Final Report of Second In-country Visit

Independent Expert, Environmental and Social Monitoring

Jubilee Field Development, Ghana

Presented to:

Tullow Ghana Limited

Presented by:

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May 9, 2011

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EXECUTIVE SUMMARY

The Jubilee oil field is currently under development offshore Ghana. Tullow Oil Ghana (TGL) is the operator of the field and via their parent company (Tullow Oil plc) obtained financing from the International Finance Corporation (IFC) in early 2009. As part of the financing agreement, the IFC has required that TGL satisfy the conditions of an Environmental and Social Action Plan (ESAP). Following an October 2010 visit by the IFC, the ESAP was revised to reflect progress made by TGL to close issues identified in the previous version of the ESAP, dated July 10, 2009. The December 2010 ESAP reflects the current commitments of TGL to the IFC.

One of the requirements of the ESAP is for an independent expert to conduct verification of the environmental and social monitoring information associated with the Jubilee development. Also, Kosmos Energy (one of the project partners) obtained similar financing from IFC and their ESAP had the same requirement for independent verification of project information (Kosmos is no longer an IFC investment as of March 31, 2011)

Jonathan T. Motherwell and Associates, LLC (JTM and Associates) of the Woodlands, Texas was selected by Tullow Oil in November of 2009 to serve as the independent expert for the Jubilee Field development. JTM has teamed with D'Appolonia SpA to provide the full range of consultants required for the independent review scope of work. The 2011 in-country visit was conducted from March 27 – April 1 and is the second trip following our initial visit in January 2010. A three-man team of Jonathan Motherwell, William Johnson and Keith Lantrip performed the in-country review, with support and cooperation from the TGL staff. Nicholas Flanders and Rosa Orellana from the IFC were also present during the majority of the meetings, site visits and discussions.

The revised terms of reference (TOR) for the independent expert verification in 2011 are dated February 25, 2011 and were developed jointly by TGL and IFC. The TOR requires a review of progress against the December 10, 2010 ESAP and the management and monitoring programs contained therein. This report provides our findings based on the in-country site visit, interviews with TGL staff and review of project documents.

Review of the Annual Monitoring Report (AMR) is also part of the TOR. The 2010 AMR was provided to the JTM team during the visit to Ghana and our comments to that document have been provided to TGL separately.

Project Status

As background, it is important to note that the Jubilee Field is being developed in a phased approach with only Phase 1 currently sanctioned by the project sponsors. Phase 1 includes the drilling of 17 wells and the installation of a Floating, Production, Storage and Offloading (FPSO) vessel, which arrived in June 2010. All but one of the wells have been drilled and completed, and the FPSO became operational on November 28, 2010. "First Oil" was officially celebrated on December 15, 2010 by the project partners and the Ghanaian government. Oil production has reached about 69,000 bpd (as of late March 2011) with current flow from five wells. Associated gas is being flared due to compression problems as the FPSO undergoes final commissioning. Full oil production of 120,000 bpd is expected to be achieved by Q3/Q4 2011. Outside of the FPSO, offshore operations are being undertaken by the Eirik Raude drilling rig currently performing well completions. Jubilee Field Phase 1 development is a Category B project as defined by the IFC.

The Ghana EPA reviewed and accepted a project-specific environmental impact statement (EIS) for the Phase 1 activities with an interim permit dated December 31, 2009 issued through construction and commissioning. The Ghana EPA subsequently issued an Environmental Permit for Offshore Operations dated November 26, 2010 and this permit includes a number of requirements associated with the production stage.

Summary of Observations

Since the initial in-country visit in January 2010, TGL has made major progress in terms of developing a project-specific Environmental and Social Management System (ESMS) as required under IFC Performance Standard 1 (PS1). In the terminology of the Jubilee project, this ESMS is referred to as an Environmental, Health & Safety and Social (EHSS) Management System. This EHSS Management System has been developed under the Tullow Oil Integrated Management System (IMS) and is complete for the production phase with the following main components:

- Environmental Management Plan (EMP), dated 1/10/10;
- Environmental Monitoring Plan (E Mon. P), dated 30/9/10;
- Waste Management Plan (WMP), dated 5/10/10;
- Public Consultation and Disclosure Plan (PCDP), dated 9/10; and
- Oil Spill Contingency Plan (OSCP) dated 20/9/10.

These are the main Plans that formed the basis for the Ghana EPA to issue the Environmental Permit for Offshore Operations. Completion of the PCDP represents an important milestone towards compliance with IFC requirements and eliminates a non-compliance identified from our

January 2010 In-Country Visit Report. The project EHSS Management System is in place and being upgraded for Operations, a process TGL intends to accomplish via ISO14001 certification by November 2011.

With respect to implementing the TGL EHSS Management System, it is apparent that TGL has made major improvements to their Environmental, Health & Safety and Security (EHSS) and Corporate Affairs (including CSR) Departments with the addition of skilled staff, including experienced managers. The current organization and staffing appears to be at or close to what will be needed to successfully manage to both Ghana EPA and IFC requirements.

One issue identified in our 2010 In-Country Visit Report was that bridging of management documents still needed to take place between TGL and the main project contractors and subcontractors. Progress has been made such that the MODEC (FPSO operator) management system documents are integrated into the TGL system, but this bridging process is not fully executed with all contractors and subcontractors.

Other management system issues relate to the Management of Change (MOC) process and training. The current MOC process is fully functional for the physical and process components of the Project, but requires further modification, implementation and tracking for organizational and environmental & social personnel changes that may take place within TGL. A recommendation is that TGL revise and broaden the Jubilee Unit MOC to be fully aligned with the Tullow Oil MOC procedure. Although TGL training activities are extensive, the current training matrix is out-of-date and should be thoroughly reviewed to make sure that staff and workers receive all of the training outlined within the EMP and the ESAP. One noted deficiency is that training in IFC PS and applicable EHS Guidelines has not been completed for all relevant personnel involved with risk management within the Jubilee Project (i.e., personnel that have arrived since the last training session in the fall of 2009).

Emergency Preparedness and Response – A positive aspect of TGL's project development is that not only have plans been prepared, but they are being implemented in the field. The Oil Spill Contingency Plan (OSCP) has been developed and approved by the Ghana EPA. Evidence that it is being implemented can be observed by the presence of a fully equipped Incident Command Center; an impressive amount of oil spill response equipment and other resources to handle Tier 1 and 2 level responses up to Tier 3; and a multipurpose vessel being deployed with four rigid hulled inflatable boats (RHIBs) to assist with spill control activities. The Ghana Incident Management Plan (IMP) has been developed and is being implemented and revised on the basis of drills and exercises.

Occupational Health and Safety – Some aspects of the occupational health and safety program have been exemplary, whereas others have been slow to start. TGL has a good malaria program/policy and a fitness for duty program, but workplace exposure monitoring (noise and chemicals) and ambient air quality measurements are just starting to be conducted. Recent hiring of an occupational health and safety specialist who has initiated the procurement of monitoring equipment is expected to improve this situation, but TGL is late in implementing their OH&S programs. An incident reporting procedure is in place, but we do see some gaps in terms of reporting and classification of malaria cases. One OH&S challenge appears to be at the Takoradi port, where congestion/traffic and lime offloading (by third parties) have created potentially hazardous conditions.

Waste and Wastewater Management – A new Waste Management Plan (WMP) has been prepared and approved by the Ghana EPA. This plan reflects the ongoing challenge of waste management where there is an absence of in-country facilities for disposal of both hazardous and non-hazardous wastes, and sets goals to reduce reliance on municipal disposal facilities. A recommendation from our review is that TGL should challenge itself to completely eliminate the use of municipal disposal facilities. A gap in terms of wastewater management is the lack of a wastewater treatment plant at the Logistics Base in Takoradi. It is understood that plans are in place to construct and operate a new plant at that facility.

Biodiversity Management – A non-compliance issue from our January 2010 In-Country Visit was the absence of an active marine mammal monitoring program. This program is late in arriving, but after "as sighted" monitoring throughout most of 2010, a systematic and proactive program has been implemented over the past month. Marine mammals and turtles are being sighted and it is expected that once significant monitoring has been performed, the data can be interpreted by a marine specialist (an ESAP requirement).

Community Engagement – The Public Consultation and Disclosure Plan is complete and approved by the Ghana EPA, which is a major improvement from the situation a year ago, when a non-compliance issue was assigned as this document had not been prepared. The TGL Corporate Social Responsibility (CSR) Group has also made major organizational improvements with the addition of Community Liaison Officers (CLOs) covering six municipalities/districts and adding a local Project Manager. Community projects have started and the community health initiative is exemplary, but community grievances have not been actively recorded and managed. This process is now just starting with the recent addition of the CLOs, but the grievance management process is late in being implemented, considering the PCDP dates from September, 2010 and the PCDP itself was late in being developed.

An additional issue made apparent from our visit to the Takoradi area is cumulative impacts. The Jubilee EIS briefly addresses cumulative impacts from the standpoints of physical presence, air emissions, effluent discharges, waste management, oil spills, and socioeconomic and human activities. All of these items were considered to represent no significant cumulative impact, except for the case where additional offshore platforms could impact local fishing (no degree of hazard assigned to this assumption). The presence of numerous offshore drilling vessels and increased port activity in the Takoradi area, as well as significant in-migration related to political instability in the Cote d'Ivoire, suggests that the EIS underestimated cumulative impacts related to the oil & gas industry. The EIS does identify some mitigation activities should cumulative impacts develop into problems and JTM recommends that TGL consider starting to implement these programs, working in conjunction with the government and other operators.

Table EX-1 below summarizes the key issues and observations from our March 2011 visit to Ghana and the project area. Considering the good progress by TGL in implementing the ESAP and management and monitoring program (MMP) commitments, JTM has not identified any non-compliance issues per se. However, we do see areas requiring action or improvement, either to fully meet the ESAP / MMP or good international practice. The color guide to the status column is as follows:

Green – is generally in compliance but may need specific action to meet good international practice or the full intent of the ESAP / MMP;

Tan – specific action is noted to assure future compliance; and

Orange – items which are close to non-compliance and require specific and immediate attention.

Table EX–1 Summary of Issues[1] Tullow Ghana Limited – Jubilee Field Development March, 2011				
ESAP or MMP Item	**ESAP or MMP Requirement**	**Description**	**Comments**	**Status / Action**
PS1: Social and Environmental Assessment and Management Systems				
1	Tullow Oil will revise the Risk Management Guidelines and EIA Recommended Practice to ensure that Applicable Projects are assessed and managed according to IFC's Performance Standards.	The Company has provided evidence that any Applicable Project is in compliance with IFC Performance Standards, or has shown that the Applicable Project can come into compliance with the Performance Standards within a reasonable time period following the implementation of an action plan to be agreed upon between the Company and IFC.	TGL has developed an ESMS incorporating an Environmental Management Plan, Environmental Monitoring Plan, Public Consultation and Disclosure Plan, Oil Spill Contingency Plan, and Waste Management Plan that has been approved by the Ghana EPA and do incorporate IFC requirements. This ESMS is now the foundation for ISO14001 certification projected for November 2011.	No action required – see Item 6.
3	Training in the IFC's Performance Standards and the applicable IFC EHS Guidelines will be provided to those involved with the risk management of Applicable Projects.	The Company has provided evidence of training and developed a specific training procedure to be included in the Corporate training plan.	TGL has initiated a training program, but key individuals responsible for EHS and CSR management have yet to receive this training, along with new employees / key contractors. The last training on IFC PSs dates from the fall of 2009 so this item is out of date.	Requires action – IFC PS training.

[1] This Summary of Issues is based on the items identified according to the December 10, 2010 revised ESAP or the MMP (including the EMP, E. Mon. P, WMP, PCDP and OSCP). Items fully closed from our May 2010 report are not included.

ESAP or MMP Item	ESAP or MMP Requirement	Description	Comments	Status / Action
5	The Project will develop and implement a management of change procedure and Tullow Oil will use reasonable endeavors, by exercising its contractual rights pursuant to any relevant Project Agreements, to ensure that the procedure is part of the Project environmental and social management system (ESMS).	(a)Tullow Oil has submitted the procedure acceptable to IFC. (b) The procedure is integrated in the Project environmental and social management system (ESMS).	Although TGL has incorporated the approved MOC procedure into their ESMS, they are not implementing it for key changes in organization and personnel, except for the FPSO.	Requires action and full implementation of MOC procedures (including corporate MOC).
6	The Project will have an ESMS that periodically reviews the environmental and social aspects of the Project to determine whether the Environmental Management Plan (EMP) needs to be revised.	(1) The Project has developed the ESMS for the production, drilling and installation phase, acceptable to IFC. (2) The Project has developed the ESMS for production operations, acceptable to IFC.	TGL has developed an ESMS for the production phase incorporating an EMP, E Mo. P, PCDP, OSCP, and WMP that has been approved by the Ghana EPA. This ESMS is now the foundation for ISO14001 certification projected for November 2011, which means that TGL needs to place significant effort in formally implementing this ESMS for operations. .	In progress, requires significant 2011 action, specifically , the PCDP identifies that other plans still need to be prepared for operations: • Community Investment Plan; • Communication Strategy; • Crises Communication Plan; and • Media Communication Plan. An additional issue to be resolved is in fully bridging this Management System to all of the main contractors and subcontractors.

ESAP or MMP Item	ESAP or MMP Requirement	Description	Comments	Status / Action
7	The Project will disclose the EMP, including this Action Plan, to local communities as it evolves and report on completion of its action items.	(1) Inclusion of a draft EMP disclosure and reporting procedure in the Project's Public Consultation and Disclosure Plan. (2) Disclosure of EMP updates, including this Action Plan, and public disclosure of EMP completion reporting.	The PCDP is now an approved, operational document, so the non-compliance identified in Jan. 2011 is rescinded. Disclosure of the EMP will take place after it has been modified for operations and as part of the ISO14001 certification process.	In progress, requires significant 2011 action. More specifically, the commitments for disclosure in 2011 are identified in the PCDP and include: • EMP for Operations; • Updated PCDP for Operations; • Community Investment Plan; • Grievance Statistics and Trends; and • Communication Strategy
EIS	Section 5.8 and Table 10.1 of EIS outlines and discusses possible cumulative impacts and mitigation measures	An observation from this in-country visit is that the Takoradi area / Western region is being affected by cumulative impacts to a degree as somewhat anticipated in the Jubilee EIA, specifically from numerous offshore drilling vessels and increased port activity, as well as transboundary issues related to political instability in the Cote d'Ivoire. Based on discussions with representatives of the fishing community, it is their contention that they are experiencing adverse impacts from current developments, interpreted by them as from TGL, even if the impacts are cumulative from many sources.	Strategies that could help manage cumulative impacts identified in the EIA include: • Strategic Environmental Assessment (SEA) • Build Capacity of Local Administration • Business Collaboration • Data Gathering and Monitoring • Developing and Enforcing Environmental Management Standards • National Oil Spill Plan Most of the responsibility for mitigating impacts rests with the Government, but TGL could be starting some initiatives.	No formal action required from this observation, but it is strongly recommended that TGL at least develop a go-forward strategy to cooperate with other operators and the Government (at local, regional and national levels) to anticipate and manage cumulative impacts.

ESAP or MMP Item	ESAP or MMP Requirement	Description	Comments	Status / Action
PCDP	PCDP, Section 7	An important component of the PCDP is the establishment of a grievance mechanism to receive and facilitate resolution of the affected communities' concerns and grievances about the TGL's environmental and social performance.	This process is just starting with the hiring of Community Liaison Officers (CLOs) that now reside in six affected municipalities /districts. The implementation of this process is late, as it is apparent that communities do have complaints and the PCDP dates from 2010.	Requires 2011 action, as outlined in Section 7 of the PCDP.
PS2: Labor and Working Conditions				
10	The Company will have a Human Resources Policy that communicates to workers their rights under Ghanaian law and spells out terms of employment, including equal opportunity principles, benefits, and leave policies.	The Company has developed and submitted the policy with reference to non-employee workers, acceptable to IFC.	Issues associated with labor practices were not identified during this in-country trip.	No action required.
E Mon. P	Sections 8.1 and 8.2	TGL's occupational health and safety program has not yet evolved to include workplace exposure monitoring (noise and chemicals) and ambient air quality measurements have not started yet.	Recent hiring of an occupational health and safety specialist who has initiated the procurement of monitoring equipment is expected to resolve this situation, but TGL is late in starting their OH&S programs.	In progress, requires 2011 action.

ESAP or MMP Item	ESAP or MMP Requirement	Description	Comments	Status / Action
PS3: Pollution Prevention and Abatement				
11	The Project will define routine inspection and maintenance of engines, generators, and other equipment, noise, and air emissions monitoring and use of low-sulfur diesel fuel, as part of the Project's environmental monitoring program.	Revised environmental monitoring program for the production operations phase, acceptable to IFC.	The Environmental Monitoring Plan for both offshore and onshore activities has been finalized. Low sulfur diesel following MARPOL recommendations is 5000 ppm (0.5%) sulfur, which appears to be generally available in Ghana. Although there is an approved Monitoring Plan in place, it is not yet being fully implemented. Testing for ambient air, stack emissions, wastewater effluent, noise, etc., has not started. It is understood that equipment is being procured and that a training program is starting, but this process is very late in being implemented and should be made a priority.	In progress, requires action per the EMP and E. mon. P.
12	The Project will maintain a monitoring program for greenhouse gases (GHG). Also, per the EMP, flaring should be less than 2.5% of monthly gas production.	Periodic public reporting of GHG emissions for the Jubilee Field production operations. Maintain flaring at less than targeted value.	Yearly reporting is required per this item; the lack of compression since production was initiated in late November 2010 has resulted in high levels of flaring of gas on the FPSO since then, such that GHG emissions are much higher than targeted. Granted, we understand that final FPSO commissioning is ongoing and TGL is working to solve this issue.	Requires immediate action to achieve EMP targeted goal.
14	The Project will ensure that a Hydrotest Water Disposal Plan will be prepared.	Availability of the plan, acceptable to IFC.	Hydrotesting is nearly complete and results reported to date show general compliance with Ghana EPA discharge standards.	Implement per EMP and E. Mon. P

ESAP or MMP Item	ESAP or MMP Requirement	Description	Comments	Status / Action
15	The Project will install a produced water discharge sampling point in the FPSO and relevant procedures developed.	Availability of the sampling point and procedures, acceptable to IFC.	Currently TGL is not producing produced water. Although it was not practical to make field observations of this system, it is understood that it is in place and TGL / MODEC have appropriate procedures.	Implement per EMP and E. Mon. P
16	The Project will develop tanker vetting procedures to ensure compliant management of ballast water. Ballast water management measures will be detailed and included in the env. mgt. system for operations.	Availability of tanker vetting and ballast water management procedures, acceptable to IFC.	Although it was not practical to make field observations of this system, it is understood that it is in place and TGL / MODEC have appropriate procedures.	Implement per EMP and E. Mon. P
17	The Company will update the Drilling Waste Management Plan (WMP) to include methods and procedures, adopted by the Project for the management of drilled cuttings and fluid disposal, and all planned activities during facility installation, as needed. An Operations Phase WMP will then be developed. Audits of the waste management facilities regularly conducted. The Chemical Handling (COSHH) Procedure will be implemented to handle all hazardous chemicals and the Company will ensure that it is adopted by its contractors.	(a) Availability of a draft Project's WMP (b) Availability of a draft Project's management plan for drilled cuttings (c) Chemical Handling (COSHH) Procedure for the drilling and installation phase, acceptable to IFC. (d) Waste Management Plan and Chemical Handling (COSHH) Procedure for the production operations phase, acceptable to IFC.	The Waste Management Plan and associated Chemical Handling Procedure (COSHH) are final documents and are being implemented.	Implement WMP, also some improvements to the hazmat storage at the Logistics Base are recommended, along with support of 3rd party providers (Zeal, etc.).
18	The Project will update the existing Emergency Response Plan (ERP), to include response procedures to emergencies potentially associated to all construction and production operations activities planned, including fire prevention and protection, environmental emergencies, and other incident responses.	ERP for the production operations phase, acceptable to IFC.	Emergency response is defined in terms of an Emergency Response Plan (ERP), Incident Management Plan (IMP), as well as the Oil Spill Contingency Plan (OSCP), all which are in place.	Continue implementing ERP, IMP and OSCP

ESAP or MMP Item	ESAP or MMP Requirement	Description	Comments	Status / Action
19	Quantitative modeling of defined potential surface and subsurface oil spill release scenarios will be conducted and an assessment of potential for oil spill related impacts to offshore and coastal environmental resources, including turtle nesting beaches, will be conducted for both the drilling/installation phase and the production operations phase, and incorporated in the Oil Spill Contingency Plan (OSCP). The OSCP will define specific measures for protecting turtle habitat and other protected and sensitive coastal habitats. The Project will develop spill scenarios for the operations phase Oil Spill Contingency Plan (OSCP).	OSCP for the production operations phase, acceptable to IFC.	The OSCP is now a completed document incorporating mapping of sensitive coastal zone.	Implement OSCP
EMP	Table 6.11.1, Ref. 2.08	A requirement of PS3 and of the Ghana EPA Environmental permit is that sewage produced by the project onshore be treated before discharge. A gap in terms of wastewater management is the lack of a wastewater treatment plant at the Logistics Base in Takoradi. It is understood that plans are in place to construct and operate a new plant at that facility.	TGL needs to work with the Ghana Air Force and other operators to develop a coordinated WWT scheme for the Logistics Base.	Develop and implement WWT at Takoradi base

ESAP or MMP Item	ESAP or MMP Requirement	Description	Comments	Status / Action
PS4: Community Health, Safety and Security				
21	The Project will develop a program to avoid intrusion into the safety zones around the drilling rigs and FPSO to include: Education program for the nearby villages and other fishers known to use the project area. Procedure for boat traffic management and for warning boats away from the safety zone, including rules of engagement for use of physical intervention. The Project will develop a security plan, based on a security risk assessment, which may include, among other things, the adaptation of the US-UK Voluntary Principles on Security.	Procedures for offshore facilities provided to and accepted by IFC and procedure for boat traffic management and for warning boats away from the safety zone, including rules of engagement for use of physical intervention.	The education program for the nearby villages and the other fishers known to use the project is defined in the PCDP and has been maintained. Sea traffic and security procedures continue to be implemented in association with the Ghanaian Navy. Controls are well established, but traffic is increasing (cumulative impacts).	It is recommended that TGL undertake a risk assessment due to increased traffic and implement the mitigations defined in the EIA for cumulative impacts, as appropriate.

ESAP or MMP Item	ESAP or MMP Requirement	Description	Comments	Status / Action
PS6: Biodiversity Conservation and Sustainable Natural Resource Management				
22	The Project will develop and implement a program for training vessel's and helicopter's operators in marine mammal observation and monitoring at and in the vicinity of the proposed Jubilee Field development. The program will be included in the final Jubilee ESIA and developed in consultation with the Ghana EPA.	Observations analyzed by an experienced marine mammal biologist and reported in the annual monitoring report to IFC.	A non-compliance issue from the January 2010 In-Country Visit was the absence of an active marine monitoring program. This program is late in arriving, but after ad hoc monitoring throughout most of 2010, a systematic program has been implemented over the past month. Marine mammals and turtles are being sighted / reported and it is expected that once the monitoring has progressed, the data will be interpreted by a marine specialist.	In progress, Monitoring needs to be maintained and data analyzed by marine specialist.
23	The Project will develop and enforce a specific policy and procedures to ensure that traffic and operations of drilling vessels, support vessels and helicopters will minimize disturbance to marine mammals.	Availability of the policy and procedures, acceptable to IFC.	Same as above.	In progress, same actions as for Item 22.
24	The Project will ensure that support helicopters will routinely avoid flying over the Amansuri wetland and that, if avoidance is not feasible due to weather conditions, a minimum altitude will be specified, according to international good practice, when flying over this area to minimize disturbance to wildlife.	Availability of the policy and procedures, acceptable to IFC.	Flying does not cross the Amansuri wetland, and TGL was able to demonstrate that appropriate procedures are in place to mitigate adverse effects consistent with the Ghana EPA permit requirements.	Maintain current flight patterns.

1.0 INTRODUCTION AND BACKGROUND

Jonathan T. Motherwell and Associates, LLC (JTM and Associates) has been contracted to serve as the independent expert for monitoring environmental and social information related to the Jubilee development in Ghana. This second in-country visit was performed by the JTM and Associates team from March 26 – April 1, 2011 with the following participants:

- Jonathan Motherwell – Team Leader; and Environmental Engineering and Social Issues Specialist.
- William J. (Bill) Johnson – Environmental Science and Geology, Health & Safety and Waste Management Specialist.
- Keith Lantrip – Health & Safety (including process safety) Specialist with previous experience as a Senior Production Manager.

The results of the March 2011 in-country visit are the topic of the current report.

The Jubilee Phase 1 Oil and Gas Development project involves the extraction of hydrocarbons from an underground reservoir located in deep water offshore Ghana. The Jubilee field is located approximately 60 km from the nearest coast and is shown below.

The partners in the Jubilee Field Joint Venture are Tullow Ghana Limited (TGL), Kosmos Ghana HC (Kosmos), Anadarko WCTP Company, Sabre Oil and Gas, the EO Group, and the Ghana National Petroleum Corporation (GNPC). TGL has been designated as the Unit Operator under an Unitisation and Unit Operating Agreement with the Ghana Ministry of Energy (MoE).

The Jubilee Unit Area covers part of the Deepwater Tano and West Cape Three Points license areas. It lies in water depths of between 1,100 and 1,700 meters and covers an area of approximately 110 km^2.

The Jubilee Phase 1 development involves the completion of 17 wells comprising a combination of nine production wells used to bring oil and gas from the underground reservoir to the surface, and six water and two gas injection wells used to re-inject water and gas back into the reservoir for pressure maintenance and enhancing oil recovery. All but two of the wells have been drilled and completed.

The wells are connected through a network of manifolds and pipelines to a Floating Production Storage and Offloading vessel (FPSO Kwame Nkrumah) which arrived in June 2010 and is now permanently moored on the north side of the Jubilee field. On the FPSO, the crude oil is separated from natural gas and water. The processed crude oil is stored in the FPSO storage tanks and offloaded to oil tanker vessels periodically for delivery to international markets. This production process started on November 28, 2010 and "First Oil" was formally celebrated on December 15, 2010 with an inauguration by the President of Ghana, including an offshore visit and ceremonies in Takoradi.

Separated natural gas will be re-injected into the reservoir to maintain pressure with a small proportion (15%) of the gas being used for power generation on the FPSO. At the time of our March 2011 visit, re-injection of the gas had not started due to difficulties with compression units and the majority of the gas was being flared. As the FPSO is still considered to be in the commissioning phase, this unanticipated flaring is allowed as part of the Ghana EPA permit. Once the FPSO is fully commissioned, the targeted maximum flaring rate is 2.5% of the monthly average total gas production.

Oil production has reached about 69,000 bpd as of the end of March and full production of 120,000 bpd is expected to be achieved by Q3/Q4 2011. Field operations are projected to last for 20 years (i.e., until 2031).

Future phases of development may extend this period significantly and will depend on the success and information obtained during Phase 1. Jubilee Phase 1A is currently being planned

such that an additional 5 – 8 infill wells will be drilled and entered into production with existing infrastructure in 2012. Jubilee Phase 1B, with additional 15 – 20 wells and associated subsea infrastructure for production is also being contemplated between 2014 and 2020. At the present time, future development could also include a GNPC sponsored project to export gas by pipeline to a shore-based power plant and export terminal. All of these new developments would be subject to separate permitting requirements as prescribed by Ghanaian environmental law.

As of the end of February 2011, the Jubilee Project employed a total of 330 persons made up of 191 Ghanaians representing 58% of the gross workforce and 139 expatriates representing 42%; specialist expatriate contractor skill-sets are primarily deployed in deepwater well engineering both offshore and onshore, and also in shorebase logistics. The permanent employees are 217 made up of 88% Ghanaians and 12% expatriates. TGL estimates that more than 400 local permanent jobs have been created or preserved through local subcontractors.

In February of 2009, the International Finance Corporation (IFC) agreed to finance part of Tullow's and Kosmos' portion of the development costs for the Jubilee Field. Based on the environmental and social review performed by IFC's staff, environmental and social action plans (ESAPs) were included in the financing agreements for both Tullow and Kosmos. Following an October 2010 visit by the IFC, the Tullow Oil ESAP was revised on December 10, 2010 to reflect progress made by TGL to close issues originally identified in the previous versions of the ESAP. The December 2010 ESAP reflects the current commitments of TGL to the IFC.

One of the requirements of the ESAP is for an independent expert to conduct verification of the environmental and social monitoring information associated with the Jubilee development. The current terms of reference (TOR) for the independent expert dated February 25, 2011 were jointly developed by Tullow and IFC specifically for this in-country visit and are included as Appendix A to this report.

2.0 REVIEW OF TGL COMMITMENTS

The body of this report focuses on a verification of compliance by TGL with IFC requirements as defined within the December 2010 ESAP and the management and monitoring programs contained therein. These management and monitoring programs (MMPs) are defined by the plans that formed the basis for the Ghana EPA to issue the Environmental Permit for Offshore Operations dated November 26, 2010. As such, this report reviews compliance with the ESAP, but also with commitments made within the management system. An additional portion of our scope of work is to review the most recent Annual Monitoring Report (AMR), issued on April 1,

2011, as part of the verification process. Comments specifically related to the AMR have been provided to TGL and the IFC under separate cover.

Five of IFC's Performance Standards (PSs) apply to the Jubilee Field development. Specifically, these include PS1 (Social and Environmental Assessment and Management Systems), PS2 (Labor and Working Conditions), PS3 (Pollution Prevention and Abatement), PS4 (Community Health, Safety and Security) and PS6 (Biodiversity Conservation and Sustainable Natural Resources Management). TGL performance against the applicable PSs incorporated into the ESAP and reflected in their environmental and social management system is reviewed in the following sections.

2.1 PS1: SOCIAL AND ENVIRONMENTAL ASSESSMENT AND MANAGEMENT SYSTEMS

The basic IFC requirements for an environmental and social management system (ESMS) are defined in PS1. PS1 establishes the importance of: (i) integrated assessment to identify the social and environmental impacts, risks, and opportunities of projects; (ii) effective community engagement through disclosure of project-related information and consultation with local communities on matters that directly affect them; and (iii) the client's management of social and environmental performance throughout the life of the project. An important milestone to compliance with PS1 was the completion of an integrated impact assessment that was completed and submitted (as an EIS) to the Ghana EPA in 2009.

The second major milestone accomplished by TGL over the past year has been the finalizing of a Project-specific ESMS for the drilling and installation phase. In the terminology of the Jubilee project this ESMS is referred to as an Environmental, H&S and Social (EHSS) Management System, with the following main components:

- Environmental Management Plan (EMP) dated 1/10/10;
- Environmental Monitoring Plan (E Mon. P) dated 30/9/10;
- Waste Management Plan (WMP) dated 5/10/10;
- Public Consultation and Disclosure Plan (PCDP) dated 9/10; and
- Oil Spill Contingency Plan (OSCP) dated 20/9/10.

These are the main Plans that formed the basis for the Ghana EPA to issue the Environmental Permit for Offshore Operations.

Table 1 identifies the main support plans and procedures to these documents and identifies the linkages among them. All of these plans and procedures identified in Table 1 are supported by

a Management of Change (MOC) Procedure dated January 20, 2011 that is separate from the EHSS Management System.

Table 1
Main EHSS Management Plans and Linkages

Main EHSS Management Plan	Supporting Documents/Linkages
Environmental Management Plan (EMP)	• Environmental Monitoring Plan • Waste Management Plan • Emergency Response Plan • Oil Spill Contingency Plan • Chemicals Management Plan • Helicopter Operations Plan • Marine Logistics Plan • Transport Management Plan • Preventative Maintenance Plan • Marine Operations Plans
Environmental Monitoring Plan (E Mon. P)	Thirty individual monitoring plans have been developed to monitor the environment affected by the Jubilee Project covering nine categories: • Air Emissions • Chemicals • Ecology • Energy • Liquid Discharges • Noise • Production • Transport • Waste Management
Waste Management Plan (WMP)	• Environmental Management Plan • Environmental Monitoring Plan • Chemical Handling (COSHH) Procedure • Takoradi Supply Base Operating Guidelines Manual • Waste Management Plan - FPSO Kwame Nkrumah MV21 (Modec) • Hazardous Material Procedure - FPSO Kwame Nkrumah MV21 (Modec) • Individual contractor waste management plans and related bridging documentation
Public Consultation and Disclosure Plan (PCDP)	• Community Investment Plan (currently being developed); • Communication Strategy (currently being developed); • Corporate Social Responsibility; • Crises Communication Plan(currently being developed); • Media Communication Plan(currently being developed); and • Environmental, Health and Safety policies.

Table 1 Main EHSS Management Plans and Linkages	
Main EHSS Management Plan	Supporting Documents/Linkages
Oil Spill Contingency Plan (OSCP)	• Ghana Incident Management Plan • Ghana National Oil Spill Contingency Plan (NOSCP) • Takoradi Commercial Harbour Oil Spill Contingency Plan

Another significant requirement of IFC PS1 is the preparation of an Action Plan for projects where specific mitigation measures and actions are necessary for the project to comply with applicable laws and regulations and to meet the requirements of IFC Performance Standards. The Action Plan needs to: (i) describe the actions necessary to implement the various sets of mitigation measures or corrective actions to be undertaken; (ii) prioritize these actions; (iii) include the time-line for their implementation; (iv) be disclosed to the affected communities; and (v) describe the schedule and mechanism for external reporting on the client's implementation of the Action Plan. For the Jubilee Development the requirement for an Action Plan was fulfilled with the completion of the Environmental Management Plan (EMP), of which the ESAP is a component. Another important requirement to achieve compliance with IFC requirements as part of the loan agreement is the preparation of an Annual Monitoring Report (AMR), the second of which was issued on April 1, 2011 (for 2010).

Our observations have been organized following the general PS1 requirements. The PS1 topic of community engagement is addressed separately.

Management Program

The EHSS Management System outlined in Table 1 satisfies the requirements of ESAP Item 6, but now needs to be fully implemented for Operations, a process TGL intends to accomplish via ISO14001 certification by November 2011. At the time of the first in-country visit in January 2010, the proposed schedule for ISO14001 certification was June 2010, which proved to be overly optimistic. TGL has developed a schedule for ISO14001 certification that includes an internal audit to identify gaps with the existing EHSS Management System and begin the process of transferring the system over to the requirements of ISO14001.

As part of the process of upgrading the current management system to the requirements of ISO14001, a recommendation is that the EMP be revised to define tiered levels of non-compliance with the commitments of the EMP and other associated plans. Our experience is that the ranking of non-compliances is an important tool to allow for management to understand the significance of particular issues and to prioritize actions to resolve problems as they are

identified. The ranking of non-compliances also facilitates external reviews of project EHS performance. It is also recommended that severe non-compliances be flagged for IFC notification.

Some gaps that will need to be filled relate to bridging the TGL EHSS Management System to the main contractors and subcontractors. One issue identified in our January 2010 In-Country Visit Report was that bridging of management documents still needed to take place between TGL and the main contractors and subcontractors. There is a requirement within the EMP that all contractors and subcontractors engaged by TGL that are responsible for performing production-related activities be in full compliance with the TGL EMP and the overall EHSS management system. Major contractors such as MODEC and Baker-Hughes appear to have management systems that bridge with TGL's EMP requirements, but some of the smaller contractors/subcontractors do not appear to have been bridged (such as SEACOR vessels). There is also a requirement for bridging between TGL and third parties in Section 1.3 of the Incident Management Plan. Bridging with government third-parties could be a capacity building process.

Based on our review of the status of TGL's development of a complete ESMS, the schedule for ISO14001 certification appears to be aggressive, but potentially achievable. Most of the components to roll out an ISO14001 program appear to be in place from the environmental and H&S groups, but there are still gaps from the social side. It is expected that general requirements under ISO14001 will include defining social risks and provide the details of stakeholder engagement, including external communications. As shown in Table 1, a Communication Strategy is still under development, as is a Crises Communication Plan and a Media Communication Plan. These communication plans yet to be developed will need to be incorporated into the ISO14001 program.

Other management system issues relate to the Management of Change (MOC) process and training. The MOC process is fully functional for the physical and process components of the Project, but requires further development, implementation and tracking for organizational and any environmental and social changes that may take place. A recommendation is that all key TGL managers involved with Ghana EPA and IFC commitments receive MOC training.

Organizational Capacity

The IFC requires that the Project establish, maintain, and strengthen as necessary an organizational structure that defines roles, responsibilities, and authority to implement the management program, including the ESAP. With respect to the TGL EHSS Management System it is apparent that TGL had made major improvements to the individual Environmental,

Health & Safety and Security (EHSS) and Community and Social Relations (CSR) Departments with the addition of skilled new staff (both expatriate and nationals) including experienced managers.

The EHS department is organized such that it is responsible for environmental management, regulatory compliance, emergency and oil spill response, security and occupational health and safety. Improvements to the organization can be seen with the addition of experienced advisors, as well as a new occupational health assistant to the medical staff. A current gap in the organization is that the Environmental Team Lead person left the Project shortly before our in-country visit and that position needs to be filled. Turnover is probably the most significant issue to the EHS organization and the lack of an MOC process to address organizational changes is a gap that needs to be addressed. The current organization and staffing appear to be at or close to what will be needed to successfully manage IFC and Ghana EPA requirements, but we recommend that TGL be sensitive to the rate and process of turnover within the EHS team.

On the social side, community engagement is managed under the Corporate Affairs team. This team manages corporate events, communications, as well as the Corporate Social Responsibility (CSR) organization responsible for engaging with the local communities and managing community development projects. The CSR sub-team has made improvements in terms of its organization with the addition of a Takoradi based Projects Manager and Community Liaison Officers (CLOs) covering six municipalities/districts. This organization appears to be able to fulfill its commitments, but it remains to be seen if staffing at the CLO level is sufficient, taking into account that the Project will continue to expand and the CLOs have only recently been deployed.

Training

IFC requires that employees and contractors with direct responsibility for activities relevant to the project's social and environmental performance be trained so that they have the knowledge and skills necessary to perform their work, including current knowledge of the host country's regulatory requirements and the requirements of the applicable Performance Standards. Training needs to also address the specific measures and actions required under the management program, including the ESAP, and the methods required to perform the action items in a competent and efficient manner.

TGL has developed a comprehensive training program that encompasses EHS for its workers, described in detail in the Annual Monitoring Report (AMR) for 2010. In particular, substantial progress has been made in terms of training and exercises dedicated to emergency response,

especially as associated with oil spill response, where this has involved cooperation with Kosmos, MODEC, Cirrus Oil, EPA, Ghana Navy, GPHA and UBI Oil.

Although training activities are extensive, the TGL training matrix is not current with all training requirements, such as training in IFC's Performance Standards for all relevant personnel involved with risk management within the Jubilee Project. At the time of the January 2010 in-country visit, the need to train key personnel in the requirements of the IFC Performance Standards and applicable EHS Guidelines was flagged as an issue to be resolved, especially when managerial turnover is an issue. This training still needs to take place, especially for personnel involved with risk management within the Jubilee Project (in particular personnel that have arrived since the last training in the fall of 2009). Additionally, the training matrix needs to be reviewed to ensure it includes all the required training associated with the revised IMP/OSCP, and any specific training that may be required as a result of implementation of the OHS monitoring program. Training is still ongoing for emergency response and crisis management with a full schedule in place for 2011. Best practice indicates that a process would be in place that determines all required EHSS training by position, frequency of required training, and whether all training required is current. It was not practical to determine if the Human Resources (HR) department has a process for doing this, but individual supervisors appear to be responsible for training their own staff, so there does not appear to be a central repository for all required EHSS training.

Monitoring

The requirements for monitoring are more clearly defined than during the last in-country visit in January 2010, as the Environmental Monitoring Plan (E Mon. P) is a working document since September 30, 2010 and the monitoring requirements defined in this plan are fully incorporated in the Ghana EPA Environmental Permit dated November 26, 2010. The E Mon. P has extensive requirements for monitoring based on 30 individual monitoring plans covering nine categories as shown below:

- Air Emissions
  - Fuel Consumption Offshore - Point Source Emissions (Monitoring of point source emissions from production-related activities; covers requirements for measuring emissions from combustion devices onboard the FPSO and MODUs)
  - Fuel Consumption Onshore - Point Source Emissions (Monitoring of point source emissions from support-related activities; covers requirements for measuring emissions from mobile support sources such as vehicles and aircraft)
  - Fugitive Emissions - Offshore Activities (Monitoring of SO_2, CO_2, NO_x, VOCs and CH_4 from all sources)
  - Emissions to Air from Flaring (Monitoring of the volume of gas sent to the flares)

  - Ambient Air Monitoring – FPSO (Monitoring of ambient air quality on board the FPSO, for the parameters NO_x, NO_2, SO_2 and VOCs)
  - Ambient Air Monitoring – Shore bases (Monitoring of ambient air quality at shore bases, for the parameters NO_x, NO_2, SO_2 and VOCs)
- Chemicals
  - Chemical Management (Injection chemical monitoring with type, volume, discharge details, using flow meters on injection system)
  - Barite Quality of Drilling Materials (Monitoring mercury and cadmium levels in stock barite)
- Ecology
  - Marine Avifauna (Bird monitoring in the vicinity of the FPSO to determine any effects on bird life)
  - FPSO Environs (Seabed and water column monitoring associated with activities in the Jubilee Field)
  - Marine Megafauna (Faunal monitoring in the water column to identify any impacts from Jubilee Field activities. Includes mammals, turtles and fish)
  - Near shore Environs (Monitoring the receiving near shore environment for presence of impact from operations)
- Energy
  - Energy Consumption (Monitoring of energy usage, covering power generation, grid electricity and renewable energy)
- Liquid Discharges
  - FPSO Produced Water Discharges (Produced water monitoring for volumes and oil in water content using In-line analyzers and manual sampling. Analysis of produced water to assess its chemical composition and quantities of discharged offshore chemicals)
  - Black/Grey Water Discharges (Black water - treated sewage - monitoring for residual chlorine content using hand held equipment and sewage discharge quality analysis)
  - Deck Drainage and Bilge Water Discharges (Monitoring of oily water discharges, including deck drainage, bilge water and ballast water for oil in water content using in-line analyzers)
  - FPSO Ballast Water Management and Discharges (Monitoring oil content in ballast water)
  - Desalination Brine Discharge and Water Use (Monitoring volume and salinity of desalination brine discharges from the FPSO, MODU and Support Vessels)
  - Desulphation Water (Monitoring of desulphation water volumes at the SRU)
  - Well Completion and Workover (Monitoring oil content in wellbore clean-up fluids)
  - Liquid Discharges – Spills (Monitoring characteristics of materials spilt)
  - Shore Base Liquid Discharges (Monitoring of industrial wastewater discharges on a batch basis)
- Noise
  - Environmental Noise Monitoring (Monitoring of ambient environmental noise levels at prescribed locations)

- Production
  - Production Monitoring (Monitoring of hydrocarbon production data for wells, flaring and onsite combustion)
- Transport
  - Transport – Marine Vessels and Air Transport Movements (Monitoring of helicopter and vessel movements, recording speed, route and other parameters)
- Waste Management
  - Waste Management Plan Monitoring (To monitor the WMP which will measure the quantity of hazardous and non-hazardous wastes produced and specify the method of treatment or disposal)
  - Offshore Food Waste Discharges under MARPOL (Monitoring the volume of organic food discharged off-shore)
  - Produced Sand Discharges (Monitoring the produced sand oil volume and concentration)
  - Naturally Occurring Radioactive Materials – NORM (Monitoring sludges and scale accumulations in pipe work, values, etc.)
  - Drill Cuttings Discharge (Drill cuttings treatment and ROC (retention on cuttings) measurement prior to discharge).

The E Mon. P is still in the process of being rolled out such that many of the individual plans have yet to be implemented. Monitoring is being performed where the measurement is simply to report quantity, but measurements requiring analytical data have not started with the exception of measurements of oil in drill cuttings discharge, produced sand discharge, and oily water discharges and hydrotest water. For example, air emissions quantities are reported based on fuel consumption plus natural gas flaring from the FPSO, but quantitative point source emissions monitoring has not started, nor has ambient air monitoring. Emissions are estimated and reported for specific chemical parameters only on the basis of combustion calculations, not actual measurements. Black water and gray water discharges are reported in terms of quantity, but not their chemistry. Workplace noise measurements have not started. It is understood that NORM measurements are made offshore from drill cuttings and that NORM is not an issue.

It is understood that TGL is in the process of procuring monitoring equipment and training personnel in their use. Nevertheless, the E Mon. P requires action to achieve full implementation.

A significant component of achieving ISO14001 Certification is with respect to audits and inspections, especially at the FPSO. As part of ISO14001 development, an Integrated EHSS Audit Plan has been developed and the first audit according to this plan is scheduled to be completed in April 2011. In addition, a “2011 Jubilee EHS Plan for Operations” has been developed that is intended to be integrated into TGL’s and MODEC’s audit plans. One of the

requirements of this document is for senior management to participate in three EHS focused visits to the FPSO in a year. At the time of this in-country visit, senior EHS management had not visited the FPSO since start-up in November, so it is expected that the first visit in April will be important.

Reporting

As part of their loan agreement with the IFC, TGL is required to prepare and submit an Annual Monitoring Report (AMR) summarizing the environmental and social performance of the Jubilee Development. The 2010 AMR was provided to the JTM team during this in-country visit and our review of this document has been provided to TGL and the IFC under separate cover.

Another example of public communication is reporting to the Ghanaian Government. TGL provides the Ghana EPA with monthly environmental monitoring reports and TGL also demonstrated incident reporting to the Ghana EPA in the case where sub-optimum combustion occurred from flaring at the Eirik Raude resulting in hydrocarbon drop-out onto the ocean on June 8-9, 2010. The total volume of hydrocarbons released was estimated to be 4.2 m^3 (26.5 bbls). The only criticism we have to this reporting is that TGL did not initially classify this incident as a spill.

Another aspect of reporting is with respect to incidents and accidents involving workers. Incident reporting procedure is in place, but we see some gaps in terms of reporting malaria cases and some lost time incidents (LTIs) as lost work day cases.

Another important component to reporting is disclosure. Disclosure of the EMP will take place after it has been modified for operations and as part of the ISO14001 certification process. More specifically, the commitments for disclosure in 2011 are identified in the PCDP and include:

- EMP for Operations;
- Updated PCDP for Operations;
- Community Investment Plan;
- Grievance Statistics and Trends; and
- Communication Strategy

The disclosure of these documents should be an important part of TGL's activities in 2011 to be able to maintain transparency with external stakeholders.

2.2 PS1: COMMUNITY ENGAGEMENT

PS1 has significant requirements for community engagement. A process of community consultation needs to be developed in a manner that provides the affected communities with opportunities to express their views on project risks, impacts, and mitigation measures, and allows TGL to consider and respond to them. It is necessary for the consultation process to be undertaken in a manner that is inclusive and culturally appropriate, tailored to the language preferences of the affected communities, their decision-making process, and the needs of disadvantaged or vulnerable groups. The consultation process also needs to involve informed and iterative participation such that community views can be incorporated into TGL's decision-making processes on matters that affect them directly, such as proposed mitigation measures, the sharing of development benefits and opportunities, and implementation issues. TGL has the responsibility of documenting the community engagement process. An important aspect of community engagement under PS1 is grievance management.

Community engagement is a process that has been ongoing since the start of the Jubilee project, but the completion of the Public Consultation and Disclosure Plan (PCDP) represents a major step forward in terms of providing a focus to TGL's social programs. Documentation of community meetings is being made consistent with the PCDP and this information is provided in the AMR. As noted in Section 2.1, the Corporate Social Responsibility (CSR) organization responsible for engaging with the local communities has made a major organizational improvement with the recent deployment of Community Liaison Officers (CLOs) covering the six coastal districts in Ghana's Western Region. It is expected that communications will improve as the CLOs develop relationships with key community members. The PCDP also has the requirement for preparing formal communication plans as described in Table 1, which should also improve communications when implemented.

During this in-country visit, three meetings were held with community leaders to receive their impression of TGL's performance regarding community engagement. Communities directly affected by TGL's community development projects described their positive feelings with TGL, whereas the community leaders representing local fishermen had unresolved grievances, including loss of catch and incidents of nets becoming entangled with ship's propellers (although unclear if specifically related to Jubilee Phase 1 activities). TGL is not yet systematically capturing community grievances, but the process is being started with the deployment of the CLOs. This grievance management mechanism is very late in being implemented considering completion of the EIS in 2009 and the PCDP in 2010. A commitment of the PCDP is that grievance statistics be tracked and under PS1 the expectation is that a grievance register will be maintained with a record of the closeout of the individual complaints.

JTM recommends that TGL fully implement the grievance management mechanism as soon as possible.

In addition to conducting community consultations, TGL has also initiated some community development projects. Community development projects are not a requirement of PS1, but represent good practice for most development projects. Excluding community health initiatives that are a requirement under PS4 and described in Section 2.5, TGL has undertaken several "quick impact" community development projects:

- *New Takoradi and Sekondi Beach cleanup project* – this project was developed in consultation with key stakeholders, local NGO's and residents of the New Takoradi / Sekondi Beach fishing communities and represents a significant improvement to overall community environment, health, safety and recreational needs.
- *Construction of Maternity Ward for the Essikado Community Hospital* – this project is a collaborative effort with the GHS, and the Chiefs and peoples of the Essikado traditional area and is focused on construction of a maternity block, provision of essential equipment and support for key staff training.
- *Planned Preventive Maintenance and Rehabilitation of clean water boreholes in the fishing/coastal communities* – this is a project to support the improvement in the quality of clean water in areas within the six coastal districts by the maintenance, repair and rehabilitation of 39 wells. This program started in 2010 is planned to continue through 2011 to deliver potable water to three remaining affected communities in the Jomoro and Ellembelle Districts (Ahobre, Egbazo, and Ambenu).
- *Fishing Communities Annual Regatta –Western Region* – this event was organized as a platform for engaging with the communities and is expected to be an annual event.
- *Refurbishment of Half Assini Senior High School Assembly Hall* – expected for Q3 2011

TGL is planning longer-term projects to promote investment to and growth in Sekondi/Takoradi and adjacent coastal Districts with government interaction and entrepreneurship skills training and micro-enterprise development. Other non-health related projects relate to improving opportunities for local education, infrastructure improvement, and biodiversity and environmental protection.

During this in-country visit, the JTM team had the opportunity to review two community development projects in the field, the New Takoradi and Sekondi shoreline cleanup project and the construction of the Essikado maternity clinic. Both represent sound investments in the local communities.

2.3 PS2: LABOR AND WORKING CONDITIONS

The ESAP requires that the Company will have a Human Resources Policy that communicates to workers their rights under Ghanaian law and spells out terms of employment, including equal opportunity principles, benefits and leave policies. TGL was able to demonstrate compliance with these requirements at the time of the January 2010 in-country visit.

With respect to working conditions, work areas are observed to be clean and well managed and workers are provided with appropriate personnel protective equipment (PPE). Nevertheless, whereas some aspects of the occupational health and safety program have been exemplary, others have been slow to start. TGL has a good malaria program/policy and a fitness for duty program, but workplace exposure monitoring (noise and chemicals) and ambient air quality measurements have not started yet. Recent hiring of an occupational health and safety specialist who has initiated the procurement of monitoring equipment is expected to resolve this situation, but TGL is late in starting their OH&S programs. A workplace challenge appears to be at the Takoradi port, where congestion/traffic and lime offloading (by third parties) have created potentially hazardous conditions where OH&S programs need to be prioritized.

2.4 PS3: POLLUTION PREVENTION

PS3 outlines a project approach to pollution prevention and abatement in line with internationally disseminated technologies and practices as far as their use is technically and financially feasible and cost-effective in the context of a project that relies on commercially available skills and resources. This approach is consistent with the ALARP ("as low as reasonably practicable" in terms of describing risk) approach taken by TGL. PS3 covers the topics of pollution prevention, resource conservation and energy efficiency; waste management; hazardous materials management, emergency preparedness and response, and greenhouse gas emissions. PS3 is supported by the IFC General EHS Guidelines in terms of defining specific effluent and emissions limits, as well as the EHS Guidelines for Offshore Oil and Gas Development that are applicable to the Jubilee Field Development.

Pollution prevention, resource conservation and energy efficiency

The offshore operations associated with the Jubilee Field Development have been designed in a manner to minimize pollution to the degree practical with conventional technology. Low sulfur diesel fuel is used to operate the drilling rigs (<0.5% consistent with MARPOL recommendations).

The EMP sets a target flaring rate of 2.5% of monthly average gas production, except for abnormal conditions (which includes commissioning), which has been incorporated into the

environmental permit from the Ghana EPA. Operational problems with the gas compression equipment on the FPSO have prevented the gas reinjection, so the majority of the produced gas has been flared since production started at the end of November 2010. Oil production has been increasing and was near 69,000 bpd at the time of our site visit at the end of March. The current level of flaring was not projected in the EIS and is significantly affecting TGL's greenhouse gas emissions (CO_2 flared in February 2011 was 80,107 tons; CH_4 flared was 515 tons). TGL is acutely aware of this situation and their operations team is working diligently to achieve gas reinjection as soon as possible.

Tanker vetting procedures have been written for the Marine Operations (Export Tanker Vetting Procedures) that indicate that export tankers must have a Ballast Water Management Plan and enter the field with clean ballast in their segregated ballast tanks, i.e., ballast water is suitable for discharging directly to the sea. The EMP requires that the ballast water exchange has to take place outside of 200 nm (nautical miles) from the Ghana coastline, although this is not a requirement of MARPOL. As there is nobody from the FPSO physically on the tanker to ensure that ballast water exchange actually occurs at sea outside the 200 nm limit, this requirement in the EMP is probably not realistic. Inspection does take place by the Mooring Master, who has the responsibility to verify ballast water records during his vessel inspection and communications are made to the tanker about the requirement for ballast water exchange. It is understood that this process will be incorporated into TGL's ISO 14001 EMS.

Activities requiring hydro-testing (i.e., primarily subsea manifold installation and other commissioning activities) have been completed within the last 14 months. Test results presented in the AMR indicate that discharges are being monitored and that they are compliant with Ghana EPA discharge limits.

During this visit, the Takoradi Logistics Base was toured to evaluate pollution prevention systems. Significant improvements were noted over conditions in January 2010. The facility is well-maintained with good material stacking procedures; pipeyard racking; good housekeeping; storage areas are bermed; lifting gear certifications were available; fire extinguishers current; spill control absorbents available; etc. Some issues still need to be addressed, however, including site drainage, which appears to be a design issue (sumps outside the fenceline with difficult access; location of outfalls appear to be into public ditches?). Evidence on the ground indicates small spills could be better managed. Currently, there is no wastewater treatment plant at the Logistics Base, but it is understood that one is being planned. We recommend that TGL work with the Ghana Air Force and other operators using the base to come up with an integrated approach to wastewater treatment and discharge.

Waste Management

Waste management encompasses a broad range of materials that can generally be divided into waste streams produced from marine operations and land waste. At the time of the January 2010 in-country visit, the main offshore activity was drilling and the main waste streams were drill cuttings and fluids. This is no longer the case and the waste streams associated with marine operations are associated with the Erik Raude undertaking well completion activities and the FPSO. Most of the waste streams managed offshore are liquid wastes, including deck water drainage; chemical additives; pilot and operating fluids BOP system; brine discharge from the desalination potable water supply system; ballast water; formation water; sewage; food (galley) waste; and cooling water. These waste streams are managed offshore following MARPOL procedures. The marine operations also produce waste streams that need to be brought onshore for treatment and/or disposal, such as oily waste, other hazardous waste and non-hazardous solid waste not suitable for maceration and disposal at sea. These wastes are managed together with the wastes generated from land operations.

A significant advancement in terms of waste management since the January 2010 visit is the finalization of the Waste Management Plan (October 5, 2010) that is approved by the Ghana EPA. This plan defined TGL's basic waste strategy in terms of performance targets and objectives that sites are expected to meet as a minimum and include:

- 95% of recoverable waste oil produced by TGL activities will be recycled;
- 95% of all scrap metal produced will be recycled;
- 0% loss of containment during storage, transport and handling of waste by TGL;
- Within 3 years of first oil, TGL will reduce reliance on landfill to <10% of total waste produced, excluding drill cuttings and produced sand if shipped to shore;
- Audit waste management contractors annually; and
- Maximize waste recycling opportunities as far as practical.

This plan recognizes the greatest difficulty with respect to waste management in Ghana, which is the lack of suitable facilities for final disposal. A component of this plan is therefore to reduce reliance on local landfills, which by no means approach even good practice. During this visit, a trip was made to the waste management facility operated by TGL's current waste contractor (Zeal Environmental Technologies Limited) at Nyankrom, a town in the Shaman District near Takoradi. Zeal is in the process of developing a modern integrated waste management facility over 6.5 acres on 12.5 acres of land. The facility is still a work in progress. They have installed a modern Oily Waste Water Separating Plant manufactured by HYDROFLO in the U.S. and can treat 150 gal/min of oily water. They have also accepted oil based mud (OBM), which they have stabilized with lime and are currently storing. Zeal is currently planning on upgrading their facility for incineration and they hope that municipal plans for an engineered local landfill will eventually eliminate their need for using local dump sites.

The type of facility being developed by Zeal offers the possibility for significantly improved waste management in the future, but we still recommend that TGL develop final waste disposal solutions internally and not be entirely dependent on the use of Ghanaian facilities, unless they have been audited and found to comply with international good practice. Another approach consistent with the Ghana EPA Permit Schedule could be to work to "support national efforts to improve waste management standards." Along this line, it is recommended that community support initiatives out of TGL's CSR group could include support to local businesses that would like to provide recycling services. Internally, it is recommended that TGL consider options whereby the need for disposing wastes locally is minimized or eliminated. Such options could include composting, identifying if there are acceptable incinerators that could be used until Zeal develops their own high-temperature incinerator, or developing internal capabilities for incineration and/or small-scale landfilling.

Waste management practices were reviewed at the Logistics Base where procedures are clearly set up such that wastes are segregated into appropriate bins to optimize recycling and minimize the quantity of waste to be landfilled. There was some evidence that waste was being somewhat segregated, but more work is needed to segregate the different waste streams. The manager at the Zeal facility also indicated that one of the difficulties they face is receiving wastes that are not well segregated, so it is apparent that improvement is needed with respect to waste segregation and handling. A positive aspect of the TGL waste management program is that waste quantities for different waste streams are being tracked.

Hazardous Materials

Hazardous materials appear to be generally well managed. Procedures for the management of chemicals are covered under a Chemical Handling (COSHH) Procedure, which provides procedures to reduce risk of chemical spills to ALARP levels. The risk of spills is greatly reduced because road transport of hazardous materials is minimal, with these materials being generally shipped to the Takoradi port. The hazardous materials storage area in Takoradi was visited and appears to be well managed. Some recommendations to improve the facility from the standpoint of pollution prevention are provided in the discussion of "pollution prevention, resource conservation and energy efficiency" *above.*

Emergency Preparedness and Response

The basic IFC requirement under PS3 is that a plan be prepared that addresses the training, resources, responsibilities, communication, procedures, and other aspects required to effectively respond to emergencies associated with project hazards. For an offshore oil development operation, the greatest hazard is from an oil spill. The IFC EHS Guidelines for

Offshore Oil and Gas Development define the requirements for the development of an Oil Spill Contingency Plan (OSCP) based on a spill risk assessment, defining expected frequency and size of spills from different potential release sources and oil spill trajectory modeling with oil fate and environmental impact prediction for a number of spill simulations (including worst case scenario, such as blowout from an oil well) using a computer model with the ability to input local current and wind data. The IFC Guidelines also require a clear demarcation of spill severity, according to the size of the spill using a defined Tier I, Tier II and Tier III approach.

TGL has significantly improved on their ability to manage emergency situations since the in-country visit in January 2010. The Ghana Incident Management Plan (IMP) has been developed and is being implemented. It has been revised three times and a fourth revision is underway based on lessons learned in drills and exercises. This document:

- Defines/establishes the TGL Incident Management (IM) organization (Corporate Crisis Management Team; TGL Business Support Team; TGL Accra Incident Management Team – IMT; TGL Takoradi Emergency Response Team – ERT; and TGL Field Response Team);
- Defines the three levels of response (Level 1 – Minor Incident –Tactical Response; Level 2 – Serious Incident – Operational Response; Level 3 – Major Incident – Strategic Response);
- Defines roles and responsibilities for each IMT and ERT;
- Defines response guidelines for each IMT and ERT;
- Provides incident notification procedures; and
- Provides incident specific checklists.

Training has been conducted on roles and responsibilities and exercises have been conducted throughout 2010. Ongoing training is scheduled for 2011.

The OSCP has been developed and is being implemented. It is approved by the Ghana EPA and involves Ghanaian authorities in spill management. It supplements the Ghana IMP and provides the initial guidance so that the correct response strategies can be identified and implemented by the IMT. This document:

- Describes the expectations, scope and content of TGL's Oil Spill Response and Management System;
- Provides guidance to the TGL Crisis/Incident Management and Emergency Response teams for the response to, and control of, a hydrocarbon spill associated with TGL facilities;
- Identifies the way in which the overall TGL response in Ghana will be coordinated;
- Sets out roles and responsibilities of key personnel;
- Identifies internal and external sources of support, assistance and resources to aid response;

- Describes local response strategies and organizations; and
- Defines internal and external notification procedures, response organizations, resources and personnel.

During this in-country visit, the JTM team was able to visit the Incident Command Center at the TGL Accra offices and review the oil spill response equipment available for use at Takoradi. We were also able to meet the Oil Spill Response specialist (primary TGL contractor) and understand their support activities (including spill modeling and Tier 3 support from the UK).

The Incident Command Center is well equipped and functional. An impressive amount of oil spill response equipment and other resources is now available to handle Tier 1 and 2 level responses up to Tier 3 including a multipurpose vessel with four rigid inflatable boats (RIBs) to assist with spill control activities. Extensive training focusing on individual roles and responsibilities as well as team responsibilities has been conducted on the FPSO, shore base, office, etc.

2.5 PS4: COMMUNITY HEALTH, SAFETY AND SECURITY

The basic objectives of PS4 are to avoid or minimize risks to and impacts on the health and safety of the local community that could be caused by a project and to ensure that the safeguarding of personnel and property is carried out in a manner that avoids or minimizes risks to the community's safety and security. TGL has developed a community health and safety program that fulfills the requirements of PS4. The health component of TGL's community outreach exceeds the requirements of PS4 and is described below as an example of good corporate stewardship.

TGL's approach to community health has been to develop an integrated program. It is referred to as an "integrated" program, because it includes baseline surveys to define local health issues and requirements and also has the component of developing the delivery capacities of community health facilities within the frontline districts, particularly with regard to disease control and management, as well as maternal and child healthcare services. During this in-country visit the JTM team had the opportunity to review this program and to visit with the Ghana Health Authority (GHA) who is partnering with TGL in this initiative.

TGL's integrated public health program is being conducted through a partnership with GHA and Jhpiego (pronounced "ja-pie-go"), an international non-profit health organization affiliated with Johns Hopkins University. The project was initiated in August 2010 by means of field visits to some 30 private and public health facilities, including the GHS-operated CHPS (Community-based Health Planning and Services) facilities in the six coastal districts in Ghana's Western Region. This program is being expanded to determine a 5-year program including a community

health baseline and also to support CHPS facilities. The community-based CHPS Compounds currently have the disadvantage that they are mostly unaccredited under the National Health Insurance Scheme (NHIS), making them functionally expensive and inaccessible to many in the local communities. Accordingly, one goal of TGL's community health initiative is that the CHPS facilities receive accreditation and provide improved services to a larger population. Focusing on the community-based CHPS compounds is expected to lead to an upgrade of local rural health infrastructure and improve their capacity to diagnose prevalent diseases. An aspect of the program that is especially attractive is that, as community facilities, the CHPS compounds have the potential for being sustainable in the long-term. This program is state-of-the-art and has the potential for TGL to develop a very positive community image.

Fulfillment of PS4 requirements specific to the Jubilee Development also includes issues of safety and security, specifically with respect to the local fishing community. These requirements are defined in the ESAP, which requires that TGL develop a program to avoid intrusion into the safety zones around the drilling rigs and FPSO; specifically via an education program for the nearby villages and other fishers known to use the project area. The second ESAP requirement is that a procedure for boat traffic management and for warning boats away from the safety zone be developed, including rules of engagement for use of physical intervention.

TGL is meeting their requirements associated with these actions. Actual enforcement is managed by the Ghanaian Navy. There have been no reported incidents and accidents since the policing operation was implemented in August 2009 and TGL provided an example of a Fishing Risk Mitigation Plan (FRMP) Daily Report that describes engagements with fishing canoes in terms of naval personnel providing briefings to fishermen and sometimes offering them assistance. During this in-country visit, discussions were held with a group representing the local fishing community near Takoradi and grievances regarding decreased fish catches were made (that may or may not be related with the Jubilee Phase 1 Project), but this group did not have any complaints regarding their treatment by marine authorities. Our review of the FRMP indicates that it is now out of date and requires revision.

The third ESAP requirement is development of a security plan, based on a security risk assessment, which may include, among other things, the adaptation of the US-UK Voluntary Principles on Security. This security plan is now approved by the IFC and the Ghanaian Navy, and the Ghana maritime authority has continued to establish security around the areas of offshore operations. In 2010, TGL conducted a Voluntary Principles on Security and Human Rights: Train the Trainers course involving close to 100 students from the Ghana Navy, Air Force, Police, and Immigration and Customs. An updated Offshore Security Threat Risk Analysis was completed in February 2001 and complements the FRMP.

TGL monitors interactions with fishing boats when there is concern that they might encroach into the safety zones. This information is reported in the AMR and includes the following details:

- Update on the implementation of the education program for the nearby villages and other fishers known to use the project area.
- Implementation of the procedure for warning boats away from the safety zone.
- Update on the management of boat traffic to the offshore facilities.
- Update on the activities involving security forces, including Ghanaian police or military.
- Incidents, accidents and security statistics.

The information provided in the AMR indicates that the process of implementing security procedures is going well, although discussions with fishermen indicate that they do have grievances that are not being managed.

2.6 PS6: BIODIVERSITY CONSERVATION AND SUSTAINABLE NATURAL RESOURCE MANAGEMENT

The basic objectives of PS6 are to protect and conserve biodiversity and to promote the sustainable management and use of natural resources through the adoption of practices that integrate conservation needs and development priorities. The ESAP identifies the three most critical actions needed to comply with PS6:

- "Project will develop and implement a program for training vessel's and helicopter's operators in marine mammal observation and monitoring at and in the vicinity of the proposed Jubilee Field development."
- "Project will develop and enforce a specific policy and procedures to ensure that traffic and operations of drilling vessels, support vessels and helicopters will minimize disturbance to marine mammals."
- "Project will ensure that support helicopters will routinely avoid flying over the Amansuri wetland and that, if avoidance is not feasible due to weather conditions, a minimum altitude will be specified, according to international good practice, when flying over this area to minimize disturbance to wildlife."

At the time of the January 2010 in-country visit, the Marine Mammal Observation Program had been prepared, but had not been implemented, for which non-compliances were assigned for the first two ESAP requirements noted above. TGL was able to demonstrate compliance with the third requirement and this continues to be the case based on this in-country visit. Flight paths from Takoradi to the offshore facilities normally do not cross over the Amansuri wetland.

The Environmental Monitoring Plan (E Mon. P) identifies additional requirements for biodiversity monitoring that are reflected in the current Ghana EPA Environmental Permit:

- "Set up a monitoring program with a professional birdwatcher on board to quantify the effects of the lighting onboard the FPSO."
- "Develop and implement a program for training supply vessel and helicopter operators in marine mammal and turtle observation and monitoring within six months after the receipt of permit."'
- "Undertake periodic (every 2 years) sampling and analysis of sediments and fish within the project area and submit reports to the Agency."

The Ghana EPA Environmental Permit for Installation and Commissioning of Infrastructure dated December 31, 2009 had additional requirements for biodiversity monitoring that are incorporated within the E Mon. P:

- "Conduct baseline surveys and monitor the receiving medium performance for a period of 2 years to generate enough scientific data to serve as a basis for review of the current discharge limits and setting of appropriate national discharge limits and guidelines."
- "Institute a seabed environmental monitoring in order to assess seabed impacts from drill cuttings disposal at sea. Parameters should include the rate of accumulation of discharged cuttings and its effects on benthic organisms."

During 2010, marine experts from Gardline Environmental, a marine services company based in the UK, were employed by TGL to train offshore personnel as Marine Mammal Observers (MMO). The purpose for this training was to allow opportunistic sightings of whales, dolphins and turtles to be recorded. Notwithstanding that turtles are not mammals, observations conducted by the MMOs during 2010 identified the occasional presence of dolphins, whales, and turtles. Pods of dolphins with over 100 individuals were observed in the field on a number of occasions. Lone sightings of turtles were generally made although on one occasion 15 were observed congregating. Whale sightings varied with species, with large pods of pilot whales observed, as well as a number of single and paired humpback whales.

The marine observations of mammals and turtles were conducted on an "as sighted" basis during 2010 and Gardline does not consider those data as sufficient for scientific analysis. Systematic observations were started only about a month prior to this in-country visit (late February 2011). Part of Gardline's work scope is to statistically analyze the marine sightings and provide an interpretive report, which is expected to be prepared after approximately one year's data has been gathered (e.g., beginning of 2012). The startup of systematic marine monitoring is late in being implemented, considering the monitoring plan was agreed with IFC in mid-2009.

Informal observations from the rigs and FPSO in 2010 indicate no unusual or large congregations of birds around the offshore facilities, but formal bird monitoring has not started.

TGL reports that they will employ the services of an ornithologist from the University of Ghana in 2011 to both train FPSO personnel on bird observation offshore as well as undertake formal bird surveys on the FPSO.

With respect to the two requirements by the Ghana EPA for baseline surveys as part of the Environmental Permit for Installation and Commissioning of Infrastructure, the process has started. Seafloor sediment and demersal sampling were undertaken by Continental Shelf & Associates working with TDI Brooks in 2010 as part of the overall program to evaluate the impact of cuttings discharge on the marine environment. Results are still pending, but anticipated to be reported by Q3 2011.

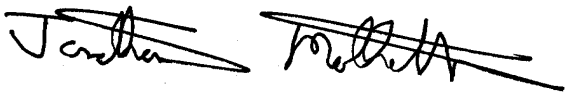
3.0 CONCLUSIONS

Tullow Ghana Limited and the Integrated Project Team have made tremendous progress in developing the Jubilee Phase 1 project since our last visit in January 2010. This includes the start of production by the end of November 2010 with formal "First Oil" celebrated on December 15, 2010.

A number of the issues and the non-compliances raised in our 2010 report concerning the IFC ESAP have been satisfactorily addressed. This improvement in performance is attributed both to TGL management commitment and the strengthening of the EHSS and Community Affairs departments.

Nevertheless, there are several areas which require further progress and continued improvement to meet both the requirements of the Ghana EPA and IFC. These items are detailed in Table EX-1 and include certification of the environmental and social management system, full implementation of the management and monitoring programs and continued training of staff, with associated response drills. Management of Change (MOC) procedures need to be applied to key organization and personnel changes so that the project continues to meet or exceed all environmental and social commitments.

Respectfully submitted:



Jonathan Motherwell, P.E. (Texas)

Jonathan T. Motherwell and Associates, LLC A Texas Registered Engineering Firm F-10480

ACRONYMS

ALARP – As low as reasonably practicable (reference to degree of acceptable risk)

AMR – Annual Monitoring Report (IFC format)

bpd – Barrels of Oil Per Day

COSHH – Control of Substance Hazardous to Health

CSR – Corporate Social Responsibility

EHS – Environmental, Health and Safety

EIA – Environmental Impact Assessment

EIS – Environmental Impact Statement

EMP – Environmental Management Plan

E Mon. P – Environmental Monitoring Plan

EPA – Environmental Protection Agency

ERT – Emergency Response Team

ESAP – Environmental and Social Action Plan

ESIA – Environmental and Social Impact Assessment

EHSMS – Environment Health and Safety Management System

EHSS – Environmental, Health & Safety, and Security

ESMS – Environmental and Social Management System (IFC terminology that also includes health and safety)

FPSO – Floating production, storage and offloading

FRMP – Fishing Risk Mitigation Plan

GNPC – Ghana National Petroleum Company

IFC – International Finance Corporation

IMP – Incident Management Plan

IMT – Incident Management Team

IPT – Integrated Project Team

HR – Human Resources

KPI – Key Performance Indicator

LTOBM – low toxicity mineral oil based mud

MARPOL – International Convention for the Prevention of Pollution from Ships

MMP – Management and Monitoring Programs (including EMP, E. Mon. P, WMP, PCDP and OSRP)

MSS – Maritime Security Strategy & Patrol Vessel Specification for the Jubilee Field

nm – nautical miles

OH&S – Occupational Health and Safety

OOC – Oil on Cuttings

OSCP – Oil Spill Contingency Plan

PCDP – Public Consultation and Disclosure Plan

PS – IFC Performance Standard

RHIB – Rigid Hulled Inflatable Boat

TGL – Tullow Ghana Limited

TOR – Terms of Reference

US-UK – United States – United Kingdom

WMP – Waste Management Plan

APPENDIX A

TERMS OF REFERENCE FOR INDEPENDENT VERIFICATION OF ENVIRONMENTAL AND SOCIAL MONITORING INFORMATION, JUBILEE FIELD DEVELOPMENT

Tullow Ghana

Terms of Reference for Independent Verification of Environmental and Social Monitoring Information

Document Number: TGJ-EHS-PRC-04-0003
Document Owner:
Minimum Review Period: 12 months

0	25.02.11	Issue for Use	CM	IFC	SW	PW
A	23.02.11	Issue for Comments	C M	IFC	GB/JW	PW
REV	DATE	DESCRIPTION	BY	TECH REVIEW	OPS REVIEW	APP'D

Revision Control

This sheet must be completed in detail, at each revision once this document has been approved.

Details must include revision number, description and indication of which pages and paragraphs have been revised, date of revision approval and approval indication.

Revision:	Description:	Page/Paragraph	Date:	Next Review Date	Owner:
Draft A	Internal review		10.02.11	DD.MM.YY	P Wahwerit
Rev 0	Issue for Use		25.02.11		P Wahwerit

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1.0 External Compliance Monitoring Background

Tullow and the IFC have agreed a range of environmental and social management measures for the Jubilee project, which are documented in the current (10 December 2010) version of the Environmental and Social Action Plan (ESAP) for the Project. The ESAP was based on IFC's review of the project against its Performance Standards,[2] which is summarized in the Environmental and Social Review Summary[3] for the project.

The project is also subject to an Environmental Impact Statement (EIS). The relevant Environmental Impact Statement report was posted on the Ghana Environmental Protection Agency (EPA) website[4] and Tullow website.

The current ESAP agreed with the IFC requires that a qualified, independent external expert (the "independent environmental and social expert" or "independent expert") be retained by Tullow to verify the company's environmental and social monitoring information for the Jubilee project. This scope of work relates to that verification requirement.

Tullow believe that transparency is vital in ensuring quality communication. As agreed in the ESAP with IFC, the finalized verification reports will be published and available to the public on the project website and, where appropriate, on the IFC website.

1.1 Scope of Work

The independent expert will be required to review and verify:

- The Project's compliance with the agreed ESAP, and the management and monitoring programs contained therein.

- The most recent Annual Monitoring Report (AMR) for the project
    - Review of source documentation which will include end of well reports, Ghana EPA Statutory Reporting, and Tullow Corporate Reporting requirements
    - Interviews with parties responsible for collecting, reviewing and approving the monitoring data.

[2] (http://www.ifc.org/ifcext/sustainability.nsf/AttachmentsByTitle/pol_PerformanceStandards2006_full/$FILE/IFC+Performance+Standards.pdf)
[3] http://www.ifc.org/ifcext/spiwebsite1.nsf/2bc34f011b50ff6e85256a550073ff1c/52c766cfd1481a2f8525760300713604?opendocument&Highlight=0,tullow
[4] (http://www.epa.gov.gh/index.php?option=com_docman&task=cat_view&gid=101&Itemid=73)

2.0 Work Plan

a) Pre – Visit Tasks

- Review the following documentation including but not limited to –
    - ESAP and related documents.
    - Jubilee EIS and inherent EMP and documented management and monitoring plans
    - Tullow Ghana EHS Management System Framework

- A month in advance of the visit, submit a suggested preliminary detail schedule showing activity type for each day including interviews, site visits, initial and final d-brief meetings and confirmed list of Visit Team members.

- At least two weeks in advance of the visit, prepare and submit the final site visit plan consisting of general questionnaires; list of documents, data and records to be made available on site by Tullow; prioritized interviewee lists; prioritized field observation requirements; and confirmation of team visiting the project.

b) Date and Duration of Visit

- The visit kicks off in Tullow Ghana Offices is on March 28th 2011.

- The Visit will have a duration of 6 days and final d-brief meeting is on Monday 4th April 2011

c) Site Visit Tasks

- Familiarization of the independent expert with the project and its setting. This involves a general meeting on arrival where a description of the current work will be provided and logistical arrangements for the conducting of the review finalized.

- Update the status of the items in the Summary of Issues table from the previous report.

- Familiarization with the TGL EHSMS Framework and other project controls and their implementation for the Jubilee project.

- Field visit to project facilities, according to the agreed site visit plan.

- Review and verification of recent environmental and social monitoring data for the Jubilee project.

- Update the status of the items in the summary of Issues Table from the previous annual visit report.

- Verification is expected to entail:
    - Review of source documentation related to the data reported in the monthly reports and collation process, this will include end of well reports, Ghana EPA Statutory Reporting, and Tullow Corporate Reporting requirements

    - Interviews with key Tullow staff including those highlighted as holding key positions in implementing the requirements highlighted in the EIS.

    - Interviews with parties responsible for collecting, reviewing and approving the monitoring data.

d) Recommendations and Report Preparation

- The preliminary findings by the independent expert are required to be presented to Tullow in Ghana prior to the end of the initial site visit. The presentation will include a summary of the audit findings and identification of the key issues. The independent expert will be involved in a discussion with Tullow and provide initial advice concerning the potential solutions or actions required to resolve the issues presented.

- Preparation of a draft report. This is expected to include:

    - Concise reporting of the initial site visit
    - Documentation of the reports and information reviewed
    - Description of the methodology adopted
    - The report will be written concisely in a factual audit style and will include an Executive Summary and a prioritized list of non-compliance findings, if any, and recommended relevant corrective actions.
    - The report will clearly identify instances where commitments from the ESAP have not been met (i.e., non-compliances) and reference the specific commitments.

- The draft version of the report will be prepared and submitted to both Tullow and IFC by the independent expert within 10 working days after departure from Ghana.

- Tullow and IFC will provide their comments on factual inaccuracies in the draft report within two weeks from its receipt.

- Taking account of Tullow and IFC comments on the draft report, the final report will be prepared and submitted within 10 working days of the independent expert receiving the comments.

1. Annual Site Visits

It is considered that following the initial site visit, annual visits to conduct the audit will be required. It is not envisaged that more frequent visits will be necessary, however, if it is the opinion of the independent expert that more regular visits are undertaken, this will be considered by Tullow and IFC and a mutual decision reached.

3.0 Other Tasks

In certain instances, Tullow and/or IFC may:

(i) Request further information from the independent expert at any time concerning any report produced by the expert, and

(ii) Seek further advice from the independent expert with respect to other matters that may arise in connection with the Project. If any requests should occur, the Consultant will be provided with a scope of work on which to base a budget. The budget must be approved by Tullow, prior to proceeding with providing the requested incremental information or advice.

4.0 Independent Expert Selection

Tullow will select an independent expert with appropriate qualifications to undertake this work. The selection will follow Tullow's contractor selection process to ensure transparency and appropriate quality standards are maintained. IFC will be invited to participate in the selection process. The final selection of the independent expert will be with agreement of both Tullow and IFC.

The independent expert selected must have appropriate qualifications to complete the required scope of work. Due to the size of the project, it is expected that a team of consultants will be required. The selection process will be used to determine whether these will be provided by a single company, or whether it would be more appropriate to use a number of individuals from different sources.

It is considered that the team will comprise at a minimum an Environmental Specialist, Socioeconomic / Socio-cultural Specialist (for consultation with fishermen and other activities where Tullow may request advice) and a Health and Safety Specialist. The successful Consultant will appoint a Project Manager within the team, who will act as a Point of Contact for Tullow and IFC. Additional specialists and support staff will be determined in consultation with the selected experts. The CVs of staff likely to be called upon will need to be provided as part of the bid documentation, to ensure all staff on the project team meet minimum qualification requirements.

The expected minimum qualifications and experience for each team member may include considerations:

- A minimum of 10 years relevant environmental or health and safety experience including environmental auditing and environmental regulation within their area of expertise
- Accredited auditor status or extensive experience in compliance auditing
- Oil industry experience, preferably off-shore
- Regional experience is preferable
- Experience with IFC Performance Standards is preferable
- Advanced skills in report preparation and effective communication with business, regulators, operators and international finance institutions

- Proven skills in project management, organization, scheduling, resource planning and execution of audit program.

The performance of the project team will be monitored by Tullow and the IFC. Any changes to the project team will be undertaken in consultation with and mutually agreed with Tullow Ghana