



# Ghana Jubilee Field Phase 1 Development

## Environmental Impact Statement

Tullow Ghana Limited

27 November 2009



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## **GLOSSARY OF ACRONYMS AND TERMS**

°C	Degrees Celsius
ABS	American Bureau of Shipping
ADCP	Acoustic Doppler Current Profiler
AHTS	Anchor Handling Tug Supply
AHV	Anchor Handling Vessel
ALARP	As Low As Reasonably Practical
Anadarko	Anadarko WCTP Company
bbl/d	Barrels per day
Bcf	Billion cubic feet
bhp	Brake horse power
BMA	Bahamas Maritime Authority
BOD	Biological Oxygen Demand
BOP	Blowout Preventor
bopd	Barrels of oil per day
bwpd	Barrels of water per day
CCMC	Chemicals Control and Management Centre
CH <sub>4</sub>	Methane
CHARM	Chemical screening which requires offshore chemicals to be ranked according to their calculated Hazard Quotients (HQ)
cm	Centimetre
CMS/UNEP	Conference of the Parties of the Convention for the Conservation of Migratory Species
CO	Carbon Monoxide
Co2	Carbon Dioxide
COLREG	Convention on the International Regulations for Preventing Collisions at Sea, 1972
CSR	Corporate Social Responsibility
CTD	Conductivity, Temperature and Depth
dB	Decibels
dB re $\mu$ Pa @ 1m	Sound pressure expressed on a decibel scale (dB) and referenced to 1 micro Pascal at 1 m from the source
DCE	District Chief Executive
Demersal	Living in the water column just above the seabed
DP	Dynamically Positioned
DT	Deepwater Tano
EBI	Energy and Biodiversity Initiative
EBS	Environmental Baseline Survey
ECC	Equatorial Counter Current
EEZ	Economic Exclusion Zone
EHS	Environment, Health and Safety
EHS-MS	Environment, Health and Safety Management System
EIA	Environmental Impact Assessment
EIS	Environmental Impact Statement (report)
EMP	Environmental Management Plan
EPA	Environmental Protection Agency
Epipelagic	Of or relating to the part of the oceanic zone into which enough sunlight enters for photosynthesis to take place
ERM	Environmental Resources Management
ERP	Emergency Response Plan
ESL	Environmental Solutions Limited
FAD	Fish Attracting Device
FAO	United Nations Food and Agriculture Organisation
FEED	Front End Engineering Design
FPSO	Floating Production Storage and Offloading Vessel
FSA	Formal Safety Case

FSU	Floating Storage Unit
g/l	Grams per litre
GAFCO	Ghana Agro-Food Company
GDP	Gross Domestic Product
GHG	Greenhouse Gas
GIS	Geographical Information Systems
GMA	Ghana Maritime Authority
GNPC	Ghana National Petroleum Corporation
GPHA	Ghana Ports and Harbours Authority
GPRS	Growth and Poverty Reduction Strategy
GPRTU	Ghana Private Road Transport Union
GRT	Gross Registered Tonnage
GWP	Global Warming Potential
HAZID	Hazard Identification Assessment
HP	High Pressure (flare)
HQ	Hazard Coefficient
Hz	Hertz (frequency)
IBA	Important Bird Area
ICCAT	International Commission for the Conservation of Atlantic Tunas
IFC	International Finance Corporation
ILO	International Labour Organisation
IMO	International Maritime Organisation
IPCC	Intergovernmental Panel on Climate Change
IPIECA	International Petroleum Industry Environmental Conservation Association
IRC	International Risk Consultants
ITCZ	Inter-Tropical Convergence Zone
ITDP	Integrated Tourism Development Plan
IUCN	International Conservation Union
JUA	Jubilee Unit Area
Jubilee Joint Venture	Joint venture partners pursuing development of the Jubilee field including Tullow Ghana Limited, Kosmos Ghana HC, Anadarko WCTP Company, Sabre Oil and Gas, the EO Group, and the Ghana National Petroleum Corporation
km	kilometer
Kosmos	Kosmos Ghana HC
KPI	Key Performance Indicator
kV	Kilovolt
KVIP	Kumasi Ventilated-Improved Pit (sanitation)
kW/m <sup>2</sup>	Kilowatt per cubic meter
Lbs	Pounds
LC50 96 h	lethal concentration for 50% of the individuals tested over a 96 hour period
l/d	litres per day
LLMC	Convention on Limitation of Liability for Maritime Claims, 1976
LP	Low Pressure (flare)
Lpm	Litres per minute
ly	Langley units (solar radiation)
m	Meter
m <sup>2</sup>	Square meter
MARPOL	International Convention for the Prevention of Pollution from Ships
MEG	Monoethylene Glycol (hydrate inhibitor)
mg/kg	milligram per kilogram
mg/L	milligrams per litre
mg/Nm <sup>3</sup>	milligrams per cubic nanometer
Mbbl	Thousand barrels
MMbbl	Million barrels
MMbo	Million barrels of oil
MMscfd	Million standard cubic feet per day
MODU	Mobile Offshore Drilling Unit
MoE	Ministry of Energy
MPV	MultiPurpose Vehicle

MSDS	Material Safety Data Sheets
MSV	Multi Service Vessel
NADP	North Atlantic Deep Water
NAFAG	National Fisheries Association of Ghana
NAVTEX	Radio and automatic broadcast of localised maritime safety information using radio telex
NCEP	National Centres for Environmental Prediction
NEAP	National Environmental Action Plan
NGO	Non-governmental Organisation
nm	nautical miles
NOAA	National Oceanic and Atmospheric Association
NORM	Naturally-Occurring Radioactive Material
NOx	Nitrogen Oxide
NPA	National Petroleum Agency
OCNS	Offshore Chemical Notification Scheme (OSPAR)
OGP	International Association of Oil & Gas Producers
OPRC	International Convention of Oil Preparedness, Response and Co-operation, adopted 1990
ORP	Oxidation-Reduction Potential
OSCP	Oil Spill Contingency Plan
OSPAR	OSlow PARis (convention on marine pollution)
OSRL	Oil Spill Response Limited
OSV	Oilfield Service Vessel
OSV	Offshore Support Vessel
PAH	Polycyclic Aromatic Hydrocarbon
PCDP	Public Consultation and Disclosure Plan
PEC: NEC	Predicted Effect Concentration against No Effect Concentration (CHARM)
PER	Preliminary Environmental Report
PFC	Pioneer Food Cannery
PLONOR	Pose Little Or No Risk
PoD	Plan of Development
ppb	parts per billion
ppm	parts per million
PS	Performance Standard (IFC)
PVT	Pressure Volume Temperature
QRA	Quantified Risk Assessment
Ramsar	Ramsar Convention on Wetlands, 1971
RCC	Regional Coordinating Council
RH	Relative Humidity
ROV	Remotely Operated Vehicle
SACW	South Atlantic Central Water
SAEMA	Shama Ahanta East Metropolitan Assembly
SCM	Subsea Control Modules
SCSSV	surface controlled sub-sea safety valve
SDU	Subsea Distribution Unit
SOLAS	International Convention for Safety of Life at Sea, 1974
SOx	Sulphur oxides
SPM	Single point mooring
SRU	Sulphate reduction unit (water injection system)
SST	Sea Surface Temperature
STCW	International Convention on Standards of Training, Certification, and Watchkeeping for Seafarers, 1978;
STMA	Sekondi Takoradi Metropolitan Assembly
TBA	Traditional Birth Attendant
TEG	Triethylene glycol (gas dehydration)
TLP	Tension Leg Platform
TN	Total Nitrogen
TOC	Total Organic Carbon
TSW	Tropical Surface Water
Tullow	Tullow Ghana Limited

UNCLOS	United Nations Law of the SEA Convention
UNEP	United Nations Environmental Programme
UNFCCC	United Nations Framework Convention on Climate Change
UTA	Umbilical Termination Assembly
VLCC	Very Large Crude Carrier
VOC	Volatile Organic Compounds
WAGP	West African Gas Pipeline
WANE	West Africa Met-Ocean Normals and Extreme
WCTP	West Cape Three Points Block
WHO	World Health Organisation
WMP	Waste Management Plan
WRI	World Resource Institute