

**FINAL PROJECT REPORT FOR CLEAN-UP AND
REMEDIATION**

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24" Nkpoku Bomu Pipeline impacted area

BERA GOKANA

BY

GIOLEE GLOBAL RESOURCES NIG. LTD.

And the OSEI Corporation

SUBMITTED TO

**SHELL PETROLEUM DEVELOPMENT COMPANY OF
NIGERIA LIMITED.**

**INCIDENT NOS: 970940 & 950208 INCIDENT DATE: 27/03/2013 CONTRACT
START DATE: 10/04/2013 CONTRACT END DATE: 18/07/2013 PURCHASE ORDER
NO: 4510295312 CONTRACTOR: GIOLEE GLOBAL RESOURCES NIG. LTD., and the
OSEI Corporation
WORK COMPLETION CERTIFICATION**

This is to certify that the clean-up/remediation project at 24" TNP Nkpoku Bomu at Bera was executed by Giolee Global Resources Nig. Ltd., and the OSEI Corporation satisfactorily to SPDC specification.

Name: Celestine Dogalah Position: Head, Operations/Project Signature: Date:

PROJECT TEAM

SPDC

PHILIP SHEKWOLO ORP CONTRACT HOLDER TUDOR MIKKO SPDC SUPERVISOR
O.R.P OTHUKE EVUE U. SPDC SUPERVISOR O.R.P ABDULRAHMAN NAGODE SPDC
(HSE)

GIOLEE GLOBAL RESOURCES LTD.

SOPHIA UCHEGBU U. HSE OFFICER DOOSU NUAKA SITE SUPERVISOR

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1.4 ACKNOWLEDGEMENT

The management of GIOLEE GLOBAL RESOURCES LIMITED, and the OSEI Corporation wishes to express her gratitude to the entire Ogoni Restoration Management Team for the award of this Contract thereby offering us the opportunity to serve in this capacity.

We wish to thank our personnel for their hard work and strict adherence to SPDC Project specification and safety precautions.

Our most profound gratitude goes to God Almighty for his grace for the successful completion of this project.

1.5 EXECUTIVE SUMMARY

On the 10th of April, 2013 the remediation of the first spill point commenced at 24" TNP Nkpoku Bomu trunk line at Bera, with the volume of work done as 111095 cubic metres and a depth of 9.5m.

The second spill point at the same Bera site has a volume of 36,618 cubic metres with 9 trenches pit excavated between 6-8.5m to groundwater.

The cause of the oil impact was due to sabotage and illegal bunkering activities. The released oil caused a geographical impact of the area. GIOLEE GLOBAL RESOURCES, and the OSEI Corporation was nominated to execute this project.

The remediation technique adopted was Remediation using **oil spill eater II**, a first response bioremediation process, anchored on Risk Based Corrective Action (RBCA) and treatment of Groundwater.

The work scope covers mobilization, site preparation; clearing of impacted vegetation, initial tilling, Deep Excavation to groundwater, homogenization and treatment of impacted soil etc. GIOLEE GLOBAL RESOURCES LIMITED, and the OSEI Corporation mobilized to site on 10th of April, 2013 and completed the

project without fatality on the 13th of July, 2013. The site was placed on monitoring, awaiting certification by regulators.

This report presents detail information on project execution from pre-mobilization to demobilization.

1.6 ACRONYMS

SPDC Shell Petroleum Development Company of Nigeria Limited **OSE II (Oil Spill Eater II)** **A first response bioremediation process** **OSRT** Oil Spill Response Team
JHA Job Hazard Analysis

2.0 INTRODUCTION

Bera is a famous community located in Gokana LGA in Rivers state of Nigeria. The people are basically subsistence farmers; the area has long kilometers of pipelines traversing through with other SPDC's facilities such as wellheads etc. The environment has been impacted with crude oil as a result of release from the pipeline. The prime cause of the impact was due to third party activity in the area. These activities have been continuous over a long period with serious environmental impact to the environment. The level of impact in the area was subsequently assessed by a constituted team from SPDC and the area was mapped out for clean-up and remediation.

Competent contractor was selected through contracting process that led to the awards of contracts for cleanup and remediation of the impacted area. The contractor was subjected to initial pre-mobilization inspection of their equipment, materials and relevant HSE requirement for the execution of work, in preparation for site mobilization. Giolee Global Resources, and the OSEI Corporation as the sole contractor was fully pre-mobbed invited for a project execution kick off meeting and induction before actual mobilization to site on the 10/04/2013.

2.1 PROJECT OBJECTIVE

The objectives of the project to be carried out by Giolee Global Resources Limited, and the OSEI Corporation are as follows:

1. To clean-up and remediate the impacted area as outlined in SPDC Job

Order/Work scope.

2. To restore the impacted site back to its original state or near original state.
3. To return site back to fit community use such as farming etc.
4. To manage HSE issues on site.
5. To manage site generated waste.
6. To present report of clean-up/remediation activity.

2.2 SITE BASIC INFORMATION

2.3 SITE HISTORY

2.4 BRIEF DESCRIPTION OF SITE

On the 27th of March, 2013, crude oil spill incident was reported to have occurred along 24" TNP BOMU at Bera Community in Gokana L.G.A. of Rivers State.

The site is land with a distance of 4 kilometers away from community habitation.

Site delineation revealed sections of high, medium and light impact. The affected third party land used is for subsistence farming and the soil profile of the site is sandy and clay.

2.5 WORK SCOPE

The work scope covered the following:

- Mobilization
- Clearing of impacted vegetation
- Site preparation
- Deep Excavation /Formation of Trenches
- Application of Nutrient amendment
- Groundwater Treatment
- Compensation of owners of affected crops.

2.6 METHODOLOGY

The methods adopted for the clean-up/remediation of the 24" TNP Bomu impacted area at Bera was done using SPDC Methodology of RENA. The procedures used are:

- Cutting and clearing of impacted vegetation
- Raking and gathering of cut impacted vegetation
- Site preparation
- Deep Excavation / Formation of trenches in the impacted area using heavy equipment
- Addition of OSE II for soil and groundwater remediation.
- Waste Management.
- Taking of photos for record purposes.

3.0 PROJECT EXECUTION

The actual work started on with a kick-off meeting by SPDC Site Rep and the workers of GIOLEE GLOBAL RESOURCES LIMITED. GIOLEE GLOBAL RESOURCES LIMITED engaged 10workers (seven labourers and three security) for each week. The job was done according to the supervision of the SPDC's Site Representative.

3.1 WORK DURATION

The work lasted from 10th April, 2013 to 11th July, 2013 (a duration of 3months).

3.2 CHRONOLOGY OF EVENTS

This shows the pattern with which the work was done.

3.3 CHALLENGES

- Community uses part of the site as access road.
- Community harassment at site.
- Difficulty in managing community labour to comply with HSE rules and procedures.
- Weather condition.
- Removal/Management of heavily impacted sludge with stony carbonized material.
- During remediation near the life pipeline on ROW we were unable to expose the pipe and remove carbonized materials left under the pipe which might pose a threat to the area overtime because permit was not granted for that purpose.

3.4 SUGGESTIONS FOR IMPROVEMENT

- Continuous daily tools box meeting and adherence to the JHA control is recommended.
- Proper site monitoring.
- Contractor's Senior Management Staff should be on site to ensure commitment.
- Re-evaluation of contract due to heavy soil impact.
- Site should be placed under monitoring for at least two (2) months.
- Subsequently, permit should be granted to work under the pipe to ensure proper removal of all carbonized materials under the pipe.

3.5 CONCLUSION

The cleanup and remediation of impacted soil was achieved successfully in an incident free situation at site.

3.6 RECOMMENDATION

We recommend the following;

- Clean-up should be effected immediately after any incident occurs to avoid much impact on the environment.
- The community be involved in surveillance of SPDC pipeline.
- A patrol team from the Joint Task Force (JTF) should be delegated to watch

over the pipeline.

- The host communities of SPDC facilities be educated on health and environmental hazards of crude oil theft and illegal refinery activities.
- The community farmers should be educated not to plant on / near SPDC ROW and also not to plant on contaminated soil based on its hazardous effects.

APPENDIX

- Pictures • Work method • Community certification

BERA BOMU 24" T/ L REMEDIATION PICTURE STORY.CONTRACTOR:GIOLEE GLOBAL RESOURCES



Initial Site after tilling



DRUMS OF OIL SPILL EATER II TO BE APPLIED ON THE SITE



EXCAVATION IN PROGRESS AND GIOLEE STAFF WORKING



TIMOTHY ISAGY OF SPDC AND MD OF GIOLEE GLOBAL DISCUSSING ON SITE





DIFFERENT BOLEHOLE POINTS THAT WAS EXCAVATED TO KNOW THE DEPTH AND LEVEL OF CONTAMINATION, BOLEHOLE 1, 3, AND 6



PIT1:EXCAVATED GROUND WATER TRENCH WITH CRUDE BEFORE RECOVERY AND APPLICATION OF OSE II



PIT1:EXCAVATED GROUND WATER TRENCH AFTER APPLICATION OF OSE II



PIT2: INITIAL PIT STATE BEFORE THE APPLICATION OF OIL SPILL EATER II



PIT2: AFTER APPLICATION OF OIL SPILL EATER II (OSE II)



PIT3: BEFORE RECOVERY AND TREATMENT OF GROUND WATER WITH OSE



PIT 3: DURING APPLICATION OF OIL SPILL EATER II



PIT3: IMMEDIATE REACTION AFTER RECOVERY AND APPLICATION OF OSE



PIT4: BEFORE APPLICATION OF TREATMENT WITH OIL SPILL EATER II



PIT4: AFTER APPLICATION OF TREATMENT



PIT5: BEFORE RECOVERY AND TREATMENT OF GROUND WATER



PIT5: A DAY AFTER APPLICATION OF OIL SPILL EATER II (OSEII)



PIT6: EXCAVATED TRENCH OF GROUND WATER CONTAMINATED WITH HYDROCARBON



PIT6: TREATED EXCAVATED TRENCH OF HYDROCARBON CONTAMINANT WITH OIL SPILL EATER II



PIT7: BEFORE APPLICATION OF TREATMENT



PIT7: AFTER APPLICATION OF OIL SPILL EATER II ON EXCAVATED PIT FOR TREATMENT OF GROUND WATER



PIT8: BEFORE RECOVERY AND TREATMENT OF EXCAVATED PIT



PIT8: IMMEDIATE REACTION AFTER RECOVERY AND TREATMENT WITH OSE



PIT9: EXCAVATED PIT WITH CRUDE BEFORE RECOVERY AND TREATMENT



PIT9: AFTER RECOVERY AND APPLICATION OF TREATMENT ON EXCAVATED PIT



PIT10: EXCAVATED PIT ON SHELL ROW CLOSE TO THE PIPE, BEFORE RECOVERY AND TREATMENT



PIT10: AFTER RECOVERY OF CRUDE AND TREATMENT OF EXCAVATED PIT WITH OIL SPILL EATER II



PIT11: BEFORE RECOVERY AND TREATMENT OF EXCAVATED GROUND WATER WITH OSEII



PIT11: AFTER RECOVERY AND TREATMENT OF EXCAVATED GROUND WATER WITH OSE II



GIOLEE STAFF SPRAYING OIL SPILL EATER II (OSE II) ON CONTAMINATED SOIL



PROF. PHILIPS SHOKWOLO OF SPDC AND MD OF GIOLEE GLOBAL DISCUSSING ON HIS VISIT TO SITE



**VIEW OF SITE AFTER GROUND WATER TREATMENT AND BACKFILLING OF
VARIOUS PITS WITH TREATED SOIL**



OVERVIEW OF SITE AFTER APPLICATION OF TREATMENT AND WORK ON SITE