HYDROCARBON UNIT
Energy & Mineral Resources Division

Technical Auditing 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

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TABLE OF CONTENTS

PAGE

LIST OF FIGURES

PAGE

LIST OF TABLES

PAGE

ABBREVIATIONS

ADP	Annual Development Program
AERC	Audit Exception Resolution Committee
BAPEX	Bangladesh Petroleum Exploration & Production Company Limited
BAS	Bangladesh Auditing Standards
BERC	Bangladesh Energy Regulatory Committee
BGFCL	Bangladesh Gas Fields Company Limited
BSCIC	Bangladesh Small and Cottage Industries Corporation
CAD	Commercial Audit Directorate
CFE	Certified Fraud Examiner
CIA	Certified Internal Auditor
CISA	Certified Information Systems Auditor
CISM	Certified Information Security Manager
CPTU	Central Procurement Technical Unit
DESA	Power Distribution System of Dhaka Electricity Supply Authority
DGPC	Directorate General of Petroleum Concessions
DR	Downstream Regulator
ECNEC	Executive Committee of the National Economic Council
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
EMRD	Energy and Mineral Resources Division
FA	Financial Audit
FIMA	Financial Management Academy
FMD	Financial Management Division
G&G	Geological and Geophysical Survey
HCU	Hydrocarbon Unit
IMED	Implementation Monitoring and Evaluation Division
IOC	International Oil Company
JMC	Joint Management Committee
JRC	Joint Review Committee
MIT	Mechanical Integrity Test
MOPEMR	Ministry of Power, Energy, and Mineral Resources
OCAG	Office of the Comptroller and Auditor General
PA	Performance Audit
PAC	Public Account Committee
PAR	Performance Audit Report
PCD	Petroleum Concession Division
PSC	Production Sharing Contract
SAI	Supreme Audit Institution of Bangladesh
SGFL	Sylhet Gas Fields Limited
SOE	State Owned Enterprise
VFM	Value for Money
WPB	Work Program and Budget

1 EXECUTIVE SUMMARY

This is a revised version of the report incorporating responses to comments by Petrobangla that were received in April 2012.

Production Sharing Contracts (PSCs) are a contractual mechanism to accomplish two goals:

- Provide incentives for IOCs to invest in exploration and development, and
- Ensure that both the Government and the IOC receive reasonable shares of any hydrocarbon production

As with any contract, there is a need for auditing to ensure compliance with the terms of the contract. In Bangladesh there is an opportunity to improve the auditing that is occurring. By way of evidence, large PSC audit exceptions have been raised, and there have been lengthy delays in resolution of these exceptions. Uncertainty about potentially large future audit exceptions and associated delays in their resolution may reduce the incentive for IOCs to consider future investments in Bangladesh.

This report suggests an effective system of technical auditing, based upon a type of auditing called "Performance Audits." Divided into three parts, performance auditing is achieved by planning future auditing activities, implementing the planned approach, and receiving reports based on the audits produced. In the planning stage the objective, scope and methodology are identified. Following the planning stage, the approach is executed, and an emphasis is placed on obtaining proper documentation and audit evidence. Finally, in the reporting stage conclusions and recommendations are reached based on the reports. The report also describes the importance of auditing both before significant investments are made, and afterwards. The pre-investment auditing can align the incentives of both the Government and the IOC, and also reduce the risk of future audit exceptions.

This report also discusses the legal justification for technical auditing in Bangladesh. In general very broad powers are given to the government and Petrobangla by the core statutes controlling the oil and gas industry, but additional powers are also established in the model Production Sharing Contract. Between these two sources, it is apparent that the Government has the power

to conduct technical auditing. Under the current regime the Comptroller & Auditor General of Bangladesh can serve to assist in ramping up oil industry audits, but due to resource constraints it is unlikely they will conduct audits on each PSC as frequently as would seem necessary. A consistent and frequent performance-auditing regime would appear to be preferable.

The report includes a comparison of PSC auditing provisions in Bangladesh with those in Pakistan, India and Malaysia. It also makes recommendations concerning audits of exploration, development, costs, prices, environmental/health/safety, and procurement. It suggests the possible creation of a neutral third party auditing agency, the potential benefits of emphasis on binding agreements prior to investments (providing that actual costs and schedules are consistent with plans), and a statute of limitations to limit the delays associated with audit exceptions.

2 INTRODUCTION

2.1 PURPOSE

This Auditing Report is the fourth report in the project entitled Strengthening of Hydrocarbon Unit in the Energy and Mineral Resources Divisions (Phase-II), funded under ADB Grant 0019: GTDP. 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. The third report, the Monitoring Report, provided additional background information and discussed monitoring and supervision of PSCs in Bangladesh.

This report discusses the different mechanisms required to maintain an efficient technical auditing scheme and provides commentary on the actual results of current audit provisions. Section 3 describes the three primary phases of a performance audit; namely planning, implementation of an audit program, and reporting. The section also analyzes historical results as they relate to the core performance areas of exploration, production, development, pricing and costs. Section 4 discusses the current institutional and legal framework, which empowers both financial and technical audits. Section 4 also outlines the current strengths, weaknesses, opportunities, and threats present in the current system. Section 5 compares audit provisions defined by PSC's in Pakistan, India and Malaysia to the audit provisions defined in the Model Production Sharing Contract 2008 (MPSC-2008). Section 6 provides recommendations for changes in technical auditing procedures, and Section 7 contains conclusions.

2.2 AUTHORITY

International consulting services are being provided by Gustavson Associates in order to assist the Hydrocarbon Unit (HCU) with technical auditing of PSCs and other contracts. Specifically, Gustavson will assist 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.

3 DESIRED GOALS OF PRODUCTION SHARING CONTRACT AUDITING

International oil companies (IOCs) have played an important role in developing hydrocarbon resources in Bangladesh, and can continue to do so. IOCs bring expertise and capital that are deployed to explore for, develop, and produce hydrocarbons. The IOCs work almost exclusively according to the terms of production sharing contracts (PSCs). These PSCs create a large degree of incentive alignment between the IOC and the country of Bangladesh. Furthermore the country is shielded from exploration risk because the IOC is solely responsible for exploration costs. Both parties are interested in successful and environmentally responsible development of hydrocarbons. However, there is not perfect alignment due to the cost recovery mechanism that is a fundamental aspect of a PSC.

If a field is developed, then the IOC is entitled to recover exploration, development and production costs out of future production. Some might argue that this cost recovery mechanism does not provide an IOC with an adequate incentive to control costs, since they will be effectively reimbursed for expenditures. However, the reimbursement in the case of exploration expenditures is not guaranteed because of the risk of exploration failure. Even in the case of successful exploration and development, the IOC incurs the cost associated with the time value of money, since cost recovery occurs out of hydrocarbon production some time after the cost are incurred.

Auditing provides a key mechanism for increasing incentive alignment between the IOC and the country. There are three auditing phases:

- Auditing of planned future activities
- Verification of reported activities compared to actual results
- Comparison of predicted and actual results

Each of these is now briefly discussed. An IOC is required to submit proposed work plans and budgets (WPBs) before work is undertaken. An audit of these WPBs provides an opportunity to modify the proposed work plan and/or budget. The country can use this auditing opportunity to suggest changes to better match its desired goals. This process also has the potential to reduce

risk for the IOC. If a WPB and budget is approved by the country and the actual work program and costs are in line with the WPB, then the IOC has good reason to expect that it will be entitled to recover its costs. However, occasionally projects do not go according to plan. They may experience delays and/or cost over-runs. This creates a challenging situation for both parties. Suppose that a project is not complete, but it is known that it cannot be completed according to the original budget. It will usually be the case that forward-looking economics will justify completion of the project. However, there may be a difference of opinion between the country and the IOC about the extent to which IOC should be entitled to recover the cost of the over-run.

The most well-known type of auditing relates to verification that reported activity is consistent with actual results. In the context of a PSC it is important, for example, to ensure that the actual work activity is consistent with the WPB and that reported costs and production are consistent with actual costs and production. It is also important to determine that the IOC is actually complying with environmental requirements. Discrepancies between reported and actual activities can have financial implications for both parties.

There is an additional phase of auditing activity that does not have a short run impact, but does have a long term benefit. This involves a comparison of predicted outcomes with actual outcomes. This is different than a comparison of reported and actual outcomes. Instead it looks back to determine the accuracy of predictions that were made. For example, were exploration results in line with expectations? If not, can the difference between results and expectations be used to improve future decision making? Similarly, differences between predicted and actual production profiles may be useful in the context of future production forecasting.

Pragmatically, the objectives of PSC audits are to ensure:

1. contractor will undertake the exploration, development and production of petroleum at their sole risk and expense, subject to the right of Government and Petrobangla to share in production to a term agreed upon;
2. Contractor provides all necessary funds for petroleum operations, purchase or lease of all assets, materials pursuant to annual work program, and such other funds for the

performance of petroleum operations. These include payments to third parties as well as technology and such expatriate personnel as may be required;

3. contractor shall not receive any compensation for its services, or any reimbursement of its expenditure, except for the share of petroleum. If there is no discovery, contractor shall bear its own losses.

This section of the report is concerned with desirable goals of PSC auditing. It describes a "Performance Audit" which can be used to advise the design of PSC audits. This section also suggests how the implementation of the Extractive Industries Transparency Initiative (EITI) can assist with the management of the hydrocarbon sector in Bangladesh, promoting long term economic growth and poverty reduction. Finally, this section presents a general procedure for conducting technical audits. It then describes how these ideas can be applied to exploration, development, production, environmental/health/safety, and to purchasing/labor.

3.1 PERFORMANCE AUDIT

A performance audit is "an objective and systematic examination of a public sector organization's program, activity, function or management systems and procedures to provide an assessment of whether the entity, in the pursuit of predetermined goals, has achieved economy, efficiency and effectiveness in the utilization of its resources."[1] The idea of a performance audit can be used for designing technical auditing procedures of PSC contractors.

The performance audit therefore, involves an independent assessment of whether economy, efficiency and effectiveness have been achieved by the organizations concerned.

3.1.1 Objectives of a Performance Audit

The primary objective of the performance audit is to provide independent information, assurance, and opinion about economy, efficiency and effectiveness in effect, Value for Money (VFM) concerning revenue, expenditure and the management of resources. Independent performance

1 Source: Government Auditing Standards, Bangladesh, November 1999

reviews can indicate whether, in using its resources to achieve organizational goals, the entity's management has achieved or realized its policies, principles or standards economically, efficiently and effectively. This means, stakeholders, policymakers, decision-makers, and the general public are provided with information on improving public accountability. A secondary objective of the performance audit is to identify ways of improving VFM and to encourage and assist audited bodies to take the necessary action to improve systems and controls.

The approach adopted in a performance audit involves the examination and evaluation of arrangements for securing good value for money within entities that are in receipt of public funds or engage in activities substantially important to the public welfare. The audit will also aim to expose serious waste, extravagance or other examples of poor performance. The auditor's role is to evaluate how far and how well the management of resources is being discharged by the organization concerned.

3.1.2 Impacts of A Performance Audit:

1. Increased income;
2. Reduced costs or expenditure, resulting in financial savings;
3. Improved efficiency;
4. Strengthened or enhanced management and administrative or organizational processes;
5. Improved quality of services provided;
6. Achievement of the organization's aims and objectives more cost-effectively;
7. Policy development;
8. Increased awareness of the need for good accountability and transparency in the use of resources.

Performance audits differ from financial audits in that the former examines whether the entity has stayed in compliance, and done so in the correct and least expensive way. It considers whether the entity has achieved its goals economically, efficiently, and effectively in utilizing its resources. Financial audits are concerned with the examination of the transactions relating to expenditure and receipts and with the form and content of the accounts. A comparison of

performance and financial audit is shown in Table 1. Performance audits are conducted to determine the VFM of the contractor's operations and financial audits are concerned with whether or not the contractor adhered to the accounting procedure required by the PSC.

Table 1 Comparison of Financial and Performance Audits

Financial Audit	Performance Audit
Voucher Oriented	Objective Oriented
Examines Compliance to financial rules	Examines economy, efficiency, and effectiveness in use of resources and goes beyond compliance
Usually quantitative	Usually Qualitative
Not analytical	Very Analytical
Does not use performance indicators standards and targets	Requires indicators, standards and targets to measure performance
Doesn't consider cost benefit analysis	Considers cost benefit analysis
Examines financial statement assertions, such as in finance accounts and appropriation accounts.	Examines all or part of an entity's activities in relation to economy, efficiency, and effectiveness.
Usually Post-Event	Considers past, present, and future performance
Does not usually concern optimal allocation of resources	Aims at optimal allocation of resources

The primary goal of auditing a contractor's operations conducted under a Production Sharing Contract (PSC) is to ensure that the contractor's actions are consistent with the terms of the PSC and consistent with industry best practices. This goal can be realized through an effective technical auditing program. An effective technical audit program will result in satisfactory Value for Money (VFM). A technical audit is critical for projects with a high risk of failure, and which require large amounts of resources; such as those activities involved with the exploration and production of hydrocarbon.

For exploration and development activities of the IOCs, performance audits may be carried out according to the exploration block and/or Production Sharing Contracts (PSCs) for national exploration and development companies. Performance audits may be carried out on the activities of the entity for a particular period. It may include different exploration and production activities carried out by the entity during the reference period. These analyses may be compared with that of the data available on IOCs activities for exploration and production. Or it may include all the activities of the entity including exploration and production.

Through effective technical auditing procedures the auditors will be able to verify if contractors have satisfied all minimum work and financial obligations defined by the PSC, at the most reasonable cost. This process will involve developing a more comprehensive system of determining the reasonableness behind contractor expenditures, as well as verifying that reported costs are justified and supported through audit evidence.

At present, exploration and development activities in Bangladesh are carried out by International Oil Companies (IOCs), Bangladesh Petroleum Explorations and Production Company Ltd. (BAPEX), and 2 other national gas companies engaged for production. The PSC directorate of Petrobangla monitors and audits technical aspects as per conditions of the PSCs through the Joint Review Committee (JRC) and Joint Management Committee (JMC). The finance directorate of Petrobangla audits financial aspects of the PSCs. There is no institutional arrangement for independent auditing of technical and financial aspects of the three national gas production companies. By properly auditing the contractor's activities, investments in Bangladesh will become more attractive to IOC's, while simultaneously maintaining an appropriate profit share for Petrobangla.

3.2 EXTRACTIVE INDUSTRIES TRANSPARENCY INITIATIVE (EITI)

The Extractive Industries Transparency Initiative (EITI) is a global program designed to strengthen the governance in industries that extract natural resources. Countries that are well endowed in natural resources often experience corruption and conflict in managing these resources. The EITI is designed to improve governance of natural resources through the verification and full publication of company payments and government revenues from oil, gas and mining. This also includes publishing tax, profit oil, and royalties in independently verified reports.[2]

Bangladesh could benefit greatly from adopting the EITI. Countries that have adopted EITI have shown an improved investment climate in the oil and gas industries through a commitment by the government to increase transparency in these industries. IOC's may have a negative view on

[2] Source: Islam, Narul. *Observations on Extractive Industries Transparency Initiative and the Possibility of its Promotion in Bangladesh.*

the investment climate in Bangladesh due to a multitude of governance problems in the oil and gas industries. This situation may be hindering IOC's from entering the Bangladeshi market. Adopting the EITI could play a crucial role for increasing the economic incentives for IOC's to explore in Bangladesh. The EITI strives to make information more readily available which in turn would allow IOC's to make better more informed investment decisions

Nigeria, one of the world's largest oil producers passed the EITI in 2007. Before passing the EITI, Nigeria's government was overrun with corruption, with the country's president embezzling between $2-5 billion in public funds. The EITI would make it more difficult to embezzle public funds, because information on revenue from the oil, gas, and mining industries would be publically available.

One of the main goals of EITI is to promote economic growth through increased government revenue created by better governance in the extractive industries. Since Nigeria passed the EITI the country's Gross National Income has risen from about $950 per capita in 2007 to roughly $1150 in 2009. EITI cannot be credited as the sole explanation for the rise in Gross National Income as it was also a period of rising oil prices which is important for an oil producer like Nigeria. However, increased transparency and reduction of corruption has clearly had a positive effect on the country.

Passage of EITI in Bangladesh could also have an analogous positive effect on the oil and gas business as it did in Nigeria. Increased transparency in this industry would help the GOB govern the hydrocarbon sector more effectively. Currently, the accounts of IOC's are audited by Petrobangla, however audit reports are considered confidential. Due to this confidentiality the Supreme Audit Institution of the country, the Office of the Comptroller and Auditor General has not been involved in auditing the accounts of signed PSC contractors. As a result the audit reports are not presented before the National Parliament.[3] Removing the confidentiality of audit reports allowing them to be published along with signed PSC's through a program such as EITI would be a major step in increasing transparency and accountability in the hydrocarbon sector.

[3] Source: Islam, Narul. *Observations on Extractive Industries Transparency Initiative and the Possibility of its Promotion in Bangladesh.*

The Government of Bangladesh should consider implementing EITI to improve the investment climate and economic performance of the country.

3.3 SUGGESTED AUDIT PROCEDURE

This section proposes an overall design for desirable stages of technical auditing. The audit should be well planned, and the audit schedule should be communicated clearly to the contractor to avoid delays and unnecessary distractions to petroleum operations. The technical auditing program should be designed to follow the three broad stages as defined in Figure 1. It is imperative that the technical audit provide sufficient audit evidence to support conclusions about the efficiency of the contractor's proposed operations in the follow up report.

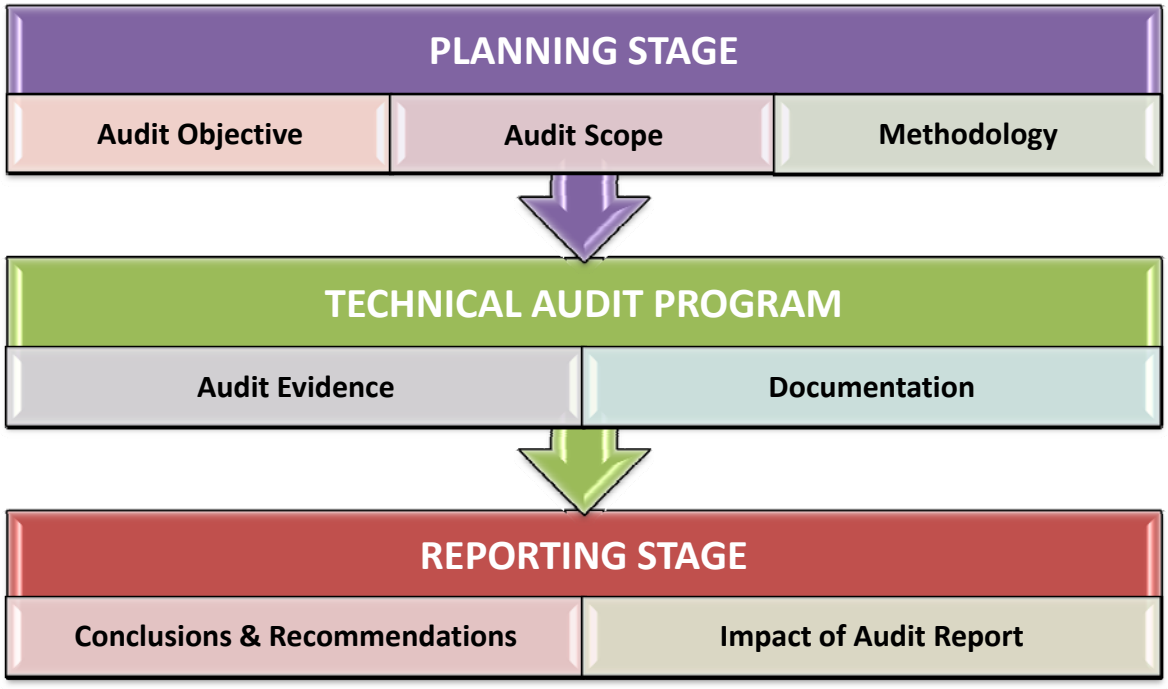

Figure 1 Stages of the Technical Auditing Program

Planning Stage

Technical audits can be a distraction for the contractor, so a well planned technical audit program is important. While planning the audit it will be necessary to identify priority areas that require the most attention. The audit plan should clearly identify the scope, objectives, and methodology of the audit.

The planning stage should begin by providing auditors with detailed information about the contractor's future operations prior to executing the technical audit program. Auditors must understand the technical aspects of all of the contractor's facilities, equipment, personnel, and operational procedures that will be performed in the exploration phase as described in the WPB.

Technical Audit Program

In this stage of the audit, relevant information is gathered based on reviews of documents, interviews with personnel and/or inspection of facilities. All of this information must be carefully documented and analyzed for compliance with required performance.

Reporting Stage

This stage is arguably the most important stage in the audit program. Reporting must draw conclusions based on the audit evidence provided in the technical audit program. These conclusions will determine whether or not the activities are in compliance with requirements, provide good VFM and are within budget. Auditors should also make recommendations on how a contractor can conduct operations more efficiently.

3.4 AUDITS OF EXPLORATION PLANS AND ACTIVITIES

In the exploration phase the Company is risking its own capital and is required to perform at least a minimum mandatory work program.

3.4.1 Review of Planned Future Activities and Costs

The PSC describes areas in which technical auditing of the contractor's operations in the exploration phase are allowed. The PSC grants the JRC the ability to review and audit the contractor's Work Program and Budget (WPB). Article 6.6 b of the Model Production Sharing Contract (MPSC)-2008 states that an audit should be conducted regarding the necessity of additional exploratory wells and seismic acquisition.

Currently, the JRC conducts an annual review of the WPB; however its technical auditing activities are somewhat less defined. Petrobangla supplements this annual review with numerous technical and operational meetings between the parties. It also engages in regular correspondence with IOCs to ensure timely submission of technical and financial documents that are required according to the terms of the PSCs.

We are not aware whether technical auditing activities that do occur within the JRC produce follow-up reports that allow Petrobangla and the Government to ascertain whether or not the contractor's proposed WPB will achieve sufficient VFM. The JRC has no ability to enforce the conclusions of an auditing report; therefore it is recommended that auditors provide a proper follow-up report to Petrobangla and the Government.

Planning Stage

In the exploration phase, the objective of the audit is to review the WPB to determine if it will be conducted in a technically efficient manner and at a reasonable cost. The scope of the audit in this phase should be limited to the activities, personnel and facilities involved in the proposed WPB. The methodology of the audit will determine how the auditors will go about reviewing the WPB, and how they will determine whether or not the WPB is technically prudent and whether or not proposed costs are reasonable. This audit can achieve its goals by interviewing the IOC's project managers to provide justification for the proposed methods and activities in the WPB and all costs associated with conducting the WPB.

Technical Audit Program

The PSC requires the contractor to conduct both 2D and 3D seismic surveys of the contract area as part of the WPB in the exploration phase. The PSC also requires the contractor to drill at least one exploratory well to the depth of 3300 meters (type A blocks - Deep Sea) and 2200 meters (type B blocks - Shallow Sea). These requirements may vary based on the actual bids of companies involved in bid rounds.

Auditors need to determine if the plan for conducting the seismic surveys and plans for drilling the exploratory wells (as defined in the WPB) will provide adequate VFM. Auditors should

interview the contractor's managers involved with seismic surveys as well as the drilling managers. These interviews will be useful in determining why the managers chose to plan the seismic surveys and drill the exploratory wells in the fashion they presented in the WPB. Following the interview, auditors will draw conclusions to ascertain whether or not the manager's survey and drilling plan will be conducted in an efficient manner, as well as follow the specifications of the PSC. These conclusions should be properly documented in a working paper.

Auditors may also find it useful to compare the costs associated with the WPB with costs of WPB's from similar projects to determine if the contractor's costs are reasonable. This is an area where a computerized cost database would be extremely useful for auditors to determine areas where costs seem excessive, before the WPB is approved by the JRC.

If additional seismic surveys/exploratory wells are proposed by the contractor outside of what is required by the minimum work obligation, auditors should document evidence of the necessity of these additional endeavors before the WPB is modified. This can be achieved through interviews of the contractor's managers providing adequate justification for the additional exploration activities. A cost-benefit analysis may also be a useful tool in determining if additional surveys\exploratory wells are necessary and will achieve good VFM.

Reporting Stage

This stage is arguably the most important stage in the audit program. Reporting in this stage should draw conclusions based on the audit evidence provided in the technical audit program. These conclusions will determine whether or not the proposed WPB will provide good VFM and that the budget for these activities is reasonable. Auditors should also make recommendations on how the contractor can conduct the WPB more efficiently.

3.4.2 Verification of Reported Historical Results and Activities

Planning Stage

The main objective of the technical audit program in the exploration phase will be to verify the contractor's reported activities carried out during the WPB are consistent with the contractor's actual activities. The scope of the audit will be limited to the reported activities involved with conducting the WPB. The auditor's methodology should consist of a critical review of the WPB and the statement of expenditures involved with conducting the WPB.

Technical Audit Program

The first step in the verification process will be to ensure the contractor has submitted the WPB to the JRC according to the timeline required by the PSC. Auditors must document evidence that the contractor prepared the WPB according to the specifications defined in the PSC and that it was agreed upon and approved by the JRC. The auditors should also document if the budget was revised due to changes in operations and that the proper approval was given by the JRC for these revisions. This will provide auditors with documented evidence of an approved revised budget. Should the contractor exceed the budget, the audit evidence will allow Petrobangla to determine the correct amount of cost recovery. As mentioned previously, Petrobangla participates in numerous meetings between the parties in order to assess the extent to which the actual work programs are implemented.

During the exploration phase, the contractor will incur several expenditures that are deemed cost recoverable according to Section 2 of the Annex-B in the MPSC-2008. These expenditures pertain to the activities described in the WPB including:

1. Geophysical, geological, topographical and seismic surveys.
2. Labor, materials, and supplies used for drilling exploratory wells.
3. Exploration facilities as well as general and administrative costs directly incurred on exploration activities.

Auditors will verify the accuracy of the reported expenditures by reviewing the contractor's statement of expenditures, which is required to be submitted quarterly by the PSC. Auditors should also have a working knowledge of Section 7 of the MPSC-2008 which describes in detail a multitude of expenditures which are not cost recoverable.

Reporting Stage The audit evidence provided by the auditors conducting the technical audit program should then be the basis for a follow-up report to Petrobangla. This report should describe the auditor's conclusions as to whether or not reported activities and costs in the WPB are consistent with actual activities and costs.

3.5 AUDITING OF DEVELOPMENT PLANS AND ACTIVITIES

3.5.1 Review of Planned Future Activities and Costs

The technical audit program in the development phase is focused on an audit of the evaluation report and the contractor's proposed development plan. The PSC states the right to audit the evaluation report should a discovery be found under article 8.6 of the MPSC-2008. The PSC also allows the results of the development plan to be audited under article 8.11 of the MPSC-2008.

Petrobangla is directly involved in drafting and monitoring the development plan through its representation in the JMC, however its auditing procedures are less well defined. Petrobangla does assign personnel to the field to increase its understanding of the contractor's day to day operations. This facilitates negotiations in committee. It is important for Petrobangla to conduct a thorough audit of the evaluation report and development plan.

The following proposed technical auditing program will ensure timeliness of moving into the production phase.

Planning Stage

Auditors in the development phase need to critically review the evaluation report and the development plan in order to understand the contractor's plan for producing hydrocarbon from a commercial discovery. By reviewing these documents, auditors can determine if the contractor's planned activities will provide adequate VFM in developing the discovery. This is the main objective of the audit during the development phase. The scope of the audit should be limited to the evaluation report and development plan. The methodology of the audit will be a critical review of the evaluation report and development plan, as well as interviews with the contractor's managers who will provide justification for figures and costs associated with the development plan.

While planning the technical audit program, auditors need to analyze and understand all documents in the evaluation report which contains the contractor's assessment of a commercial discovery. This audit will help determine whether or not the discovery should be developed in the manner defined in the contractor's development plan, and will aid the auditors in determining if the future development plan will be conducted at a reasonable cost.

Following a review of the evaluation report, auditors must review the development plan. The development plan contains detailed proposals by the contractor for the construction and establishment of all facilities and services for the recovery, storage, and transportation of petroleum from the contract area. This includes:

- Proposals relating to drilling and completion of wells, production and storage installations, and transport and delivery facilities required for the production, storage and transport of petroleum including:
    - The estimated number, size and capacity of production facilities/platforms;
    - Estimated number of production wells;
    - Particulars of production equipment and storage facilities;
    - Particulars of waste disposal;
    - Particulars of feasible alternatives for the transportation of petroleum; including pipelines;
    - Particulars of equipment required for the petroleum operations;

- Estimate of the rates of production;
- Cost estimates under such development plan and alternative development proposals;
- Proposals related to the establishment of processing facilities (if any);
- A description of the organizational set up of the contractor in Bangladesh;
- An estimate of the time required to complete each phase;
- Description of the abandonment plan, to be implemented whenever a piece of equipment, facility or a platform needs to be abandoned prior to or on termination of this contract;
- Details of yearly forecast of expenditure of capital, operating and abandonment expenditure; and contingencies for minimizing gas wastage, pressure maintenance program to optimize petroleum recoveries and additional development.

The scope of the audit in the development phase should be limited to the information provided in the evaluation report, as well as all production facilities, documents, personnel, and budgets established in the development plan.

In this phase it will be critical for auditors to thoroughly review all documents, files, reports, and studies supplied by the contractor in the evaluation report and development plan. When constructing the methodology of the audit it will be imperative to implement an appropriate audit schedule to ensure the audit is completed in a timely manner, allowing the contractor to move into the production phase. It will also be important to assess whether the audit team has the appropriate number of audit staff before proceeding with the technical audit program. The audit team in this phase must contain relevant personnel including geologists and geophysicists to determine if the proposed evaluation report and development plan are technically efficient.

Technical Audit Program

The technical audit in the development phase may be the most critical for determining whether or not the contractor's future operations will attain an adequate level of VFM. The information provided in the evaluation report and development plan is extremely comprehensive and requires critical scrutiny by the audit team.

The audit evidence provided by reviewing the evaluation report needs to be submitted in an organized fashion, aimed at supporting the findings of the audit. This can be achieved by preparing working papers which will provide a systematic record of all work carried out during the audit. The working papers will provide the auditors with a record of major decisions taken during the audit and key correspondence with the audited body. This will provide the auditors with the information necessary to determine if the contractor's proposed development plan will be technically efficient and conducted in a cost effective manner.

The development plan contains the contractor's blueprint of how they will conduct recovery, storage and transportation of hydrocarbon, as well as a budget for developing the resource. Auditors should interview the contractor's managers in the methods and costs associated with estimating the rate of production, proposals for establishing production facilities as well as forecasts of expenditure of capital, operating and abandonment expenditures, and the economics\profitability of the proposed development before the development plan is approved by the JMC. Special attention should be paid to the cost and size of all production and transportation facilities and equipment, ensuring they will be established with the proper specifications and constructed at a reasonable cost. This has been a problematic area for Bangladesh in the past,[4] and an area where Petrobangla needs to provide increased effort to monitor auditing provisions more efficiently.

Reporting Stage

The documentation of audit evidence provided in the technical auditing program is to supply the basis for a follow up report submitted to Petrobangla and the Government. The goal of this report is to draw conclusions based on the audit evidence collected while conducting the audit of the evaluation report and development plan. Following the review of the contractor's planned activities involved in the evaluation report and development plan, the auditor's report to Petrobangla and the Government will provide conclusions as to whether or not the contractor will be able to efficiently develop the discovery at an appropriate cost with their current development plan. The conclusions in this report will determine whether there are deficiencies

[4] With regards to the Sangu field, the capacity of production facilities was much larger than the daily contracted quantity of gas.

in the contractor's planned operations and will provide recommendations on how to correct the deficiencies.

3.5.2 Verification of Reported Historical Results and Activities

Planning Stage

In the development stage the primary objective will be to ensure that the activities stated by the contractor in the evaluation report and development plan are accurate and coincide with the contractor's actual operations. The scope of the audit should be limited to the information reported by the contractor in the evaluation report and development plan. The methodology of this audit should involve interviews with the contractor's managers as well as frequent onsite visits to determine that the activities reported by the contractor are actually taking place.

Technical Audit Program

Within one hundred and twenty (120) days after the completion of the appraisal program, the contractor is required to submit to Petrobangla an evaluation report of the proposed discovery. Auditors should verify whether or not the contractor submitted the evaluation report on time and whether it was approved by the JMC. Once auditors have documented that the evaluation report was received on time and approved by the JMC, the auditors should focus on verifying that the contractor has provided reliable data that agrees with the contractor's actual activities.

The evaluation report provides Petrobangla with the contractor's assessment of the volume of oil and gas initially in place, the reserves in proved, probable and possible categories, production capacity of the reservoir, production forecasts, estimates of recoverable reserves, and the estimated production capacity of the reservoirs. It is necessary for auditors to systematically check all procedures, figures, and assumptions the contractor has made in developing the evaluation report to ensure the reported figures coincide with actual figures. Interviewing the contractor's managers involved with the evaluation report would be a good method to verify the accuracy of the aforementioned figures.

Auditors must also make it a priority to verify whether the contractor's reported activities in the development plan are in accordance with the actual activities carried out by the contractor. The development plan contains information regarding:

- The development well pattern
- Time schedule of the development operations
- Estimate of development and operation costs
- Intended reservoir operating policy,
- Installation of production, storage, transport and delivery facilities required for operations,
- Estimated number of production wells,
- Estimate of the rates of production and projection of the possible sustained rate of production
- Estimate of the time required to complete each phase of the proposed development

Auditors should first verify that the development plan was submitted on time and was put together according to the specifications defined by the PSC. Auditors should further verify that the development plan was properly approved by the JMC. After verifying that the development plan has been properly submitted and approved, auditors should document evidence that the contractor has accurately reported its development activities.

The development plan, describes the contractor's approach to developing a discovery. In order to verify that the contractor's reported activities are accurate and Petrobangla is not being defrauded, auditors should make frequent onsite visits. During the onsite visits auditors will determine if the contractor's reported number of wells, estimated rates of production, and installation of production, storage, and transmission facilities actually exist and are built to the quantity and specifications consistent with the contractor's reported development plan. Auditors should also provide evidence to support whether or not the contractor operated the reservoir according to good international petroleum policies.

Reporting Stage

The conclusions of the auditors should be properly documented in a follow up report to Petrobangla. These conclusions should determine whether or not reported activities/costs are consistent with actual activities/costs. This report will help Petrobangla to accurately determine which costs are eligible for cost recovery, and which costs should be raised in audit exceptions.

3.6 AUDITING OF PRODUCTION PLANS AND ACTIVITIES

3.6.1 Review of Planned Future Activities and Costs

The MPSC-2008 gives the right to audit the contractor's production program. An annual review of the contractor's production program is currently being conducted by Petrobangla. To ensure the technical efficiency of the production program, a comprehensive technical audit is required. The proposed technical audit program follows below.

Planning Stage

The objective of the technical audit during the production phase should be to review the contractor's production program to ensure it will be carried out efficiently and at a reasonable cost.

The scope of the audit involves understanding the volume of oil and natural gas that the contractor estimates will be produced as well as understanding the split of production between the contractor and Petrobangla. Before the technical audit program commences the methodology of the audit needs to be defined. The methodology of this audit will specifically explain how the auditors intend to review the proposed contractor's production program and determine if it will be conducted in a technically prudent fashion.

Technical Audit Program

The technical audit in the production phase will focus mainly on determining if the contractor's production program will produce hydrocarbon in the most technically efficient manner, as well

as operating at a reasonable cost. Article 14.9 of the MPSC-2008 requires the contractor to submit a forecast of the total quantity of petroleum that it estimates can be produced, saved and transported during the next four (4) calendar quarters. Auditors should interview the contractor's managers to determine if the forecasts of production in the future production program are likely to be met and any challenges the contractor may experience in meeting the forecasted production level.

The contractor is required by article 18.5 of the MPSC-2008 to submit to Petrobangla a report detailing procedures to allocate the correct amount of production between parties, should a measurement error occur. Auditors should be familiar with this report and determine if the contractor's procedures for gauging a measurement error will allow the future production program to run in an efficient manner.

Reporting Stage

The follow up report in the production phase may be the most critical, because it is in this phase that the contractor will begin recovering its costs. The audit evidence provided in the technical auditing program will be crucial in determining whether or not the contractor has allocated production correctly.

3.6.2 Verification of Reported Historical Results and Activities

Planning Stage

During the production phase the auditor's primary objective will be to verify whether the contractor's reported rate of production matches the contractor's actual rate of production. This auditing function is crucial in determining the correct split of production between the contractor and Petrobangla, and will ensure that Petrobangla is not being defrauded by the contractor. The scope of the audit in this phase should be limited to the information reported in the contractor's production program. The methodology of the audit will involve a critical review of the contractor's production program to ensure that reported production coincides with actual production, and that the production program was carried out according to the specifications

defined in the PSC. This will also involve onsite visits to ensure that all measurement equipment was operating properly and no measurement errors occurred during production.

Technical Audit Program

The contractor is obligated to produce at a rate defined in the production program as specified by the PSC and approved by the JMC. In order to verify that the contractor's reported production program is accurate and coincides with actual production, auditors must make frequent onsite visits to ensure that all measurement equipment is functioning properly, and being maintained in accordance with good international petroleum practices.

Petrobangla distribution companies verify and certify gas and condensate production quantities. Gas metering stations are routinely calibrated in the presence of representatives from those companies. In addition, the BTU value of the gas is cross-checked and certified. Petrobangla makes payments for gas and condensate invoices only after this certification has occurred.

Reporting Stage

The auditor's evidence will be documented in a follow-up report to Petrobangla. This report will help Petrobangla in determining whether or not reported production is consistent with actual production, and Petrobangla received the correct amount of hydrocarbon as defined by the share of production in the MPSC-2008.

3.7 COSTS

3.7.1 Procurement

Article 10.12 of the MPSC-2008 requires the contractor to furnish to Petrobangla its procurement procedures. The procurement procedure must follow the requirements in Section 16 of the MPSC-2008. Currently, the procurement procedure of the contractor is submitted to Petrobangla as a mere formality in fulfilling the requirements defined by the PSC. Petrobangla's methodology and effort in monitoring procurement audit provisions of the PSC are not adequate.

Petrobangla or the HCU needs to play a more active role in the entire procurement process, even before purchases are made to ensure VFM for procured materials in Bangladesh.

It has been noted in discussion that a contractor may procure a used piece of equipment, but claim costs based on a new one. A more proactive role in the procurement process by Petrobangla and the HCU would help reduce the contractor's ability to make inaccurate procurement claims such as this.

Audits by Petrobangla should determine if the contractor's procurement procedures will provide good VFM by purchasing equipment necessary for petroleum operations at competitive prices. In order to ensure VFM in procurement, the procurement plan must be reviewed by auditors to determine if the procedure will allow for the best available price. An electronic cost database would be useful for auditors to determine if major procurements will be obtained at a reasonable cost by comparing costs for similar procurements from different projects. The contractor is required to provide Petrobangla tender documents for competitive bidding on major purchases of the contractor. Auditors should review the tender documents to determine if the bidding process will be conducted in a manner that provides for competitive prices.

After the procurement is obtained, Petrobangla should check to see that reported costs are consistent with actual costs and the equipment is the right specification, ie. if a used piece of equipment was procured, ensure the reported cost is consistent with a used piece of equipment and not a new piece of equipment. Due diligence on invoices would facilitate this process. A more detailed comparison of actual and reported costs follows in the next section.

3.7.2 Comparison of Actual vs. Reported Costs

Verifying contractor's reported costs with actual costs has been an area of major weakness in administering PSC's in Bangladesh, and has led to hefty audit exceptions by Petrobangla. This situation has led to frustrating relations between IOC's and Petrobangla in the past, as well as many costly arbitration hearings. A proposed technical auditing program for determining the accuracy of reported costs is described below.

Planning Stage

The auditor's primary objective of the technical audit program in this phase will be to verify that reported costs coincide with actual costs in a timely fashion, before costly arbitration is necessary. Section 2 & 3 of Annex-B of the MPSC-2008 documents the procedure of how the contractor is required to classify all of its costs and expenditures. Section 7 of Annex-B of the MPSC-2008 classifies costs that are not deemed recoverable under this contract. Under the terms of the PSC, the contractor is required to submit a statement of expenditure each calendar quarter.

The contractor is also required to submit a quarterly cost recovery statement that includes recoverable costs as well as unrecovered costs from previous quarters. The scope of the audit should be limited to the contractor's reported statement of expenditures as well as the contractor's cost recovery statement. The methodology of this audit will involve a critical review of both of these documents.

Technical Audit Program

Auditors will review the contractor's statement of expenditure and the contractor's cost recovery statement to verify reported costs match actual costs. Performing due diligence on invoices, ensuring vendors actually exist and payments for procurements have actually been made is an important audit function in this phase.

In reviewing these documents, auditors must provide evidence to support whether or not the contractor followed the appropriate accounting procedure and classification of costs before they raise audit exceptions for costs they deem non-recoverable. Verifying the accuracy of the contractor's costs should be done promptly each quarter, after the contractor submits their statement of expenditure. The timeliness of this audit is critical to avoid potential accounting problems for the contractor, as well as to avoid formal arbitration should disputes arise.

Reporting Stage

The evidence provided by the auditors performing the technical audit program should be the basis of a follow-up report to Petrobangla. This report will help Petrobangla determine the

accuracy of reported expenditures. Providing justification for expenditure as well as ensuring that reported expenditures are consistent with actual expenditures will allow Petrobangla to determine the correct amount of cost recovery before denying recovery through audit exceptions. This will help minimize hefty audit exceptions that have arisen in the past due to misinterpretation of cost recovery items.

3.8 PRICING

Planning Stage

The objective of the technical auditing program in this phase will be to verify that the contractor has accurately reported the price for hydrocarbon sales. Article 15.7 of the MPSC-2008 describes the method by which the price for natural gas should be calculated. Article 17 of the MPSC-2008 describes the procedure for the valuation of petroleum.

The MPSC-2008 states that the sale price for natural gas shall be 75% of the Marker Price converted to US $ per MCF. The Marker Price shall be calculated for each calendar quarter based on the arithmetic average of Asian Petroleum Price Index ("APPI") quotations of High Sulphur Fuel Oil 180 CST ("HSFO"), FOB, Singapore.[5] The sales price is also subject to a price floor of seventy Dollars ($70) per metric ton and a ceiling of one hundred and eighty Dollars ($180) per metric ton.

The value of Petroleum under the MPSC-2008 is defined as the price, which a willing buyer would pay to a willing seller under a long-term contract for the sale of a given product at a given time on an arm's length basis, taking into account the quality, volume, and cost of transportation from the measurement point.[6] The scope of the audit should be limited to understanding and verifying for accuracy the procedure involved with determining the price of petroleum and natural gas.

Technical Audit Program

The primary function of the auditor will be to verify that the contractor reported the correct sales price; ensuring Petrobangla paid the appropriate amount for petroleum and natural gas sales. For

[5] Source: Model Production Sharing Contract 2008, Article 15.7
[6] Source: Model Production Sharing Contract 2008, Article 17.2

natural gas, the verification process will involve auditors checking that the correct marker price was calculated by verifying the APPI quotation for the previous calendar quarter. Auditors will also need to determine that the correct quantity of natural gas was applied to the appropriate marker price to verify the final sales price. Auditors must also verify the correct price for petroleum sales calculated per article 17.2 of the MPSC-2008. Verifying these figures will allow the auditor to determine if the contractor's reported pricing is consistent with the actual price paid by Petrobangla.

Reporting Stage

The auditor's conclusions should be properly documented in a follow-up report to Petrobangla. The conclusions in this report should verify whether or not the contractor applied the proper pricing mechanisms to their petroleum and gas sales. This will determine whether Petrobangla paid the correct amount for petroleum and natural gas sales.

3.9 ENVIRONMENT, HEALTH AND SAFETY (EHS)

The PSC grants Petrobangla the right to conduct EHS audits. Article 10.6 of the MPSC-2008 gives Petrobangla the right to conduct a technical audit of the contractor's facilities. The PSC also grants the power to audit the Environmental Impact Assessment (EIA) and Environmental Management Plan (EMP).

This is an area that involves careful planning as well as a stringent auditing procedure in order to avoid disputes that are likely to arise. The main goal for auditing in this section is to determine if the contractor's EHS expenditures are reasonable and they provide sufficient protection against environmental disaster as well as emergency facilities for response if necessary.

Petrobangla officials visit the IOC fields on several occasions throughout the year, with such visits including monitoring of environmental safety. However, we are not aware of any existing guidelines on how to effectively monitor a disaster area exist. There are also no guidelines stipulating the timeframe in which Petrobangla must investigate a disaster area.

In the event of a disaster a dispute is likely to arise when trying to determine the reasonableness of expenditures. There are no guidelines in the PSC which state which types of expenditures are cost recoverable should an accident/disaster occur. This process is further complicated by the requirement of an expenditure incurred by the contractor in the event of emergency/disaster. This expenditure will be incurred without the contractor knowing fully if they will be able to recover the cost. The implementation of an EHS technical audit program will help alleviate some of these problems. The proposed technical audit program follows below.

Planning Stage

In the planning stage the primary objective will be to review the Environmental Impact Assessment (EIA) as well as the Environmental Management Plan (EMP) to determine if they can efficiently provide protection against disasters. These documents are required to be submitted to Petrobangla before petroleum operations are to commence. The scope of the audit should remain limited to the environmental and safety procedures that are required to be submitted to Petrobangla. The methodology of the audit should be a critical review of the EIA and EMP.

Technical Audit Program

Auditors should review the EMP and EIA to determine if the proposed EHS expenditures are reasonable and the contractor's proposed environmental and safety procedures will be effective at minimizing the impacts of an environmental disaster or accident involving the harm of an employee. Auditors should provide audit evidence of weak areas in the contractor's environmental management plan and environmental impact assessment that may lead to an environmental disaster or potential health risks to employees. This review should be conducted before the EMP and EIA are approved, and petroleum operations are allowed to commence.

Reporting Stage

In order to provide sound conclusions to Petrobangla and the government about the contractor's ability to preserve health, safety, and the environment in its operations, reliable audit evidence needs to be provided by the auditors conducting the technical auditing program. The follow up

report is critical in determining the reasonableness of a contractor's expenditure should an environmental accident or employee accidents occur.

3.10 LOCAL TRAINING, LABOR AND SUPPLIES

The PSC defines areas where audits of locally procured supplies, hiring of local labor, and training are necessary. Article 10.12 of the MPSC-2008 requires the contractor to submit to Petrobangla the contractor's employee salary and benefits policy. Article 10.13 of the MPSC-2008 requires the contractor to submit to Petrobangla its yearly manpower requirements including an organizational chart. Preference must be given to hiring and training Bangladeshi personnel under this article. Written approval from Petrobangla is required in hiring any expatriate personnel, and expatriates should only be hired if it is not possible to obtain comparable Bangladeshi personnel.

The articles described above implies that a comprehensive technical audit is necessary to ensure that preference is given to Bangladeshi personnel (including training) as well as local sub-contractors, manufactured materials, equipment, machinery, and supplies required for petroleum operations.

Petrobangla needs to provide increased effort in monitoring the acquisition of locally procured materials and the hiring of local personnel as their current methodology and effort are not adequate. Currently there is no mechanism in place to monitor whether or not the contractor is giving preference to local personnel and equipment. Due to the deficiencies in auditing the contractor's procurement procedures, the contractor has the liberty of procurements at their convenience. This often results in acquiring materials that have not been procured locally at un-competitive prices leading to over expenditure in cost recovery items. This in turn will be an increased cost to Petrobangla. It is also unclear as to whether or not the contractor is getting the proper approval by Petrobangla for hiring expatriate personnel.

Petrobangla and the HCU need to play a more active role in determining if the contractor is complying with local procurement procedures and they are hiring the appropriate amount of local personnel, while providing adequate training.

A regular audit should be scheduled to ensure personnel are provided with ongoing and up to date training programs. Also, a provision requiring an annual report describing the level of procurement of goods and services from local sources should be included in the next revision of the PSC. A provision for an annual report on the status of training programs and employment of Bangladeshi nationals should also be added to the PSC. The following represents the proposed technical auditing program.

Planning Stage

In the planning stage of the technical audit program, auditors should focus on understanding the contractor's local procurement procedures, employee salary and benefits policy, and the contractor's manpower requirements and organizational chart.

The objective of the technical audit program for local training, labor, and supplies will be to determine if the contractor intends to maximize the use of local personnel, provide adequate training programs, as well as procure locally manufactured goods. This will be facilitated by reviewing the contractor's procurement procedures before any procurement is granted for approval. The scope of this audit should be limited to the contractor's proposed procurement procedures, employee salary and benefits policy, and the contractor's manpower requirements.

Technical Audit Program

Auditors should determine if local manufacturers were invited to bid on the procurement before it is approved. If local manufacturers are not included in the bidding process, auditors should interview the contractor's managers involved in procurement to justify why the procurement could not be obtained locally. The technical audit program should also determine whether or not the contractor intends to satisfy the PSC requirement of providing local personnel with adequate

training programs. Interviews with the contractor's personnel department could facilitate this process.

The technical audit program should establish a method to influence compliance with giving preference to local personnel and providing adequate training. Section 10.13 sub section D of the MPSC-2008, specifies the percentage of Bangladeshi personnel that must be hired during each phase of operations. Auditors should review the contractor's manpower requirements and organizational chart to determine if the contractor intends to hire the correct proportion of Bangladeshi nationals in each phase of operations. This audit should be conducted before the contractor hires employees and should meet the approval of Petrobangla.

Reporting Stage

The auditors conducting the technical auditing program will provide audit evidence that will support the conclusions drafted in the follow-up report to Petrobangla. These reports need to be submitted to Petrobangla as quickly as possible following the audit so Petrobangla may draw conclusions as to whether or not the contractor's proposed procurement procedures will provide adequate VFM, Bangladeshi personnel will be hired in the correct percentages required by the PSC, and adequate training programs will be provided.

3.11 COMPARISON OF PREDICTED AND ACTUAL RESULTS

There is a common phrase "Those who forget the past are condemned to repeat it." One way to improve future performance is to not only remember the past, but to learn from it. In this regard, an important audit activity is to compare actual results with predictions that were made earlier. There are several examples:

- If exploration results are not consistent with predictions, then there may be learnings about the accuracy of geological, seismic and/or other geophysical studies in the specific context of Bangladesh.
- Learnings can arise by comparing the actual schedule and costs of exploration and development activities with forecasts that were made before undertaking these activities.

- Actual production rates may differ from forecasts. There is an opportunity to understand the reasons for the differences, and to use that understanding to improve future production forecasts.

3.12 TECHNICAL AUDITING PROCEDURE CHECKLIST

This section will provide a model of all the technical auditing procedures involved in the exploration, development and production phases as well as procedures for Environmental, Health and Safety and procurement audits. The audit checklist will state the audit objective, the proposed audit procedure, and any associated provisions of the PSC that imply technical auditing power. The checklist follows in Table 2. We understand that Petrobangla undertakes many, if not all, of these activities on a regular basis.

Table 2 Auditing Checklist - Exploration

Stage	PSC Provisions	Audit Objective	Audit Procedure
Exploration	NA	Review and determine technical efficiency of the proposed WPB.	Interview managers involved with seismic surveys as well as drilling managers to determine if the contractor's procedures for conducting the WPB will provide goo VFM.
	NA	Compare reported costs of proposed WPB with costs from similar projects.	Utilize electronic cost database to facilitate comparison of reported costs with costs from similar projects. The cost database will allow auditors to determine where costs seem excessive before WPB is approved by JRC.
	Article 6.6b	Document the necessity of additional seismic surveys/exploratory wells outside those required in the minimum work program.	Conduct a Cost-Benefit analysis to determine if additional surveys/exploratory wells will provide good VFM. Interview contractor's managers to determine why they deem additional surveys/ exploratory wells are necessary.
	Section 7	Verify reported expenditures involved in the WPB are consistent with actual expenditures.	Review the contractor's statement of expenditures. Properly document whether reported expenditures match actual expenditures and publish in a follow up report. Document whether or not the WPB was submitted on time and approved by the JMC.
	NA	Compare actual outcome with anticipated results	Review actual results of exploration wells, compared to results expected on the basis of seismic, G&G and other exploration activity. Compare with nearby areas.

Table 3 Auditing Checklist - Development

Development	Article 8.2	Review and monitor Appraisal program	Review proposed appraisal WPB, and revise or give approval to Contractor. Monitor appraisal activity.
	Article 8.6	Review the evaluation report on the appraisal program.	Review findings of the appraisal program
	Article 8.11	Review the development plan.	Interview IOC managers to determine the methods and costs associated with estimating the rate of production, proposals for establishing production facilities, forecasts of expenditure of capital, operating and abandonment expenditures, and the economics\profitability of the proposed development.
	NA	Verify reported activities and costs associated with the evaluation report are consistent with actual costs.	Document whether or not the evaluation report was submitted on time and approved by the JMC. Check all procedures, figures, and assumptions the contractor has made in developing the evaluation report to ensure the reported figures coincide with actual figures.
	NA	Verify reported activities and costs associated with the development plan are consistent with actual costs.	Schedule frequent onsite visits. During the onsite visits auditors will document if the contractor's reported number of wells, estimated rates of production, and installation of production, storage, and transmission facilities actually exist and are built to the quantity and specifications consistent with the contractor's reported development plan. Auditors should also provide evidence to support whether or not the contractor operated the reservoir according to good international petroleum policies. Document auditor's activities during onsite visits in follow up reports submitted to Petrobangla.

Table 4 Auditing Checklist – Production, Pricing, Procurement

Production	Article 14.9	Review the contractor's production program.	Interview the contractor's managers to determine if the forecasts of production in the future production program are likely to be met. Auditors should also perform regular onsite visits to inspect all measurement equipment to ensure the equipment is working correctly, and the correct amount of hydrocarbons will be produced. Auditor's onsite activities should be documented in a follow up report and submitted to Petrobangla.
	NA	Verify whether the reported rate of production is consistent with the actual rate of production	Auditors must make onsite visits to determine that all measurement equipment is operating correctly and the contractor is producing according to the specifications defined in the PSC.
Pricing	Article 15.7 & Article 17	Verify that the contractor reported the correct gas sales price.	Verification of the correct sales price requires the auditor to determine the contractor calculated the marker price correctly. Auditors will also need to determine that the correct quantity of natural gas was applied to the appropriate marker price to verify the final sales price.
Procurement	NA	Review the contractor's procurement procedures.	Auditors should review the contractor's purchases to ensure they were procured at the best available price. Auditors should review the tender documents to determine if the bidding process will be conducted in a manner that provides for competitive prices. Auditors must also determine if the cost of reported procured equipment and facilities are consistent with actual costs. Due diligence on invoices would facilitate this process. Use of an electronic cost database may be helpful in determining reasonable costs for various procurements.

Table 5 Auditing Checklist – EHS and Local Training/Labor/Supplies

Environment, Health & Safety	Article 10.6	Review the Environmental Impact Assessment as well as the Environmental Management Plan to determine if they can efficiently provide protection against disasters.	Auditors should provide audit evidence of weak areas in the contractor's environmental management plan and environmental impact assessment that may lead to an environmental disaster or potential health risks to employees.
Local Training, Labor, Supplies	Article 10.12, Article 10.13 Section 16	Review the contractor's procedure for obtaining local supplies. Review the contractor's manpower requirements and organizational chart.	Auditors should determine if local manufacturers were invited to bid on the procurement before it is approved. If local manufacturers are not included in the bidding process, auditors should interview the contractor's managers involved in procurement to justify why the procurement could not be obtained locally. The technical audit program should also determine whether or not the contractor intends to satisfy the PSC requirement of providing local personnel with adequate training programs and hiring the appropriate percentage of Bangladeshi nationals.

4 BANGLADESH AUDITING INSTITUTIONS AND PRACTICES

This section describes auditing activity conducted by Government agencies in Bangladesh, including the auditing procedures that Petrobangla may employ according to powers granted by the PSC and the laws and statutes of the Government of Bangladesh. The audit powers granted by the PSC and the laws of Bangladesh are described in detail later in this section.

4.1 ALLOWED AUDIT PROCEDURES

The Government of Bangladesh has developed several types of technical auditing procedures and related mechanisms for the systematic and objective examination of all oil and gas operations in Bangladesh. Those auditing procedures are both focused on the financial aspects of the projects as well as the technical soundness of the development. This section examines the allowed technical auditing. Generally Bangladesh specifies the allowed procedures according to two mechanisms, the Production Sharing Contract and the various laws & statutes of the Government of Bangladesh. The two mechanisms create a broad authority for both Petrobangla and the Government to conduct extensive technical auditing.

4.1.1 Audit Procedures Allowed According to the PSC

Technical auditing authority is derived mainly from the terms of the PSC. These terms of each PSC may differ, perhaps only slightly. This section discusses auditing authority allowed by the 2008 Model PSC (MPSC-2008). The core categories of technical auditing that are allowed are discussed below.

Authority to Audit:

The authority to perform technical audits has many sources. Article 12.3 of the MPSC-2008 gives the JMC the power to appoint auditors. It does not specify the scope of what those auditors can do, but generally the JMC has technical and financial power, so technical auditing appears to be allowed.

Auditing Via Review of Required Documents:

In addition to specifically mandated auditing, Petrobangla and the Government have the opportunity to audit a number of technical documents submitted according to IOC adherence to reporting guidelines. The following documents are important to the technical elements of any project and are also required:

- Work Programs (JMC review);
- Budgets (JMC review);
- Production Levels (JMC review);
- Subcontractor and Service Contracts (JMC review);
- Disaster Response Reports (JMC review);
- Operating Agreements (Petrobangla Review);
- Appraisal Program (Petrobangla Review);
- Valuation of Oil & Gas Notices (Petrobangla Review);
- Abandonment Work Program & Budget (Petrobangla Review).

While the JMC has no direct power to act on its findings, Petrobangla and the Government can enforce the findings of the JMC. Thus, the authority to run the equivalent of a technical audit is possible via this process. Technical Auditing can be conducted on all reports received by Petrobangla.

Cost Recovery:

Often the most contentious financial issue, adequate technical performance of cost recovery items is also important. Article 14.3 of the MPSC-2008 subjects the cost recovery process to audit procedures and thus opens the possibility of technical audits of cost recovery items.

Procurement:

Article 16 of the MPSC-2008 allows for audit of the methods by which goods and services are procured.

Financial Auditing Procedures Important to Technical Auditing:

In addition to technical audit procedures, a number of financial auditing procedures provide important information for a technical audit. For instance, Article 23.3 of the MPSC-2008 requires submission of end of year balance sheets and profit / loss reports. Both submissions are important in determining the reported level of IOC profit and costs.

In the Audit and Adjustment, Section 14 of MPSC-2008, the following provisions also provide instrumental information in an effort to create a technical auditing report.

14.1- "Statement of Expenditure supplied by contractor"

14.2- "annual audited accounts and statement of expenditure supplied by contractor"

14.3- "Without prejudice to statutory rights, Petrobangla, upon at least twenty (20) Days advance written notice to the contractor, shall have the right to inspect and audit, during normal business hours, all records and documents supporting costs, expenditures, expenses, receipts and income, such as the contractor's accounts, books, records, invoices, cash vouchers, debit notes, price lists or similar documentation with respect to the Petroleum Operations conducted under this Contract in each Year, within two (2) years (or such longer period as may be required in exceptional circumstances) from the end of such Year."

14.4- "Petrobangla or its auditors shall be entitled to examine and verify, at reasonable times, all charges and credits relating to the contractor's activities under this Contract and all books of account, accounting entries, material records and inventories, vouchers, payrolls, invoices and any other documents, correspondence and records considered necessary by Petrobangla to audit and verify the charges and credits. The auditors shall also have the right, in connection with such audit, to visit and inspect, at reasonable times, all sites, plants, facilities, warehouses and offices of the contractor directly or indirectly serving the petroleum operations, and to physically examine other property, facilities and stocks used in petroleum operations, wherever located and to question personnel associated with those operations."

14.7- "Petrobangla may require contractor to engage contractor's parent company's auditors to examine at contractor's cost and in accordance with generally accepted auditing standards, the books and records of contractor's Affiliate to verify the accuracy and

compliance with the terms of this Contract and this Accounting Procedure in so far as a charge from the Affiliate of contractor (or of any entity comprising contractor) is included directly or through contractor as a reimbursable cost under this Contract."

14.8- "All documents must be maintained by contractor and made available for inspection for five years following their date of issue, or for such longer period as may be legally required."

4.1.2 Relevant Statutes & Laws

While the PSCs provide the context for technical audits, Bangladesh's statutes and laws provide far more audit opportunities. The Bangladesh Petroleum Act of 1974 defines opportunities for technical auditing in Bangladesh. In fact, the powers given in Articles 3, 5 and 6 provide a substantial ground for technical auditing if the government wishes to exercise it. Details are described below.

Article 3 Powers:

Article 3(1)- "The Government shall have, within the territory, continental shelf and economic zone of Bangladesh, exclusive right to explore, develop, exploit, produce, process, refine and market petroleum."

Comment- Given the government's right to "explore, develop, exploit, produce" etc. substantial responsibility is given to government to ensure that its resources are being produced in an efficient and professional manner.

Article 3(2) "The Government shall plan, promote, organize and implement programmes for exploration, development, exploitation, production, processing, refining and marketing of petroleum."

Comment- In this Article it is important to point out the planning and organization responsibilities of the government. Thus, not only does the government have the power to control the industry but they are expected to do so in a calculated and organized manner.

Article 3(3) “In particular, and without prejudice to the generality of the foregoing provisions, the Government may take such steps as it thinks fit to:

a) Carry out geological, geophysical and other surveys for the exploration of petroleum;
b) Carry out drilling and other prospecting operations to prove and estimate the reserves of petroleum;
c) Undertake such other activities as may lead to the establishment of such reserves;
d) Undertake the production of petroleum from such reserves and the refining of such petroleum;
e) Sell, distribute, transport and otherwise dispose of petroleum and its refined products;
f) Contribute towards the cost of any studies, experiments or technical research connected with petroleum;
g) Undertake, assist or encourage the collection, maintenance and publication of statistics, bulletins and monographs;
h) Undertake any other activity which is supplemental, incidental or consequential to any of the activities aforesaid, or which may be prescribed by rules made under this Act.”

Comment- the most important provisions in Article 3(3) for achieving a technical auditing program, are sub points (c), (f), (g) and (h). Sub point (c) is important because its stresses the importance of establishing additional reserves in Bangladesh. Without appropriate technical auditing it is impossible to determine if companies are under reporting, or omitting reserves estimations that are not in their general programs. Thus, in the spirit of sub point (c) the government should carefully audit and comment on reserve calculations. In sub point (f) the important take-away is that the government has specific mandates that will assist in undertaking studies that facilitate industry development. To construct effective studies the government must understand the data being produced by IOCs and the problems that arise. To facilitate sub point (f) the assumed mechanism would be careful technical auditing. Sub point (g) provides the most direct mandate in Article 3 to conduct technical auditing. Collection, maintenance and publication are fundamental attribute of a technical auditing program. Finally, sub point (h) provides a general catch all authority to conduct any activity which is necessary to ensure the goals identified in sub point (a) – (h). Thus, if there was any question about whether technical auditing is permitted, Article 3.3(h) provides that authority.

Article 5 Powers:

Article 5: "For any purpose mentioned in this Act or the rules made there under, any person authorized by the Government in this behalf may:

a) Inspect and take extracts from and make copies of any records, returns, plans, maps and accounts which is kept or made by any person engaged in any petroleum operation;
b) Inspect the installation, well, plants, appliances and works operated or maintained by any person engaged in any petroleum operation and the state of repair and condition thereof;
c) Survey and conduct measurement in any area covered by any petroleum operations;
d) Conduct measurement of any stock of petroleum;
e) Order the production of any cores, samples, records, returns, plans, maps, and accounts relating to any petroleum operations;
f) Examine any person engaged in any petroleum operation.

Comment- While Article 3 gives general obligations of the Government, Article 5 provides a specific call to action to perform technical auditing. While some of the Articles 5 powers may have a more financial flavor to them, Article 5(a) (b), (c), (d), (e), and (f) have a very technical flavor to them. Sub points (b), (c), and (d) provide substantial justification to conduct a multi-disciplinary engineering audit. Sub points (b) and (e) provide substantial justification for a geological audit, and finally sub point (f) allows the possibility of a human resources audit. In sum the general powers of Article 5 give very broad review power, and in the event that is not currently done by Petrobangla it seems likely that EMRD could delegate such power to the HCU.

Article 6 Powers:

Article 6 (1): It shall be the duty of any person engaged in any petroleum operation to:

a) Ensure that such petroleum operation is carried on in a proper and workmanlike manner and in accordance with good oil-field practice;
b) Carry on petroleum operation in any area in a manner that does not interfere with navigation, fishing, and conservation of resources of the sea and sea-bed;
c) Consider factors connected with the ecology and environment;

Comment- Article 6 provides an additional angle on the potential for technical auditing, by obligating anyone involved in petroleum operations to review their activities. Since (a)-(c) describes a wide range of activities within the country, it is apparent that given the right procedure, technical audits may demanded from the companies themselves. In

this situation the government would simply need to review the report, and would be relieved of the extensive finding duties described in Article 5.

Article 6 (2) "In particular, and without prejudice to the generality of the foregoing provision, a person engaged in any petroleum operation shall, in carrying on such operation in any area:

a) Control the flow, and prevent the waste or escape, in that area of petroleum or water;
b) Prevent the escape in that area of any mixture of water or drilling fluid with petroleum or any other matter;
c) Prevent damage to petroleum bearing strata in any area, whether adjacent to that area or not;
d) Keep separate each petroleum pool discovered in the area;
e) Prevent water or any other matter entering a petroleum pool through wells in that area, except when required by, and in accordance with, good oil-field practice.

Comment- the concepts embodied in Article 6(2) are widely considered conservation concepts, and can serve as the underlying justification for additional technical auditing over the status quo. Most regulators worldwide use the conservation of resources and environment argument as their primary source to regulate. Statutes in Bangladesh provide that underpinning to do the same.

4.2 ORGANIZATIONAL FRAMEWORK

This section describes the organizational framework of the various government agencies involved in auditing of oil and gas activity in Bangladesh. It also describes the entities within Petrobangla that conduct PSC auditing activity.

4.2.1 Overview of Governmental Auditing

The Energy and Mineral Resources Division (EMRD) of the Ministry of Power, Energy and Mineral Resources is responsible for overall management of exploration and development of hydrocarbons carried out by the International Oil Companies (IOCs) and the three national gas production companies (BAPEX, BGFCL, SGFL).

For efficient management of hydrocarbon development, there is a need to have coordinated actions with other related institutions carrying out important functions such advisory, regulatory and audit. The organogram of the Ministry of Power, Energy and Mineral Resources (MOPEMR) showing Management, Advisory, Regulatory and Financial Audit (FA) functions are displayed in Figure 2. The Supreme Audit Institution of Bangladesh (SAI) is responsible for Financial and Performance auditing, and reports to the Parliament of Bangladesh. Brief descriptions of different functional authorities are presented below with reference to the organogram.

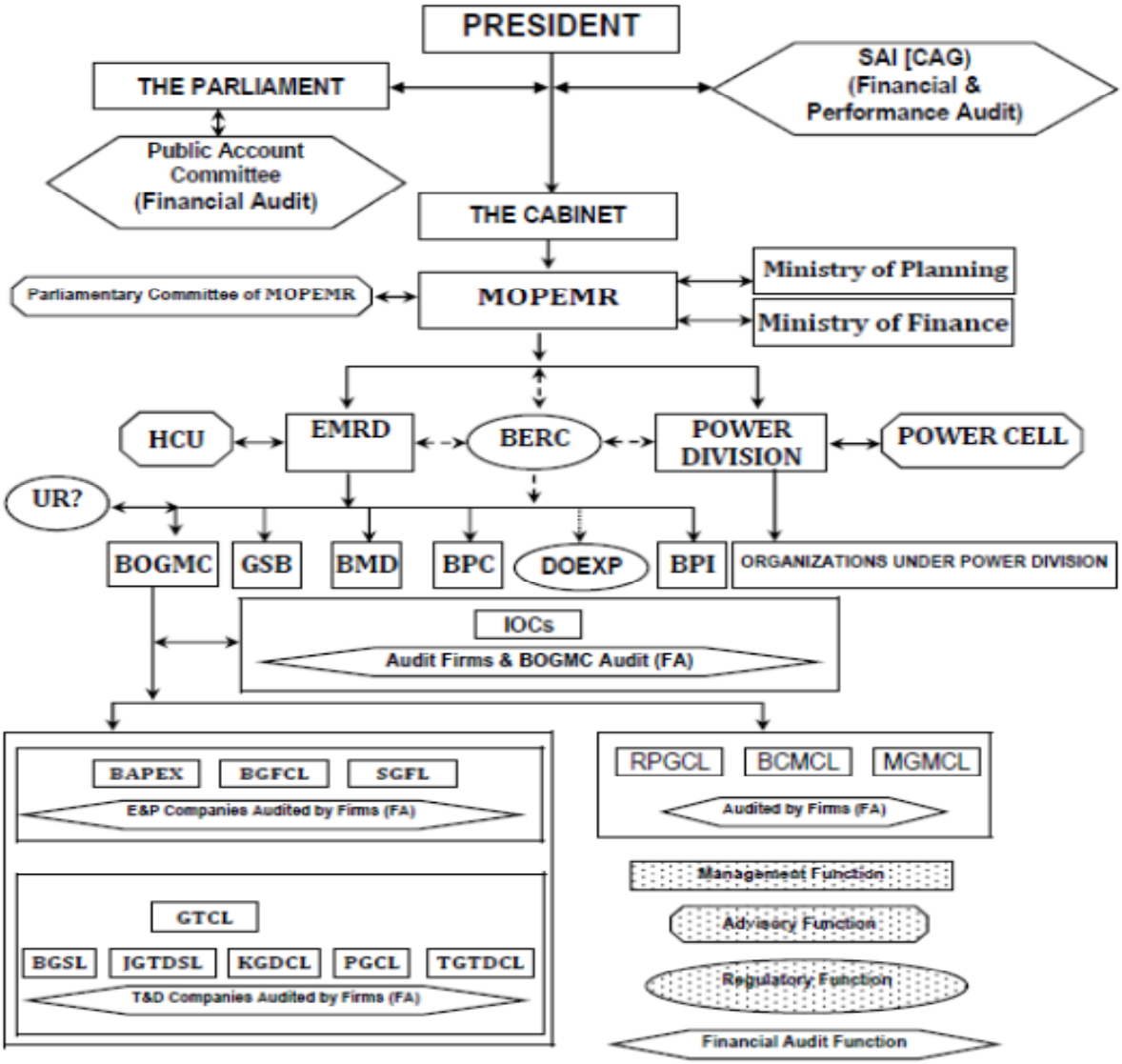

Figure 2 Energy Management, Advisory, Regulatory and Financial Audit Entities[7]

[7] Petrobangla appears in this organogram with the name Bangladesh Oil Gas and Mineral Corporation, BOGMC

Advisory Functions:

- The Parliamentary Committee of MOPEMR advises the ministry on different issues identified by them
- HCU advises the Energy and Mineral Resources Division (EMRD) on different technical issues related to coal, oil, natural gas and mineral resources;
- Power Cell advises Power Division on technical issues related to Power Sector;

Regulatory Functions:

- The Energy and Mineral Resources Division (EMRD) has charged Petrobangla with coordination and regulation of the activities of the IOCs on behalf of the government;
- Petrobangla coordinates activities of different companies under its supervision, including three national gas production companies (BAPEX, BGFCL, SGFL);
- As per the BERC Act of 2003, the Bangladesh Energy Regulatory Commission (BERC) acts as the Downstream Regulator (DR) of the gas sector (e.g. transmission, distribution);
- The Monitoring and Supervision Procedures for Exploration and Development Activities Report, which was the previous report in this project, recommends that EMRD should appoint an Upstream Regulator (UR) for the gas sector and assign them with the responsibility to fix the wellhead price of national gas based on economic rationale;

Auditing Functions:

- As per Constitutional provision, all Audit Reports prepared by the Office of the Comptroller and Auditor General (OCAG) are submitted to the President for submission to the Parliament;
- The Public Account Committee (PAC) of the Parliament has the authority to resolve audit issues through hearing with the stakeholders. Decisions of the PAC may be as follows (i) general guidance, (ii) acceptance, (iii) recovery, (iv) adjustment, (v) writing off, (vi) departmental action;
- The PAC submits recommendations to the Parliament for their approval;
- OCAG is the Supreme Audit Institution (SAI) of the country; has the authority to audit the activities of all government agencies as per the authority given in the Constitution and

by the Act (the Comptroller and Auditor General (additional functions) Act (No. XXIV of 1974) as amended up to 1983).

- It is reported that the Commercial Audit Directorate (CAD) is in the process of preparing (i) Annual Audit Report on Ministry of Power, Energy and Mineral Resources (2006-2007) and (ii) Performance Audit Report (PAR) on BAPEX for the period from 2006-07 to 2008-09;
- As per requirements of the Company's Act 1994, all Petrobangla companies submit their respective annual accounts audited by Independent Auditors (Chartered Accountant Firms) for the approval of their respective Governing Boards. The independent auditors certify the accounts according to Bangladesh Auditing Standards (BAS);
- Technical personnel of Petrobangla participate in JRC and JMC meetings along with the representative of the respective IOCs for implementation and management of the PSCs. IOCs prepare their respective annual accounts audited by Independent Auditors (Chartered Accountant Firms). The Petrobangla audit team carries out auditing of IOCs accounts.

Organizations Providing Auditing Services:

At present, different organizations involved with exploration and development activities (e.g. Petrobangla, National Gas Production Companies, International Oil Companies) are audited by different Monitoring and Audit Authorities in order to ensure accountability and improve performance:

1. Implementation Monitoring and Evaluation Division (IMED), EMRD, Petrobangla, Governing Boards of Petrobangla Companies,
2. Commercial Audit Directorate of OCAG
3. Petrobangla
4. JRC & JMC Constituted as per PSCs,
5. Audit Committees of Petrobangla,
6. Chartered Accountant Firms.

4.2.2 Supreme Audit Institution (SAI) of Bangladesh

The Office of the Comptroller and Auditor General (OCAG): the Supreme Audit Institution (SAI) of Bangladesh is responsible for auditing government receipts and public spending and to ascertain whether expenditures have yielded value for money in government offices, public bodies and statutory organizations. The Comptroller and Auditor General (CAG) heads the Supreme Audit Institution and is appointed by the President of the Republic. CAG has the mandate to determine the scope and extent of audit.

Articles 127-132 of the Constitution of the People's Republic of Bangladesh provides the CAG with complete independence. CAG is not subject to any other authority having access to all documents required for carrying out an audit. The authority and functions of the CAG have been further specified in the Comptroller and Auditor General (additional functions) Act (No. XXIV of 1974) as amended up to 1983. The organogram of the Comptroller and Auditor General of Bangladesh is shown in Figure 3.

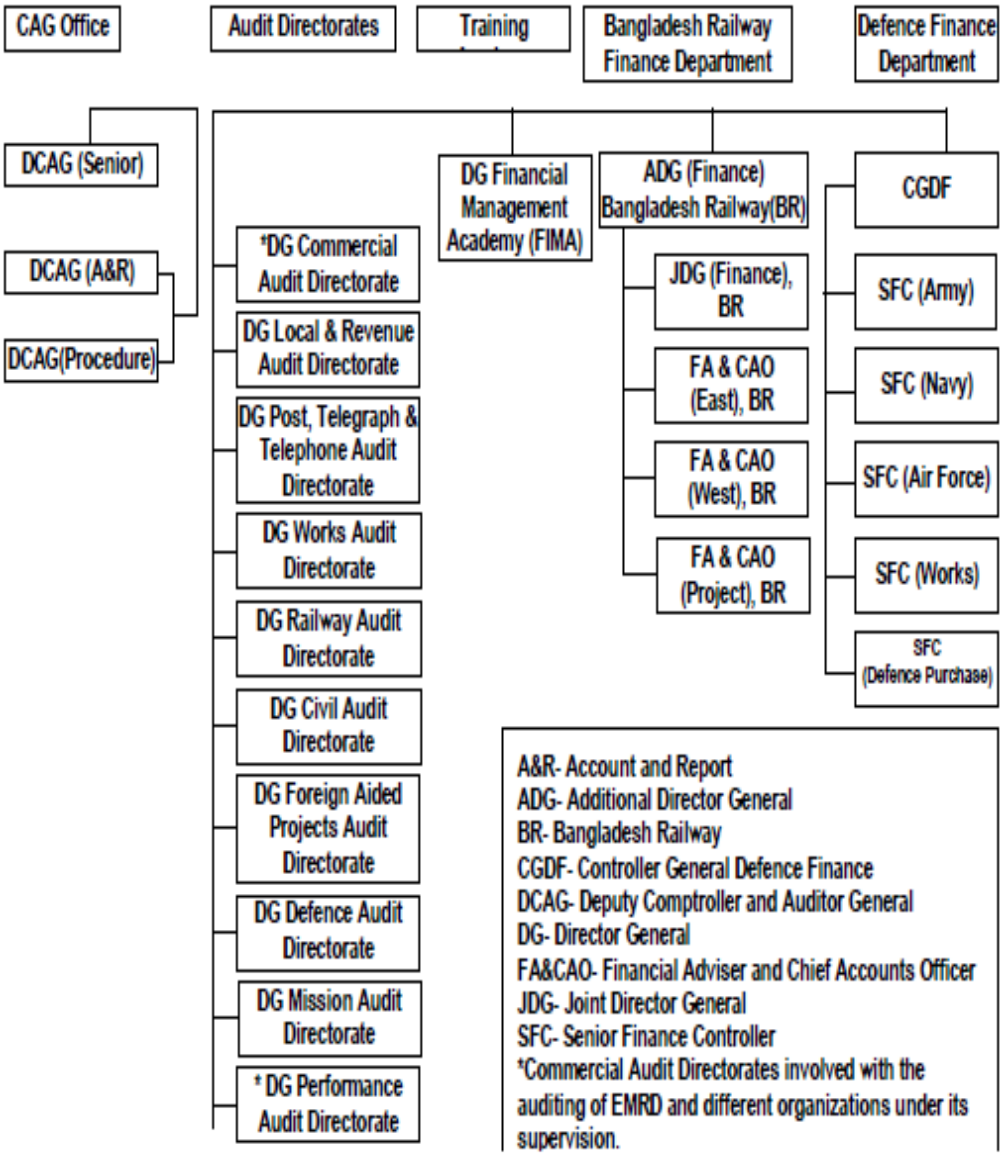

Figure 3 Organogram of Comptroller and Auditor General of Bangladesh

The Director Generals (the heads of the audit directorates) are responsible for conducting audits on behalf of the CAG in the government offices as well as the public sector. Audit observations involving serious financial irregularities are initially developed into advance paras (AP) and subsequently draft paras (DP) after taking into consideration the replies received from the concerned audited organization and the Principal Accounting Officer (Secretary of the Ministry/Division). The DPs are incorporated in the audit reports after approval of the CAG. Alongside the traditional approach to carry out financial, compliance or regularity audits, the

office is now conducting performance audits to determine economy, efficiency and effectiveness in the management of public resources, thereby adding value to the governance issues.

Among the different audit directorates, the Commercial Audit Directorate is responsible for auditing all public sector entities and state owned enterprises (SOEs), including nationalized commercial banks and financial institutions, autonomous bodies, semi-autonomous bodies, and public holding companies. The Performance Audit Directorate is responsible to carryout performance audits of selected bodies and assists other audit directorates in carrying out performance audits. Approximately four thousands (4000) officers and staff are presently working in OCAG, of which twenty eight (28) people are working in the Performance Audit Directorate.

The CAG Act requires audits to include an examination of the books of accounts, stores, and assets relating to the receipts and expenditure of the Government, statutory public authorities and public enterprises. This will ensure that rules and orders framed by the competent authority in regard to financial matters have been followed and that sums due have been properly assessed, realized, and brought to account. This also ensures that expenditures have been incurred with due regularity and propriety, that assets have been properly utilized and safeguarded, and public resources have been used economically, efficiently and effectively.

The Supreme Audit Institution requires specialized knowledge and skill to conduct diversified audits. The skill and expertise of OCAG employees are the most important requirement to perform audits efficiently. OCAG officials possess a wide range of academic backgrounds which is often very useful for carrying out the audit, especially performance and environmental audits OCAG gives its highest priority to enhance its core expertise in accounting and auditing by stressing required qualifications and training. Presently, the majority of the managerial staff has science and humanities degrees followed by degrees in Finance, Accounting, Financial Management and Business Administration. The number of officials as Certified Accountants and other qualified professional accountants/auditors is still quite low. However, OCAG has adopted policies and undertaken necessary steps to address this matter. Special emphasis has been given on creating a pool of officials as Certified Information Systems Auditor (CISA), Certified

Information Security Manager (CISM), Certified Internal Auditor (CIA) and Certified Fraud Examiner (CFE).

OCAG of Bangladesh has extensive experience of auditing over a long time period. They have developed different standards, codes, ethics and manuals for carrying out audits in a systematic, transparent and effective manner. Guidelines for "audit of contracts" are presented below. They may be useful in auditing Production Sharing Contracts (PSCs).

The Government has laid down the following fundamental principles for the guidance of authorities authorized to enter into contracts or agreements involving expenditure from Government revenues. These are financial rules but they state audit principles as well:

1. The terms of a contract must be precise and definite and there must be no room for ambiguity or misconstruction therein;
2. As far as possible, legal and financial advice should be taken in the drafting of contracts before they are finally entered into;
3. Standard forms of contracts should be adopted wherever possible, the terms to be subject to adequate prior scrutiny;
4. The terms of a contract once entered into should not be materially varied without the previous consent of the authority competent to enter into the contract as so varied. No payments to contractors by way of compensation, or otherwise, outside the strict terms of the contract or in excess of the contract rates, may be authorized without the previous approval of the competent authority;
5. No contract involving an uncertain or indefinite liability or any condition of an unusual character should be entered into without the previous consent of the competent authority;
6. Whenever practicable and advantageous, contracts should be placed only after tenders have been openly invited and, in cases, where the lowest tender is not accepted, reasons should be recorded;
7. In selecting the tender to be accepted, the financial status of the individuals and firms tendering must be taken into consideration in addition to all other relevant factors;
8. Even in cases where a formal written contract is not made, no order for supplies, etc., should be placed without at least a written agreement as to the price;

9. Provision must be made in contracts for safeguarding Government property entrusted to a contractor;
10. The Comptroller and Auditor-General and, under his direction, other audit authorities have the power to examine contracts and to bring before the Public Accounts Committee any cases where competitive tenders have not been sought or high tenders have been accepted or where other irregularities have come to light;
11. When a contract is likely to endure for a period of more than 5 years, it should, wherever feasible, include a provision for an unconditional power of revocation or cancellation by Government at any time on the expiry of six months' notice to that effect.

Audits should identify any payment that is outside the strict terms of the contract or in excess of contract rates are not made without the consent of the competent financial authority. Cases in which there is evidence that an officer or agent of a contracting department has an undue common interest with the contracting party, should be brought to the notice of the competent higher authority for such action as it may deem necessary.

Standing contracts should be reviewed occasionally and if the Auditor has reason to believe that the rates accepted in those contracts are considerably higher than the rates prevailing at the time of the review, such variations should be brought to the notice of competent authority.

In 2005, a Performance Audit Directorate was established to coordinate performance audit activities of OCAG. The Organogram of the Performance Audit Directorate is shown in Figure 4. The Performance Audit Directorate is controlled by the Director General of Performance Audit and supervises a director and two deputy directors of performance audit.

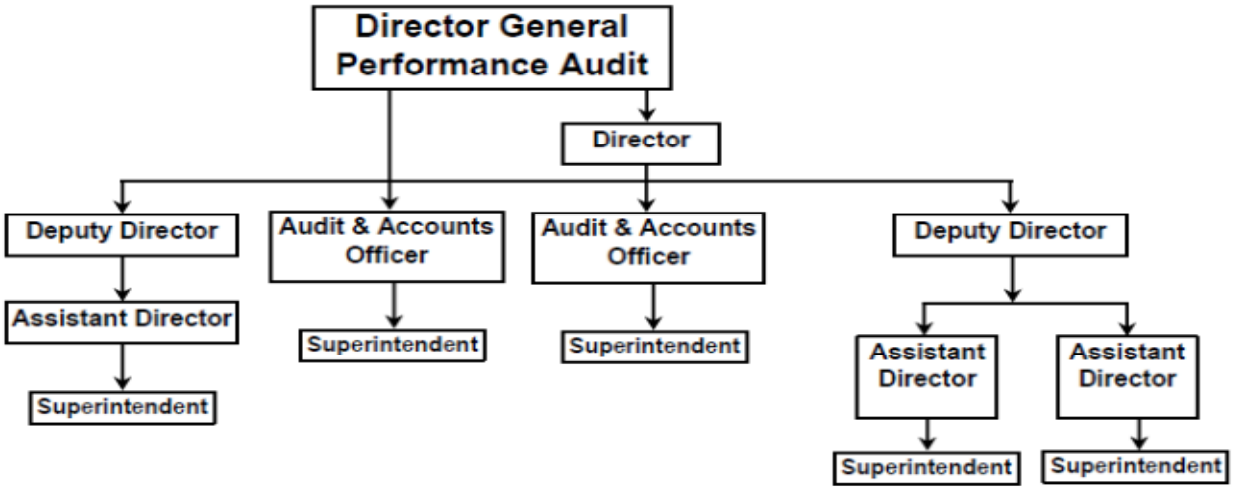

Figure 4 Organogram of the Performance Audit Directorate

The main responsibility assigned to the Performance Audit Directorate is enhancing the performance audit capability of OCAG by:

- Providing advice to other Audit Directorates
- Supervising performance audit works of other Audit Directorates
- Working as research wing of OCAG for improving audit methodology
- Developing training modules and deliver trainings
- Developing Quality Checklists
- Setting up a Resource Centre

4.2.3 Public Accounts Committee (PAC) of the Parliament

The Comptroller and Auditor General submits the audit reports to the Honorable President of the Republic who submits them before the Parliament in accordance with Article 132 of the Constitution. Prior to submission, the Prime Minister is apprised about the reports in compliance with the Rules of Business. These reports are later discussed by the Public Accounts Committee (PAC) of the Parliament.

The PAC deals with important observations and comments of the audit reports through threadbare scrutiny, simultaneously giving hearing to the Principal Accounting Officers (Secretaries of different ministries) and concerned officials. PAC findings include the responses

of the ministries and executive agencies along with the recommendations of the committee. After committee hearings, PAC decisions may be as follows: (a) General guidance, (b) Acceptance, (c) Recovery, (d) Adjustment, (e) Writing off, (f) Departmental Action.

The reports of the Public Accounts Committee are presented to the Parliament. They are not discussed because these are unanimous recommendations of a Parliamentary Committee in which all the major parties of the Parliament are represented.

The PAC process is shown in Figure 5. It has its starting point with a report from the auditor general. The prime mechanism for considering such reports is the hearing at which witnesses are called before the committee to answer to questions by members on critical issues raised. After the conclusion of a hearing, the committee has to finalize its own report based on its findings, and make sure that the government implements any recommendations. The process usually involves the following: (a) Choosing audit reports to be considered, (b) Preparing for hearing, (c) Conducting hearing, (d) Reporting & recommendations, (e) Government responses, (f) Following up on implementation.

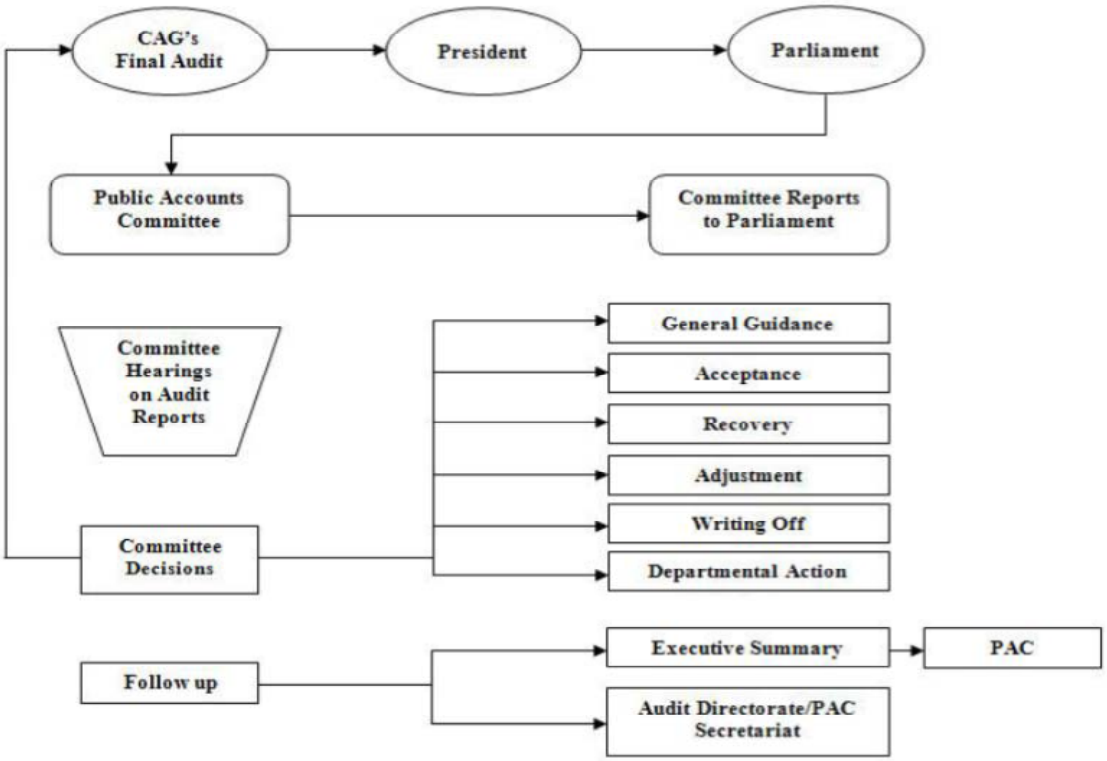

Figure 5 Work Flow Diagram of the Public Accounts Committee

4.2.4 Implementation Monitoring and Evaluation Division (IMED)

Implementation Monitoring and Evaluation Division, commonly known as IMED, is the central and apex organization of the Government of the People's Republic of Bangladesh for monitoring and evaluation of the public sector development Projects including the Annual Development Program (ADP). As per 'Allocation of Business among the Different Ministries/Divisions', the IMED also deals with the matters relating to the Central Procurement Technical Unit (CPTU) and The Public Procurement Act, 2006. The CPTU of IMED acts as a central organ of the government for policy formulation, coordination, monitoring and improvement of the public procurement process in Bangladesh[8].

The primary function of IMED is to monitor and evaluate the implementation of development projects in order to enable the ministries and executing agencies to ensure their proper implementation. Through monitoring, it points out to the project implementing ministries and

[8] www.imed.gov.bd

other appropriate authorities the progress of implementation and problems, if any, relating to the quality, time, cost for taking remedial measures.

The Rules of Business of the government allocated the following functions to the IMED:

- Monitoring and Evaluation of the implementation of development projects included in the Annual Development Program.
- Collection and compilation of project-wise data for preparing quarterly, annual and periodical progress reports for information of the President, NEC, ECNEC, Ministries and other concerned.
- Rendering such advisory or consultancy services to Ministries/Agencies concerned on implementation of projects as necessary.
- Field inspection of projects for on the spot verification of implementation status and such other Co-ordination works as may be necessary for the removal of implementation problems, if any, with the assistance of related Ministries/Agencies.
- Submission of project inspection reports to the concerned President and Ministers when attention at such level is necessary.
- Matters relating to Central Procurement Technical Unit (CPTU).

4.2.5 Petrobangla

Petrobangla is involved in the monitoring of all PSCs. 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 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.

4.3 AUDIT PROCESS

4.3.1 Petrobangla

This section explains the process of approving Work Programs and Budgets and the auditing activities involved with the WPB. This section also details audit exceptions raised by Petrobangla from various IOC's.

Once a commercial discovery has been made through carrying out the exploration and appraisal phases, an evaluation report along with a development plan is submitted to Petrobangla. Acceptance and approval of the development plan and budget is essential and the auditor has the right to compare the proposed budget with the actual outcome and to challenge the outcome. The budget however, is only a best estimate and will evolve over time. The budget should reflect the maturity of the project at the front end design stage, and the estimate might be +/-40%, narrowing +/-10% when fully scoped and the detailed design is completed. Once construction contracts are awarded the range of uncertainty might be further reduced.

The process of approving the work program and budget has been streamlined and whenever, the budget is overrun the matter is sent to a Management Committee with reasonable explanation for revision. To avoid an audit exception, Petrobangla maintains a team in-house known as "Audit Compliance" whose function is to oversee the points where Petrobangla audit exception issues may arise. All procurement and other activities get clearance from this compliance team.

Currently, PSC auditors in Bangladesh have experience with the WPBs for the exploration, appraisal, development and production periods. Exploration and appraisal period WPBs are

overseen by the Joint Review Committee (JRC) in the context of article 6 and Article 8. To switch over from the exploration to the production phase, the contractor submits a declaration of commercial discovery to Petrobangla that includes the evaluation report from the appraisal program, and a development plan. If Petrobangla approves the development plan, the PSC enters into the production phase. The Joint Management Committee (JMC) oversees the production period WPB. Both committees consist of eight members divided equally between Petrobangla/Government and contractor. The WPBs encompasses the entire exploration, appraisal, development, production and marketing phases.

Various divisions of the PSC directorate carry out the technical audits during JMC meetings. No formal reports are prepared on the basis of experiences of JMC meetings. In the future if technical audits are to be incorporated they need to be introduced as an integral part of the PSCs. It is reported that in the near future OCAG may instantiate auditing the activities of the IOCs.

The documents and reports prepared by the IOCs are mainly related to the work program and budget performed during the year. Generally, the following documents and reports are looked at during an auditing process:

a. Company's annual financial report;
b. Expenditure statement (cost recoverable) and as classified in accordance with Accounting Procedure Articles. These are section 3 (Costs and Expenditures), section 4 (Cost Centers), section 6 (Receipts), and section 12(Expenditure Statement);
c. Detailed accounting analysis, ledger book, company overhead, time records, expatriate wages and benefits;
d. Quarterly cost recovery statement including recoverable costs for the work performed and also unrecovered costs from previous quarter;
e. Procurement procedures for expenditures above $50,000. Various different contracts, purchase orders, service orders;
f. Bidding documents and selection of contractors and sub-contractors for performing petroleum operation, offer document, bidding participated, and bidder's technical and commercial evaluation;

g. Contractor and sub-contractor contracts;
h. Procurement documents for goods and material awarding, or purchase order issued;
i. Annual work program and budget approval.

Usually the accounts of the IOCs are audited by Chartered Accountant Firm(s) engaged by the IOCs and the reports are sent to Petrobangla for necessary actions. The Financial Management Division (FMD) of Petrobangla 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. 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. These reports are met with little interest or follow up from Petrobangla.

The Audit Exception Resolution Committee (AERC) of Petrobangla discusses audit objections made by the IOCs concerning the approved Audit.

Petrobangla's Financial Management Division (FMD) is responsible for review of the IOC's accounts, finance and auditing. At the end of March, each IOC submits their annual audited report for the previous year to Petrobangla. A Petrobangla audit team is convened with members taken mainly from the FMD, Petrobangla's audit and account division, and the PSC directorate. The audit team tries to complete the audit within twelve months according to the PSC requirements. During the auditing process the team takes the following steps:

1. Draft an audit exception report;
2. Receive the company response;
3. Discussion phase;
4. Accepted by Petrobangla or/ by Company or remain unresolved;
5. The unresolved issues are dealt with by another committee of Petrobangla known as AERC (Audit Exception Resolution Committee);

6. One AERC is responsible for each PSC company, and is comprised of a GM (FMD) as convener, audit team leader; technical officials of PSC, and officers from accounts and finance divisions.

4.3.2 OCAG

Statutory audit of government entities by OCAG is concerned primarily about accountability of the audited entities to the Parliament and ultimately to the tax payer. This embraces not only financial and regulatory audit but also the audit of performance or Value for Money (VFM). In carrying out performance audits OCAG takes into account any proposal or suggestions made by the Public Account Committee (PAC). However, resource constraints on the OCAG may direct its attention to areas where the largest resources are involved and where VFM is judged to be most at a risk. The nature and type of audit are ultimately issues for the OCAG to decide, since it is constitutionally independent and not subject to the direction or control of any person or authority[9].

In broader terms, a performance audit is aimed to ensure Value for Money (VFM) under medium term perspective. Because it takes time to carry out an audit, identify the short comings and ultimately resolve them at the Parliament. It is carried out on selective basis as per discretion of OCAG.

In Bangladesh, Performance Audits have been incorporated in the audit portfolio of the Office of the Comptroller & Auditor General of Bangladesh [OCAG] since 1999. The OCAG realizes that in Bangladesh, where resource constrains is a major issue and a significant amount of public expenditure is financed by public debt, an independent evaluation of the economy, efficiency and effectiveness with which public resources have been used is essential. Therefore, Performance Audits were introduced by OCAG in addition to Financial and Compliance Audits for ensuring accountability of the executive to the Parliament and ultimately to the taxpayers for optimal utilization of public resources.

[9] As per Article 128(4) of the Constitution of People's Republic of Bangladesh.

The Constitution of the Peoples' Republic of Bangladesh provides OCAG with the mandate to perform Performance Audits. The mandate of the OCAG, to carry out all audits, is derived from Article 128 of the Constitution which provides the OCAG with discretionary power in deciding how, what, and when to audit. Moreover, the Public Accounts Committee [PAC] of the 5th Parliament expressed its concern in 1998 for greater accountability and requested the Auditor General to conduct Performance Audits alongside annual financial and compliance audits.

4.4 ACTUAL AUDITING EXPERIENCE

This section describes Petrobangla's extensive experience with auditing contractor's operations under production sharing contracts. This section details audit exceptions for various IOC's. This information is based on local research, multiple discussions in-country, and a general meeting with participants from Petrobangla, EMRD, and Bapex that was conducted in Dhaka during November 2010.

4.4.1 Observations from the General Meeting

The comments from the general meeting were that the financial auditing procedures were strong, but could be improved in certain areas. Deficiencies in financial auditing were as follows:

- Frequency of audits too low
- Effective auditing of service price.
- Offshore pricing
- Reasonableness of day rates
- Expatriate salaries
- Cost of administrative overheads
- Monitoring non-recoverable costs for keeping good statistics
- Verification of time sheets submitted
- Understanding tax equalization structure
- Reasonableness of benefits charges

Since sound financial auditing is often a pre-requisite for an effective technical audit, it is important that these points are addressed.

On the side of technical auditing, however the general comments were that it was highly inconsistent, and rarely applied outside the activities of the JMC/JRC. The meeting identified the following deficiencies in technical auditing:

- Lack of follow up on JMC identified problems
- Infrequent technical auditing at IOC facilities
- Infrequent follow up on IOC facility audits
- Failure to adequately monitor time IOC has contractors on site
- Failure to identify if turnkey contracts are effectively used
- Lack of facilities or drilling engineers to monitor costs
- Monitoring offshore operations and highly advanced technical issues
- Learning new software used by companies
- Lack of involvement of foreign consultancies to assist Petrobangla
- Adequate review of forecasts
- Shortage of field professionals and consistent field inspections
- Lack of time for JRC/JMC to respond to technical problems
- Failure to identify the cause of service contract price variances
- IOCs provide too little technical justification for work programs and budgets
- Failure to submit work programs and budgets to the EMRD

The allowed technical auditing procedures identified in the previous sections are generally not conducted and follow up is rare when they are. This is not likely to change without additional training and staff. The general conclusion is that the actual technical auditing process is extremely different from what is allowed by contract and statute.

4.4.2 Petrobangla

Petrobangla is the main audit interface with IOCs. This section describes Petrobangla's historical and current audit experience.

There are several blocks in Bangladesh where exploration activities did not bring any success. Seismic surveys were carried out on Block #15 by Shell and Cairn Energy. The surveys were conducted on 1000 line kilometers, and after processing the surveys they found drillable structures in two different places. They drilled two exploratory wells, which resulted in dry holes. Ultimately they relinquished the block and all costs incurred were taken as a loss to the IOC.

In Block #17 and #18 Tullow Oil Plc. carried out Geological and Geophysical surveys (G&G) and drilled one well, which was a dry hole. In Blocks #5 and #10 Shell and Cairn Energy carried out seismic surveys of more than 1000 line kilometers and found a few leads, but relinquished the blocks without drilling, taking all costs as a loss.

In Block # 16 Cairn Energy carried out a geological and geophysical study and drilled an exploratory well in 1996, which became a shallow offshore discovery. The discovery was designed for development on a fast track basis. The field is now in the declining phase.

In Blocks #12 & 13 Occidental (Unocal/Chevron) was given two structures named Jalalabad (a gas discovery) and Moulivibazar (seismically delineated prospect) for appraisal and development. The work program was accomplished and gas production is ongoing in these fields as predicted. However, a blow out occurred in the Moulivibazar structure while drilling the well and Occidental (Unocal/Chevron) incurred a cost of about $47 million. This amount was agreed upon through the audit process as not cost recoverable and was taken as a loss.

In Block #12 a world-class gas field (Bibiyana) was discovered and on November 8, 2004 and a gas purchase and sales agreement was signed by Chevron (seller) and Petrobangla (buyer). According to terms defined in the PSC, Petrobangla was entitled to 4% of the seller's total volume of gas (cost recovery gas + profit gas) measured at the measurement point during the contract year. This percentage was to be used to cover tariffs and losses incurred when the seller uses the buyer's trunk pipelines to supply gas to the Bangladesh domestic market. Petrobangla deducted a 4% tariff, and made a payment for the adjusted amount to Chevron. Chevron objected Petrobangla's payment and the JMC's were not able to resolve the dispute. The issue

was taken before an ICSID Arbitration Tribunal who unanimously rejected the claim of Chevron ruling that Petrobangla had determined the correct amount of gas.

At present, Petrobangla monitors five PSCs covering six blocks.

It has been reported that the Audit Exception Resolution Committee (AERC) at Petrobangla has completed the resolution of audit objections on accounts of the following three IOCs (Cairn/Shell, Chevron and Tullow) through the 2006 fiscal year. The objection resolution process for the 2007 financial year is still 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. Petrobangla has been carrying out the auditing of IOCs activities since 1995. Table 6 is a comparison of audit exceptions of the three IOC contractors in Bangladesh. The joint venture between Cairn/Shell had the highest audit exceptions at $443.74 million between the years 1995-2006. Tullow Bangladesh had the lowest audit exceptions at $21.02 million over the same time period. Total audit exceptions of the three contractors was $751.2 million from 1995-2006.

Table 6 Summary of Audit Exceptions

Year	Cairn/ Shell	Chevron Bangladesh	Tullow	Total
1995	-	0.15	-	0.15
1996	16.64	0.45	-	17.09
1997	48.65	34.77	-	83.42
1998	169.08	65.77	-	234.85
1999	23.72	35.13	-	58.85
2000	52.71	74.02	-	126.73
2001	18.95	6.16	0.85	25.96
2002	4.42	3.93	1.87	10.22
2003	21.92	5.3	9.72	36.94
2004	14.52	9.91	3.27	27.7
2005	32.05	24.02	2.3	58.37
2006	41.08	26.84	3	70.92
2007	Running	Running	Running	Running
Total	443.74	286.45	21.02	751.2

Figures in Million US $

Table 7 shows the total expenditure incurred by Chevron Bangladesh from 1995-2007 as well as the value of audit exceptions raised by Petrobangla. Audit exceptions for the year 2007 are currently ongoing. This table also shows the amount of resolved and unresolved audit exceptions each year from 1995-2006. The total expenditure for Chevron Bangladesh from 1995-2007 was $777.39 million. Total audit exception value over this time period was $286.45.[10] The audit exception value was 36.8 % of total expenditure. It is curious to note that of the $263.75 million in audit exceptions after duplication $252.78 million remains unresolved! That is over 90% in unresolved audit exceptions!

Table 7 Audit Exception Summary for Chevron Bangladesh Blocks #12,13,14

Year	Total Expenditure	Exception Value	Duplication	Exception Value – Duplication	Resolved	Unresolved
1995	2.44	0.15	-	0.15	0.15	0
1996	10.43	0.45	-	0.45	0.1	0.35
1997	38.88	34.77	0.02	34.75	17.61	17.14
1998	113.29	65.77	-	65.77	3.11	62.66
1999	98.38	35.13	-	35.13	-	35.13
2000	46.59	74.02	12.68	61.34	-	61.34
2001	10.5	6.16	-	6.16	-	6.16
2002	13.09	3.93	-	3.93	-	3.93
2003	14.16	5.3	-	5.3	-	5.3
2004	36.3	9.91	-	9.91		9.91
2005	90.84	24.02	-	24.02		24.02
2006	194.48	26.84		26.84		26.84
2007	108	Running				
Total	**777.39**	**286.45**	**12.7**	**273.75**	**20.97**	**252.78**

Figures in Million US $ **As of 2/16/2010**

Table 8 shows the total expenditure incurred by Cairn/Shell from 1995-2007 as well as the value of audit exceptions raised by Petrobangla. This table also shows the amount of resolved and unresolved audit exceptions each year from 1995-2006. Audit exceptions for 2007 and 2008 are ongoing. Total expenditure incurred from 1995-2008 was $806.70 million. Total audit exception raised during this time period was $444.89 million.[11] The total audit exceptions over this time period were 55.1% of total expenditure! The total of audit exceptions seems fairly

[10] This figure is subject to change once audit exceptions are finalized for the year 2007.
[11] This figure is subject to change once audit exceptions are finalized for the year 2007 and 2008.

exorbitant and may be a deterrent in attracting IOC's to explore and develop hydrocarbon in Bangladesh.

Table 8 Audit Exception Summary for Cairn/Shell

Year	Expenditure	Exception Value	Exception Value 2	Budget Over Run / Agreed Resolved	Exception Resolved	Unresolved
1995	15.57					Closed
1996	26.78	16.64	13.88	15.44	1.2	
1997	165.93	48.65	26.75	38.98	9.67	
1998	102.72	169.08	106.24	43.65	29.94	
1999	34.69	23.72	20.22	18.97	3.89	
2000	55.26	52.71	48.71	28.2	11.44	
2001	22.56	18.95	18.95	15.48	3.03	0.43
2002	18.2	4.42	4.42			4.42
2003	30.99	21.92	21.92			21.92
2004	46.73	14.52	14.52			14.52
2005	88.64	32.05	32.05			32.05
2006	58.3	41.08	35.72			27.11
2007 (Intervention)	2.17	1.15	1.15			1.15
2007	66.6	Running				
2008	71.56	Running				
Total	806.70	444.89	344.53	160.72	59.17	101.60

Figures in Million US $ **As of 2/16/2010**

Table 9 shows the total expenditure incurred by Tullow Bangladesh from 1995-2008 as well as the value of audit exceptions raised by Petrobangla. This table also shows the amount of resolved and unresolved audit exceptions each year from 1995-2008. Total expenditure from 1995-2008 was $183.52 million. Total audit exceptions over this time period were $21.02 million.[12] Total audit exceptions were only 11% of total expenditure from 1995-2008. This figure is much lower than Cairn/Shell and Chevron's audit exceptions; however it is interesting to note that all of Tullow's audit exceptions remain unresolved.

[12] This figure is subject to change once the 2007 and 2008 audit exceptions are finalized.

Table 9 Audit Exception Summary for Tullow Bangladesh Block # 9

Year	Total Expenditure	Exception Value	Duplication	Exception Value except Duplication	Resolved	Unresolved
1995	-			-		-
1996	-			-		-
1997	-			-		-
1998	-			-		-
1999	-			-		-
2000	-			-		-
2001	2.6	0.85		0.85		0.85
2002	16.31	1.87		1.87		1.87
2003	20.25	9.72		9.72	-	9.72
2004	25.61	3.27		3.27		3.27
2005	10.38	2.3				2.3
2006	56.23	3				3
2007	25.17	Running				
2008	26.97	Running				
Total	**183.52**	**21.02**	**-**	**15.72**	**-**	**21.02**

*** Figures in Million US $**

The explanation for audit exceptions raised by Petrobangla is due to the situation of costs being incurred by the contractor which are not related to petroleum operations. These costs are gathered from audit personnel when auditing the PSC. These costs include:

1. Bouquets/presents given to high officials of Petrobangla or Ministry;
2. Zipper stitching charge;
3. Well drilling contractors charged their daily rates, although the drilling was stopped due mechanical failure of the rig;
4. Official chair (ergonomic) for all expatriates. Total cost of about $900 each;
5. Expatriate allowances which total more than a top bureaucrat receives as a monthly salary;
6. Costs for work performed by foreign sub-contractors are considered to be excessive;
7. Recently used BAPEX drilling rig for work-over in one of PSC Company's producing well. Reported rig refurbishing costs has been made around $700,000 but through technical discussion it has been reduced to about $500,000. There has also been a disagreement between Petrobangla and contractor over the point at which eligible costs of petroleum operations will have been fully recovered.

4.4.3 OCAG

Performance Audit was first piloted by OCAG in 1999 in response to the demand of the PAC. A Performance Audit Cell was created and four Pilot Audits were carried out by the Cell with officials who had under gone extensive trainings in the relevant fields. The reports were finalized in January 2002 and were submitted to Parliament. The reports are:

- Performance Audit on Printing, Publication and Distribution of Text Books
- Performance Audit on the Power Distribution System of Dhaka Electricity Supply Authority [DESA]
- Performance Audit of the Industrial Parks of Bangladesh Small and Cottage Industries Corporation [BSCIC]
- Performance Audit on the Health Care Services of the Chittagong Medical College Hospital

After the successful piloting of Performance Audit in Bangladesh, OCAG conducted performance audits regularly through the nine Audit Directorates. Since 1999, a total of twenty two (22) Performance Audit Reports have been submitted to the Parliament; of which the following three (3) reports were discussed in the PAC:

1. Jamuna Fertiliser Co. Ltd. under Bangladesh Chemical Industries Corporation
2. Performance Audit on Bangladesh Jatiyo Grontho Kendro
3. Performance Audit of DESA.

19 other performance audit reports are under active consideration of the PAC. The Public Accounts Committee of the 9th Parliament has established five sub-committees to address all files pending hearing.

A Performance Audit Core Group has been formed comprising 28 officers of the department for carrying out the Performance Audit in a professional manner with the help of the project on Strengthening, Comptrollership, and Oversight of Public Expenditure (SCOPE). The Pilot Performance Audit will be carried out in guidance of International experts in this sector.

Performance Audit Training was provided by the Performance Audit Directorate in collaboration with the Financial Management Academy (FIMA) to 90 selected officials during 2008-2009.

Training on Field Execution & Reporting will be carried out by the Performance Audit Directorate for members of the Performance Audit Teams who will be conducting Performance Audits in 2010. The OCAG is continuously trying to increase the effectiveness of its audit function and the reforms the OCAG has undertaken will gradually improve the performance audit activities in line with the international best practices.

4.5 SWOT ANALYSIS

This section summarizes the strengths, weaknesses, opportunities, and threats of the PSC technical auditing activity in Bangladesh.

Strengths:

- Auditing teams are well organized and they work well with IOCs. Significant time is spent ensuring financial auditing is done in a systemic and comprehensive manner.
- Current financial auditing although irregular has turned up significant numbers of issues, which have led to adjustments in favor of Petrobangla in the $100 million dollar range.
- Bangladesh has a longstanding experience in the petroleum sector. Such experience gives the country a positive foothold in pursuing new endeavors like a yearly technical audit or increased field testing.

Weaknesses:

- Technical auditing is rarely conducted, and any technical auditing program would have to start essentially from scratch.
- Personnel at Petrobangla are already stretched very thin on financial auditing, and the EMRD has little to no staff with technical expertise to conduct audits. Field inspectors would also require significant lead time to train.
- Extensive technical auditing of historical records may lead to a situation where IOCs may have to refund revenue already distributed, a very unpopular action among IOCs possibly deterring investment.

Opportunities:

- Raise awareness of the technical and environmental problems that exist in the field in Bangladesh, increasing the likelihood those problems will be discovered before a disaster occurs.
- Opportunity to increase the efficiency of hydrocarbon operations in Bangladesh and in turn increase not only the amount of gas produced but also the amount of gas that can be economically utilized.
- A based study to present to IOCs for explanations of irregularities, even in the event that a specific problem is not indentified.

Threats:

- Without effective technical auditing, the likelihood of repeat Niko-like disasters is substantial.
- Without technical auditing, even in the event problems are found by the JMC/JRC, nothing will be done because Petrobangla is not given the authority and EMRD lacks the political will to act.

5 CROSS-COUNTRY AUDITING COMPARISON

This section is a comparison of PSC auditing procedures in Pakistan, India, Malaysia and. This section compares each countries audit provisions for various aspects of exploration and development and compares the position of Bangladesh relative to the other countries.

	Management Committee
Pakistan	The management committee is comprised of two members appointed by the Government Holdings Private Limited (GHPL) and 3 members appointed by the contractor. The committee is responsible for approving and revising: • Annual Work Program & Budgets • Employment plans for the petroleum operations • Procurement procedures and terms of contracts with subcontractors; • Development plans and delimitation of development areas; • Proposed production levels and production allocation mechanism; • Appointment of auditors and approval and adoption of audited accounts;
India	A management committee is to be established within 30 days of contract signature. The government may nominate two members and each company constituting the contractor may nominate one. One of the government representatives acts as chairman. The management committee has only advisory powers with regard to annual WP&B's. The management committee is responsible for: • Approval and revision of the development plan; • Determination of a development area; • Appointment of auditors; • Proposals in respect of the abandonment plan/site restoration. All decisions of this committee require a unanimous vote.
Malaysia	A management committee must be established comprising four representatives each from both Petronas and the contractor. The chairman is appointed from among Petronas' representatives. The management committee reviews the annual WPB and any proposed amendments or revisions to an approved WPB. No petroleum operations are to be carried out unless and until the relevant WPB have been approved by Petronas. However, the contractor may make minor amendments to the WPB without the prior approval of Petronas, provided that the deviation from the budget is not more than plus-or-minus 10%. • The contractor must comply with all directives given by Petronas with regard to location of manpower, sites for its offices and major facilities in Malaysia and any other requirements as may be directed by Petronas.
Bangladesh	A joint management committee must be established promptly after the effective date. Committee shall consist of eight members; three of whom shall be designated by Petrobangla, one by the Government and four by the contractor. The JMC is responsible for reviewing: • All WPBs. • Contractor's proposed production levels; • Terms of contracts with sub-contractors and performance of sub-contractors work • Appointment of auditors; • The Development plans and budget; • The annual personnel plan;

Summary: The auditing provisions defined by the MPSC-2008 in regards to the responsibilities of the management committee, seem to be fairly aligned with the practices in Pakistan, India, and Malaysia.

	Procurement, Local Training & Supplies
Pakistan	• Contractor must submit an annual report describing the level of procurement of goods and services from local sources. The contractor must award at least 10% of computer software contracts to local companies. • Each year the contractor is required to submit a report to the government describing its success in utilizing Pakistani goods and services. The contractor must establish tender procedures in consultation with GHPL for the acquisition of goods and services to ensure that Pakistani suppliers are given adequate opportunity to compete for the supply of such goods and services. • Contractor must submit an annual report to the DGPC detailing the status of training programs and employment of Pakistani nationals, within 30 days of the effective date. • Contractor shall spend on training a minimum amount of $20,000 per year during Exploration and $100,000 per year during the development and production phases. • Such training programs 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-house seminars.
India	• The contractor must establish and submit to the management committee for approval appropriate procedures, including tender procedures, for the acquisition of goods and services. • The tender procedures must include, *inter alia*, the financial amounts or value of contracts which will be awarded on the basis of selective bidding or open competitive bidding, the procedures for such bidding, and the exceptions to bidding in cases of emergency. • Must ensure that suppliers and subcontractors in India are given adequate opportunity to compete for the supply of goods and services.
Malaysia	• All procurement of equipment, facilities, goods, materials, supplies and services required for petroleum operations must be on an arm's length basis and, unless otherwise approved by Petronas, must be obtained as a result of competitive bidding. Bidding documents for tenders for the supply of goods and services must be approved by Petronas and companies licensed by Petronas must be included in the bidding list. Petronas' written approval of the basis on which the bids are evaluated is required. Approval must also be obtained before any contract is awarded. • The contractor must comply with the national objective of maximizing Malaysian participation in the use of local materials and services required for operations. • The contractor must undertake and submit a training program to Petronas which will be designed with the objective of training its Malaysian personnel with a view to the eventual replacement of all its expatriates with Malaysians. The contractor must, if so requested by Petronas, provide on the job training for Petronas personnel and must also, where appropriate and practicable, provide Petronas personnel with training in the contractor's training institutions. • The contractor must obtain prior approval from Petronas before employing expatriate personnel. Such employment must be minimized and is reviewed annually by Petronas.

Bangladesh	• Provide Petrobangla with a list of the entities from whom the contractor proposes to invite tender for contracts; and such list shall be approved by Petrobangla.
	• During the Exploration and Development Period, Contractor shall expend a minimum of fifty thousand Dollars ($50,000) each calendar year and $100,000 during the production period. All expenditures are cost recoverable.
	• Contractor shall maximize the employment of Bangladeshi nationals possessing the requisite qualifications and experience in petroleum operations. Contractor shall ensure that the employment of the Bangladeshi nationals be maintained in the following proportion:
	  • Exploration Period: Initial Exploration Period not below 20%.
	  • Production Period: 1st five years - not below 60%
	  • Next five years - not below 75%
	  • Period after ten years - not below 90%
	  • Give preference to locally manufactured materials, equipment, machinery, supplies and consumables so long as their quality, price and time of delivery are comparable to international standards.

Summary: The auditing provisions in the MPSC-2008 in the area of procurement, local training and supplies do not seem to be as stringent as those in Pakistan, India, and Malaysia. According to the MPSC-2008 the contractor is required to expend a certain amount on training of local personnel during each phase of operations. The contractor is also required to provide a list of qualified vendors for procurement which require the approval of Petrobangla. These provisions seem to be fairly uniform in all countries PSCs, however the Bangladesh PSC lacks a clear mechanism to verify whether or not the contractor is providing sufficient training for local personnel, giving preference to local personnel, goods and services, and procuring goods in the most cost effective manner. This issue has been addressed as part of Gustavson Associates proposed technical audit program. Recommendations on how to address this deficiency are also provided in the next section of this report.

	Environmental Health & Safety
Pakistan	• The Ministry of Petroleum and Natural Resources is responsible for the prevention of damage to the environment, imposing penalties in case the licensee does not comply with the regulations. • Safety issues are under the authority of the Chief Inspector of Mines, who monitors and administers safety measures, including the provision of protective equipment, identification of safety personnel and emergency measures and accident reporting. • The contractor's development plan must contain a detailed account of the anticipated adverse impact on the environment of the operations in question and the measures proposed to be taken to prevent those impacts and for the general protection of the environment. • Contractor must develop and submit for approval an emergency response plan for each worksite including a blow-out prevention plan. • Non-compliance with the environmental provisions of the 1997 Environmental Protection Ordinance is subject to payment of penalties prescribed under Article 17 of the said ordinance.
India	• Contractor must 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 • If the Contractor fails to comply with these environmental provisions 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. • If the Government in accordance with the laws has good reason to believe that any works or installations erected by the Contractor or any operations conducted by the Contractor are endangering or may endanger persons or any property of any person, or are causing or may cause pollution, or are harming or may harm fauna or flora or the environment to a degree which the Government deems unacceptable, the Government may require the Contractor to take remedial measures within such reasonable period as may be determined by the Government and to repair any such damage. • The Contractor shall, prior to conducting any drilling activities, prepare and submit for review by the Government contingency plans for dealing with Oil spills, fires, accidents and emergencies, designed to achieve rapid and effective emergency response.
Malaysia	• Contractors shall consult PETRONAS in relation to the measures to be undertaken by contractors including, without limitation, the installation of appropriate measuring systems and the adoption of measures for safety and environmental protection which are consistent with good and modern petroleum practice.
Bangladesh	• Contractor is required to submit an initial Environmental Examination (IEE), Environmental Impact Assessment (EIA) and Environmental Management Plan (EMP). In the case of any damage or expense caused by inefficient, careless or negligent activities of the Contractor: • Contractor will not be allowed to recover the cost for such damage under Cost Recovery; • Contractor shall pay due compensation for such damage;

Summary: The environmental health and safety audit provisions in the MPSC-2008 is an area of potential weakness in this contract. Contractors are required to submit an IEE, EIA, and EMP, however the actual monitoring and compliance procedures associated with these documents are not defined by the PSC. Pakistan, Malaysia, and India seem to have a government agency that is responsible for the prevention of damage to the environment and the health and safety of the contractor's personnel. The PSC in these countries specifically allow penalties for non-compliance with environmental health and safety issues. While Bangladesh has an analogous organization responsible for EHS issues in the Government, the procedures and penalties associated with these issues are not clearly defined in the PSC.

	Development Plan
Pakistan	The development plan must include, inter alia, the following: • Proposal for development of each discovery and the disposal of gas; • Proposals for drilling, production, storage, transport and delivery of production; • Production profiles of the fields; • Cost estimates including capital and operating; • Profitability estimates; • Proposals for processing facilities; • Safety measures to be adopted and protection of the environment • Contingency and abandonment plans • Scheduling of all activities.
India	• The contractor must submit a comprehensive development plan to the management committee for its approval within 200 days of declaring commerciality in the case of oil and one year in the case of natural gas. The development plan must: • Define the boundaries of the proposed development area; • Be designed to ensure the most efficient, beneficial and timely use of petroleum resources discovered; and • The development plan must contain detailed proposals by the contractor for the construction, establishment and operation of all facilities and services for the recovery, storage and transportation of the petroleum from the proposed development area to the delivery point. • Estimate of the rate of production to be established and projection of the possible sustained rate of production.
Malaysia	• The contractor must submit a development plan for the discovery to Petronas for approval at least 60 days before the date when the related annual work program and budget is to be proposed. The development plan must include the following: • Details of exploration and appraisal activities on the field; • Estimated volumes of in-place and recoverable petroleum; • Full details of production facilities • Location and schedule for the construction of the facilities; • Feasibility study as to the marketability of the petroleum, any problems expected to be encountered in production and marketing and the maximum and minimum annual production quantities; • Overall development configuration of the oil fields; • Sequencing and timing of the development of oil fields. • First expected crude oil production.
Bangladesh	The Development Plan must include provisions for: • The estimated number, size and capacity of Production facilities. • Estimated number of Production wells; • Particulars of equipment required for the Petroleum Operations; • Estimate of the rates of production to be established. • Cost estimates under such development plan and alternative development proposals, if any; • Safety measures to be adopted in the course of the Petroleum Operations. • Anticipated adverse impact on environment and measures proposed to be taken for prevention and for general protection of the environment; • Estimate of the time required to complete each phase of the proposed development;

Summary: The auditing provisions defined by the PSC that pertain to the development plan are fairly uniform across all countries. No major deficiencies in audit provisions have been identified in the MPSC-2008.

	Production
Pakistan	• The DGPC has responsibility for supervising the performance of petroleum operations. The DGPC is authorized to give directions as to the measurement of petroleum obtained from the contract area. The DGPC also inspects and examines installations, wells, plants, appliances and works executed by the licensee in order to ensure compliance with the approved programs and the directions given by it.
India	• Each year the contractor must obtain approval by the management committee of the program quantity of production for the year. • The contractor may also be required by the management committee to prepare a three year forecast of production as part of its annual work program.
Malaysia	• Petronas has the right to review the proposed production level and may, on written notification, request the contractor to increase or decrease the rate of production from any field. The contractor must allow officials of the federal or state government and Petronas: • Examine the boreholes, wells, plant, equipment, buildings and other things made, done or carried out; • Inspect, check and certify the accuracy of any measurement systems, equipment or instruments, weights, data, information and records. • Have full and complete access to the contract area at all reasonable times with the right to observe petroleum operations and to inspect all assets in the custody of or leased by the contractor • Any review of the level of production is to be guided by Petronas procedures which are to be consistent with good and modern oil field practice
Bangladesh	• Contractor and Petrobangla shall review annually operator's production program. • Contractor shall furnish in writing to Petrobangla and the joint management committee a forecast setting out the total quantity of petroleum that it estimates can be produced in each of the next four calendar quarters. Contractor shall endeavor to produce each quarter the forecast quantity.

Summary: Provisions in Malaysia and Pakistan allow for the national oil company to specifically inspect all wells, equipment, and measurement systems as well as augment production based on need. There are similar possibilities in Bangladesh. Article 10.17 of MPSC-2008 entitles Petrobangla to inspect any part of petroleum operations. The proposed production is subject to discussion by the JMC, and Article 24.6 entitles the Government to requisition all production and to maximize production in the event of war or grave national emergency.

6 RECOMMENDATIONS

This section presents recommendations for changes in current technical auditing in Bangladesh. In this section we present the current auditing problems and provide recommendations on possible solutions.

The main problem areas for administering PSC's in Bangladesh are:

1. Lack of technical auditing procedures involved with cost recovery;
2. Long delays in finalizing audits and hefty audit exceptions;
3. Responsibility of audits fragmented over several directorates;
4. No clear procedures exist for conducting environmental, health and safety audits;
5. Procurement audits are not being conducted.

1. Problem- Currently there is a lack of technical auditing procedures in dealing with cost recovery issues. Petrobangla's control of cost recovery issues relies strongly on approving the WPB in the JMC\JRC. No definitive auditing procedures exist that would allow Petrobangla to determine if the contractor is conducting the WPB in a technically efficient manner, as well as installing equipment and facilities with to the specifications defined in the approved WPB.

There have been instances where IOC contractors have installed processing facilities in extreme excess of the daily production from the field. In the case of the Sangu field, the contractor installed a processing facility with the capacity of 530 mmcfd. However, the daily contracted quantity (DCQ) of natural gas at the Sangu Field was only 192 mmcfd.[13] This means that the processing facilities capacity was 276% larger than the daily contracted quantity of gas. This may represents a significant over expenditure by the contractor. However, the contractor may have installed additional capacity to capture economies of scale, anticipating a future increase in production. Such uncertainty can result in disputes over the cost recovery of expenditures that may be deemed excessive by Petrobangla. In this situation it should be recognized that the contractor has no profit incentive to oversize facilities or inflate costs. Petrobangla should consider that the contractor is operating in good faith, unless there is evidence to the contrary.

[13] Source: Report of the Committee to Identify the Weak Areas in Administering the PSC by Petrobangla, 2003

Recommendation- A solution to this problem could be to require that all of the contractor's expenditures approved by Petrobangla in the WPB not be subject to audit exceptions. This recommendation would guarantee that the contractor's expenditures would be recovered as long as the contractor made expenditures according to the specifications in the approved WPB. This would include expenditures involved with the installation of processing facilities. If the contractor builds facilities to the specifications approved in the WPB and within budget, then costs should be recoverable.

2. Problem- There are lengthy delays in closing out audits and Petrobangla auditors have raised large exceptions against IOC contractors. Petrobangla is currently finishing Chevron's 2009 audit, Cairn's 2008 audit and Tullow's 2008 audit. From 1995-2006 Petrobangla raised audit exceptions of nearly 43% of Chevron's total expenditures! Tullow experienced audit exceptions of 16% of total expenditure from 2001-2006. Cairn had the worst case with nearly 67% of total expenditures being raised in audit exceptions! Taking over three years to finish an audit, as well as raising such large audit exceptions is creating a difficult environment for IOC contractors in Bangladesh. Most contractors are publicly traded firms and must submit quarterly and yearly financial statements. Such reporting is difficult when there are delayed and unfinished audits. Audit exceptions that are finalized years after the contractor publishes its financial statements pose accounting problems for the contractor.

Recommendation- A statute of limitations is recommended when auditing the accounts of IOC contractors. This statute would mandate that if an audit is not closed within a certain period of time, then audit exceptions on contractor's accounts could not be raised. The statute of limitations would help alleviate potential accounting problems for the contractor and facilitate a quality working relationship between the contractor and Petrobangla. Another recommendation would be to appoint independent third party auditors to reduce the time necessary to close out audits, as well as to provide Petrobangla's auditors with the proper training in order to correctly understand cost recovery items. This power is granted under article 23.6 of the MPSC-2008. It should be realized that large audit exceptions may help Petrobangla in the short term, but such audit exceptions may create a business environment that is not conducive to future IOC investment.

3. Problem- The responsibility of conducting audits is fragmented over several directorates. This is another factor that is contributing to the delay in closing out audits. Currently, audits are conducted on an ad-hoc basis comprising several officers from various directorates. Also there are instances of BAPEX (subsidiary of Petrobangla) being involved with exploration activities, along with IOC contractors. Due to the fact that BAPEX is a subsidiary of Petrobangla, Petrobangla may have a profit motive in conducting audits on contractor's activities in which BAPEX is involved in exploration. This could be construed by the contractor as a conflict of interest for Petrobangla.

Recommendation- Assigning the responsibility of the proposed technical auditing program under one specific audit entity may alleviate some auditing problems. The auditing entity should employ a full time permanent staff, rather than utilized people on an ad-hoc basis. The auditing entity should have no profit motive in conducting the technical audit program and possess sufficient experience, knowledge of PSC terms and knowledge of contractor operations to conduct the technical audit program.

4. Problem- Currently, no auditing procedures for conducting Environmental, Health and Safety audits are in place. There are no guidelines that specify how and when Petrobangla must respond to an environmental disaster or accident involving the injury of an employee. Article 10.28 of the PSC states that the contractor will not recover costs associated with an accident that was caused by the inefficient, careless, or negligent activities of the contractor. The problem lies with determining whether the contractor's operations were unsafe, inefficient, careless or negligent. There is no language in the PSC that describes how Petrobangla is supposed to determine fault in the event of an accident.

Recommendation- An Environmental, Health, and Safety audit should be included as part of the proposed technical audit program. The EHS audit should involve regular onsite monitoring of the contractor's operations to identify weak areas in operations where accidents may occur. As part of the EHS audit, an annual Mechanical Integrity Test as well as an annual inspection of the well site should be conducted. These inspections have been proven to prevent operational accidents and should be conducted with high priority. The EHS audit would provide evidence of

inefficient, careless or negligent activities in the contractors operations that would deny cost recovery should an accident occur. A separate article regarding environmental health and safety including provisions allowing Petrobangla to conduct EHS audits should be added to the next revision of the PSC.

5. Problem- No procedures exist for conducting procurement audits. Procurements are not always made at competitive prices. Furthermore no mechanism is in place to determine whether or not the contractor has hired the appropriate amount of Bangladeshi personnel in each phase of operation, as well as provided adequate training programs for these personnel.

Recommendation- It is recommended that a procurement audit be a mandatory part of the new technical audit program. This audit will determine if the contractor procured items at competitive prices and according to the specifications required by the PSC. Implementing an electronic cost database would allow auditors a mechanism to compare contractor's procurements with prices for similar procurements to determine if the contractor's expenditures are reasonable. Petrobangla should give approval before major expenditures are incurred. This stipulation should imply that major procurements approved by Petrobangla cannot be disallowed in audit exceptions, as long as the contractor followed the proper procurement procedures defined in section 16 of the PSC.

Auditing procedures should be implemented to verify that the contractor is in compliance with giving preference to local goods, services and personnel. The PSC requires the contractor to hire and provide training programs for a certain percentage of Bangladeshi employees in each phase of operations. A concrete mechanism for verifying that the contractor has met these requirements needs to be developed. While the percentage of local personnel for each phase of operations is defined in the PSC, there is no comparable schedule for giving preference to locally manufactured goods. The term "preference" in reference to procuring local goods and personnel is ambiguous and left open to the interpretation of the contractor. It is recommended that a specific percentage of goods be procured from local manufacturers. This stipulation should be added to the PSC. Also, adding a penalty for non-compliance of procurement issues may be a good mechanism to influence the contractor to comply.

6. Problem - Government involvement in auditing seems to be inadequate given its significant power. As an example, Petrobangla is given very little enforcement power when it comes to auditing. Instead the EMRD has the majority of power via the petroleum statutes and those powers can be voluntarily expanded given proper motivation and effort.

Recommendation - Since taking on such an effort would require substantial high-level ministry political commitment, a more natural approach would be to have the HCU conduct supplemental technical audits. Such an approach would insulate the high-level government officials from the results of audits, and develop expertise within the HCU.

7. Problem - A fundamental principle of "audit" is that it is to be carried out by an independent authority de-linked from the parties involved with the operation of the systems. In this respect various activities carried out by Petrobangla and different committees may not be considered as "audit" in letter and spirit.

Recommendation In this context, EMRD may consider assigning the responsibility of carrying out technical audits for exploration and development activities to a competent independent organization. The assigned organization should be legally authorized to carry out the tasks on a continuing basis and draw the attention of EMRD for remedial actions. In order to carry out the tasks it would be necessary to prepare guiding documents such as operation manual, codes, ethics etc. Such a technical audit organization would not substitute the function of Performance Audit of OCAG, but rather it would play a complementary role.

7 CONCLUSIONS

There is an opportunity to improve the current PSC technical auditing procedures in Bangladesh Such improvements can influence the goal of providing attractive investment opportunities for IOCs to explore and produce hydrocarbons in Bangladesh. Auditing in Bangladesh focuses mainly on financial audits and provides limited mechanisms for determination of the performance of contractor operations. The current technical auditing procedures that do occur are sparse. Furthermore these audits do not provide follow-up reports to Petrobangla to determine the efficiency of the contractor's operations. No definitive schedule or procedure for a comprehensive technical audit exists, and current auditing procedures provide no mechanism to ensure that contractor operations are providing an appropriate level of value for money.

This report makes recommendations for a definitive technical auditing program that will allow Petrobangla to determine the efficiency and effectiveness of the IOC contractor's operations. The technical audit program is derived from the authority to conduct technical audits from provisions in the MPSC-2008.

The proposed technical audit program follows three stages.

1. Planning Stage
2. Technical Audit Program
3. Reporting Stage

In the planning stage, auditors will determine the objective of the technical auditing program as well as define the scope, and methodology for conducting the audits. The next stage will involve auditors conducting the technical audit program. In this stage, auditors will provide audit evidence about the efficiency of the contractor's operations and document the evidence in working papers. The final stage of the technical auditing program is the reporting stage. In this stage auditors will use the audit evidence obtained while conducting the technical audit program to draft a follow-up report submitted to Petrobangla. This report will specify the auditor's conclusions about the performance of the contractors operations, and provide recommendations on how to increase efficiency.

There are several areas where there are deficiencies in auditing procedures, or auditing procedures are completely void. The technical audit program's aim is to eliminate these deficiencies. The major deficiencies in technical auditing include:

- Lack of clear understanding and technical auditing procedures involved with cost recovery;
- Frequency of technical audits too low, and conducted on an ad-hoc basis. Auditors assigned on an ad-hoc basis frequently do not possess the necessary technical skills or knowledge of the contractors operations to perform an effective technical audit.
- Closing out audits takes too long, and extremely large audit exceptions are being raised.
- Lack of procedure for conducting environmental, health and safety audits.
- Lack of procedure for conducting procurement audits. This includes the lack of a mechanism to determine if contractors have complied with giving preference to local equipment and personnel, as well as provided adequate training for Bangladeshi nationals.
- Inadequate review of planned future activities.

Currently, technical auditing is conducted by officers of the PSC Directorate and the Financial Management Division of the Finance Directorate. In addition, expert opinion is sought from relevant Petrobangla companies when necessary. Petrobangla states that its technical auditing ability is constrained by a manpower shortage caused by a lack of regular recruitment. However, it is keen to enhance its auditing capabilities through suitable staffing and regular training.

The report describes a technical auditing program that was designed to address deficiencies and provide a framework for establishing a well-planned and timely technical auditing program. Implementing this technical auditing program will improve the business environment for exploration and development of hydrocarbons in Bangladesh by making potential investments more attractive to IOC's. It will also ensure that Bangladesh receives the share of production to which it is entitled. This will be an important step towards Bangladesh's goal of providing its people with a reliable energy future.