotiable rates linked to a sliding scale of production;
- the contractor's income tax liability is discharged by the government out of its share of profit petroleum;
- the contractor is exempt from all other taxes and levies including import duties; and
- the 2006 model contract includes the provision for direct financial state participation.

Petroleum remaining after cost recovery is shared between the contractor and the government at negotiable rates usually linked to an incremental sliding scale. Separate rates apply to crude oil, condensate, associated gas and non-associated gas. In the 2004 and 2006 model contracts, crude oil is shared based on a two-tier rate basis, condensate on a two-tier rate basis; and associated gas and non-associated gas on a fixed percentage basis.

Recently signed contract provide for a contractor share of crude oil of 20% up to 10,000 barrels of oil per day; 17.5% from 10,000 - 20,000 barrels of oil per day; and 16.5%, thereafter.

The contractor must also pay a negotiable annual rental in US dollars at a fixed rate until the year in which a commercial discovery is made. The amount of annual rental is negotiable; rentals have been in the region of US\$100,000 a year. Annual rentals are non-recoverable costs under the contract.

5.3.8 Measurement

Crude oil is valued at the market price for production sharing purposes. This is defined as the price generally obtained by the government from its long-term customers for crude oil/condensate.

5.3.9 Taxes, Duties, Levies

Although the contractor is liable for income tax under *Decree No. 47 on Company Income Tax* of 1981 and *Decree No. 77 on Profit Tax* of 1989, as amended, the 2006 model contract provides that the government will discharge the contractor's income tax liability from its profit share. The fiscal regime does not include royalty. Although a royalty of 20% exists under tax legislation of 1976, the 2006 model contract explicitly provides that there is no royalty payable by the contractor to the government in respect of its operations under the contract.

Taxable income is subject to a special 55% tax rate for the petroleum industry. The general corporate tax rate is effectively 30%.

The contractor is exempt from all taxes (including tanker tax), royalties, levies, export duties and fees other than those specified in the contract (i.e. income tax, bonuses and rentals). However, for the period commencing on the effective date and ending three years after the date of commercial production the contractor is required to pay custom duties on all its imports and submit a quarterly claim to the Ministry of Oil and Gas for reimbursement. The contractor is liable for import duties. General customs duties are currently 5% to 100% with most items being 5%.

The contractor is exempt from any withholding tax levied on dividends. However, the contractor is liable to deduct and pay to the Secretariat General for Taxation withholding tax in respect of any payments as per the *Law of Income Tax on Companies* whenever applicable. The general dividend withholding tax rate is 10%.

5.3.10 Domestic Supply

Subject to any restrictions imposed on exports to specified countries, the contractor may freely export and dispose of its share of petroleum. It is exempted from any tanker or other export taxes or related charges. If a license is required for the export of petroleum, the government will obtain such license on behalf of the contractor free of costs or any charges. Exports of gas are subject to the government's annual domestic requirement.

There is no obligation to supply crude oil to the domestic market. In the case of non-associated gas, the government may specify annual quantities to be delivered for domestic use. There is no provision in the 2006 model contract or in the petroleum legislation regarding requisition or emergency supply of petroleum.

5.3.11 Associated/Non-Associated Gas

The contractor may use associated gas for pressure maintenance, gas lift and other oilfield operations. The government is entitled to take gas in excess of such requirements free of charge and utilize such gas at its own cost and sole risk provided this does not interfere with the contractor's operations. The contractor may elect to participate in the gathering, transmission, sale or disposal of excess gas within four months of receiving notice from the government that it wishes to take excess gas. The parties must discuss any proposals to deliver and sell associated gas. If the contractor elects to participate in the sale of associated gas the contractor may recover costs of processing facilities, gathering and transmission pipelines and related facilities subject to the cost recovery ceiling specified for associated gas.

Within a reasonable period after a discovery of non-associated gas, the contractor must determine whether it is commercial. A commercial discovery is defined as a 'discovery declared commercial' by the contractor after taking into account the government's annual domestic gas requirements. If the contractor considers the discovery to be commercial, it may dispose of its share of such gas subject to the government's annual domestic gas requirement and any agreement entered into for joint commercialization. If the contractor considers the discovery to

be non-commercial, it loses all rights to the discovery and the government is free to develop it at its own cost and risk, provided, however, that it does not interfere with any other operations of the contractor.

Non-associated gas may not be used in operations as long as associated gas is available, even though it may require treatment and compressing to be used in operations.

5.3.12 Safety and Environment

Environmental regulation falls under the responsibility of the Ministry of Regional Municipalities and Environment and Water Resources (MRMEW). Under the MRMEW, the Directorate of Environmental Planning and permits administers permitting procedures that apply to all projects undertaken in Oman.

The contractor's main environmental duties are specified in environmental legislation and permitting procedures. All operations must be preceded by submission of an Environmental Impact Assessment (EIA), leading to the issue of an Environmental Permit. Air emissions and operational discharges are subjects of specific regulation setting limits for all industrial sources. The contractor must also abide by the National Oil Spill Contingency Plan that was issued by the Ministry of Regional Municipalities and Environment in 1995.

The liability provisions of the 2006 model contract encompass liability for environmental damage. The contractor accepts liability for wrongful or negligent acts and omissions, including those of its subcontractors, which result in damage to the property or personnel of the government or third parties. The contractor must at all times indemnify the government against any resulting claims by third parties. Under the 2006 model contract, the contractor is specifically not liable for indirect or consequential damages.

5.3.13 Accounting

The contractor must keep the Government currently advised of all major development regarding operations under the PSC. All data including but not limited to well logs, maps, magnetic tapes, description of cores and other geological and geophysical information obtained by the contractor and all geological, technical, financial and economic reports, studies and analyses prepared by the contractor are the property of the government. The contractor is required to deliver to the government, as they become available, two copies plus a digital format of all of the above except magnetic tapes which shall be delivered only if requested. All processed geophysical information shall be submitted on transparent dimensionally stable material such as "Mylar" or equivalent. Other processed data larger than legal size paper shall be submitted, one copy on Mylar and one black-line copy.

The contractor must maintain adequate financial accounting books, records and registers concerning its activities under the PSC in accordance with accounting practices generally accepted in the petroleum industry, and the government, and the government has the right to receive a copy, certified by a representative of the contractor that it conforms to the original, of any books, records and registers, the original copy of which is not kept within the Sultanate of Oman.

Duly authorized representatives and auditors of the government have the right at all reasonable times to have access to and to inspect, test and audit the works, equipment, operations and financial books, records and registers of the contractor relating to its activities for the two years immediately preceding under the PSC, including the transportation and marketing of Petroleum. The contractor must furnish to the duly authorized representatives and auditors of the government who effect the inspection, testing or audit, all necessary assistance and adequate facilities for the proper discharge of their duties.

Within forty-five (45) days after the end of each quarter, the contractor must prepare and deliver a quarterly progress report to the government which shall contain a narrative report of activities during such quarter under this Agreement and financial reports for such quarter, including a

statement of recoverable costs. Financial statements included in quarterly progress reports need not be audited.

Within four (4) months after the end of each calendar year, the contractor must prepare and deliver to the government an annual report and financial statements which shall consolidate the information contained in the quarterly progress reports furnished in respect of such calendar year. The financial statements included in the annual report must be prepared in accordance with the accounting principles generally accepted in the petroleum industry and must be audited and reported upon in conformity with such principles by an internationally recognized firm of professional accountants mutually agreed upon by the parties.

5.3.14 Title and Equipment Control; Procurement

The contractor has the sole right and obligation to acquire the equipment and supplies required for its operations. In the acquisition of equipment and supplies the contractor must give preference to articles made or produced in the Sultanate of Oman, provided said articles as compared to similar articles of foreign origin, can be acquired on equally advantageous conditions with due regard to their quality, price and availability at that time and in the quantities required, and their suitability for the purposes for which they are intended.

Title to movable and fixed assets purchased, or constructed by the contractor in the Sultanate of Oman and title to movable assets imported into the Sultanate of Oman in connection with its operations are transferred automatically to the government at the end of the calendar year when its total cost has been recovered by the contractor, or in the event of the termination of the PSC, whichever first occurs. The contractor can, however, have the exclusive use free of charge of such machinery and equipment for its operations so long as it may require.

5.3.15 Training and Technology Transfer

From the effective date of the contract, the contractor must pay the government a negotiated annual amount for training purposes. Training costs incurred are not a recoverable cost.

Preference must be given to employing Omani nationals provided that they have, in the contractor's opinion, the necessary experience and qualifications.

It appears that the government attaches considerable importance to indigenization issues. Within Petroleum Development Oman (PDO), the number of Omani nationals increased from 54% in 1988 to 77% in 1998 as part of an "Omanization Program" which was agreed in 1988 between PDO and the Ministry. Since August 2000, employers must pay 7% of a foreign worker's basic salary to a vocational training fund for Omanis, and 8% of an Omanis' basic salary to a social security fund.

5.3.16 Assignment

The contractor may assign any part of its rights and interests under the contract. Any assignment to affiliated companies must be notified as soon as the assignment has been made. The prior written consent of the government must be obtained for an assignment to non-affiliated companies. The assignor will be relieved of its obligations only to the extent that they have been assumed by the assignee.

5.3.17 Termination

A contract may be revoked by the government if the contractor fails to comply with its obligations under the contract. In particular, the contract may be revoked on the following grounds: default in payment of any sum due to the government within 30 days after the contractor has been notified by the government that such payment has become due under the contract; intentional and material overstatement of recoverable costs; and a material breach whereby contractor fails to carry out its obligations. The severe termination penalty for intentional and material overstatement of costs is appropriate to incentivize truth-telling on the contractor's part. However, careful auditing may be required to identify the overstatement, and it might be challenging to prove that a material overstatement was intentional.

The government must inform the contractor of the grounds for revocation and give it 30 days to remedy the breach or default. Any dispute relating to an alleged default or the remedying of a default may be referred to arbitration as provided for in the contract.

5.4 PAKISTAN¹⁷

Pakistan was examined because the system varies slightly from that of a traditional all inclusive production sharing contract. The multi-phase system includes both permits and licenses in the early stages, resulting in a Production Sharing Agreement later in the process. This system aids in the efficient administration of contracts, since all issues do not have to be determined in advance. Table 5 outlines the major contracts terms in Pakistan, with a special emphasis on monitoring and supervisory related items.

An effective element of the PSC and licensing system in Pakistan is their use of Work Units. A work unit is defined as "measuring the compliance with the minimum work obligation under an agreement. Work Units are defined in terms of kilometers of seismic or numbers of exploration wells drilled." While the system in Pakistan limits Work Units to 3D seismic, 2D seismic and wells drilled, a country can create units for a much larger array of activities. It has not been possible to find details of the Pakistani Work Units. An example of an extensive work unit system (from one of Argentina's model contracts) is shown in Table 6.

¹⁷ Research summarized from the most recent model contract and multiple sources including IHS Energy.

Table 5 Major Terms of Pakistani PSCs

| Monitoring and Supervision Procedures | Description of Current Activity |
|--|---|
| Duration | <ol style="list-style-type: none"> 1. Initial Exploration- 3-5 years. 2. Appraisal Phase- 1-2 years. 3. Development and Production Lease- 25 years. 4. Extension Phase to Exploration- 5 years. |
| Exploration and Work Program | <ol style="list-style-type: none"> 1. Instead of close monitoring of exploration activities, work obligations are measured in units. If a company completes the unit they will have satisfied their obligation. (km of seismic, and wells). 2. Management committee makes the majority of decisions and is composed of 2 Pakistan connected individuals, and 3 officials from the investing company. 3. Work programs and budgets are approved by the Management Committee annually. 4. The Management Committee has control over the production levels and general operational planning. The Government has no control over production levels. 5. Despite the broad authority of the Management Committee the Directorate General of Petroleum Concession (DGPC) has broad authority to inspect, monitor, and supervise work programs, drilling issues, abandonment and reclamation. 6. Submission of a work plan to the government must be diligently reviewed, and covers the following issues; health, safety, construction, operations, environment, storage and transportation. |
| Relinquishment | <ol style="list-style-type: none"> 1. 20% after initial exploration term. 2. 30% after initial extension period. 3. 30% after second extension period. 4. Shape of the relinquishment is determined by consultation with the DGPC by the operator. |
| Evaluation and Registration Requirements | <ol style="list-style-type: none"> 1. Contract negotiated by the DGPC, and contract with Government Holdings, Ltd. 2. Companies may apply for open blocks at any time, or submit an application in response to a call for bids. However, for unsolicited bids the government requests competing bids and then grants the block to the highest bidder. 3. Registration of a "branch" office is required for all companies investing in Pakistan. 4. A bank guarantee or bond is required for the minimum work commitment negotiated in the contract. |
| Recoverable Costs | <ol style="list-style-type: none"> 1. 100% of costs recoverable up to 85% of the gross revenue. 2. Costs must be approved in the work plan by the management committee, but generally everything is approved unless expressly excluded in the PSA. |
| Fiscal Structure | <ol style="list-style-type: none"> 1. Combination of concession agreements and production sharing agreements. 2. Typical government participation is a 5% carried interest before a commercial discovery is made and 15-25% after pay out. 3. Reconnaissance Permit (Non Exclusive), Petroleum Exploration License (Exclusive and Typically Accompanies by Production Sharing Agreement). 4. Production bonus ranging from approximately US \$1-7 million. 5. Rental payments at approximately \$10 per sq. km. 6. Royalty that is deductible, simply a mechanism to ensure early project cash flow to the government. 7. Tiered Production Sharing - 0-100 MMBOE- 80% in favor of contractor. >1200 MMBOE- 80% in favor of Pakistan, and mid-range levels are staggered every 100 to 400 MMBOE. |
| Measurement | <ol style="list-style-type: none"> 1. Handled by the Oil and Gas Regulatory Authority along with transportation issues. |

| | |
|-------------------------------|---|
| Taxes, Duties, Levies | <ol style="list-style-type: none"> 1. Income Tax (35-55%) 2. Dividend Withholdings Tax (15%) 3. Windfall levy for products sold above market price. |
| Domestic Supply | <ol style="list-style-type: none"> 1. See Associated Gas. 2. For oil three months' notice, price determined by arms -length or regulated price, and capped at 40% of the production. |
| Associated Gas | <ol style="list-style-type: none"> 1. Must be re-injected. 2. Pakistan may require associated gas be delivered to local market under two pricing schemes a) arms-length value b) regulated value in certain markets. |
| Safety and Environment | <ol style="list-style-type: none"> 1. The Federal Environmental Protection Agency together with provincial agencies in charge of environmental matters as they pertain to the petroleum industry. 2. Ministry of Labor and Manpower controls safety issues in the petroleum industry. 3. Project in sensitive areas may be subject to an Environmental Impact Statement, and Initial Environmental Examination as well as local environmental permitting requirements. |
| Accounting | Controlled by the Management Committee. |
| Title and Equipment Control | <ol style="list-style-type: none"> 1. Pakistan can take title to permanent facilities and related equipment at the end of their use. |
| Purchasing and Procurement | <ol style="list-style-type: none"> 1. Preference must be given to Pakistani goods. Annual report required to review the success of Pakistani good utilization. |
| Training, Technology Transfer | <ol style="list-style-type: none"> 1. Employment plans must be approved by the Management Committee. 2. Very small training fee levied each year for minimum training requirements. 3. The DGPC has the power to require a certain amount of Pakistani employment on any project. The ultimate number is determined in a consultation process with the Operator. |
| Assignment | <ol style="list-style-type: none"> 1. Requires written consent on the part of the government. 2. Requires a report on technical capability of assignee, statement of effect on operations, a commitment that assignee assume all rights, privileges and obligations, and proof of incorporation in a country not hostile to Pakistan. |
| Termination | <ol style="list-style-type: none"> 1. Pakistan may revoke contracts for companies in the following situations. Failure to make payments, failure to pay arbitration awards, providing false information, extraction of unauthorized minerals, breach, and several financial issues. 2. Contractor may surrender on 90 days-notice. |

Table 6 Work Units from an Argentinean Model PSC

| Exploration Operations | Onshore | Offshore |
|---------------------------------|----------|----------|
| km seismic reprocessed | 0.05 WU | 0.03 WU |
| km magnetic survey | 0.006 WU | 0.006 WU |
| km gravimetry | 0.05 WU | 0.05 WU |
| km 2D seismic shot | 1 WU | 0.16 WU |
| km ² 3D seismic shot | 4 WU | 3 WU |
| wells to: | | |
| 1,000 metres | 210 WU | 600 WU |
| 2,000 metres | 300 WU | 1,000 WU |
| 3,000 metres | 620 WU | 2,100 WU |
| 4,000 metres | 1,110 WU | 4,000 WU |
| 5,000 metres | 1,700 WU | 6,100 WU |
| 6,000 metres | 2,800 WU | 8,300 WU |

*Source: IHS Energy.

* A typical exploration contract requires the completion of at least 2000 WU's.

Work units provide a certain degree of flexibility in a contractor's exploration program. This flexibility is attractive for the contractors, and is likely to increase the success of overall exploration activity.

5.5 NORWAY¹⁸

The Norwegian system of Licensing is by far the most efficient and effective system in the international petroleum business. Its emphasis on qualified producers and decreased intervention on the part of the government would be a good model for promoting investment in Bangladesh. While the general operational control has been removed, the Norwegian system still keeps issues such as conservation of resources, the environment, health and safety in check by its sophisticated regulatory framework. Terms are summarized in Table 7.

¹⁸ Research summarized from recent contracts and multiple sources including IHS Energy.

Table 7 Key Norwegian PSC Terms

| Monitoring and Supervision Procedures | Description of Current Activity |
|--|---|
| Duration | <ol style="list-style-type: none"> 1. Exploration License- 3 years 2. Production License- 10 years 3. Extension of Production License- 30-50 years |
| Exploration and Work Program | <ol style="list-style-type: none"> 1. Controlled by the issuance of licenses, and then a joint operating agreement establishes the relationship between the various parties involved. 2. The Joint Operating Agreement management committee is completely separate from the government, despite government right to involvement by establishing a share of the project. 3. On June 1 each year a brief overview of economics and yearly targets must be submitted for review by the management committee. 4. Norway sets budget years where the budget and work plan must be approved by December of that year, the work plan is good for a period of three years. 5. The Ministry of Petroleum and Energy (MPE) has the power to demand increased production, or other methods which may maximize the recovery of reserves in an efficient manner. 6. A Development plan is required and must be approved by the MPE. However, requests for changes are limited to resource recovery and social considerations. 7. Typical exploration work programs include reprocessing 2D seismic, 3D seismic acquisition and the drilling of one well. 8. Content of Plan for Development and Operation- Economics, Resource Analysis, Technical and Safety, Commercial, Environmental, Location of Installments, Transportation Plan, and Remediation Plan. |
| Relinquishment | <ol style="list-style-type: none"> 1. 50% after an initial license period, with a minimum retained area of 100 sq. km. 2. Norwegian Petroleum Directorate approves the size and shape of the areas, and decides if waiving the requirement is prudent. |
| Evaluation and Registration Requirements | <ol style="list-style-type: none"> 1. All but specifically excluded activities are managed via the Norwegian Petroleum Directorate and The Ministry of Petroleum and Energy. 2. Bidding includes both bid rounds and open areas. Norway solicits nomination of blocks on a regular basis. 3. Until recently, the only method of combined bidding was result of the Norwegians electing several parties to take the block on a joint basis; however industry pressure has resulted in Norway's accepting joint bidding arrangements. 4. Establishment of a local joint stock company is a required prerequisite to being granted a license. 5. Bonding is not required. 6. Operators can be pre-qualified before the bidding process begins so that bids are not submitted that clearly fall outside Norwegian operator minimum standards. 7. Despite requirements that a work program, an exploration program and a budget must be submitted, Norway expressly removes itself from the determination of commerciality. |
| Recoverable Costs | Cost recovery principles are not present in the Norwegian system. |
| Fiscal Structure | <ol style="list-style-type: none"> 1. 50% initial government participation standard (not carried), increasing with the level of production. However government participation is determined by the quality of the acreage. (Range of 3-70%) 2. Broken into several different types of licensing rounds, namely exploration, seismic and production. This compartmentalization allows companies to exit the project if the economics are not attractive. 3. Depending on the age of the project, yearly rental of 30k NOK to 130k NOK is mandatory. 4. Taxes- income tax 28%, dividend withholding 25%, other profits tax and special petroleum taxes which are a bundle of smaller taxes. |

| | |
|--|---|
| Measurement | Standard international measurement systems are used. |
| Taxes, Duties, Levies | See Fiscal Structure. |
| Domestic Supply | The government may demand that licensee delivers petroleum from its production to satisfy national demand, and provide transportation to the Norwegian mainland. In such a case the government decides to whom the petroleum is to be delivered. The licensee must be paid a price determined in the same way as the price that forms the basis for the calculation of the royalty payment, plus transportation costs. |
| Associated Gas | 1. May be used in petroleum operation as needed. 2. Flaring if strictly regulated, and CO2 emissions are taxed. |
| Safety and Environment | 1. Monitoring of safety and emergency response is performed by a separate directorate. 2. Safety and environmental issues are required items to accompany the bid. |
| Accounting | Conducted according to joint operating agreement. |
| Title and Equipment Control | 1. Title of oil, gas and condensate is transferred from the working interest owner at the wellhead. 2. Fixed facilities may stay in the hands of the government, but all movable property remains in the hands of the international oil company. |
| Purchasing and Procurement | Unregulated. |
| Training, Technology Transfer | 1. The Ministry of Petroleum and Energy (MPE) has the right to require that the licensee provide training to the National Petroleum Directorate and other Norwegian authorities. 2. The licensee must also ensure that all personnel working with the project are properly trained and have the necessary qualifications. |
| Assignment | 1. Consent from MPE either in the case of license transfer, or transfer of shares in company holding the license. 2. The MPE reviews the transfer, but no special document requirement is present on the part of the operator. |
| Termination | 1. Licenses can be terminated by MPE in the case of persistent breach, bankruptcy on the part of the license holder, and weakening of the security or bond in place. 2. Surrender by the operator can occur on 3 months -notice, but may require the fulfillment of any outstanding license obligations. |
| Misc. Monitoring and Supervision Items | 1. In some circumstances the maintenance of permits is required, and they are issued and monitored by the State Pollution Control Authority. 2. On abandonment the MPE reviews documents submitted regarding technical, safety and environmental concerns of winding down. The government then can decide to take over the facilities permanently, temporarily or alternatively request a disposal solution from the license holder. |

5.6 SUGGESTED BEST PRACTICE STANDARDS FOR BANGLADESH

5.6.1 General Monitoring, Supervisory and Audit Scheme

Below are three general Monitoring and Supervising recommendations. Recommendations for the Auditing Scheme and structure will be addressed in this reports next deliverable.

Recommendation #1- The government/Petrobangla should strongly consider staying away from a controlling position on the Joint Management Committee. The current model allows an equal division between contractor and country, and to maximize investment potential should be changed to a 4 to 3 ratio similar to that of Oman. This is also the recommendation with regards to the Joint Review Committee. To promote investment, the contractor should retain control throughout the project. In the event that an equal representation of the management committee is required, the shift from 4 to 3, to 4 to 4 should not occur until after commerciality. This transfer of power should only take place in the event that Bangladesh feels its resource potential requires significant promotion to attract investors.

Recommendation #2- Focus as many resources as possible on understanding and effectively monitoring the development plan. The development plan is the one portion of the project where international oil companies expect government intervention, so Bangladesh should exert as much time and effort here as possible. Petrobangla should consider both hiring outside consulting and engineering firms to review the development plan alongside them, as well as demand training programs, with collaboration on the part of several employees in the process of constructing the development plan. Having a Petrobangla employee who understands preparation issues can help the JMC members immensely in their final review.

Recommendation #3- Currently the responsibilities of all divisions under the PSC Directorate are the same. This is causing a technical inefficiency in the ability to effectively monitor and supervise the PSC. Each division is responsible for monitoring all phases of the PSC from exploration to abandonment. In order to vacate this technical inefficiency, it is recommended that the Government create a single contact point for each firm operating under a PSC. The

contact point should then delegate monitoring responsibilities to deputies represented by each department under the PSC Directorate. This way the representative departments will only be monitoring an individual firm's PSC terms in the area of their expertise. Responsibilities could be further delegated between Petrobangla and the HCU holding the contact point responsible for coordinating all proposals and documents received from the IOC. Delegating through a single contact point will allow the IOC to submit documents and proposals to one person, relieving the disruption caused by filing proposals and documents to two different agencies.

5.6.2 Duration

The Durations of the various obligations are appropriate. However, the time between discovery, appraisal well, and actual production could be extended to facilitate ease of operations.

5.6.3 Exploration and Work Program

Instead of a static system based on a certain level of required interpretation and the drilling of one well, Bangladesh should consider adopting a system where fulfillment of the work program is measured in Units or based primarily on negotiation. This common model used in multiple countries reviewed above allows much greater flexibility, and is easy to manage considering its wide scale use internationally. The system used by Qatar or Pakistan can simply be copied and adapted to any issues that are unique to Bangladesh. This should provide flexibility in the work program for projects that only require reprocessing of seismic or other non-drilling related activities. Requiring a well in the model may impose a requirement that is not actually necessary and may discourage investment.

5.6.4 Relinquishment

Consider revising relinquishment requirements to match the internationally accepted standards. While 25% is the current standard, decreasing the required relinquishment to 20% with an option to retain all acreage on approval is more attractive.

5.6.5 Evaluation of Bidding Round Procedure

Consider expanding the bid round system to include a general invitation to bid on all open blocks. In the event that an unsolicited bid is received, that specific block can be offered for competitive bidding to see if other companies are interested. This competitive bidding after unsolicited offers has greatly increased transparency in Pakistan, and would likely do the same in Bangladesh. The justification for such an approach is that opening an unsolicited bid to the public tests the market to ensure the price offered is fair.

5.6.6 Recoverable Costs

Cost recovery provisions and practices are already in line with international best practices.

5.6.7 Fiscal Structure

Recommendation #1- Consider the creation of a licensing scheme which can be inclusive or exclusive of the PSC. In the event that an exclusive Reconnaissance License is adopted, companies should be allowed to retain data interpretation for a reasonable time to keep it confidential. This retention should include a period in which even the government is not allowed a copy. In the event that exclusive exploration licenses are adopted they should be confidential, but the government should also be free to look at data interpretation.

Recommendation #2- Consider modifying the tiered production sharing scheme regularly based on the international oil and gas market. For instance the currently depressed nature of gas should allow the international oil company a break for investing. In the current market the stated seven levels of reduced production share are likely a bit onerous (especially compared to its regional competitors). However, the high price of oil should warrant the contractor paying a premium for its development and therefore justifying more tranches.

5.6.8 Measurement

Measurement standards appear to be in line with international practice.

5.6.9 Taxes, Duties, Levies

Recommendation #1- The primary concern regarding taxes should be the way they are structured. Work with the investing companies to ensure that the tax regime applied to their contract will fit that which can be written off against their home income or corporate tax regime. This should be an openly advertised negotiable option.

Recommendation #2- Bangladesh should consider reviewing income tax payments from IOC's to ensure actual payments are accurate and in accordance with the PSC.

Recommendation #3- The Dividend Withholdings tax rate appears reasonable according to international standards.

5.6.10 Right of First Refusal for Gas Purchases

Typically, rights of first refusal to buy gas are capped at around 40% according to international practice, and are rarely used. However, since domestic supply is one of the most important issues to the Bangladesh Government, these two items should be reviewed by an economist for the purpose of contract balance. First, is the suggested price for domestic supply competitive with other markets that the producer may have access to? Second, do the fiscal benefits given to the producer in the rest of the contract accommodate for this very strict domestic market provision? In practice, many of the typical encumbrances beyond production share would likely be inappropriate in this contract. Bangladesh should be especially careful with charging extra bonuses, multiple categories of taxes, ring fencing (article 14.3), etc. so that the IOCs will still find it attractive to invest in Bangladesh.

5.6.11 Associated/Non-Associated Gas

Recommendation #1- Based on domestic supply concerns, all associated gas should be delivered to market rather than re-injected, unless the producer can show a demonstrated benefit to re-injection. Depending on the project this may bring additional gas to market which is desperately needed.

Recommendation #2- Petrobangla and the Government should have a very aggressive incentive program related to bringing non-associated gas to market. Long time frames for gas utilization studies should be allowed, approximately 4-10 years. Incentives should be offered for companies that decide to develop a non-associated gas project even if they are only marginally economic. Some examples of incentives are tax waivers, an increased production share, waiver of bonuses or even government capital contributions.

5.6.12 Safety and Environment

The environmental provisions of the PSC are in line with international standards. However, there has been substantial worldwide review of environmental regulations in the light of the 2010 Deepwater Horizon incident in the Gulf of Mexico.

5.6.13 Accounting

Streamline the reporting requirements and standardize summary documents for better large scale project review. The general goal of Petrobangla accounting staff should be reduction of documents, and an increase in the understanding of fundamental fiscal issues.

5.6.14 Title and Equipment Control; Procurement

So long as items that are transferred to the control of Petrobangla have been paid for via cost recovery, it is acceptable international practice to take title to those items. The language that title

is passed to Petrobangla on purchase of land might create a scenario somewhat stricter than international standards.

5.6.15 Training and Technology Transfer

Recommendation #1- Petrobangla should insist that several employees be implanted in the Contractor's offices to learn the process of project development and execution. Special emphasis should be placed on the creation and maintenance of the development plan. This training should require an employee to stay with Petrobangla for at least 5-10 years, or a typical project life cycle. Structurally, the emphasis should be on contractor sponsored training rather than the collection of fees for the purpose of conducting training. While a detailed analysis of this has not been provided in this report, Oman has successfully increased the level of domestic participation in projects to 75%. Bangladesh should set more aggressive long-term goals for Bangladesh employment minimums, and establish programs to achieve those long term goals.

Recommendation #2- Bangladesh should consider adding new taxes on expatriate employees and Bangladeshis working for IOCs based primarily on a model similar to Oman. A higher tax on those employees creates more revenue for training Bangla personnel. All the tax money should be directly reinvested in training and Bangladesh should avoid the temptation of placing it in the country's general fund.

Recommendation #3- Bangladesh should consider requiring educational training for its technical and non-technical staff as a requirement in the PSC. Similar to Pakistan, companies could sponsor Petrobangla employees to attend premier international petroleum courses of study at major universities.

5.6.16 Assignment

The current contract is consistent with international practice.

5.6.17 Termination

The current contract is consistent with international practice and requires no change on this element.

5.7 “FAR EAST” REGIONAL COMPETITION ANALYSIS

To supplement the findings covering international best practice standards, Gustavson Associates has also conducted an extensive analysis of the regional competition in “Southeast Asia” and “South Asia”. To facilitate this comparison, Gustavson reviewed and compared the petroleum fiscal systems of Bangladesh, Pakistan, Malaysia and India. As a general conclusion the Bangladesh contract was found to be competitive on most items except export potential, gas price and domestic supply obligations. Due to the large burden that price controls place on the IOCs compared to free export and pricing in the three other countries reviewed, it will remain Gustavson’s recommendation to offset that undesirable portion of the contract in other sections of the PSC. This can be achieved by commissioning an economic model to determine how much income tax, production share, or other important economic factors should be adjusted to remain competitive.

A comparison of the key PSC terms in the four countries is presented in Appendix D.

6 MONITORING AND SUPERVISION RECOMMENDATIONS FOR PREVIOUSLY SIGNED PSCS AND JVA

6.1 OPERATING PSCS

The Directorate of production sharing contracts (PSC) was created within Petrobangla to enhance implementation and administration of PSCs, but no formal procedure for PSC monitoring and supervision has been developed. Moreover, PSC finance, accounting and auditing activities are not under the domain of the PSC Directorate. The following steps are recommended for improvement of the monitoring and supervision of previously signed PSCs.

1) General

- a. Formulate a method for monitoring and supervision of PSCs activities and present it immediately to the relevant JRC/JMC for approval
- b. Draft upstream regulations in the oil & gas sector.

2) Staffing/Personnel

- a. Realign the directorates within Petrobangla to ensure that all company review teams have adequate expertise to review projects. For instance all teams should have technical, financial, legal and operational experts.
- b. Create a dedicated audit team for reviewing the accounting and procurement procedures and manuals of the PSC contractors. Update the team's knowledge with regular training. This will avoid misunderstanding and confusion about governmental financial and budget practices, and improve interaction with IOCs
- c. Develop the skills and technical abilities of Petrobangla personnel through regular training. Keep pace with advances made in oil industry practices.

3) Financial

- a. An agreed accounting and financial procedure and auditing process should be developed and implemented, based on discussions with the PSC contractors. A common understanding of the terms "estimate" and "budget" should be developed through discussions and knowledge sharing between the personnel of Petrobangla and IOCs. Discussions should consider previous experiences.

4) Collaboration

- a. The PSC Work Program and Budget(WP&B) submittal should be supported by adequate details and attachments.
- b. The JRC/JMC should be more vibrant and active in dealing with petroleum operations – it should be proactive rather than reactive in reaching for unanimous decisions.
- c. Each meeting of JRC/JMC should have a constructive and conclusive result. Any unresolved issues should immediately be referred to the Secretary, Ministry of Energy and Mineral Resources for a decision in order to avoid delays due to pending/unresolved issues.
- d. Petrobangla and IOCs should cooperate and work in an open-minded and transparent manner. PSCs should be read by spirit, not by language.

5) IT

- a. Use computer models to effectively monitor and simulate the operational and financial performance of PSC contractors.
- b. Establish a computerized PSC data bank, as recommended several years ago. Replace current manual data handling by use of a LAN and WAN with an adequate server capacity. Currently, there is an operating LAN in Petrobangla Building. However, an exclusive LAN/WAN is highly recommended for PSC Directorate to preserve data security.
- c. Petrobangla offices should have internet access to review petroleum industry vendor websites, for the purpose of updating and verifying petroleum operation materials prices.
- d. Computer based file and data sharing over the internet or through a WAN linking PSC contractors and the PSC Directorate would be a great breakthrough. This will create a good working relationship with IOCs. It will have multifaceted advantages for both the parties and achieving this stage, both sides should have more or less the same level of technological skill. Imagine that an IOC's Dhaka office and PSC Director of Petrobangla's office are receiving/communicating/sharing with real time petroleum operational activities, whether it is a Geological and Geo-physical (G&G) survey or drilling or

production operations - anything and everything of the whole Petroleum Operation.

6.2 JVA

Observations on Future Joint Venture Projects for Marginal Gas Field Development

1) A “PROCEDURE¹⁹” to consider JVAs for Marginal/Abandoned Gas Fields was approved on June 14, 2001. The PROCEDURE required Petrobangla to form a technical committee to evaluate all gas fields. Petrobangla has not yet constituted this committee.

2) There is a need for a study to assess the impacts of different parameters identified in the approved “PROCEDURE”. One area of interest is gas pricing. The “PROCEDURE” suggests that the cost of production of gas should be considered as a factor in assessing the marginality of a gas field. Under existing practice, the government has fixed the wellhead price of gas produced by BAPEX at Tk. 25/mcf and that produced by BGFCL and SGFL at Tk. 7/mcf. As per law, gases produced by the three national gas companies are required to pay a Supplementary Duty (SD) and VAT @ 122%. Generally, the current cost of gas production by national companies from new gas fields varies between Tk. 30-50/mcf, although it may be as high as Tk. 100/mcf in difficult locations. The combination of a low wellhead price together with SD and VAT payments means that the national gas companies suffer a financial loss when they produce gas from new wells. Moreover, consumers bear the high cost of SD and VAT imposed on national gas. For example, if the gas production cost is Tk. 100/mcf, then the consumer price of the gas (including SD and VAT) will be Tk. 222/mcf. Hence, national gas companies do not have any financial incentive to undertake gas development projects in comparatively difficult locations. As a result, such gas fields automatically become financially marginal.

¹⁹ “PROCEDURE”- means a document approved by the highest authority with reference to the BAPEX-NIKO JVA.

Recommendation for Future Consideration

At present three suits regarding the BAPEX-NIKO JVA are pending: a decision of money suit for compensation in a local Court, and two arbitration suits at International Center for Settlement of Investment Disputes (ICSID Case No. ARB/10/11, ICSID Case No. ARB/10/18). Marginal gas fields may not be considered in the future. Instead Petrobangla may consider formulating an abandonment policy for the gas fields.

Future Joint Venture Policy for Private Sector Participation

A draft “Joint Venture Policy for Private Sector Participation in Energy Sector of Bangladesh” was completed in December 2009. The draft will be sent to EMRD for the government approval. The draft proposes that the following categories of project should be developed under joint ventures.

- i. Exploration, production, transmission and distribution of natural gas and its by-products.
- ii. Petro-chemical complex (condensate/NGL based) projects and associated power stations.
- iii. Exploration, development, production and distribution of coal.
- iv. Coal fired power plants

7 RECOMMENDED MONITORING AND SUPERVISION METHODS FOR THE
2008 MODEL PSC

The 2008 Model PSC contains 35 articles and 5 annexes. The articles and annexes provide a large number of opportunities for the monitoring of PSC activities. Table 8 contains a list of the articles that involve monitoring, and also a suggestion for which agency might be responsible for the associated monitoring activity. There are certain articles for which the assignment of responsibility is not clear. Four of the articles refer to the Government. Petrobangla could act as the Government’s representative. There are several articles where a responsible party is not explicitly mentioned. Either Petrobangla or the Hydrocarbon Unit could undertake the corresponding monitoring.

Table 8 Suggested Monitoring Assignments for PSCs based on 2008 Model

| Agency | 2008 Model PSC Articles |
|---|---|
| PB | 2.4, 3.1, 3.2, 4, 5.1, 5.4, 5.5, 6.7, 6.9, 7.5, 7.7, 8.1, 8.12, 8.13, 8.2, 8.3, 8.4, 8.7, 8.8, 8.9, 10.10, 10.11, 10.18, 10.19, 10.20, 10.21, 10.22, 10.25, 10.26, 10.9, 11.5, 12, 13.1, 13.7, 14, 15, 16.5, 17, 18.2, 18.3, 18.4, 18.5, 18.6, 19.5, 20.1, 20.4, 20.6, 21.1, 21.2, 21.3, 21.4, 22.1, 22.2, 22.5, 23.1, 23.2, 23.3, 23.4, 23.5, 23.6, 23.7, 24.9, 25.1, 26.1, 26.11, 26.12, 26.13, 26.2, 26.5, 26.6, 27, 28.1, 28.2, 28.3, 32.2, 33.1, 33.4, 33.5, 34.1, 34.4, 34.5, 35, 10.12a, 10.12b, 10.13a, 10.13b, 10.13c, 10.24a, 10.24b, 10.24c, 10.24d, 10.24e, 13.2 - 13.4, 2.7 Emergency, 20.2 & 20.3, 24.1 to 24.6, 24.7 & 24.8, 25.2 to 25.10, 33.2 to 33.3, 34.2 & 34.3, 7.1 & 7.2, 7.3 & 7.4, 8.10a, 8.10b, 8.5 & 8.6 |
| PB/Gov | 10.17, 32.3, 32.4, 32.5 |
| PB/HCU | 5.2, 5.3, 5.6, 5.7, 6.10, 6.1, 6.11, 6.12, 6.2, 6.3, 6.4, 6.5, 10.1, 10.14, 10.15, 10.2, 10.4, 10.5, 10.6, 10.7, 10.8, 13.5, 16.1, 16.4, 20.5, 22.4, 22.7, 22.8, 10.13d, 10.23c, 2.7 Non-Emergency, 6.8a, 8.10c |
| HCU/ PB/ Ministry of Environment and Forest | 10.23a |
| Bangladesh income tax agency | 19.3 - 19.7 |

It is recommended that a small committee be assembled with representatives from EMRD, Petrobangla and the HCU to go over the suggested assignments in this table. An appendix to this report provides an article-by-article list of activities that are specified according to the 2008 Model PSC. This will be useful for the work of the committee. The suggested goals of the committee are as follows:

1. Develop agreement about the exact monitoring that is possible and/or required according to the 2008 Model PSC, using the appendix as a guide.
2. Develop a schedule and checklist for the monitoring activities that will occur.
3. Agree on an assignment of responsibility for each of the monitoring tasks that will be carried out.

This exercise is likely to reveal redundancy in certain monitoring provisions of the PSC. In this case, the committee may make recommendations for amendments to the PSC that will facilitate its implementation and reduce the burden of complying with the terms of the PSC both for the contractor and for the government agencies.

8 RECOMMENDATIONS FOR FRAUD PREVENTION

8.1 POSSIBLE TYPES OF FRAUD

There is the possibility of fraudulent activity with any contract, including PSCs. It is important to consider how such fraud might occur in order to implement mitigation measures that can limit its occurrence. Several possible types of PSC fraud are listed below:

1. Overstate actual expenditures, so there is additional cost recovery
2. Conduct less testing than reported, so reported costs are over-stated
3. Do more exploration and testing than is really necessary, with payments being made to a subsidiary, or with payments from vendor to contractor
4. Sell less gas than is reported. (Can mitigate against by use of multiple gas meters, one on each side of delivery point.)
5. Purchase excess inventory of supplies, report costs, but resell inventory for other purposes
6. Fraudulent invoices (over-stated prices or quantities). Requires collusion with vendor.
7. Payoffs to local officials with false accounting.
8. Contractor over-reports actual number of wells and facilities

8.2 RECOMMENDED FRAUD PREVENTION ACTIVITIES

The following list provides activities that can be implemented to reduce the occurrence of fraudulent activity.

1. Do due diligence on invoices, e.g., call to ensure that vendor exists
2. Instill company loyalty, that may mitigate against individual profit motive
3. Pay better than average wage to employees, so that loss of employment is unattractive for employees.
4. Create and check cost database to ensure that costs and cost ratios are reasonable
5. Perform auditing and sampling

6. Consider an electronic clearing house for all purchasing activities. This facilitates auditing. (Need mitigation against electronic fraud.)
7. Create a task force with HCU, Petrobangla and Dept. of Revenue/Finance to develop and implement on-going fraud detection
8. Technical auditing of facilities
9. Geological and engineering review of fields to ensure appropriate development activities. Will result in improved skills at HCU and/or Petrobangla.
10. Use Benford's law²⁰ for accounting data

The auditing report which will be delivered later as part of this project will devote attention to these and other mitigation measures.

²⁰ Benford's law is a method for detecting irregularities in numerical data. See http://en.wikipedia.org/wiki/Benford%27s_law for information.

9 CONSIDERATION OF CHANGES TO THE 2008 MODEL PSC

9.1 FEASIBILITY OF CHANGING THE 2008 MODEL PSC

In order to consider possible changes to the Model PSC 2008, it is necessary to understand the legal and institutional aspects of formulation, revision and approval of PSCs.

Legal Status of PSC

When approved by the Cabinet, a Draft Model PSC becomes the rules of the Petroleum Act. A PSC is an operational document to implement petroleum agreement under the Bangladesh Petroleum Act, 1974. Article 11 of the Act states that the government may make rules concerning the Act by notification in the official gazette. Legally a PSC represents the rules of the Petroleum Act and therefore it should be published in the official gazette. The exploration, development, and extraction of different type of mineral resources in Bangladesh, other than hydrocarbon resources, are governed by the Mines and Minerals (control and development) Act, 1992, and corresponding Mines and Mineral Rules 1968 (revised). Rules are periodically revised according to necessity, and the revised portions are published in the gazette. Bureau of Mineral Development (BMD) is the regulatory body, issues initial exploration license for identification of minerals and final lease for development of minerals with the approval of the government. In the case of hydrocarbon exploration and development, Petrobangla is carrying out tasks similar to the BMD.

Although PSC systems have been used in Bangladesh since 1974; a Model Production Sharing Contract was first published by Petrobangla in March 1997. The Model Production Sharing Contract 2008 was published in February 2008 as part of the offshore bidding round. Similar to the Mines and Mineral Rules, the Model Production Sharing Contract should have been published by the government (EMRD) through official gazette, according to law.

Process of Revision of Model PSC 1997

Before considering any revision of the current Model PSC 2008 it is appropriate to know the process through which the previous PSC (Model PSC 1997) was revised. Two committees, one at the level of Petrobangla and the other an Inter-Ministerial Committee were involved in the preparation of the draft final version of the 2008 Model PSC. In 2005, Petrobangla formed a Committee to revise the Model PSC 1997. The committee intensively interacted with those Petrobangla professionals who were directly involved with the management of previous and on-going PSCs.

During discussions it was reported that there were differences in the language of the same article in different previously signed PSCs. In order to avoid confusion and future litigation, the committee decided that the revised Model PSC would allow bidders only to fill in blanks with specific numbers, while the language of the Model PSC would have to be kept unchanged during negotiation and at the time of final signing.

Completion of the revised PSC was delayed, because the government considered carrying out seismic surveys in the offshore area before going for bidding. In April 2006, the government decided to carry out hydrocarbon exploration in the offshore area through a previously practiced block-bidding process. Successful bidders would be expected to carry out seismic surveys in their respective allocated blocks.

The Model PSC revision committee of Petrobangla was reactivated in 2007. The committee studied the Model PSCs of India, Pakistan, Vietnam, Malaysia, Trinidad and E. Timor and prepared an updated version of draft Model PSC. The committee had discussions with the legal experts of Dr. Kamal Hossain and Associates. In the next stage an international legal expert Dr. Pedro Van Meurs was engaged as a consultant and further modifications were made according to his advice.

The draft version of the Model PSC prepared by the Petrobangla committee was sent to EMRD for approval. An inter-ministerial committee headed by the Secretary EMRD finalized the draft

for submission to the cabinet for approval. The cabinet approved the Model PSC 2008 on February 5, 2008, becoming an operational document according to the Bangladesh Petroleum Act 1974. The 2008 Model PSC was offered for bidding on February 24, 2008 and bidding was closed on May 7, 2008. A similar method will need to be followed for any future revisions of the Model PSC.

9.2 DIFFICULTIES ASSOCIATED WITH THE 2008 MODEL PSC

9.2.1 Reasonableness of IOC expenditures

Expenditures made or incurred by any IOC for the purpose of petroleum operations are generally taken as a cost. But, when this expense is tagged with the words “reasonable expenditure” then questions arise as to qualifying and justifying the expenditure, and who will do so? And it opens up the scope for dispute issues and other complications in managing PSC contracts.

To avoid this, one should be straightforward in articulating the clause and mention it very simply and clearly the requirement of documents for petroleum operation to justify its expenditure. In Model PSC-2008 Article 2.7 is a new version, where reasonableness of work and expenditure has been written as – “In the event of emergency or extraordinary circumstances...”. Some of the phrasing of this Article has been borrowed from Article-6.12 of Model PSC-1997, where reasonableness of expenditure has not been mentioned.

So, it is better to avoid this sort of qualified word, instead it may be advisable to mention, -if any operator is made any mess in the contract area or to environment or to any assets, etc. Contractor’s obligation is to bring back it as it were, etc. and at no cost to Government or cost incurred should not be cost recoverable.

9.2.2 Environmental Aspects in Production Sharing Contracts

Exploration and production of hydrocarbons is a risky undertaking. They involve many different technologies operated by a group of persons having expertise in different disciplines of science and technology. Coordinated actions are necessary for safe operation and efficient management of E&P activities. Even then, accidents may occur due to failures of machines and operating personnel for various reasons such as lack of communication or human error. Accidents can cause huge losses of human life, wealth, properties and/or resources. Environmental safe guards highlighted in different legal documents and Production Sharing Contracts (PSC) are presented below.

As per Article 143(1) (a) of the Constitution of Bangladesh, all minerals and other things of value underlying any land of Bangladesh is the property of the Republic. It is mentioned in Article 6(2)(C) of the Bangladesh Petroleum Act 1974 that persons engaged in petroleum operations shall, in carrying on such operation in any area prevent damage to petroleum bearing strata in whether adjacent to the area or not. The Environmental Conservation Act 1995 (with subsequent revisions) and The Environmental Conservation Rules 1997 have provided sufficient scope and compensatory measures²¹ to consider environmental damages that may occur during hydrocarbon exploration and production. However, in the Act the definition of the word "environment" means the inter-relationship existing between water, air, soil and physical property and their relationship with human beings, other animals, plants and micro-organisms. It does not include sub-surface hydrocarbon resources. An expert legal opinion should be sought to include damage to gas reserves in the Environmental Conservation Rules 1997.

²¹ Non compliance of Environmental Conservation Act 1995, may result imprisonment not exceeding 10 years or fine not exceeding Tk. 1 million or both.

Study of different PSCs and the BAPEX-NIKO JVA indicates that the legal aspects identified in the Petroleum Act have been incorporated in the different Petroleum Agreements signed between 1994 and 2006. Three accidents occurred during this period at the time of drilling exploration wells, summarized below:

(a) Moulavibazar Well # 1 Blowout on 15 June 1997

Occidental Exploration of Bangladesh Ltd. (Oxy) started drilling the Moulavibazar Well # 1 located in Block 14 on June 4, 1997. It is reported that on 15 June, 1997 at 1:45 AM a blowout occurred which destroyed the drilling rigs, other equipment and accessories, and caused damage to surrounding properties and reserves. EMRD constituted an enquiry committee on 3 July, 1997. The committee submitted the report on 11 July, 1997. The committee report was not made available to the public. There has been lot of discussions in print and electronic media about the colossal loss of national wealth due to blowout. It is reported that the IOC (Oxy) signed a Supplementary Agreement with Petrobangla on 25 November, 1998 where it was agreed to increase Petrobangla's share of profit natural gas by 5% (thereby decreasing contractor's share of profit by 5%). The contractor waived its right to recover Moulavibazar Well # 1 Blowout cost. It is also reported that the concerned IOC has repaired the damages of physical properties of the surrounding organizations. There was no public statement by Petrobangla and government that what percentage of total damage of the blowout has been compensated by the supplementary agreement. Every year the civil society members organize protest on 15 June to get due compensation from the IOC (Occidental/Unocal/Chevron).

(b) Two Blowouts at Chattak (West) on 7 January, 2005 and 24 June, 2005

A Joint Venture Agreement (JVA) between BAPEX and NIKO was signed on October, 2003 for the development of Feni and Chattak gas fields. NIKO started supplying gas to the national gas pipeline from the Feni Gas Field starting from November 2004. NIKO started drilling in Chattak (West) at a place called Tangratila in Doarabazar upazila of the Sunamgonj District, starting from 31 December, 2004 without the approval of Joint Management Committee (JMC) as

required by JVA. A blowout occurred on 7 January, 2005 and a second blowout occurred on 24 June, 2005.

(c) Environmental Issues in Model Production Sharing Contracts (PSC) 2008

Petrobangla initiated the process of an offshore bidding round in February 2008 under MPSC 2008. Final decisions on selected PSCs are in process. Environmental damages caused due to blowout occurred in the coastal area of the USA on the evening of 20 April, 2010 in Macondo Well operated by BP has drawn global attention to look into the environmental compensation aspects of offshore hydrocarbon operations. In this context it is apprehended that any accidental blowout occurring in offshore areas of Bangladesh would also affect the coastal areas of the neighboring countries. There is a need to pay serious attention to the environmental issues in the Model PSC 2008. In particular, Article 10.27 should be made more specific to include a loss of gas reserves. Such revision will have to be made by legal expert(s) considering various issues mentioned in the Environment Conservation Act 1995, the Environmental Conservation Rules 1997 and the Bangladesh Petroleum Act 1974.

(d) Regional Analysis of Environmental Provisions

Given the heightened concern regarding blowouts and other accidents in the fall out of Macondo, a comparison of the environmental clauses of Malaysia, India, Pakistan and Bangladesh was conducted. Starting with Malaysia, the environmental regulations in the PSC itself seem to be the most relaxed. The extent of its mention in the Malaysia contract is merely a reference to good oilfield practices and a number of required environmental reports. Thus no comparison can be drawn from the Malaysia contract to that of Bangladesh.

In contrast, the environmental provisions found in Pakistan and India are extensive. To avoid duplication of similar language, the following clauses from the Indian contract were highlighted as a go by for possible additions to the Bangladesh contract:

14. 1 (i) prevent Environmental Damage and, where some adverse impact on the environment is unavoidable, to minimize such damage and the consequential effects thereof on property and people;

14.1 (ii) ensure adequate compensation for injury to persons or damage to property caused by the effect of Petroleum Operations; and

14.2 If the Contractor fails to comply with the provisions of paragraph (b)(i) of Article 14.1 or contravenes any relevant law, and such failure or contravention results in any Environmental Damage, the Contractor shall forthwith take all necessary and reasonable measures to remedy the failure and the effects thereof.

14.5.3 The studies mentioned in Article 14.5 above shall contain proposed environmental guidelines to be followed in order to minimize Environmental Damage and shall include, but not be limited to, the following, to the extent appropriate to the respective study taking into account the phase of operations to which the study relates :

1) blowout prevention plan;

14.7.1 In the event of an emergency, accident, Oil spill or fire arising from Petroleum Operations affecting the environment, the Contractor shall forthwith notify the Government and shall promptly implement the relevant contingency plan and perform such Site Restoration as may be necessary in accordance with modern oilfield and petroleum industry practices.

14.7.2 In the event of any other emergency or accident arising from the Petroleum Operations affecting the environment, the Contractor shall take such action as may be prudent and necessary in accordance with modern oilfield and petroleum industry practices in such circumstances.

14.8 In the event that the Contractor fails to comply with any of the terms contained in Article 14.7 within a period specified by the Government, the Government, after giving the Contractor reasonable notice in the circumstances, may take any action which may be

necessary to ensure compliance with such terms and to recover from the Contractor, immediately after having taken such action, all costs and expenditures incurred in connection with such action together with such interest as may be determined in accordance with Section 1.7 of Appendix C of this Contract.

While both contracts have additional provisions covering reporting, clean up, remediation, etc.; the above clauses emphasize how to deal with a sudden event or accident. The overriding theme is accountability to engage in a quick response and compensation for actual damages. The Bangladesh contract addressed these primary objectives but only in the context of other provisions. For instance in the development plan section, environmental contingencies are supposed to be considered. Similarly environmental reports and assessments are required, but no general provisions are included to indicate what actions the government expects to be taken in the event of a disaster. Additionally the only section which suggests there may be a remedy for an accident is in the “contract’s obligations” section, but it is vague as to when it is applied and overly broad in that it could require much larger damages than are usual in the context for an unexpected but normal accident (like a blowout).. Thus in order to ensure clarity, a separate section for environmental protection and accident should be created, following the basic guidelines outlined below.

The following general aims should be embraced to avoid the several unusual inconsistencies and omissions compared to Bangladesh’s regional competitors.

- Create a separate section in the PSC for environment and accidents.
- Provisions regarding compensation for blowouts or other accidents should be limited to only actual gas lost and actual damages, not punitive (punishment) or consequential type damages.
- Focus should be on measures to remedy the accident according to standard oilfield practices. This focus should be accompanied by specific procedures.
- Require a blowout prevention plan.
- Tighten up notification standards, making all accidents immediately reportable to Petrobangla.
- For any reporting, clean up, remediation, or other standard environmental clauses, condense current language into one concise section on the environment.

9.3 ALLEVIATION OPPORTUNITIES WITH PSC AMENDMENTS

9.3.1 Royalty Contracts

Verification of the cost recovery aspect of PSCs is challenging. Since operators are entitled to recover costs according to a PSC, they may not exercise the highest standards of care with regard to making expenditures. Audits are necessary for costs that are included by the contractor. Disputes about the legitimacy of costs are commonplace. There is a standing committee for resolution of such disputes.

There is an alternative form of contract that avoids the need for the government to consider the operator's costs. With a royalty contract, the operator pays the government a percentage of the value of the hydrocarbon that is produced, or alternatively, at the government's discretion, provides the government with that percentage of the production in kind. Such a payment is not directly dependent on any of the contractor's costs, providing that the hydrocarbon price is based on market value.

Such royalty contracts are commonly used in the United States. The royalty payments may be supplemented with bonus payments, based on contract signing, production targets, or other measurable events.

It is important to establish an appropriate level for the royalty. Competitive bidding amongst IOCs can be used to establish the level. The government can protect itself by establishing a minimum acceptable royalty rate.

There is a downside of royalties. The contractor may find it uneconomical to continue production in the later stages of a field's life, given the royalty payments and other operating costs that are large compared to the value of dwindling production. This problem can be obviated by implementing a sliding scale royalty, in which the royalty rate declines as the production rate decreases.

There is another potential issue with introducing a royalty contract. Professionals working in Petrobangla and other decision makers involved with the management of the energy sector are familiar with the existing PSC type of petroleum agreement. In this context, it may not be acceptable to introduce a different type of agreement. However, management of a royalty contract should be simpler than a PSC, so such a change should be possible with training of relevant monitoring staff.

9.3.2 Domestic Market Obligation for Gas

As per Articles 15.5.1 to 15.6 there is provision to export gas in the form of LNG subject to government's first right of refusal. Conditional export provision was included in the PSC at a time there was uncertainty of domestic gas market. At present the situation has completely changed. The government is seriously considering import of natural gas in the form of LNG to mitigate shortage of gas. The import price of gas in the form of LNG may be as high as US\$ 15/mcf.

In future model PSCs domestic provision of natural gas should be included similar to the provision of domestic requirement of oil mentioned in Article 24.1 of Model PSC 2008 of Bangladesh or similar to provision described in Articles (21.11-21.31) of NELP, VIII 2009 of India.

9.3.3 Gas Pricing

In Model PSC 2008, the price of natural gas is indexed to the FOB price of HSFO at Singapore. The price of gas could be specified directly in terms of \$/mcf, as is done in India and Pakistan. This issue may be explored in a future Model PSC.

9.4 POTENTIAL BENEFITS FROM AN AMENDED PSC

Making necessary revisions to the PSC will ultimately make petroleum operations in Bangladesh far more attractive. Benefits from a revised PSC could be:

- i. Facilitate administration of PSCs
- ii. Reduce potential for fraud
- iii. Reduce bureaucracy and regulatory uncertainty for IOCs

Along with these benefits it is essential to run a Discounted Cash Flow Analysis to determine if investing in Bangladesh is attractive to IOC's. Without this analysis it is not readily identifiable whether seemingly competitive terms in regional PSC's will be attractive enough to draw bids due to poor gas pricing in Bangladesh.

10 IMPLEMENTATION SUGGESTIONS

10.1 EMRD

- (i) Government (EMRD) should make it a policy to publish the approved Model PSC in official gazette as per the requirement of the Bangladesh Petroleum Act, 1974 (Article 11). It has been mentioned in Article 11 of the Petroleum Act that the Government may, by notification in the official Gazette, make rules for carrying out the purposes of this Act. Approved Model PSCs are rules for operation of the Petroleum Act. Uploading of approved Model PSC 2008 on Petrobangla's website does not satisfy the legal requirement of the Petroleum Act (Article 11). It is obligatory for EMRD to publish Model PSCs in the official gazette.
- (ii) Starting from exploration step, supply of natural gas and petroleum to the transmission/ transportation system is termed as upstream activities. As per Petroleum Act, Petrobangla has been carrying the responsibility of management of PSCs on behalf of the government (EMRD).

As per BOGMC Ordinance, 1985 Petrobangla has been carrying the responsibilities of exploration and production of oil and gas through different production companies and supplying of produce gas up to transmission level. Wellhead prices of gas produced by the IOCs are decided in their respective PSCs. Wellhead price of natural gas produced by the three national gas production companies (BAPEX, BGFCL, SGFL) by the government.

In Pakistan, the Oil and Gas Regulatory Authority (OGRA) acts as both an upstream and downstream regulator. As upstream regulator the authority annually documents the wellhead price of gas of all the producing fields owned by National Oil Companies (NOCs) and International Oil Companies (IOCs) in the gazette. There is wide variation of the wellhead price of gas produced in different fields due to variation of the contractual parameters. As per government's policy directive OGRA also documents in the gazette a single Weighted Average Cost of Gas (WACOG) annually. This is subsequently used by the two vertically integrated gas transmission and distribution companies (Sui Southern Gas Company Ltd. and Sui Northern Gas

Pipelines Ltd.) for computation of revenue requirement. OGRA as the downstream regulator assesses various parameters used by the two utilities for computation of revenue requirement and consumers price of gas.

In Bangladesh as per BERC Act 2003, the commission is responsible for fixing the consumers gas tariffs. Consumer gas tariffs consist of production/purchase costs of gas plus transmission and distribution tariffs (computed by BERC) and government taxes fixed by NBR as per law. BERC has been designated as the Downstream Regulator. During a recent hearing at BERC, the Commission opined that there is no legal basis to call Petrobangla as the upstream regulator of natural gas.

Government (EMRD) should declare a regulator for the upstream activities and assign them with the responsibility of notifying one weighted average wellhead price for national gas and one weighted average wellhead price for IOC's gas and publish them in the official gazette. As per the Finance Act: there is SD & VAT on national gas and no SD & VAT on the gas produced by the IOCs. This is why in Bangladesh it will be necessary to notify two values of the average wellhead price of gas. In the subsequent stage these two values of average wellhead price of gas can be used for computation of revenue requirements by the gas transmission and distribution companies; which will be assessed by the downstream regulator, BERC. This decision will facilitate in fixing consumers level tariffs of natural gas in a transparent manner, which it is now lacking.

(iii) EMRD should notify the responsibilities of Petrobangla and HCU with reference to the management of IOCs' activities by assessing their respective capabilities.

(iv) Sometimes it is suggested that as Petrobangla is involved with exploration and production of oil and gas (through its companies), there may be conflict of interest between Petrobangla and the IOCs. Three national gas production companies (BAPEX, BGFCL, SGFL) work as independent companies and governed by their respective management board. The government (EMRD) has assigned different gas fields to the three national gas production companies; therefore, there is at least a possibility for Petrobangla to be in direct conflict with the IOCs. As

per government decision, Petrobangla has fixed a very nominal wellhead price of gas for the three national gas production companies arbitrarily²². Moreover, gas produced by national gas production companies is required to pay government taxes²³ @ 122.22% of the price of gas. Because of these decisions national gas production companies are in difficulties with the IOCs.

It has been discussed that with a large number of professionals²⁴ having long experience of working in gas sector, Petrobangla is finding it difficult to monitor the activities of the IOCs properly.

In India, Pakistan and Thailand there are separate directorates of Oil and Gas directly under the ministry to administer the IOCs activities. These organizations have been carrying out these activities for a long time. There is no parallel organization in Bangladesh.

Unless the HCU is institutionalized by recruiting of permanent staff it may not be able to fulfill the assigned responsibilities.

(v) It has been reported during first ever tariff order for consumer level gas tariff of BERC, that all the Petrobangla companies involved with production, transmission and distribution of natural gas are operating profitably. On the other hand, Petrobangla is having deficits by acting as the single buyer of gas purchased from the IOCs.

The Government (EMRD) should pay serious attention to solve Petrobangla's deficit problem by introducing transparent methods for the computation of gas tariffs and the distribution of gas revenue. It should also allow BERC to determine the tariff for natural gas delivered to consumers according to an economic rationale.

²² The wellhead price of gas produced by BAPLEX is Tk. 25/mcf and by BGFCL and SGFL is Tk. 7/mcf

²³ Supplementary Duty and Value Added Tax

²⁴ In total 559 posts in Petrobangla

10.2 EMRD/PETROBANGLA

(i) Professionals working in Petrobangla and the decision makers involved with the management of the energy sector have become familiar with the management of PSC type petroleum agreements. In this context it may not be acceptable to re-introduce Concession Type Agreements.

(ii) Petrobangla has achieved notable success by saving US\$ 80 million through the audit resolution process with Cairn in Block 16. By winning Chevron's arbitration case at ICSID, Petrobangla saved payment of US\$ 240 million to Chevron during the life cycle of the three Blocks (12, 13 & 14).

Petrobangla being a state-owned enterprise meets its operational expenses from the service charge provided by the operating companies. It does not get any incentive for better financial performance. Different companies under Petrobangla are governed by the Company's Act 1994. At present as per Labor Law 2006, employees working in those Petrobangla companies get a bonus based on 5% of the annual profit of the respective companies. The government should consider giving a financial incentive to Petrobangla employees similar to the employees of the companies in recognition of their good work.

10.3 PETROBANGLA

(i) Revision of the Model PSC should be considered by Petrobangla on a continuing basis. For the purpose Petrobangla should form a standing committee under the convenorship of the Director (PSC) for revision of Model PSC. The standing committee should periodically review the experiences of monitoring existing PSCs and consider corrective measures accordingly for future revision.

(ii) Realign the directorates within Petrobangla to ensure that all company review teams have adequate expertise to review projects. For instance all teams should have technical, financial, legal and operational experts.

- (iii) Petrobangla should install standard software used in Petroleum Industries for monitoring and financial management of the PSCs relevant personnel should be trained to handle the software system affectively.
- (iv) Petrobangla should consider recruitment of professionals on a regular basis.
- (v) Petrobangla should consider organizing trainings, workshops in order to develop capable manpower for future management of the PSCs.
- (vi) Petrobangla should consider organizing seminars in order to develop human resources for future management of the PSCs and to create awareness about PSC activities.

10.4 HCU

Necessary actions should be taken to recruit approved staffs of HCU urgently for strengthening its capabilities.

11 CONCLUSIONS

11.1 CURRENT SITUATION

The current hydrocarbon and PSC situation in Bangladesh may be summarized in terms of a SWOT analysis:

Strengths

- Gas production increased from 392 BCF in 2002 to 654 BCF in 2009
- There have been 4 rounds of PSC awards
- Niko and Bapex entered into a JVA
- 4 IOCs are currently operating in Bangladesh
- Petrobangla companies produced almost half of country's gas supply in April 2010
- Petrobangla successfully defended an arbitration case concerning gas tariffs worth about \$240 million, that was filed by Chevron's predecessor company, Unocal
- Petrobangla audits of Cairn and Chevron reduced recoverable costs by \$60 million and \$20 million respectively

Weaknesses

- There are long delays in finalizing PSCs
- Petrobangla incurs financial losses, since it pays more for gas purchases than it receives from gas sales. The Government pays a subsidy to Petrobangla to compensate for the losses
- Petrobangla makes interest payments to IOCs because it is unable to make timely payments for natural gas purchases
- Petrobangla is not current in its auditing of IOC PSCs. It has audited IOC accounts through 2007.
- Petrobangla is hindered by the lack of experienced professionals.
- Petrobangla spent 4 years in the Chevron arbitration proceedings.
- Petrobangla may have a conflict of interest with IOC's due to the exploration and production activities performed by its subsidiary companies.

Opportunities

- Attract IOCs to explore for and develop hydrocarbons in Bangladesh
- Improve the technical capabilities of Petrobangla and the HCU
- Petrobangla may consider making investments outside Bangladesh

- Streamline the current activities and bureaucracy related to monitoring and supervision of PSCs
- Reduce delays between the announcement of successful bids and signing of PSCs
- Develop a discounted cash flow analysis to determine whether the PSC is attractive to potential IOC's.

Threats

- Gas reserves in Bangladesh are dwindling, which may result in curtailed supplies
- IOCs might find it unattractive to do more business in Bangladesh due to
 - Gas prone area, rather than oil
 - Delays in awarding PSCs
 - Propensity for litigation/arbitration
 - Severe penalties for environmental violations

Petrobangla

The following activities might be considered at Petrobangla in order to improve PSC monitoring and supervision:

- Establish a standing committee to regularly consider revisions to the Model PSC
- Realign the directorates within Petrobangla to ensure that all company review teams have adequate expertise to review projects. For instance all teams should have technical, financial, legal and operational experts.
- Establish whether employee shortages are hampering performance, and if so recruit and train accordingly
- Organize trainings (foreign and local) and workshops about technical issues, PSCs, and management skills to develop the capabilities of Petrobangla staff, and to prepare them for future management roles

HCU

It is often difficult to implement changes in policy or regulations in any context. To improve the monitoring of petroleum activities in Bangladesh, the HCU must use the current structure as

much as is possible. Since many of the functions of the EMRD are broad, the HCU should look primarily to the following provisions to begin its effort to facilitate change:

1. EMRD's general powers to oversee policies relating to the petroleum, natural gas and mineral resources.
2. EMRD's general power to regulate and develop the petroleum industry in Bangladesh.
3. EMRD's authority to supervise the execution of the list of legislation and statutes for the petroleum sector.

Acting through the authority of EMRD to request general responsibilities will lay the groundwork for making specific changes. For example if the HCU decides to increase its presence in facilitating the approval, review and monitoring process for pending PSCs, it must have EMRD support. With this support, the HCU and EMRD can meet with Petrobangla to determine how the proposed changes will best assist Petrobangla in both the short term and the long term. Ideally, all parties will agree, and an interagency memorandum of understanding can be signed. It is important that all three agencies sign on to such an agreement, as it will prevent duplicative efforts that could slow down the system.

The efforts by the HCU and the proposed task force should focus on areas where Petrobangla can benefit from assistance from the HCU. Although perhaps politically sensitive, the recent experience of Pakistan may provide useful guidance for sharing responsibilities between Petrobangla and the HCU²⁵. Their experience suggests the following:

1. Of utmost importance is the creation of a petroleum prospects database.
2. Of secondary importance is the increased involvement of the HCU in the pre-contract signing administrative process. HCU should relieve the significant burden placed on Petrobangla in the approval process, but not duplicate their efforts. Focus should be placed on shortening the time between announcement of the successful bids and approval of PSCs.

²⁵ This is based on discussions with Arif Muhammad, a former employee of the national oil company of Pakistan, who was active in reforming Pakistan's oil and gas sector.

3. Efforts should be made in the long term to increase the HCU's general regulatory authority, so that Petrobangla can transition into a company that actively invests in Bangladesh and also makes acquisitions outside Bangladesh. This model will make Petrobangla a premier international oil company, and at the same time ensure increased supply after domestic fields run dry.

With those recommendations in mind the HCU should focus on relationship building with Petrobangla, and identifying its core responsibilities. This report places the responsibilities of research, promotion, exploration, development, surveying, petroleum business formation, petroleum business management, supervision and monitoring in the hands of Petrobangla. With those core responsibilities identified, it seems to make sense that the core responsibility of Petrobangla is to act as the primary petroleum business facilitator in Bangladesh. While monitoring and supervision and regulatory-like language are included in the Petroleum Act, such language seems to be somewhat secondary to Petrobangla's responsibility to run an efficient business. Therefore, the HCU should openly encourage Petrobangla to return to a structure that focuses on its core responsibility as the primary petroleum business in Bangladesh, and to alleviate some of its burden by agreeing to let the HCU handle more of the PSC monitoring and supervision. The following benefits would likely result:

1. Decreased institutional stress on Petrobangla to handle all activities, even those seemingly assigned to the government.
2. Additional time for Petrobangla to work with companies interested in Bangladesh, thus increasing the possibility of additional supply.
3. Ability of Petrobangla to build its legitimacy as an international oil company. Petrobangla is far more likely to be successful in bidding in other countries if it is not perceived as an arm of the state. Statoil, Sonatrach, and Petrobras have been extremely successful for this reason. Given Petrobangla's expertise in development, there is no reason that it cannot establish itself outside Bangladesh.
4. Remedy the poor ranking in industry investment appeal surveys. Bangladesh currently ranks in the bottom 5% in investment appeal in a broad range of categories. Adding responsibility to the HCU would be seen as a positive step towards aligning their system with international standards. The process took 15 years to perfect in

Pakistan, but its rank on investment appeal indexes has drastically increased, and "interested" IOCs report that Pakistani systems seem easy to work with.

5. Finally, allowing the HCU to alleviate the pre-contract award administrative burdens will drastically decrease the time it takes to approve PSCs. Since Petrobangla has a currently large workload with current companies, HCU can commit more of its time to contract approval. The current PSC approval time is approximately 3 years according to in country consultants, a time frame that is considered very long by international standards. It is interesting to compare Bangladesh and Angola, a similarly situated petroleum state trying to attract investors. By the time a contract is approved in Bangladesh, an IOC working in Angola would likely have completed its first and second exploration work obligations. This is something that can be easily remedied in the short term, and would not infringe upon any of Petrobangla's core responsibilities.

We recommend that HCU should have the following core responsibilities:

1. Assist in the negotiation of PSCs and finalizing PSCs before signature.
2. Participate in policy discussions and suggest changes, along with conducting third party studies to that end.
3. Monitor and supervise PSCs by participation in JRCs and JMCs, and report its findings to the EMRD. It is then EMRD's responsibility to suggest any changes or action.
4. Data Management, including especially the maintenance of the national database of petroleum prospects.
5. Manage the drafting and enforcement of upstream oil & gas regulation.

There is an important distinction between active and passive roles that the HCU should understand. As an active player the HCU should be involved in facilitating pre-contract signature administration, speed up the process or approval, help with promotion and assist with drafting upstream oil & gas regulations. As a passive player HCU should observe post-signature PSC activities and make reports to the EMRD for possible enforcement. These observations will

ultimately include full monitoring and supervision of all PSC activities in the regulatory context. The HCU should defer to the EMRD for decisions concerning possible implementation.

Committee on Drafting Upstream Oil & Gas Regulations

We recommend that a committee be established with representatives from the EMRD, Petrobangla, the HCU and other impacted institutions to accomplish two tasks:

- Develop a monitoring/supervisory checklist with an assignment of responsibilities, using Appendix C of this report as a starting point.
- Draft regulations for the upstream oil & gas industry in Bangladesh.

To achieve cooperation between the various agencies in Bangladesh, it is our proposal to have an inter-agency drafting committee facilitate communication and create a memorandum of understanding on how HCU, EMRD and Petrobangla will work together. Such a committee has been used in other contexts for resolving issues as complicated as border disputes or as simple as shared responsibilities between two friendly agencies. The following members should be present at the proposed drafting committee:

1. Director General of the HCU.
2. Director PSC Petrobangla.
3. Director Finance Petrobangla.
4. Head Ministry Official of the EMRD.

Participation of these parties is essential to the success of this mediation/committee because they represent the full scope of stakeholders in the current regulatory structure of the oil and gas business in Bangladesh. They may decide to include others also. The following initial steps are recommended for the drafting committee²⁶:

- a. Meeting hosted by HCU.
- b. Meeting hosted by EMRD.
- c. Meeting hosted by Petrobangla.

²⁶ This is based on consultation with the Federal Mediation and Conciliation Service (FMCS), a renowned mediation lawyer at Dewey LeBoeuf, and a renowned mediation lawyer at Crowell Moring.

- d. Determine Division of Responsibilities.
- e. Kick off meeting to determine scope of regulations.
- f. Draft Upstream Oil & Regulations.
- g. Review of Draft Upstream Oil & Gas Regulations.
- h. Finalize Upstream Oil & Gas Regulations.

The above schedule for meetings related to shared responsibilities and draft regulations are merely a mechanism to get the important parties to the table. Each meeting should be held in intervals of no less than 3 months, so the issue of writing upstream regulations is always fresh. At meeting e., an international consultant should be present who then writes the regulations over a 3-6 month period for review at meeting g. A similar process was funded by the ADB in Afghanistan, and the Afghans successfully passed legislation including the upstream oil, gas and mining regulations drafted. The Gustavson team worked directly on that project.

11.2 SUGGESTED FUTURE PROJECTS BASED ON RECOMMENDATIONS

To sum up the findings above, the following projects would help Bangladesh move towards what is suggested based on both international and regional competition. The projects would take practical action rather than observational reporting, and the end result would be a backbone for regulatory administration and a stronger understanding of economic models to aid future block negotiations. The suggested projects include:

- 1) Draft Upstream Oil & Gas Regulations- International and Local Team
- 2) Construct an Economic Model of the PSC to determine sensitivities.
- 3) Set up a facilitated rulemaking committee, directed by international consultants experienced in facilitating the transition into a regulatory structure.

Additional recommendations are summarized in **Error! Reference source not found..**

Table 9 Summary of Recommendations

| # | RECOMMENDATION | JUSTIFICATION |
|------------------|---|--|
| IMPORTANT | | |
| 1 | Prepare a checklist of PSC monitoring and supervising activities, and determine who is responsible and when the activities must be completed. | A checklist will ensure the timely execution of monitoring and supervision activities. This checklist should be prepared with reference to the suggestions in appendix C of this report. |
| 2 | Petrobangla should document its belief that PSC monitoring is hindered by lack of staff. | There is opportunity to realize financial gains through appropriate monitoring activity. If additional staff is required, then these gains can be realized. |
| 3 | The Government needs a Discounted Cash Flow Analysis Tool to determine if investing in Bangladesh is attractive to IOCs | Without conducting this analysis it is not readily identifiable whether the Bangladesh PSC terms will be attractive enough to draw bids for future bid rounds. |
| 4 | The Government should maintain a single contact point for each IOC. The contact point should then delegate monitoring responsibilities to deputies representing each department under the PSC Directorate. | The single contact person can delegate specific tasks to departments with appropriate expertise. |
| DESIRABLE | | |
| 5 | The government/Petrobangla should not insist on having a controlling position on the Joint Management Committee (JMC) and Joint Review Committee (JRC). | Allowing the Contractor to maintain control of these committees will encourage investment in Bangladesh. |
| 6 | Improve the understanding of development plans for each field and effectively monitor implementation. Petrobangla should consider hiring outside consulting and engineering firms to review the development plans, and train Petrobangla/HCU personnel. | Contractors expect Government intervention in this phase, so Petrobangla should scrutinize this phase carefully. The JMC will benefit by having Petrobangla/HCU employees who have a detailed understanding of the development plans. |
| 7 | Streamline the PSC reporting requirements and standardize summary documents for better project review. | Streamlining the reporting requirements will make monitoring less time consuming. |
| 8 | Instead of an exploration work program system based on a certain level of required interpretation and the drilling of one exploration well, Bangladesh should consider adopting a system where fulfillment of the program is measured in Units. | Work units make the program more flexible. Requiring the drilling of an exploratory well in every block may impose a requirement that is not necessary, and may discourage investment. |
| 9 | Consider revising relinquishment requirements to match internationally accepted standards. | 25 % of the original contract area is to be relinquished at the end of the 4 th contract year. An additional 25% must be relinquished by the end of the 7 th contract year. Decreasing the required relinquishment to 20% with an option to retain all acreage on approval is more attractive to IOCs. |
| 10 | Consider expanding the bid round system to include a general invitation to bid on all open blocks. In the event that an unsolicited bid is received, that specific block can be offered for competitive bidding to see if other companies are interested. | Opening a block that has received an unsolicited bid to other firms ensures that the price received for the block is fair. |
| 11 | Bangladesh should review income tax payments from IOCs to ensure that actual payments are accurate. | Many companies will use technical accounting methods to avoid paying income tax. |

| # | RECOMMENDATION | JUSTIFICATION |
|----|--|--|
| 12 | Based on domestic supply concerns, all associated gas should be delivered to market rather than re-injected, <i>unless</i> the producer can show a demonstrated benefit to gas re-injection. | Associated gas going to market instead of being re-injected could alleviate some domestic supply concerns. |
| 13 | Petrobangla and the Government should have an aggressive incentive program related to bringing non-associated gas to market. Long time frames for gas utilization studies should be allowed, approximately 4-10 years. | This recommendation would alleviate domestic gas supply concerns. |
| 14 | Petrobangla should require that some of its employees be implanted in Contractor's offices to learn the process of project development and execution. | Many Petrobangla employees lack practical experience. Petrobangla employees can gain practical experience by working in Contractor's offices |
| 15 | Each meeting of the JRC or JMC should have a constructive and conclusive result. Any unresolved issues should immediately be referred to the Secretary, Ministry of Energy and Mineral Resources. | It takes a long time to approve and monitor PSCs in Bangladesh. Meetings must have a conclusive result to minimize delays associated with pending/unresolved issues. |
| 16 | Petrobangla, HCU and IOCs should cooperate and work in an open-minded and transparent manner. | Furthering a healthy working relationship will instill trust between both parties and make operations run more smoothly. |
| 17 | Use computer models to effectively monitor and simulate the operational and financial performance of PSC contractors. | Many financial gains may be realized by more accurate monitoring through a computer based monitoring platform. |
| 18 | Establish a computerized PSC data bank, as recommended several years ago. | A computerized data bank will enable better comparisons between proposed and previous projects. |
| 19 | All Petrobangla offices should have internet access. | Internet access is essential for accessing current information. |
| 20 | Computer based file and data sharing over the internet or through a WAN linking PSC contractors and the PSC Directorate would be a great breakthrough. | This recommendation will facilitate clear communication between Petrobangla and Contractors. |
| 21 | Petrobangla/HCU should install standard software used in Petroleum Industries. Relevant personnel should be trained to handle the software effectively | This is essential for monitoring and financial management of the PSCs. |

APPENDIX A- GAS PRICE SUBSIDY

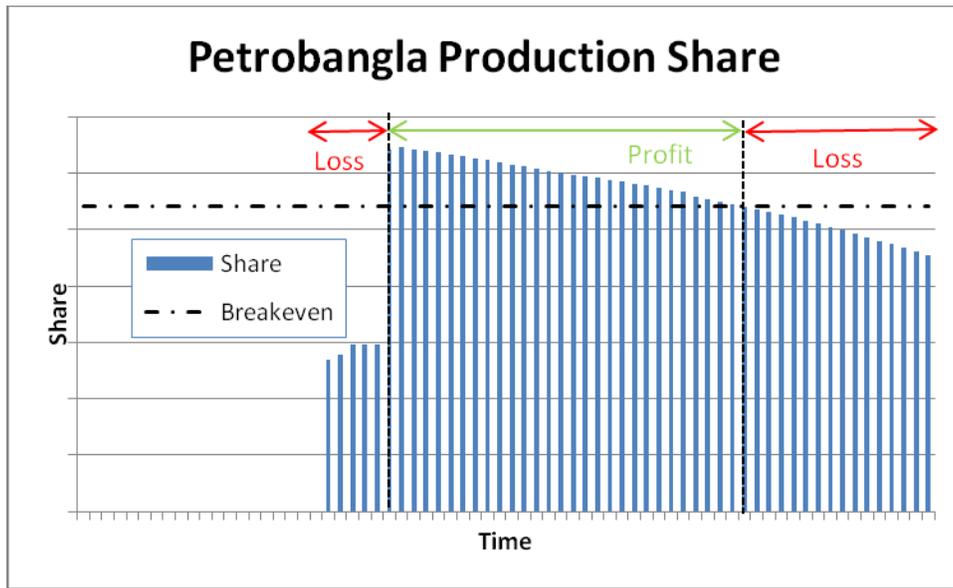
All gas produced in Bangladesh must be offered for sale to Petrobangla. There are two conflicting forces that cause Petrobangla to lose money as a result of operations. The price that Petrobangla pays for gas must be high enough that oil companies have an incentive to explore for and develop gas in the country. On the other hand, the delivered price of gas is kept low so that gas customers do not endure financial hardship. Consequently, Petrobangla pays a higher price for its gas purchases from IOCs than it receives for sale of its gas.

In the case of a production sharing contract, Petrobangla does not pay for all of the gas production, since it is entitled to receive a share of production without payment in the form of profit gas. This means that Petrobangla's overall cost of gas acquisition from a given PSC becomes lower when its share of production (from profit gas) is higher. There is a "break-even" share of production, above which Petrobangla receives enough revenue from gas sales to cover the total cost of acquiring and transporting gas, thereby earning an operating profit. If its production share is below this level, then it will incur an operating loss. The breakeven share is determined by the price received from gas sales, the cost of transporting gas, and the price paid to the IOC for its share of profit gas and gas to which it is entitled for cost recovery.

An example of how Petrobangla's production share varies over time is shown in Figure 1. The figure describes the situation of a particular PSC. Petrobangla's share is low during initial production, because the contractor receives a significant amount of cost recovery gas as reimbursement for exploration and development capital costs. Petrobangla's share increases immediately after these costs have been recovered. However, its share then declines as field production falls, which leads to gradually increasing shares of production be allocated to cover operating costs.

The implication of this time profile of Petrobangla's production share is that it may incur an operating loss during the early production from a PSC, and also late in the life of a PSC, while earning an operating profit during the middle period of production, as shown on the figure.

Figure 1 Example of Petrobangla PSC production share



The government of Bangladesh has created a price deficit fund to cover Petrobangla's losses. It directs funds to Petrobangla, as discussed in the main body of this report. In effect, the price deficit fund is a mechanism for subsidizing the price paid by end-users of gas at a level that is not high enough to cover the actual exploration, development, production and transportation costs of that gas.

Petrobangla has been suffering financial crises in managing IOCs gas as a single buyer due to the absence of a transparent method of computation of gas tariffs and distribution of gas revenues among the stakeholders (e.g. Petrobangla as the buyer of IOCs gas, national gas production companies for the price of gas supplied by them, transmission and distribution companies for their services, and National Board of Revenue for government taxes). Bangladesh Energy Regulatory Commission (BERC) has started fixing consumers tariffs since 2008. Petrobangla has not yet been pro-active to act as the up-stream regulator to fix the average wellhead price of gas. These issues are quite complicated and needs a separate study similar to the present report. Petrobangla has already initiate to implement such a study.

APPENDIX B- DETAILS OF CHEVRON ARBITRATION

Unocal Bangladesh filed an arbitration request at the International Center for Settlement of Investment Disputes (ICSID) against the government of Bangladesh on March 17, 2006 (ICSID Case No. ARB/06/10). The claim was US\$ 15.7 million at the time of the application. By 2009, the claim amount was reported to have increased to about US\$ 40 million. The life-time claim for all the three GPSAs have been reported as US\$ 240 million. On the basis of hearing both the parties, the International Center for Settlement of Investment Disputes (ICSID) Arbitration Tribunal has unanimously rejected the claim of the Claimants (Chevron companies) on the merits by its award dated May17, 2010. Salient points of the arbitration case are presented below.

On January 11, 1995 Occidental²⁷ signed two PSCs with Petrobangla for three Blocks: 12 and 13/14. Article 14.7.2 of both of the PSCs contains the following language: “Contractor will build and operate any required spur line from the fields from which it is producing Natural Gas in the Contract Area to the nearest agreed upon point of the transmission company’s trunk Pipeline, which point shall become the Measurement Point.”

Article 14.7.3 of both of the PSCs says that “The transmission company shall be entitled to receive four percent (4%) of Contractor’s total Natural Gas measured at the Measurement Point during a Calendar Year under a delivery schedule to be agreed upon between Contractor and the transmission company to cover tariffs and losses incurred when Contractor uses a pipeline operated by the transmission company to supply Natural Gas to the Bangladesh domestic market.”

On October 30, 1996 Occidental (Unocal/Chevron) the seller, signed a Gas Purchase and Sale Agreement (GPSA) with Petrobangla (buyer) for the supply of gas from the Jalalabad Gas field located in Block 12. Article 4.17 of the GPSA states that “As described in ARTICLE-14.7.3 of the PSC, if Buyer or any of its entity under it is the transmission company, Buyer shall be

²⁷ The ownership was subsequently taken over by Unocal/Chevron.

entitled to receive four percent (4%) of Seller's total volume of Gas (cost recovery gas + profit gas) measured at the Measurement Point during a Contract year under a delivery schedule pursuant to the ARTICLE-4 on a Calendar Month basis to cover Tariffs and losses incurred when Seller uses Buyer's Trunk Pipelines and/or any other pipeline and associated facilities not built by Seller and owned and operated by Buyer to supply Gas to the Bangladesh domestic market."

Production in the Jalalabad Gas Field and corresponding sales of gas to Petrobangla started in February 1999. The gas was transported to the domestic market by a pipeline of Petrobangla's affiliate, GTCL. The first monthly invoice, for February 1999, was sent to Petrobangla on March 9, 1999.

Petrobangla deducted a 4% tariff according to Article 4.7 of the Jalalabad GPSA, and made a payment for the adjusted amount. The seller (Occidental) objected to Petrobangla's decision, which was the commencement of a dispute between Occidental (Unocal/Chevron) and Petrobangla.

Unocal was also party to disputes concerning the Moulavibazar and Bibiyana gas fields. On October 20, 2003, a Gas Purchase and Sale Agreement (GPSA) was signed by the Unocal (seller) with Petrobangla (buyer) for the supply of gas from Moulavibazar Gas Field located in Block 14. On November 8, 2004 a Gas Purchase and Sale Agreement (GPSA) was signed by Chevron (seller) with Petrobangla (buyer) for the supply of gas from the Bibiyana Gas Field located in Block 12. The same issue with the Jalalabad Gas Field gas supply was disputed for gas supplied from the Moulavibazar and Bibiyana Gas Fields. The JMCs were unable to resolve these disputes.

After hearing both the parties, the ICSID Arbitration Tribunal unanimously rejected the claim of the Claimants (Chevron companies) on the merits in determination of an award dated May 17, 2010.

APPENDIX C- SUGGESTIONS FOR MONITORING OF PSCs BASED ON 2008 MODEL

This appendix lists the monitoring opportunities that are available according to the 2008 Model PSC, and makes preliminary suggestions about which agency should undertake particular monitoring tasks. It is recommended that a committee be constituted to review this list and agree on the monitoring responsibilities. Table 10 of the Summary Report, which was prepared as part of this project, also provides some suggestions about the distribution of responsibilities between Petrobangla and HCU. The institutional capabilities of both the HCU and Petrobangla should be kept in mind at the time of assigning responsibilities.

Regardless of who is responsible for conducting various monitoring activities, it is important that a simple and clear line of communication be maintained with the oil and gas companies. It is suggested that there be a single primary point of contact for PSC monitoring from the Bangladesh side.

| PSC Article | What is supposed to happen according to the PSC? | How will it be verified? | Who will verify it? |
|--------------------|--|---|----------------------------|
| 2.4 | Contractor shall employ state of the art scientific methods, procedures, technologies and equipment generally accepted in the Petroleum industry. | Contractor will provide regular (quarterly/annual?) reports Petrobangla participates in JMC and JRC | PB |
| 2.7 Emergency | Contractor shall notify Petrobangla of the emergency within 72 hours and take all actions deemed proper or advisable to protect life, assets, equipment, interest of Petrobangla and Contractor and the environment. Contractor may recover costs only if they notify Petrobangla within 30 days of actions taken, and can prove to the satisfaction of Petrobangla that such actions and costs were reasonably warranted | Contractor must notify Petrobangla. Petrobangla must investigate the emergency site within ??? days of being notified, and also assess whether the Contractor's response actions and costs were reasonably warranted | PB |
| 2.7 Non-Emergency | Contractor shall conduct Petroleum Operations in accordance with approved Work Program and Budget (WPB) | Contractor must submit a WPB , and regular reports of Petroleum Operations explaining any variances from the WPB | HCU/PB |
| 3.1 | Contractor must operate within Contract Area | PB must monitor location of operations and compare with contract area | PB |

| PSC Article | What is supposed to happen according to the PSC? | How will it be verified? | Who will verify it? |
|--------------------|---|---|----------------------------|
| 3.2 | Contractor has no rights to surface area, sea-bed, sub-soil, or any natural resources or aquatic resources | PB must monitor to ensure no use of such resources | PB |
| 4 | Contract term | PB must establish schedule for monitoring contract term | PB |
| 5.1 | Contractor must relinquish certain acreage at specified times | PB must ensure relinquishment according to article | PB |
| 5.2 | Contractor must relinquish the rights to conduct Petroleum Operations in a Production Area, if normal production has ceased for more than 180 consecutive days, unless there is Force Majeure | Petroleum Operations must be monitored every ??? days. WHAT FORM OF MONITORING? CONTRACTOR REPORTS? SITE VISITS? | HCU/PB |
| 5.3 | Contractor may voluntarily relinquish part or all of the Contract Area. | Contractor will notify HCU or Petrobangla. WHICH ONE? | HCU/PB |
| 5.4 | If Contractor desires to relinquish all of the Contract Area, then it must pay Petrobangla for any unfilled parts of the minimum Exploration Program, specified in PSC article 6. | Compare actual work undertaken with work specified in minimum Exploration Program. | PB |
| 5.5 | Contractor must give 90 days' notice of proposed relinquishment | PB must monitor contract area for relinquishment | PB |
| 5.6 | Relinquished acreage must conform to certain shape and size requirements | HCU or PB must ensure compliance | HCU/PB |
| 5.7 | Prior to relinquishment of any area, Contractor must (a) clean-up the area, (b) leave any exploratory or appraisal wells technically capable of production in a condition suitable for later testing and/or recompletion, (c) take action necessary to prevent hazards to the environment, human life, or property. | HCU or PB must ensure compliance | HCU/PB |
| 6.1 | Contractor must commence Exploration Operations not later than 60 days after the Effective Date, and continue Exploration diligently for the duration of the Exploration Period and any extensions | HCU or PB must ensure compliance | HCU/PB |
| 6.2 | Contractor must carry out at least the agreed Minimum Exploration Work Program during the Initial Exploration Period. | HCU or PB must ensure compliance | HCU/PB |
| 6.3 | Contractor must carry out at least the agreed Minimum Exploration Work Program during the first extension of the Exploration Period. | HCU or PB must ensure compliance | HCU/PB |
| 6.4 | Contractor must carry out at least the agreed Minimum Exploration Work Program during the second extension of the Exploration Period. | HCU or PB must ensure compliance | HCU/PB |
| 6.5 | Contractor must use best endeavors to achieve the objectives specified in an extension according to PSC article 4.5 | HCU or PB must ensure compliance | HCU/PB |

| PSC Article | What is supposed to happen according to the PSC? | How will it be verified? | Who will verify it? |
|--------------------|---|---|----------------------------|
| 6.6 | NA | | NA |
| 6.7 | Contractor must present a comprehensive technical evaluation of the petroleum potential of the Contract Area to Petrobangla within 90 days after completion of the Minimum Exploration Program under 6.2, 6.3, and 6.4 | Contractor will make a presentation to Petrobangla | PB |
| 6.8a | A Joint Review Committee (JRC) must be established by the Government and the Contractor promptly after the effective date. | HCU or PB must ensure establishment of JRC promptly after effective date | HCU/PB |
| 6.8b | Contractor must submit proposed Work Programs and Budgets (WPB) to the JRC within 60 days after the Effective Date and at least 90 days prior to each subsequent Contract Year | | JRC |
| 6.8c | The JRC must offer an opinion about the WPB within 45 days of receipt | | JRC |
| 6.9 | The Contractor must make any revisions requested by the JRC within 15 days and submit the WPB to Petrobangla for approval | Petrobangla (PB) must ensure receipt of the WPB within 15 days. (PB has members on the JRC, so they can verify the timing.) | PB |
| 6.10 | PB must respond to the Contractor within 45 days of receiving WPB. If PB requests changes, then Contractor and PB must agree within 30 days, or else Contractor can proceed with submitted WPB, as amended with agreed changes. | HCU/PB will monitor the schedule | HCU/PB |
| 6.11 | Contractor may make small changes to the WPB that do not generally alter the general objectives, after consultation with PB | HCU or PB must monitor actual work program and expenditures, and compare them with the WPB | HCU/PB |
| 6.12 | Upon expiration of any phase of the work program, the Contractor may either : (a) enter the next phase, or (b) terminate the contract upon payment of liquidated damages for unfulfilled Minimum Work Obligations | HCU or PB will monitor schedule and choices by Contractor. | HCU/PB |
| 7.1 & 7.2 | Contractor must provide PB with an irrevocable and unconditional bank guarantee securing Contractor's timely performance of the Mandatory Work Program and Minimum Exploration Program | PB must receive the bank guarantee | PB |
| 7.3 & 7.4 | Bank guarantee shall be reduced in accordance with schedule specified in this section | PB countersigns completion certificate prepared by Contractor | PB |
| 7.5 | Contractor shall pay PB the amount of the outstanding guarantee if it fails to perform in accordance with the Minimum Exploration Program in the Initial Exploration Program or any extension | PB must monitor the actual work undertaken and compare it to the Minimum Exploration Program | PB |
| 7.6 | The bank guarantee will not be affected by any changes in the structure of the issuing bank. | <i>Not sure if this is enforceable. What if bank goes bankrupt?</i> | NA |

| PSC Article | What is supposed to happen according to the PSC? | How will it be verified? | Who will verify it? |
|--------------------|---|--|----------------------------|
| 7.7 | Parent company of Contractor, or the Contractor itself must deliver a financial and performance guarantee to PB. | PB must ensure that they receive the guarantee. | PB |
| 8.1 | Contractor must notify PB immediately of any discovery made in an Exploratory Well, and must notify PB within 30 days about whether it proposes to undertake an Appraisal | PB must monitor activities during drilling of each Exploratory Well. (Alternatively, could rely on Contractor reports, but with occasional audits by PB.) | PB |
| 8.2 | Within 90 days of Contractor proposing to undertake an Appraisal, the Contractor must present an Appraisal Program to PB for approval. | PB will receive Appraisal Program from Contractor. PB must monitor schedule from Contractor proposal to receipt of Appraisal Program. | PB |
| 8.3 | PB may require Contractor to relinquish an area including the geological structure or feature containing the Discovery, if the Contractor does not notify Petrobangla that it proposes to undertake an Appraisal | PB must monitor activities during drilling of each Exploratory Well. (Alternatively, could rely on Contractor reports, but with occasional audits by PB.) | PB |
| 8.4 | Contractor must carry out the approved Appraisal Program within its specified timeframe | PB must track completion date of Appraisal Program | PB |
| 8.5 & 8.6 | Contractor must submit a comprehensive Evaluation Report to PB within 120 days after completion of the Appraisal Program | PB must track completion date of Appraisal Program, and ensure receipt of the Evaluation Report | PB |
| 8.7 | Contractor must submit a declaration of the type of discovery to Petrobangla with the Evaluation Report | PB must ensure receipt of the declaration of the discovery type with the Evaluation Report | PB |
| 8.8 | Contractor may do additional Exploration or Appraisal work outside the Appraisal area in order to determine the type of discovery | PB must evaluate the request from the Contractor, and agree on a schedule for determining the type of discovery | PB |
| 8.9 | If Contractor declares that Discovery is a Significant Discovery of Natural Gas, then it may retain the Appraisal Area for a term specified in this article | PB must make note of Contractor's Significant Gas Discovery declaration, and track the final date that Contractor is entitled to retain the Appraisal Area | PB |
| 8.10a | If Contractor declares a Commercial Discovery (according to 8.7) then it must submit a proposed Development Plan and Budget (conforming to 8.11) and a designation of the Production Area to PB together with the Evaluation Report | PB must ensure receipt of the Development Plan and Budget | PB |
| 8.10b | If PB has objections to the Development Plan and Budget, it must respond to Contractor within 60 days of having received it. | PB must respond to Contractor within 60 days of receipt of Development Plan and Budget, if it has objections | PB |

| PSC Article | What is supposed to happen according to the PSC? | How will it be verified? | Who will verify it? |
|--------------------|--|---|----------------------------|
| 8.10c | Upon approval of the Development Plan, the Contractor must develop the Discovery promptly and diligently, in accordance with international Petroleum Industry practice. | PB/HCU must monitor development of the discovery | HCU/PB |
| 8.11 | See 8.10a | | NA |
| 8.12 | If a Discovery extends beyond the Contract Area into another awarded block, all contractors in affected areas must propose a joint development plan, and submit it to PB | PB must check whether any Discovery extends beyond the Contract Area | PB |
| 8.13 | If a Discovery extends beyond the Contract Area into an open block, Contractor may use seismic and other technical means to define limits of the Discovery. Contractor and PB will endeavor to obtain a supplemental agreement with additional profit share for PB. Boundary modification must be submitted to PB for approval of the Government | PB must check whether any Discovery extends beyond the Contract Area, and if so, negotiate a supplemental agreement with Contractor | PB |
| 9 | Contractor has several rights, described in 9 sub-paragraphs | Contractor would bring any violations to the attention of PSC administrator | NA |
| 10.1 | Contractor must establish and register a subsidiary, or a branch or representative office in Bangladesh within 180 days of the Effective Date | Contractor should be required to provide evidence. HCU??? | HCU/PB |
| 10.2 | Contractor must designate a representative residing in Bangladesh who has full authority including receipt of notices | Must ensure receipt of evidence within 180 days Contractor should be required to provide evidence. HCU??? | HCU/PB |
| 10.3 | Contractor must provide all necessary funds for Petroleum Operations | WHY IS THIS PARAGRAPH NECESSARY? | NA |
| 10.4 | Contractor must conduct all operations diligently and safely in accordance with accepted international petroleum standards, to maximize ultimate recovery of Petroleum from the Contract Area | PB or HCU must review all planning and operations. MAXIMIZING RECOVERY MAY NOT BE ECONOMICAL | HCU/PB |
| 10.5 | Contractor must ensure that all materials, equipment, technology, and facilities comply with generally accepted engineering standards, and are kept in good working order | Require Contractor to submit reports to HCU/PB demonstrating compliance with accepted standards, and regular maintenance | HCU/PB |
| 10.6 | Contractor must pay due regard to conservation, safety of life, property, crops, fisheries, navigation, protection of the environment, prevention of pollution, and safety and health of personnel | Require Contractor to submit reports to HCU/PB demonstrating compliance | HCU/PB |
| 10.7 | Contractor must evaluate all reservoirs identified in logs of Exploratory or Appraisal wells | Contractor must submit evaluation and well logs to HCU or PB for review | HCU/PB |

| PSC Article | What is supposed to happen according to the PSC? | How will it be verified? | Who will verify it? |
|--------------------|---|--|----------------------------|
| 10.8 | Contractor must ensure that any Exploratory or Appraisal well that is technically capable of production can be re-entered for further testing and/or completion | Contractor must submit wellbore schematics for all exploratory and appraisal wells to HCU/PB. | HCU/PB |
| 10.9 | Contractor must submit all original geological, geophysical, drilling, production, core samples, and other data, together with analysis and interpretations to PB | PB must ensure receipt of this info | PB |
| 10.10 | Contractor must notify PB in advance and keep PB informed of all Petroleum Operations, as well as keep full records | PB will receive info from Contractor | PB |
| 10.11 | Contractor must submit daily drilling reports and monthly physical progress reports to PB | PB will receive info from Contractor | PB |
| 10.12a | Contractor must submit "Employee's/Labor Salary and Benefit Policy" and "Procurement Procedures" to PB within 90 days of Effective Date | PB must ensure receipt of this info | PB |
| 10.12b | Contractor must submit manuals, technical specifications, design criteria, design documents, and construction records relating to Petroleum Operations to PB within 30 days of completion | PB must ensure receipt of this info | PB |
| 10.13a | Except for the Exploration Period of offshore blocks, Contractor must (i) submit manpower requirements and org. chart to PB together with its yearly WPB, and (ii) obtain written approval from PB before filling positions with expatriate personnel | PB must ensure receipt of this info | PB |
| 10.13b | Contractor must develop and train Bangladeshi personnel, and submit annual development and training plans to PB | PB must ensure receipt of this info | PB |
| 10.13c | Contractor shall provide PB with details of all payments, benefits and privileges accorded to each classified category of personnel, together with the yearly WPB | PB must ensure receipt of this info | PB |
| 10.13d | Contractor shall adhere to hiring statistics for Bangladeshi nationals | Contractor must present reports with statistics about % of Bangladeshi nationals in their work force. | HCU/PB |
| 10.13e | Contractor must present a personnel plan to the JRC or JMC at least annually | JRC or JMC must ensure receipt of this info | JRC/JMC |
| 10.14 | Contractor must give priority to local sub-contractors | Contractor must submit purchasing information, including quotes received from multiple vendors to HCU/PB | HCU/PB |
| 10.15 | Contractor must give preference to locally manufactured items | Contractor must submit purchasing information, including quotes received from multiple vendors to HCU/PB | HCU/PB |

| PSC Article | What is supposed to happen according to the PSC? | How will it be verified? | Who will verify it? |
|--------------------|---|---|---|
| 10.16 | Contractor must be mindful of the rights and interests of the People's Republic of Bangladesh | | NA |
| 10.17 | Contractor must allow inspections by PB and/or the Government to occur | Inspections will not be prevented | PB/Government |
| 10.18 | At PB's request, Contractor must negotiate a technical assistance agreement with PB | Negotiations will occur | PB |
| 10.19 | Contractor shall obtain insurance coverage and furnish policies/certificates showing coverage to PB. Insurance must be with local insurance companies if required coverage is available. | Contractor delivers policy information and/or certificates to PB | PB |
| 10.20 | Contractor must require subcontractors to carry insurance against the risks described in 10.19 | Contractor must deliver a list of subcontractors and evidence of their insurance to PB | PB |
| 10.21 | Contractor must bear responsibility for loss or damage to third parties caused by wrongful or negligent acts, indemnifying PB and the Government from related claims and liabilities | PB must get evidence that they and Government are indemnified against claims and liabilities caused by wrongful or negligent acts by Contractor | PB |
| 10.22 | If the Contractor consists of more than one entity, the entities must designate one of them as Operator (subject to approval by PB). Contractor must provide PB with a copy of the Operating Agreement. | PB must be aware of multiple entities, must receive a copy of the Operating Agreement, and must be informed of change in Operator by the Contractor | PB |
| 10.23a | PB must approve any change of Operator Contractor must abide by all environmental laws and regulations. Contractor must conduct appropriate environmental assessment before undertaking Petroleum Operations, and incorporate assessment recommendations in its Work Program | Contractor must demonstrate compliance before commencement of Petroleum Operations. | HCU/PB/Ministry of Environment and Forest |
| 10.23b | Contractor must submit a disaster management plan to the Ministry of Environment and Forest prior to undertaking Petroleum Operations | Contractor submits plan to Ministry. Ministry informs operating permit granting agency. | Ministry of Environment and Forest |
| 10.23c | Contractor must restore and reclaim affected sites upon completion of activity | SHOULD REQUIRE A PERMIT BEFORE PETROLEUM OPERATIONS CAN COMMENCE HCU/PB conducts site visit upon completion of Contractor activity | HCU/PB |
| 10.24a | Contractor must use good and modern oil and gas field practices | Contractor and PB to consult | PB |
| 10.24b | Contractor must observe sound technical and engineering practices in producing and conserving petroleum deposits | Contractor and PB to consult | PB |
| 10.24c | Contractor must not conflict with international laws or conventions signed by Bangladesh | Contractor and PB to consult | PB |
| 10.24d | Contractor must take precautions to prevent petroleum spills or waste | Contractor and PB to consult | PB |

| PSC Article | What is supposed to happen according to the PSC? | How will it be verified? | Who will verify it? |
|--------------------|---|---|----------------------------|
| 10.24e | Contractor's operations must not interfere unjustifiably with navigation or fishing | Contractor and PB to consult | PB |
| 10.25 | PB and Contractor must consult regularly on good and modern petroleum practices | Regular consultation about petroleum practices between PB and Contractor | PB |
| 10.26 | Contractor must consult with PB about items in 10.24 | Consultation between PB and Contractor | PB |
| 10.27 | Contractor shall pay compensation and may not recover costs for damage caused by inefficient, careless or negligent activities | HOW TO DETERMINE NEGLIGENCE? | |
| 11.1 | PB and Government assist Contractor with various items | Contractor will notify PB in the event of non-compliance | NA |
| 11.2 | If requested, PB must assist Contractor to recruit local personnel | Contractor will notify HCU in the event of non-compliance | NA |
| 11.3 | If requested, PB will provide Contractor with data and samples, and assist with purchase of data from relevant Government departments | Contractor will notify HCU in the event of non-compliance | NA |
| 11.4 | If requested, PB will render assistance for the purpose of smooth implementation of the Contract | Contractor will notify HCU in the event of non-compliance | NA |
| 11.5 | Contractor must pay for expenses incurred by PB under Article 11 | PB will submit expenses to Contractor. | PB |
| | | HOW WILL CONTRACTOR KNOW IF EXPENSES ARE REASONABLE? | |
| 12 | JMC must be formed within 30 days after declaration of first Commercial Discovery | PB must track schedule | PB |
| 13.1 | Contractor must present a detailed WPB to the JMC within 60 days after PB's approval of a Development Plan | PB must verify receipt of the WPB | PB |
| 13.2 - 13.4 | Contractor must present a Production schedule and detailed WPB to the JMC no later than September 1 of each subsequent year | PB must verify receipt of the Production schedule and WPB | PB |
| 13.5 | Contractor may not carry out Petroleum Operations without written approval of WPB by PB. | PB must give written approval of WPBs. | HCU/PB |
| 13.6 | PB must give written approval of WPBs | PB/HCU must compare actual operations with WPB. HOW? | |
| 13.7 | Resolution procedure in the event that PB does not approve entire proposed WPB | No verification necessary. | NA |
| 13.8 | Procedure for changes to WPB | Contractor and PB will discuss | |
| 14 | Contractor must provide all funds for implementation of WPB | PB must compare actual work with WPB | PB |
| 14 | Production sharing | WHY IS THIS PARAGRAPH NECESSARY? | |
| 15 | Natural Gas | PB must monitor production and production sharing according to this article | PB |
| | | PB must monitor production and price of natural gas sales according to this article | |

| PSC Article | What is supposed to happen according to the PSC? | How will it be verified? | Who will verify it? |
|--------------------|---|---|------------------------------|
| 16.1 | Contractor may construct pipeline(s), following declaration of Commercial Discovery | PB/HCU must monitor pipeline construction, and verify that Commercial Discovery has been declared | HCU/PB |
| 16.2 | Contractor may submit a Development Plan for pipeline construction | Not necessary. Development Plan for pipeline is optional | NA |
| 16.3 | PB must review pipeline Development Plan if it is submitted | Contractor will submit plan to PB. No verification necessary. | NA |
| 16.4 | Contractor must operate the pipeline downstream (IS THIS A TYPO? SHOULD IT BE UPSTREAM?) of the measurement point until the pipeline cost is recovered. PB may request Contractor to continue to operate after cost recovery. | PB/HCU must determine when pipeline investment cost has been recovered. | HCU/PB |
| 16.5 | Payment for use of pipeline downstream of the Measuring Point. | PB must monitor pipeline volumes, and sources of hydrocarbons into pipeline | PB |
| 16.6 | Use of spare pipeline capacity PB has title to the pipeline(s) | NA | NA |
| 16.7 | PB must assist contractor in obtaining ROW for pipeline and access roads | NA | NA |
| 17 | Valuation of petroleum | PB must ensure compliance with this article | PB |
| 18.1 | Petroleum must be measured at the Measurement Point | NA | NA |
| 18.2 | PB must determine the Measurement Point | PB selects the Measurement Point | PB |
| 18.3 | Contractor must install and maintain measurement equipment, and verify accuracy at regular intervals and upon PB's request | PB must conduct occasional checks of meter accuracy | PB |
| 18.4 | Contractor must make meter repairs upon discovery of meter malfunctions or errors. | PB must conduct occasional checks of meter accuracy | PB |
| 18.5 | Procedure for adjustments after discovery of meter error | PB must ensure that error correction procedure is followed | PB |
| 18.6 | Measurement must be adjusted to standard conditions | PB must check procedure used for adjustment | PB |
| 19.1 & 19.2 | Government will hold Contractor harmless from several items, but not others | Not necessary. Contractor will raise the issue if necessary | NA |
| 19.3 - 19.7 | Each Contractor entity is liable for Bangladesh income taxes | Bangladesh income tax agency must look for tax payments from Contractor | Bangladesh income tax agency |
| 19.5 | Contractor entities must provide PB with copies of receipts issued by the Government for tax payments | PB must look for income tax payment receipts from Contractor entities | PB |
| 19.8 | PB will arrange for reimbursement of any taxes or duties paid by the Contractor, but for which the Contractor is held harmless | Not necessary. Contractor will raise the issue if necessary | NA |
| 20.1 | Contractor must pay PB a Discovery Bonus within 30 days after either the declaration of a Commercial Discovery or approval of a Development Plan | PB must look for payment of Discovery Bonus | PB |

| PSC Article | What is supposed to happen according to the PSC? | How will it be verified? | Who will verify it? |
|--------------------|---|---|----------------------------|
| 20.2 & 20.3 | Contractor must pay PB Production Bonuses | PB must look for payment of Production Bonuses | PB |
| 20.4 | At the end of each calendar year, Contractor must pay PB an amount based on profit hydrocarbon as a contribution towards R&D activities | PB must look for payment of R&D contributions | PB |
| 20.5 | Bonuses and R&D contributions are not recoverable costs | Contractor's PSC calculations must be reviewed | HCU/PB |
| 20.6 | Contractor must pay PB a Contract Service Fee on each anniversary of the Effective Date | PB must look for payment of Contract Service Fee | PB |
| 21.1 | PB gets title to all assets acquired and owned by the Contractor in connection with Petroleum Operations | Contractor must provide PB with a list of all assets acquired and owned in connection with Petroleum Operations | PB |
| 21.2 | Contractor has exclusive use of all 21.1 assets as long as they are required for use in Petroleum Operations. Contractor must make assets available for use by others at request of PB, if they are not exclusively needed. | PB must assess whether assets are available for other uses | PB |
| 21.3 | PB has title to all original geological, geophysical, geochemical, drilling, engineering, well logs, production and other data | Contractor must provide PB with a list of all data acquired in connection with Petroleum Operations | PB |
| 21.4 | Upon relinquishment of any part of the Contract Area, Contractor must remove all moveable property to a retained portion of the Contract Area. Any unmoved property must be handed over to PB free of charge. | PB must inventory any property that is left behind in relinquished areas. WHAT IF THERE ARE ASSOCIATED LIABILITIES? | PB |
| 22.1 | Contractor must make payments to PB in US dollars, unless Contractor and PB agree to another currency | If Contractor offers another currency, PB must decide whether to accept. | PB |
| 22.2 | PB must make payments to Contractor in US dollars, except that a minimum of 7.5% may be requested in local currency by the Contractor to meet local expenses | PB must verify that any local currency payment request is at least 7.5% of the total requested amount | PB |
| 22.3 | Contractor may use all proceeds without restriction | Not necessary | NA |
| 22.4 | Contractor must operate and maintain a dollar or other foreign currency account in Bangladesh, subject to applicable laws | Contractor must provide account details to HCU/PB | HCU/PB |
| 22.5 | All payments between PB and Contractor must be made within 60 days of the end of the month in which the obligations arise. | PB must keep track of payable and receivable timing | PB |
| 22.6 | With respect to foreign currency exchange, Contractor is entitled to receive similar treatment to any other international petroleum exploration or production company doing business in Bangladesh | Not necessary | NA |
| 22.7 | Contractor must pay for goods, services, and expenses in any currency from accounts outside Bangladesh without | HCU/PB must verify currency used for payments | HCU/PB |

| PSC Article | What is supposed to happen according to the PSC? | How will it be verified? | Who will verify it? |
|--------------------|---|--|----------------------------|
| | conversion into Taka. HOW DO THEY PAY LOCAL COSTS? | | |
| 22.8 | Article 22 also applies to foreign sub-contractors working for the Contractor | HCU/PB must verify currency used for payments | HCU/PB |
| 23.1 | Contractor must keep accounting books in English and in dollars, consistent with practices generally used in the international petroleum industry | PB may conduct audits | PB |
| 23.2 | Contractor must provide PB with a monthly return showing the amount of petroleum produced and saved, within 15 days of the end of the month. | PB must ensure timely receipt of the return from the Contractor | PB |
| 23.3 | Contractor must submit a balance sheet and P&L to PB, certified by an independent chartered accountant within 90 days of the end of each calendar year. | PB must ensure timely receipt of the balance sheet and P&L from the Contractor | PB |
| 23.4 | Contractor must submit statements required by section 1.4 of the Accounting Procedure to PB within 30 days of the end of each quarter. | PB must ensure timely receipt of the Accounting Procedure section 1.4 statements from the Contractor | PB |
| 23.5 | Contractor must provide PB with all other financial information, reports and statements required by the Accounting Procedure. | PB must identify all other submissions that are required according to the Accounting Procedure, and ensure timely receipt. | PB |
| 23.6 | Contractor must make financial books, accounts and records available for auditing in Dhaka by PB or an independent auditor selected by PB. | PB or independent auditor may request access to Contractor's books, according to Section 14 of the Accounting Procedure | PB |
| 23.7 | PB may require Contractor's parent company auditors to examine the books and records of Contractor's affiliate. | PB makes request to Contractor | PB |
| 24.1 to 24.6 | PB may require Contractor to provide oil, condensate and NGLs for Bangladesh domestic use with terms specified in these articles. | PB makes request to Contractor | PB |
| 24.7 & 24.8 | PB may request that Contractor market PB's share of oil, condensate or NGLs. | PB makes request to Contractor | PB |
| 24.9 | Contractor may not contract any part of PB's oil, condensate or NGL for sale without PB's prior specific consent | PB must monitor sales of its share of oil, condensate and NGL | PB |
| 24.10 | PB must give timely notice under this article | Not necessary | NA |
| 25.1 | Contractor must transfer its technology, know-how and experience to PB. | PB must establish a means for receipt of such information. | PB |
| 25.2 to 25.10 | Contractor must hire Bangladesh nationals, offer training programs, and provide training grants to PB. | PB must ensure that Contractor satisfies the requirements of Article 25 | PB |
| 26.1 | Contractor must prepare and maintain accurate and current records of its operations. | PB must assess the quality of documentation that it receives. | PB |

| PSC Article | What is supposed to happen according to the PSC? | How will it be verified? | Who will verify it? |
|--------------------|--|---|----------------------------|
| 26.2 | Contractor must save and keep a representative sample of cores and cuttings. PB may request that samples be delivered to them. | PB must monitor drilling activity and request samples within 60 months of drilling. | PB |
| 26.3 | Before any export of rock samples outside Bangladesh, Contractor must deliver equivalent samples to PB. | Contractor must notify PB of export of rock samples. | Impossible? |
| 26.4 | Contractor must obtain permission from PB before exporting originals of technical data and records. | Contractor must notify PB of export of technical data and samples. | Impossible? |
| 26.5 | PB is allowed full and complete access to all assets, records and data kept by Contractor. | PB may request access, without undue interference to operations | PB |
| 26.6 | Contractor must provide PB with all data as soon as it is available. | PB must monitor availability of data | PB |
| 26.7 | Either party may disclose information providing that it is subject to confidentiality restrictions | Either party must notify the other of information disclosure. | Impossible? |
| 26.8 | For the purpose of obtaining new offers on relinquished areas, PB may reveal data for those areas at any time. For obtaining new offers on adjacent or nearby areas, PB may reveal data that is no less than 24 months old. | NA | NA |
| 26.9 | Data shall be maintained as strictly confidential | ? | Impossible? |
| 26.10 | Contractor must not sell or trade data relating to the Contract area | ? | Impossible? |
| 26.11 | Contractor must not publish a compilation of such data with prior written consent of PB | PB must monitor publication of Bangladesh E&P data | PB |
| 26.12 | Contractor must deliver all original data to PB at the end of the Contract term | Contractor must prepare an inventory of all data as it is gathered, and provide it to PB. | PB |
| 26.13 | Contractor must obtain prior written approval from PB before making any public announcement or statement about Petroleum Operations | PB must monitor publications for statements and announcements. | PB |
| 27 | Either party may claim force majeure | PB must verify any Contractor claim of force majeure | PB |
| 28.1 | Government may terminate contract under specified circumstances | PB must monitor for specified circumstances | PB |
| 28.2 | Contractor may relinquish entire contract area | Contractor must give notice to PB | PB |
| 28.3 | Either party may terminate the Contract in the event of a material breach of the contract, only after giving written notice | PB must monitor for material breaches of Contract | PB |
| 28.4 | Contractor's rights are terminated if Government or PB terminates the contract | NA | NA |
| 29 | Contract is governed by the law of Bangladesh | NA | NA |
| 30.1 | Parties shall make best efforts to settle disputes amicably | NA | NA |

| PSC Article | What is supposed to happen according to the PSC? | How will it be verified? | Who will verify it? |
|--------------------|--|--|----------------------------|
| 30.2 to 30.4 | Either party may refer unresolved disputes to a sole expert or sole arbitrator if not resolved within 90 days | NA | NA |
| 30.5 to 30.13 | Either party may refer dispute to an arbitral tribunal if not resolved by a sole expert or arbitrator within 60 days | NA | NA |
| 31 | All notices must be in English, and are deemed given upon delivery of hard copies | NA | NA |
| 32.1 | PB may assign any or all of its rights to any company under its control | NA | NA |
| 32.2 | With prior written approval from PB, Contractor may assign any or all of its rights to any of its affiliates | PB will receive request | PB |
| 32.3 | With prior written approval from Government, Contractor may assign any or all of its rights to a non-affiliated third party. Request must include specified information. | Government will receive request | PB/Government |
| 32.4 | Contractor must seek consent of the Government for specified changes in the status of the entity comprising the Contractor | Government must monitor for status changes | PB/Government |
| 32.5 | Contractor must submit terms and conditions of assignment to PB/Government before requesting approval of assignment | PB/Government must assure receipt of assignment terms and conditions | PB/Government |
| 32.6 | Government may employ an independent consultant, paid by the Contractor, to value the assignment transaction | NA | NA |
| 33.1 | PB may unitize the contract area with adjoining areas if they are part of a single geological structure | PB must ascertain whether contract area is part of a single geological structure that extends beyond the contract area | PB |
| 33.2 to 33.3 | Contractor must respond to a unitization request from PB by cooperating with specified other party | PB must monitor Contractor response | PB |
| 33.4 | PB may submit a development scheme for the unit if Contractor does not respond within requested time period. | PB must check schedule of response concerning development scheme for a unit | PB |
| 33.5 | Contractor must reimburse Government for reasonable expenses associated with obtaining an agreement, if unit extends across international boundaries | PB requests compensation | PB |
| 34.1 | Parties must comply with Bangladeshi law, or good and modern international practice in the absence of Bangladeshi law, concerning abandonment obligations. | PB must monitor abandonment, and ensure compliance with Bangladeshi law and/or good and modern international practice | PB |
| 34.2 & 34.3 | Contractor must submit abandonment work program and budget together with the annual work program and budget to PB in the year immediately prior to the planned year of first commercial production | PB must confirm receipt of abandonment work program and budget | PB |

| PSC Article | What is supposed to happen according to the PSC? | How will it be verified? | Who will verify it? |
|--------------------|---|--|----------------------------|
| 34.4 | Contractor must pay into an abandonment fund held by Petrobangla annually starting on the first anniversary of the first commercial production | PB must ensure receipt of abandonment fund payments | PB |
| 34.5 | Contractor must obtain written consent from PB before abandoning any well of withdrawing any cemented string or other permanent form of casing. Contractor must report any salvage operation and associated accounting to PB. | PB must monitor status of wells, and ensure that it has previously given abandonment approval for any abandoned wells. | PB |
| 35 | Effectiveness and amendment provisions | PB must review this article to ensure compliance | PB |

**APPENDIX D- Regional Comparison of PSCs: Bangladesh,
Pakistan, Malaysia and India.**

| | Title Pass Point |
|-------------------|--|
| Bangladesh | Each entity comprising Contractor shall receive during each Quarter at the Measurement Point and may separately dispose of its individual share of the Cost Recovery Petroleum and Profit Petroleum. Title and risk of loss shall pass to each entity comprising Contractor at the outlet flange of such Measurement Point. Subject only to Articles 15.5, 15.6 and 24, each entity comprising Contractor shall have the right to export freely Petroleum received. |
| Pakistan | Title of Petroleum to which Contractor and GHPL are entitled under this Agreement shall pass at the Measurement Point. Contractor shall be responsible for all costs and risk upstream of the Measurement Point and each Party shall be responsible for all costs and risks associated with such Party's share downstream of the Measurement Point and where GHPL or its nominee purchases all or some of Contractor's share of Petroleum then GHPL or its nominee shall be responsible for all costs and risks downstream of the Measurement Point in respect of Petroleum purchased. (2.6) |
| Malaysia | Subject to Article 5.1(c), Article 5.10 and Article 15, Contractors are authorized to market, lift and export Contractors' Portion of Cost Oil under Article 5.1 (b) and Contractors' Portion of Profit Oil under Article 5.2 and title thereto shall pass to Contractors upon delivery at the Point of Export or Point of Sale |
| India | Title to Petroleum to which the Contractor is entitled under this Contract, and title to Petroleum sold by the Companies shall pass to the relevant buyer party at the Delivery Point. The Contractor shall be responsible for all costs and risks prior to and including at the Delivery Point and each buyer party shall be responsible for all costs and risks associated with such buyer party's share after the Delivery Point. |

Recommendation: No Change Required.

| | Appraisal Program |
|-------------------|--|
| Bangladesh | <p>1. Within thirty days of such Discovery, Contractor shall notify Petrobangla whether or not Contractor proposes to undertake ... appraisal.</p> <p>2. If Contractor by its notice to Petrobangla indicates that Contractor proposes to undertake an Appraisal of the Discovery, Contractor shall within ninety days of that notice present to Petrobangla for approval...</p> |
| Pakistan | <p>If Contractor notifies Directorate General of Petroleum Concessions that the Discovery merits Appraisal, Contractor shall submit to the DGPC for approval within six (6) Months from the date of the notice referred to in Article 5.1, an Appraisal Programme which highlights the Appraisal Area and provides for the Appraisal of the Discovery within a period of two (2) Years from the date of approval of such Appraisal Programme, consisting of the drilling of a minimum of one Appraisal Well to the estimated depth of the reservoir discovered in the Discovery well. (5.3)</p> |
| Malaysia | <p>No specific appraisal requirements, only procedure on discovery and commerciality.</p> |
| India | <p>1. APPRAISAL MUST OCCUR WITHIN a period of eighteen (18) months for on land and shallow water blocks and thirty (30) months for deepwater blocks from the date on which the notice provided for in Article 10.1 (c) was delivered, whether such Discovery should be declared a Commercial Discovery or not.</p> <p>2. objectives: (i) determine without delay, and, in any event, within the period specified in Article 10.5, whether such Discovery is a Commercial Discovery and (ii) determine, with reasonable precision, the boundaries of the area to be delineated as the Development Area.</p> |

Recommendation: Notice period is sufficient, but period to present for approval appears to be shorter than regional competitors, especially India. Consider extending the approval period to somewhere between 6 and 18 months. Since Bangladesh requires similar information, this extension seems prudent.

| | Exploration Requirements |
|-------------------|--|
| Bangladesh | In addition to the bidded minimum work program in the Initial Exploration Period specified below in Article 6.2.2 the Contractor shall be required to undertake and complete the 2D seismic in grid size of.....km xkm. covering the entire Contract Area and drilling of 1 (one) exploration well up to the depth not less than 3300 meter tvd measured from seabed (herein after referred to as “Mandatory Work Program”) during the Initial Exploration Period. The Mandatory Work Program should be carried out earlier than or simultaneously with the bidded work program under Article 6.2.2 below. |
| Pakistan | Based on the DGPC's desired amount of development on a certain block, they will set a minimum work unit bid for that block. Companies then bid competitively to set the actual minimum work units to be conduct during the exploration period. |
| Malaysia | Contractors undertake to carry out during the Exploration Period the following activities hereinafter referred to the "Minimum Work Commitment":- (a) reprocessing of _____ line-kilometers of existing 2D full-fold high quality seismic data; (b) acquisition and processing of _____ line-kilometers of new 2D full-fold high quality seismic data and five thousand (5,000) line-kilometers of new 3D full-fold high quality seismic data; (c) drilling of not less than _____ firm Wildcat Wells with an aggregate depth of not less than _____ meters; and (d) a detailed and systematic review on the hydrocarbon potential of the Contract Area through integrated geological, geophysical and geochemical studies on a regional scale trend and prospect level. (3.5) |
| India | 1. In addition to the Bid Work Programme Commitment in first Exploration Phase specified below in Article 5.2.1 and 5.3, the Contractor Shall be required to undertake and complete the 2D seismic API???, in grid size of _____ LKM x _____ LKM covering the entire Contract Area (herein after referred to as Mandatory Work Programme) during first Exploration Phase. (5.2) 2. Wells and 3D Seismic Negotiable. |

Recommendation: The rigid requirement to commit a well is not competitive with regional counterparts. Consider changing this requirement to a negotiable standard to facilitate projects when drilling and exploration does not make technical or economic sense.

| | Development Program & Budget |
|-------------------|---|
| Bangladesh | The Development Plan shall be deemed approved if no written objections are delivered to Contractor by Petrobangla within 60 days following Petrobangla's receipt thereof. |
| Pakistan | Each Development Plan requires approval of the DGPC in accordance with the Rules. Such approval will not be unreasonably withheld or delayed. The DGPC may only disapprove of the Development Plan, where such plan is not materially in accordance with the terms and conditions of this Agreement and the Rules. (5.12) |
| Malaysia | The management committee examines the annual work programme and budget and any proposed amendments or revisions to an appended work programme and budget |
| India | As soon as possible after the Effective Date and thereafter within ninety (90) days before commencement of each following Year, the Contractor shall submit to the Management Committee the Work Programmes and the Budgets relating to Petroleum Operations to be carried out during the relevant Year. Work Programme and Budgets for the Exploration Period shall include work sufficient to meet the relevant Mandatory Work Programme and Minimum Work Programme with respect to each Exploration Phase specified in this Article 5. (5.9) |

Recommendation: No change required, the language is favorable compared to the other countries in the region

| | Annual Cost Ceiling |
|-------------------|--|
| Bangladesh | ... Operation hereunder with respect to the Contractor Area to the extent of and out of a maximum of fifty-five percent (55%) per Calendar Year of all Available Oil/Natural Gas/Condensate/NGL from the Contract Area... |
| Pakistan | Contractor shall recover Expenditure not excluded by the provisions of this Agreement or the Accounting Procedure in respect of all Petroleum Operations hereunder to the extent of and out of a maximum of 85% of all Available Oil and all Available Gas (hereinafter referred to as "Cost Recovery Oil" and "Cost Recovery Gas" respectively). Available Oil and Cost Recovery Oil shall include LPG and Condensate. Any Royalty payments as well as any payment referred to Article IX shall be part of the Expenditure and shall be recoverable as Cost Recovery Oil or Cost Recovery Gas. (6.2) |
| Malaysia | 30-70% Depending on the Revenue to Cost Ratio (R/C) for both oil & gas. |
| India | "1. Exploration Costs incurred by the Contractor in the Contract Area up to the date of first Commercial Production shall be aggregated, and the Contractor shall be entitled to recover the aggregate of such Exploration Costs out of the Cost Petroleum at the rate of one hundred percent (100%) per annum of such Exploration Costs beginning from the date of such Commercial Production. (15.2) 2. The maximum amount of Cost Petroleum to which the Contractor shall be entitled, in accordance with the provisions of this Article, shall be X% (to be taken from the accepted bid) of the total value of the Petroleum Produced and Saved from the Contract Area. (15.9)" |

Recommendation: Bangladesh is not competitive with its counterparts in Asia. Petrobangla and the ministry should consult with an economist and determine if increasing this percentage could be done without compromising too much early cash flow.

| | Abandonment Fund |
|-------------------|--|
| Bangladesh | <p>1. All costs incurred by Contractor for the Abandonment of Petroleum facilities during the term of this Contract shall be cost recoverable...</p> <p>2. Abandonment fund is based on a yearly formula in 34.4.2.</p> |
| Pakistan | <p>For abandonment of any well, platform, facility or other asset related to Petroleum Operations in the Contract Area, Contractor shall establish an escrow account for the estimated cost of implementing Abandonment Plan (Abandonment Costs). Unless otherwise agreed by GHPL and Contractor, the full amount of the Abandonment Costs shall be placed in the escrow account as per this Article 7.14. ... Amounts contributed to the Abandonment Fund shall be recoverable for Cost Recovery Gas and Cost Recovery Oil purposes, but disbursements from the Abandonment Fund shall not be so recoverable (7.14)</p> |
| Malaysia | <p>Yearly Payment = (Annual Production MOEB/Estimated Total Production MOEB + Annual Production MOEB) x (Abandonment Cost Estimates - Cumulative Contributions)</p> |
| India | <p>The Contractor shall prepare a proposal for the restoration of site including abandonment plan and requirement of funds for this and the annual contribution. This will be submitted along with the annual Budget for the consideration and approval of the Management Committee. The annual contribution shall be deposited by the Contractor in the Site Restoration fund which will be established, in accordance with the scheme notified by the Government. For this purpose, the annual contribution to Scheme shall be calculated based on unit of production method i.e. Reserve to Production Ratio.</p> |

Recommendation: The formula for the abandonment fund is competitive.

| | Domestic Market |
|-------------------|---|
| Bangladesh | Petrobangla generally has the right of first refusal on all gas sold by the IOC. |
| Pakistan | <p>If the Government does not require Contractor to meet the internal Petroleum requirements of Pakistan, then Contractor is entitled to sell Contractor's share of Petroleum produced from the Contract Area in Pakistan or elsewhere at Contractor's election.</p> <p>Government may require Contractor to provide the Natural Gas Production from a Lease area to meet Pakistan's internal requirements in accordance with L-15 principle as laid down in the Government policy, provided, however, such requirement be notified in writing to Contractor in accordance with the Rules and not later than six (6) months after completion of the Appraisal Programme as per Article 5.4 so that Contractor can take into account this requirement when evaluating the commerciality of the Discovery. (10.1)</p> |
| Malaysia | <p>Contractors shall :-</p> <p>(a) be subject to any prohibition imposed by Government authority on the export of Petroleum produced from the Contract Area to any country;</p> <p>(c) in times of general shortage of supplies of Petroleum in countries which are from time to time members of ASEAN Council on Petroleum (ASCOPE) or its successor, or to Malaysian refineries, whether a supply emergency has been declared under Article 14 or not, give preference to prospective buyers (whether Related Companies or third parties) in such countries and to Malaysian refineries provided that the prices and other terms of purchase offered are competitive. (5.10)</p> |
| India | <p>1. Until such time as the total availability of Crude Oil and Condensate from all Petroleum production activities in India meets the total national demand as determined by the Government, each Company comprising the Contractor, shall sell in the domestic market in India (domestic sale obligation) all of the Company's entitlement to Crude Oil and Condensate from the Contract Area</p> <p>2. Until such time as the total availability of Natural Gas from all Petroleum production activities in India meets the total national demand as determined by the Government, each Company comprising the Contractor, shall sell in the domestic market in India (domestic sale obligation) all of the Company's entitlement to Natural Gas from the Contract Area.</p> |

Recommendation: While the clauses textually are not very different, the reality on the ground is that Bangladesh requires all gas be used in the domestic market. Adopting an approach more like India would make the process more transparent and clear up any confusion that gas might be exported.

| | O&G Pricing |
|---------------------------------|--|
| Bangladesh ²⁸ | \$3.5 per Mcf (price according to data from Cairn on sales to Petrobangla). 1 mcf = .96 MMbtu. |
| Pakistan | The wellhead price of gas effective from 1 January 2010 was in the range US\$2.49 per MMbtu to US\$3.9223 per MMbtu depending on location and field. This is set by the Gas Regulatory Authority. |
| Malaysia | <p>1. For the purpose of Article 5.3 the base price shall be United States Dollars twenty five (US\$25.00) per Barrel. The base price shall be increased by four per cent (4%) each year commencing on the first anniversary of the Effective Date. (5.3.1)</p> <p>2. For the purpose of this Article 8.7, the base price shall be United States Dollars one and cents eighty (US\$1.80) per mmBtu. The base price shall be increased by four per cent (4%) each year commencing on the first anniversary of the Effective Date. (8.7)</p> <p>3. Petronas report gas prices as high as \$9.10 per MMbtu with averages falling at about \$5.00 per MMbtu (Jakarta Post)</p> |
| India | India's gas price varies from \$4.20 an MMbtu to \$6 an MMbtu depending on the field. (Reuters) |

Recommendation: Bangladesh may not be competitive with other countries on the basis of its low gas price, and high costs. However, a comparative economic analysis of all of the terms of each PSC is necessary to confirm this.

²⁸ Offshore gas pricing was not available for comparison between countries.

| | Non Associated Gas |
|-----------------------|---|
| Bangladesh | Bangladesh has no specific policy on non-associated natural gas, only policies pertaining to development of commercial discoveries and maximum per year production. Appraisal must be complete in under three years. After successful appraisal there is 30 days to give notice and 120 days to submit the evaluation report for approval. |
| Pakistan | Non-associated gas is treated as if it were a commercial discovery of gas and subject to the obligation to submit notice within 6 months of the drilling of the appraisal well, which confirmed commerciality. The contractor then has another 12 months to submit its development plan. |
| Malaysia | Where Non-associated Gas is discovered and such discovery is, in the reasonable opinion of Contractors, substantial, Contractors and PETRONAS shall, by agreement between them, define the extent of the Gas Field from which such discovery was made, and Contractors, upon making written application within forty-five (45) days of such discovery, shall, subject to agreement on the extent of such Gas Field, be allowed to hold the Gas Field for a period of five (5) years from the date of its first discovery. The purpose of this holding period is for the Contractors to submit for the approval of PETRONAS a comprehensive Development Plan for the implementation of a viable gas supply project based on normally acceptable commercial considerations. |
| India | The Contractor will have a two (2) years period, from the date of approval of the Development Plan by the Management Committee or Government, to tie-up the market(s) for sale of Non-associated Natural Gas. |
| Recommendation | The period after notice to determine development and marketing strategy for non-associated gas in Malaysia and India are more favorable. However, given the government's heavy interest in seeing gas projects through to development, no change is necessary. The Pakistan contract is actually very similar. |

Recommendation: The period after notice to determine development and marketing strategy for non-associated gas in Malaysia and India are more favorable. However, given the government's heavy interest in seeing gas projects through to development, no change is necessary. The Pakistan contract is actually very similar.

| | Associated Gas |
|-------------------|---|
| Bangladesh | “Contractor must use Associated Gas the purpose of increasing the recovery of Oil, when indicated by good international reservoir practices, but may also use Associated Gas for petroleum operations. If gas is not required for these purposes, and it is not economic for Contractor to recover the gas economically, then it must be offered to Petrobangla at no charge.” |
| Pakistan | Associated Gas which is not used in the Petroleum Operations, and the processing and utilization of which, in the opinion of Contractor, is not economical, shall be returned to the subsurface structure, or may be flared with the prior approval of DGPC in accordance with the Rules. In the event Contractor elects not to process and sell Associated Gas and if it is not required for the Petroleum Operations, GHPL may elect to off-take such Associated Gas at the Measurement Point and use either itself or through its designee. ... (11.2) |
| Malaysia | Subject to approval of PETRONAS, Contractors shall be given priority to use Associated Gas produced in the Contract Area for Petroleum Operations within the Contract Area including re-injection for pressure maintenance or re-cycling operations to effect maximum economic recovery of Crude Oil and the cost of such operations shall be regarded as an allowable cost for the calculation of Cost Oil in accordance with Article 5.1(b). Subject to the preceding sentence, Contractors shall collect all Associated Gas that is produced in association with Crude Oil and which is agreed with PETRONAS to be capable of being exploited commercially by Contractors for supply to agreed Natural Gas project |
| India | <p>1. Based on the principle of full utilization and minimum flaring of associated natural gas (ANG), a proposed development plan for an Oil Discovery shall, to the extent practicable, include a plan for utilization of the ANG including estimated quantities to be flared, re-injected, and to be used for Petroleum Operations</p> <p>2. Where the Contractor is of the view that the Excess ANG cannot be commercially exploited and chooses not to exploit the said Excess ANG, or is unable to find a market for the Excess ANG pursuant to Article 2 1.4.3, the Government shall be entitled to take and utilize such Excess ANG free of any cost/charge.</p> |

Recommendation: No change required.

| | Income Tax |
|-------------------|--|
| Bangladesh | 27.5% for publicly traded companies, and 37.5% for other companies. |
| Pakistan | The sum of payments to the Government and taxes on income shall be forty percent (40%) of the profit and gains in accordance with the Ordinance (14.1) |
| Malaysia | 38% for crude, gas and condensate. |
| India | 42.23%, but there is evidence that the fiscal system provides for multi-year tax holidays, decreasing the impact of the tax. |

Recommendation: The income tax in Bangladesh is very competitive compared to the other three countries. This may offset losses due to price and export inflexibility, but should be examined by an economist.

| | Management Committee |
|-------------------|---|
| Bangladesh | 8 Members 3 appointed by Petrobangla 1 appointed by Government 4 appointed by Contractor |
| Pakistan | GHPL shall nominate two (2) members and two (2) alternate members on the Management Committee whereas Contractor shall nominate three (3) members and three alternate members on the Management Committee among which at least one (1) member will be appointed by the Operator and if Contractor comprises more than one entity at least another one (1) member will be coming from a Contracting Company other than the Operator. |
| Malaysia | For the purpose of this Contract there shall be a committee consisting of four (4) representatives from PETRONAS, one (1) of whom shall be the chairman and four (4) representatives from Contractors formally nominated by PETRONAS and Contractors respectively. (4.2) |
| India | Government shall nominate two (2) members representing Government in the Management Committee, whereas each Company constituting the Contractor shall nominate one (1) member each to represent Company in the Management Committee provided that in case the Contractor constitutes only one Company, that Company shall have two (2) members. |

Recommendation: Bangladesh is the same competitively with India and Malaysia, but to gain a competitive advantage Bangladesh would need to come in line with Pakistan and give the Contractor control of the management committee.

| | Training |
|-------------------|--|
| Bangladesh | Training clauses in Bangladesh Model PSC encourage use of local personnel, have a monetary requirement to commit to training annually, and suggestions to cooperate with Petrobangla companies. |
| Pakistan | <p>1. employ Pakistani Subcontractors having the required skills or expertise, to the maximum extent possible, insofar as their services are available on comparable standards with those obtained elsewhere on competitive terms; provided that where no such Subcontractors are available, preference shall be given to non-Pakistani Subcontractors who will use Pakistani goods to the maximum extent possible;</p> <p>2. co-operate with domestic companies in Pakistan to enable them to develop skills and technology to service the Petroleum industry; and</p> <p>3. Operator on behalf of Contractor agrees to employ to the maximum extent possible qualified nationals of Pakistan in its Petroleum Operations and to provide their schooling and training for staff positions, including administrative and executive management positions.</p> <p>4. An annual programme for employment and training of nationals of Pakistan shall be established by Contractor and submitted for approval to the DGPC. Such programme shall be included in the annual work programme and budget.</p> <p>5. . Such training programme shall cover both technical and management disciplines (including but not limited to geology, geophysics, engineering, project management, accounting, economics and legal) and shall include on-the-job training and participation in in-house seminars.</p> <p>6. Contractor shall spend on training a minimum amount of Twenty Thousand US Dollars (\$20,000) per Contract Year during Exploration Period and One Hundred Thousand US Dollars (\$100,000) per Contract Year during the Development and Production phases.</p> |
| Malaysia | <p>26.2 Contractors shall undertake the development and training of their Malaysian personnel (including the training of Malaysians for specific task of taking over positions held by expatriate personnel) for all positions including administrative, technical and executive management positions. Contractors shall prepare and submit yearly to PETRONAS for its approval plans and programmes for such development and training.</p> <p>26.3 If requested by PETRONAS, Contractors shall as part of Petroleum Operations endeavour to provide a reasonable number of PETRONAS' personnel with on-the-job training and where appropriate and practicable with training in their training institutions, based on a mutually agreed programme.</p> <p>26.4 Contractors shall also submit to PETRONAS together with their submission of the yearly Work Programme and Budget, the details of all payments, benefits and privileges accorded for each classified category of Contractors' personnel (both expatriate and Malaysian).</p> <p>26.5 Contractors shall provide a minimum of _____ for training of PETRONAS' personnel in respect of Petroleum Operations. PETRONAS and Contractors shall develop and agree on a suitable training programme for</p> |

| | |
|--------------|--|
| | such personnel. Contractors shall bear all expenses relating to such training and such expenses shall be cost recoverable. |
| India | India uses a generic provision requiring on the job training and technical assistance to Indian companies working on projects. |

Recommendation: Bangladesh is competitive in this area to their detriment. While Bangladesh has very low training requirements, thus decreasing IOC expenditures, coming in line with Pakistan would greatly help develop the ability to reinvest in the future.

| | Dispute Resolution |
|-------------------|--|
| Bangladesh | 1. By agreement to sole expert, or sole arbitrator. 2. UNCITRAL administration, UNCITRAL Rules, and Procedure by the Bangladesh Arbitration Act of 2001. |
| Pakistan | Controlling procedural law is Pakistan Arbitration law, substantive law is Pakistan, and the forum is International Chamber of Commerce in Pakistan or Abroad. |
| Malaysia | 1. The place of arbitration shall be Kuala Lumpur. The arbitration shall be conducted in accordance with the Rules of Arbitration of the Kuala Lumpur Regional Arbitration Centre. The language of the arbitration shall be the English language. 2. This Contract shall be governed by and construed in accordance with the laws of Malaysia. 24.1 |
| India | 1. This Contract shall be governed and interpreted in accordance with the laws of India. 2. The decision of the arbitral tribunal shall be pronounced within four (4) months unless otherwise extended by the Parties, and, in case of difference among the arbitrators the decision of the majority shall be final and binding on the Parties. |

Recommendation: Bangladesh is competitive with its regional peers, but should add reference to some sort of international law standard to reassure companies regarding investment security.

| | Production Rate |
|-------------------|--|
| Bangladesh | The contractor has the right to produce annually up to 7.5% (or for offshore fields such greater percentage as may be agreed with Petrobangla) of proven recoverable gas reserves for each gas field. |
| Pakistan | No ascertainable limit in the law other than the requirement that good oilfield practices be used. |
| Malaysia | Without prejudice to the generality of the foregoing provisions, PETRONAS shall have the right to review the proposed level of production in respect of any proposed or approved annual Work Programme and may, upon written notification, request Contractors to increase or decrease the rate of production from any producing Oil Field(s) for any of the following reasons: (i) to optimize oil and gas recovery (ii) to minimize gas wastage pursuant to Article 8.4; (iii) for safety considerations; (iv) for operational considerations; and (v) for national interest considerations. (3.3) |
| India | Not available. |

Recommendation: Bangladesh should adopt the Malaysian standard because of its increased flexibility and to avoid conducting operations outside of best engineering practices.

| | Work Units |
|-----------------------|--|
| Bangladesh | Not available. |
| Pakistan | Value of work units US\$10,000. Extensive points system based on 3D, depth of wells and 2D surveys. |
| Malaysia | Not available. |
| India | For the purposes of this Article, as well as Article 16, costs, expenditure, sales and income shall be converted into production unit equivalents, ... both in physical and monetary terms, using the relevant prices established pursuant to Article 19 for Crude Oil and Article 21 for Natural Gas. The costs, expenditure, sales and income for the purpose of this Article, as well as Article 16, will be on accrual basis as per generally accepted accounting practices. |
| Recommendation | The absence of work units is not a competitive disadvantage because they are also not available in Malaysia, and not used in the same way in India as they are in Pakistan. However, adoption of work units may be a good way to avoid rigid exploration programs that require drilling a well and definite amounts of 3D seismic. |

| | Pre PSC Contract Rights |
|-----------------------|---|
| Bangladesh | No licensing opportunities outside the production-sharing contract. Joint Venture arrangements and concession have been the only other types of contracts used. |
| Pakistan | Allows for the application of both exclusive and non-exclusive Reconnaissance licenses, which typically carry large relinquishment requirements after 2-3 years. |
| Malaysia | The Petroleum Management Unit has the authority to negotiate contracts outside of the PSC for reconnaissance purposes, but will only use the PSC for fiscal negotiations resulting in actual production. |
| India | India has no alternative form to a PSC except in the case of coal bed methane, which is a royalty/tax type contract. |
| Recommendation | Bangladesh may want to consider offering a reconnaissance license similar to that used in Pakistan. Some companies prefer to study the area without the obligations of a full production-sharing contract and extensive work obligations. Since the industry varies on its desire to enter these agreements, the possibility should be evaluated on a case-by-case basis. |

| | Allowable Cost Override |
|-------------------|--|
| Bangladesh | It is recognized by Petrobangla and Contractor that the details of a Work Program may require changes in the light of changing circumstances. Thus Contractor may without the prior approval of Petrobangla make minor changes, provided that such changes shall not increase or decrease the approved Budget for any affected expenditure items by more than ten percent (10%) and do not substantially alter the general objectives of the Work Program. Petrobangla shall be notified of such changes as soon as possible. Any other changes shall require the prior written approval of Petrobangla. Any decision by Petrobangla on such request for approval shall be communicated to Contractor within sixty (60) days of receipt of the same. |
| Pakistan | (a) if necessary to carry out an approved work programme Contractor is authorized to make Expenditure in excess of the budget adopted therefore up to but not exceeding ten percent (10%) of such budget, provided that such actual or foreseen excess Expenditure shall be reported promptly to the Management Committee, giving the details and justification for such excess Expenditure |
| Malaysia | thus Contractors may without the prior approval of PETRONAS make minor changes, provided that such changes shall not increase or decrease the approved Budget for any affected expenditure items by more than ten per cent (10%) and do not substantially alter the general objectives of the Work Programme. (3.3) |
| India | The Contractor acknowledges that the cost estimates for Minimum Work Programme are the realistic estimate of expenditure. For the purposes of allowing cost recovery under Article 15 herein read with Section 3 of the Accounting Procedure, the cost estimates given by the Contractor in the bid documents towards the Minimum Work Programme in both the Exploration Phases shall be taken as Bench Mark. Any material difference over the Bench Mark shall not be allowed for cost recovery unless the Government on the recommendation of the Management Committee agrees that the difference is due to change in circumstances after the Contract comes into effect. For the above purpose, an itemized break-up of the cost estimates given by the Contractor in the bid documents is placed at Appendix-H to this Contract. |

Recommendation : No change required, the new PSC remedies the generous standard in the old contracts.

| | Auditing |
|-------------------|--|
| Bangladesh | Audits are carried out by Petrobangla on an ongoing basis, but are not generally conducted by an outside auditing firm. There is no reference in the PSC to a cost recoverable 3rd party auditor. |
| Pakistan | A third party auditor is allowed as a recoverable expense but must be approved by the management committee. |
| Malaysia | No specific audit system is covered in the PSC. |
| India | The annual audit of accounts shall be carried out on behalf of the Contractor by an independent firm of chartered accountants, registered in India in accordance with the generally accepted auditing and accounting practices in India. |

Recommendation: Bangladesh should emulate Pakistan. In the case that a 3rd party auditor is needed, it should be subject to consent and cost recovery. The Auditing report that will be prepared as the next deliverable in this project will make recommendations concerning PSC auditing in Bangladesh.

| | Relinquishment |
|-------------------|--|
| Bangladesh | Under the 2008 model contract, a 25% relinquishment of the original contract area is required after four years, and another 25% after six years for Type-A blocks; similarly after five and seven years for Type-B blocks. |
| Pakistan | <ul style="list-style-type: none"> • onshore licenses: 30% of the original area at the end of Phase I, 20% of the remaining area at the end of Phase II and 10% of the remaining area on or before the second renewal; and • offshore licenses: 30% of the original area at the end of Phase I, 30% of the remaining area at the end of Phase II and 20% of the remaining area at the end of the first renewal (Note: the foregoing figures are for shallow water. For deep water and ultra-deep water the requirement is 30% of the original area at the end of the initial term and 20% of the remaining area at the end of the first renewal. |
| Malaysia | There is no standardized relinquishment requirement, only voluntary relinquishment based on non-commerciality. |
| India | If at the end of the first Exploration Phase, the Contractor elects, pursuant to Article 3.4, to continue Exploration Operations in the Contract Area in the second Exploration Phase, the Contractor shall retain up to sixty per cent (60%) of the original Contract Area, including any Development and Discovery Area (4.1) |

Recommendation: Consider revising relinquishment requirements to comparative international standards. Decreasing the required relinquishment to 20 % with an option to retain all acreage on approval is much more attractive.

| | Minimum Bid Standards |
|-------------------|--|
| Bangladesh | Bidders must have existing daily production of 25,000 barrels to qualify for offshore bid rounds. |
| Pakistan | where an applicant does not have the requisite past operating experience it must produce an agreement with an internationally renowned E&P service company acceptable to DGPC or a high caliber management team with a proven track record of overseeing and managing operations in the international petroleum industry |
| Malaysia | Not available. |
| India | experience of the bidding company as an operator in oil/gas field projects during the last 10 years [for onshore blocks bid, and shallow water, deepwater (greater than 400 meters) and ultra-deepwater (depths greater than 1,000 meters) block bids, as an operator for offshore projects] |

Recommendation: While its peers do not state a production minimum in any of the materials reviewed, there seems to be less flexibility in Bangladesh. Instead of a hard and fast 25,000 bbl/d requirement, Bangladesh may want to consider adopting the clause used in India. The emphasis on experience is more important than production levels.

| | Production Share of Profit Hydrocarbons |
|-------------------|---|
| Bangladesh | Onshore- 20-45% to the contractor depending on the amount of gas produced. Offshore-25-50% to the contractor depending on the amount of gas produced. |
| Pakistan | Shallow Gas- Contractor's share depending on the amount produced is 20-80%. Ultra Deep Water Gas- Contractor's share depending the amount produced is 40-95%. |
| Malaysia | Under 30 million BOE, or .75 Tcf cumulative production: 30-80% to Contractor depending on Revenue vs. Cost Ratio. Over 30 Million BOE, or .75 Tcf cumulative production: 10-40% to Contractor depending on Revenue vs. Cost Ratio. |
| India | Based on investment multiples of 0, 1.5, and 3.5 with a basement share of 30% to contractor at the highest multiple. |

Recommendation: Bangladesh may not be competitive with other countries on the basis of its low Contractor share of profit petroleum. However, a comparative economic analysis of all of the terms of each PSC is necessary to confirm this.

| | Bonus/Royalty |
|-------------------|---|
| Bangladesh | No royalty, discovery bonus, production bonus. |
| Pakistan | Royalty is based on a percentage of production but is deductible from Income Tax calculation, production bonus. |
| Malaysia | Royalty payable on quarterly basis, no bonuses are included in most recent version of the Malaysian PSC. |
| India | Royalty of 5-12.5% depending on depth and type of petroleum. |

Recommendation: The lack of a royalty in Bangladesh makes it competitive with its peers. Bangladesh also appropriately avoid bonuses, which is competitive with its peers.

| | Ring Fencing |
|-----------------------|---|
| Bangladesh | The ring fence for cost recovery is around the entire contract area. |
| Pakistan | The ring fence for cost recovery is on a contract area basis. |
| Malaysia | Based on Thresh Hold Volume (THV), which takes into account the general geologic reservoir that the contract is drawing from. This can lead to two or more contracts combining for the purpose of ring fencing. |
| India | Around the contract area, no distinction between oil and gas. |
| Recommendation | Bangladesh is competitive with its peer group on the issue of ring fencing. |

| | Insurance |
|-------------------|--|
| Bangladesh | The contractor has an obligation to obtain insurance for petroleum operations in such amounts and against such risks as are specified in the contract and specifically agreed by Petrobangla. It must furnish to Petrobangla certificates evidencing that such coverage is in effect. The insurance policy must include Petrobangla as additionally insured and must waive subrogation against Petrobangla. The contractor must also require its subcontractors to obtain insurance. |
| Pakistan | Insurance must be obtained by using good industry practice for the IOC and all its subcontractors. |
| Malaysia | <p>1. wells, equipment, facilities, goods, materials and supplies in use or in the course of construction or in Contractors' custody, the costs of which are recoverable as Cost Oil or Cost Gas as the case may be, to be insured against such risks of loss and damage for such amount and with such reputable insurer or insurers as may be agreed with PETRONAS. (18.1)</p> <p>2. In the case of Petroleum that has been produced to the surface Contractors shall insure against such risks of loss and damage for such amount and with such insurer or insurers as may be agreed with PETRONAS and shall nominate PETRONAS and Contractors as joint beneficiaries under such insurances. (18.3)</p> |
| India | <p>The said insurance shall, without prejudice to the generality of the foregoing, cover:</p> <p>(a) loss or damage to all installations, equipment and other assets for so long as they are used in or in connection with Petroleum Operations; provided, however, that if for any reason the Contractor fails to insure any such installation, equipment or assets, it shall replace any loss thereof or repair any damage caused thereto;</p> <p>(b) loss, damage or injury caused by pollution in the course of or as a result of Petroleum Operations;</p> <p>(c) loss of property or damage or bodily injury suffered by any third party in the course of or as a result of Petroleum Operations for which the Contractor may be liable;</p> <p>(d) any claim for which the Government may be liable relating to the loss of property or damage or bodily injury suffered by any third party in the course of or as a result of Petroleum Operations for which the Contractor is liable to indemnify the Government, or the State Government;</p> <p>(e) with respect to Petroleum Operations offshore, the cost of removing wrecks and cleaning up operations following any accident in the course of or as a result of Petroleum Operations; and</p> <p>(f) the Contractors and/or the Operators liability to its employees engaged in Petroleum Operations.</p> |

Recommendation: The detailed list used in India is likely the most appealing to the NOC, while the IOC prefers to select its own policies. For that reason Bangladesh is competitive with its peers.

| | Environmental Liability |
|-------------------|---|
| Bangladesh | Environmental liability based on negligence or reckless behavior is potentially subject to consequential damages. |
| Pakistan | Under its licensing and supervisory authority, the Ministry of Petroleum and Natural Resources is responsible for the prevention of pollution and prevention of damage to the environment, imposing penalties in case the licensee does not comply with the regulations. |
| Malaysia | The 1997 model contract includes general environmental obligations requiring the operator to take the necessary precautions for the protection of navigation and fishing and ensure the conservation of living marine resources. |
| India | 1. (b) take necessary and adequate steps to: (i) prevent Environmental Damage and, where some adverse impact on the environment is unavoidable, to minimize such damage and the consequential effects thereof on property and people; (14.1) 2. If the Contractor fails to comply with the provisions of paragraph (b)(i) of Article 14.1 or contravenes any relevant law, and such failure or contravention results in any Environmental Damage, the Contractor shall forthwith take all necessary and reasonable measures to remedy the failure and the effects thereof. (14.2) |

Recommendation: Of the 4 countries, the possibility of consequential damages in the Bangladesh contract in the event of a blow out or other typical problem make it the least desirable contract for an IOC. The remediation approach taken in the Indian contract is the most appealing to IOCs.

| | Definition of Petroleum |
|-------------------|---|
| Bangladesh | "Petroleum" means: i) any naturally occurring hydrocarbon, whether in a gaseous, liquid or solid state; ii) any naturally occurring mixture of hydrocarbons, whether in a gaseous, liquid or solid state; or iii) any naturally occurring mixture of a hydrocarbon or hydrocarbons, whether in a gaseous, liquid or solid state, and one or more of the following: hydrogen sulphide, nitrogen, helium and carbon dioxide. |
| Pakistan | "Petroleum" means all liquid and gaseous hydrocarbons existing in their natural condition in the strata, as well as all substances, including sulfur, produced in association with such hydrocarbons, but excluding basic sediments and water. |
| Malaysia | Petroleum means any Crude Oil and Natural Gas existing in its natural condition and casing head petroleum spirit including bituminous shales and other stratified deposits from which oil can be extracted. (1.1) |
| India | Petroleum means Crude Oil and/or Condensate and/or Natural Gas existing in their natural condition but excluding helium occurring in association with Petroleum or shale. |

Recommendation: No change needed.

| | Title to Equipment |
|-------------------|---|
| Bangladesh | Petrobangla becomes the owner of all assets acquired and owned by the contractor in its operations under the contract, as follows: <ul style="list-style-type: none"> • title to any immovable property purchased or acquired by the contractor passes to Petrobangla as soon as it is purchased; and • title to any fixed or moveable asset passes to Petrobangla when landed in Bangladesh, if purchased outside the country, or as soon as it is purchased, if purchased in Bangladesh |
| Pakistan | Assets purchased by the contractor for use in petroleum operations are owned by the right holder (the purchasing party). When an agreement has terminated or the use of installations and facilities has come to an end, the government has the right to take title to permanent installations and related equipment in the contract area, which are necessary for the production of petroleum. This includes pipeline transportation and related facilities installed by the contractor. No compensation is payable to the contractor. |
| Malaysia | PETRONAS shall have the legal title to any equipment and assets purchased by Contractors pursuant to Article 12, for the purpose of Petroleum Operations but subject to the provisions of Article 12.7, Contractors shall have the sole use of such equipment and assets for Petroleum Operations hereunder free of charge for the duration of this Contract. |
| India | Assets purchased by the contractor for use in petroleum operations are owned by the parties comprising the contractor in proportion to their participating interests so long as the contract is in force |

Recommendation: Bangladesh is less competitive than India, but generally in line with the rest of the countries in the region.

| | Assignment Bonus |
|-------------------|-------------------------|
| Bangladesh | None. |
| Pakistan | None. |
| Malaysia | None. |
| India | None. |

Recommendation: Bangladesh is identical to the other countries in the region and should not add an assignment bonus. Assignment bonuses are viewed in a similar negative light as signature bonuses.