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Onshore Drilling Rig Decommissioning at Dibi Area, Benin River A Case Study of Parker-74 Drilling Rig Barge.

Sylvester Efe OWHOJETA, Nigeria

outline

- BACKGROUND
- AIM / OBJECTIVE
- SCOPE / VALUE DRIVERS
- STUDY AREA
- SURVEY METHODOLOGY
- EXECUTION PROCESS
- CHALLENGES
- HIGH LIGHTS

BACKGROUND

- In March 2003, the Parker-74 barge, an onshore drilling rig was was overrun and abandoned, due to the ethnic crisis that erupted in the region
- Then it was drilling an oil well in the Remote Manifold Platform close to Benin River in Dibi area, Niger-Delta.

- After abandonment, the rig was subjected to years of vandalism, looting, corrosion and general neglect.

ABANDONED PARKER 74 DRILLING RIG

BACKGROUND

- 12 years later, the need for re-entry.
- To commence The 2015 onshore drilling campaign in Dibi area , It was required that the Parker-74 drilling rig barge be fully decommissioned and removed from location before drilling could commence in the area.
- This was mandated by DPR (the Government agency saddled with the responsibility of petroleum resources in Nigeria.
- This paper attempts to share the Facilities Engineering work scope supports for the decommissioning and essentially to show case the environmental contributions and application of survey.

BACK GROUND--PARKER-74 DRILLING RIG
Particulars and Dimensions

- The approximate weight of Parker-74 Drilling Rig is 5,125 tons.
- Rig dimensions: 240 ft. length, 72 ft. width, and 14 ft. hull depth (72m length, 21.6m width, and 4.2m hull depth).
- The helideck level was 41ft. (12.3m) and the derrick towered over 100 ft. (30m).
- To put these figures in perspective: the Airbus A380, which is the largest commercial airliner has a zero-fuel weight of 369 tons and measures 239 ft. length, 79 ft. height, and 262 ft. wingspan (71.8m length, 23.7m height, and 78.7m wingspan).
- The National Arts Theater, the cultural landmark edifice located at Iganmu, Lagos, Nigeria towers at 101 ft. (30.3m).

BACK GROUND- PARKER-74 DRILLING RIG

Particulars and Dimensions

National Arts Theater, Iganmu, Lagos, Nigeria towers at 101 ft., Approximately same height as Parker 74 derrick.

Parker 74 weight was 14 times the weight of A380 airliner.

AIM

- The aim of the project is to complete the original field development plan that was suspended due to the 2003 ethnic crisis in the region, as well as, to complete already identified infill drilling opportunities.

OBJECTIVES

- To prepare for the onshore drilling campaign in the area.
- To complete the original field development plan that was suspended due to the 2003 ethnic crisis in the region.
- To complete already identified infill drilling opportunities.
- To provide topographic and bathymetric appraisal of the entire production area.

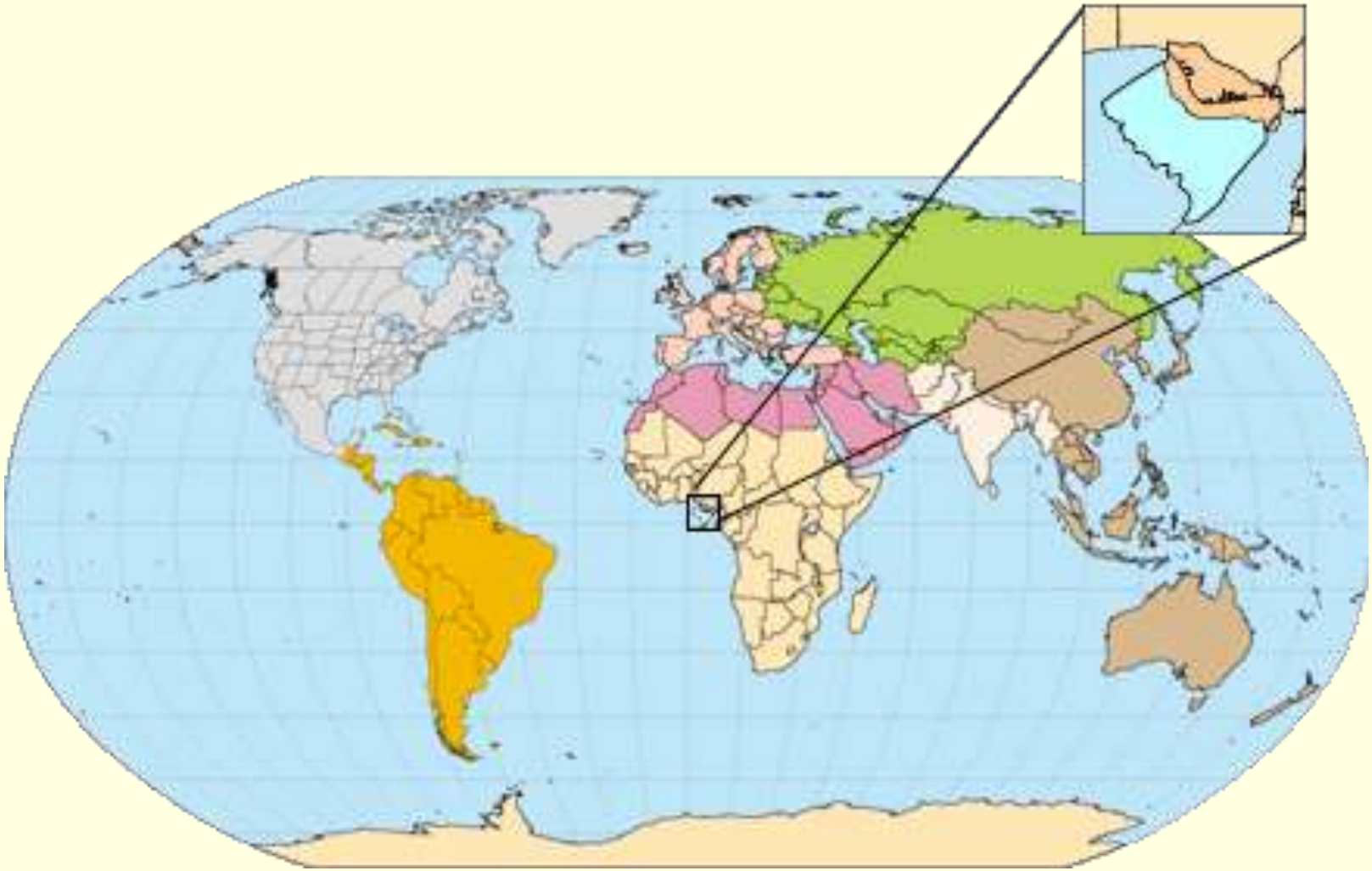
SCOPE-TERMS OF REFERENCE:

- Removal of Sunk Barge
  - Mobilize diving spread to evaluate sunk vessels around and within the location.
  - Removal of sunk barge around and Parker-74 Rig from location.
- Dredging of Location and Access to Location
  - Mobilize dredging contractor to the location.
  - Complete joint pre-dredge survey and boundary delineation of location.
  - Complete pipeline / flowline / other metal scanning of dredge location and flag-off.
  - Complete bush clearing right of way (ROW) and bund wall preparation for dredging of location and access way.
  - Complete dredging of access way and location.
  - Complete joint post dredge survey.

KEY VALUE DRIVERS

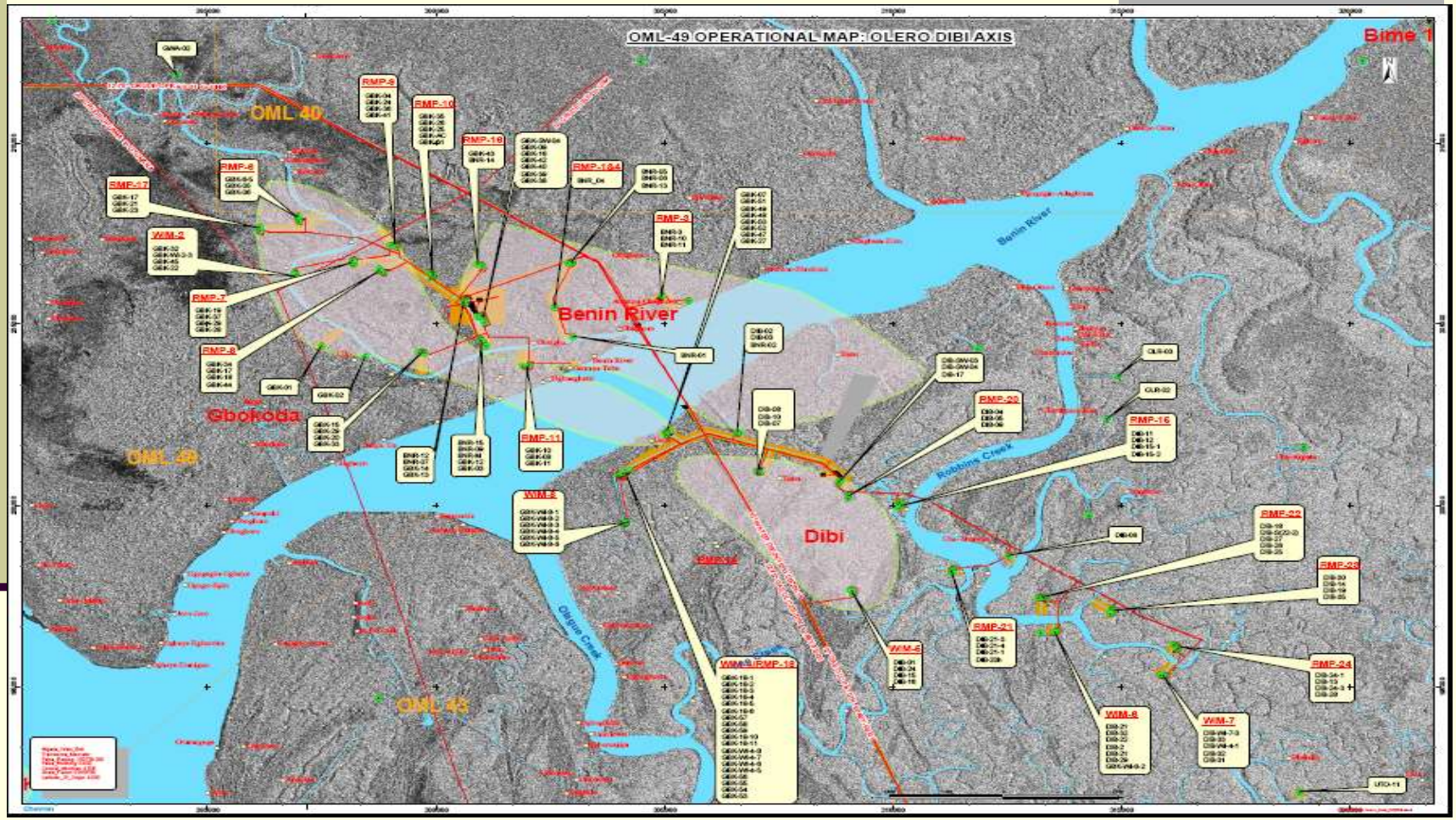
- Safety – incident and injury free operation
- Cost
- Do-ability
- Production impact.

PROJECT AREA



PROJECT STUDY AREA

Showing Benin River and Environs



PROJECT STUDY AREA

Imagery of Parker-74 Rig Prior To Decommissioning at Dibi.

PROJECT ORGANIZATION

INTEGRATED MULTIDISCIPLINARY TEAM

An integrated multidisciplinary team was set

TEAM MEMBERS

The key project team members include:

- ✓Facilities Engineers
- ✓Drilling Contact Person
- ✓Project Geologist
- ✓Onshore Construction Engineer
- ✓Survey Coordinator
- ✓Senior Construction Representative
- ✓Field Designers (piping and structural)
- ✓Construction HES Inspectors
- ✓Community Engagement Representativ
- ✓Construction Civil Inspector
- ✓QA/QC and Mechanical Representative
- ✓Operations Representative
- ✓Materials Coordinators
- ✓Contractors Project Engineers

REGULATORY & ENVIRONMENT PERMITTING

To ensure compliance, the Project team worked with Government agency and regulators in charge of the oil and gas sector in the country and the Health Environmental and Safety (HES) unit to obtain regulatory compliance approvals.

The following permits were obtained:

- Department of Petroleum Resources (DPR) permit – a regulatory compliance approval.
- Dredging permit – an environmental permit from National Inland Waterways Authority (NIWA) to carry out dredging of the location.

Nigerian Content Management.

The project fully complied with the Nigeria Content Development (NCD) requirement. All activities in this project were executed by local indigenous contractors and local community contractors.

ENVIRONMENTAL ISSUES

- Environment Social Health Impact Assessment (ESHIA) pre-screening was also carried out to guide the team in developing specific plans for addressing other environmental management issues that may result from the project.
- A waste management process was in place to evaluate different types of waste streams and amount generated. Strict waste management collection and disposal procedure implemented on site to prevent indiscriminate waste disposal of food, human and construction waste.

Stakeholder Engagement.

- The Project team engaged all stakeholders (internal and external) to gain support and input.
- Community engagement and Security plan was developed and put in effect to tackle and resolve all community and security related issues.
- Monthly stakeholders update meeting set-up to communicate project plan and progress.
- Continuous engagement with Government agency and regulators on project execution permits and approvals through out the course of the project.

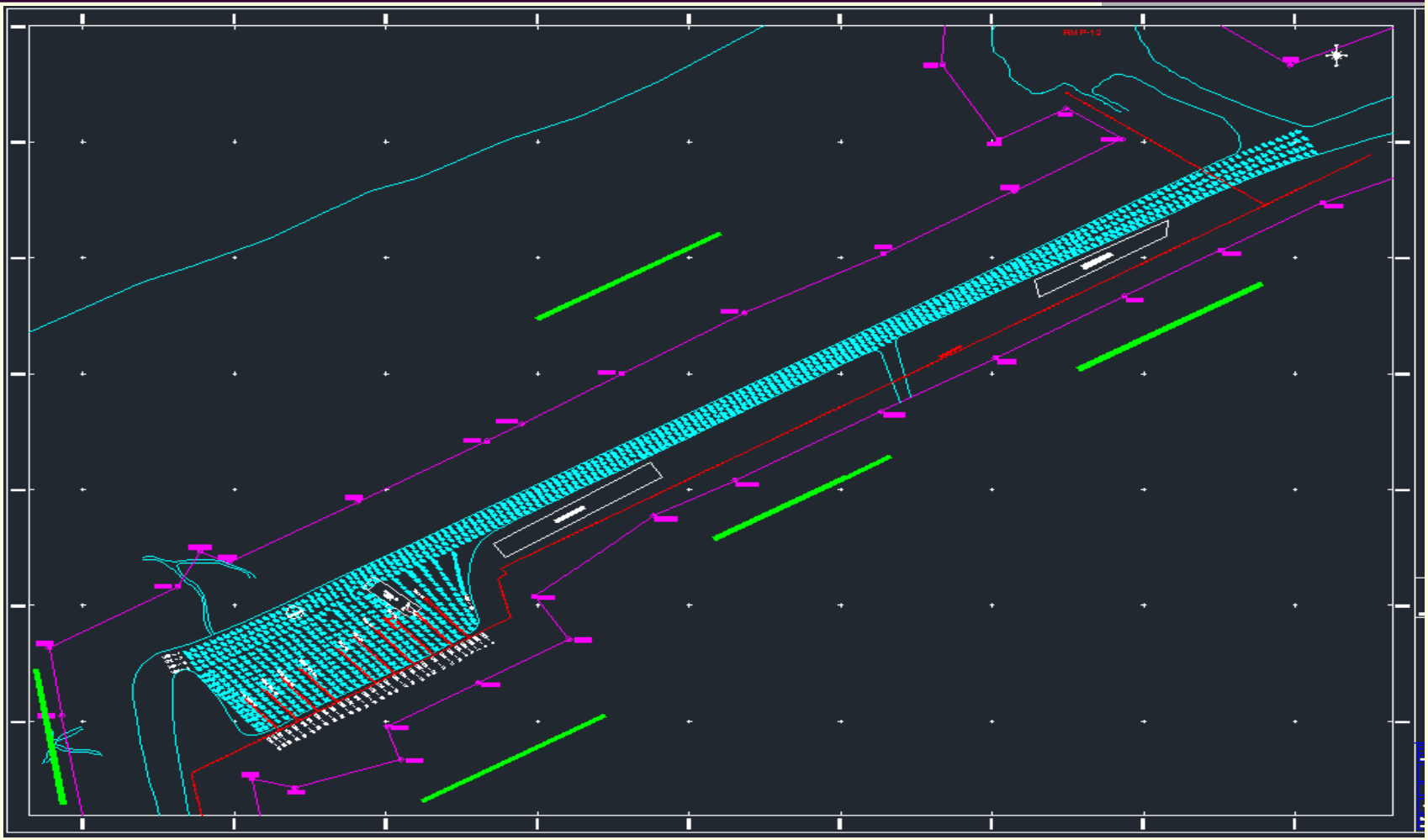
SURVEY METHODOLOGY

A complete survey of the entire project area was carried out which involved:

- Joint pre-dredge survey and boundary delineation of location and access way.
- Pipeline / flowline / other metal scanning of dredge location and flag-off.
- Bush clearing right of way (ROW) and bund wall preparation for dredging of location and access way.
- Dredging of access way and location.
- Joint post dredge survey.

SURVEY MAP OF LOCATION

Pre-dredge Survey

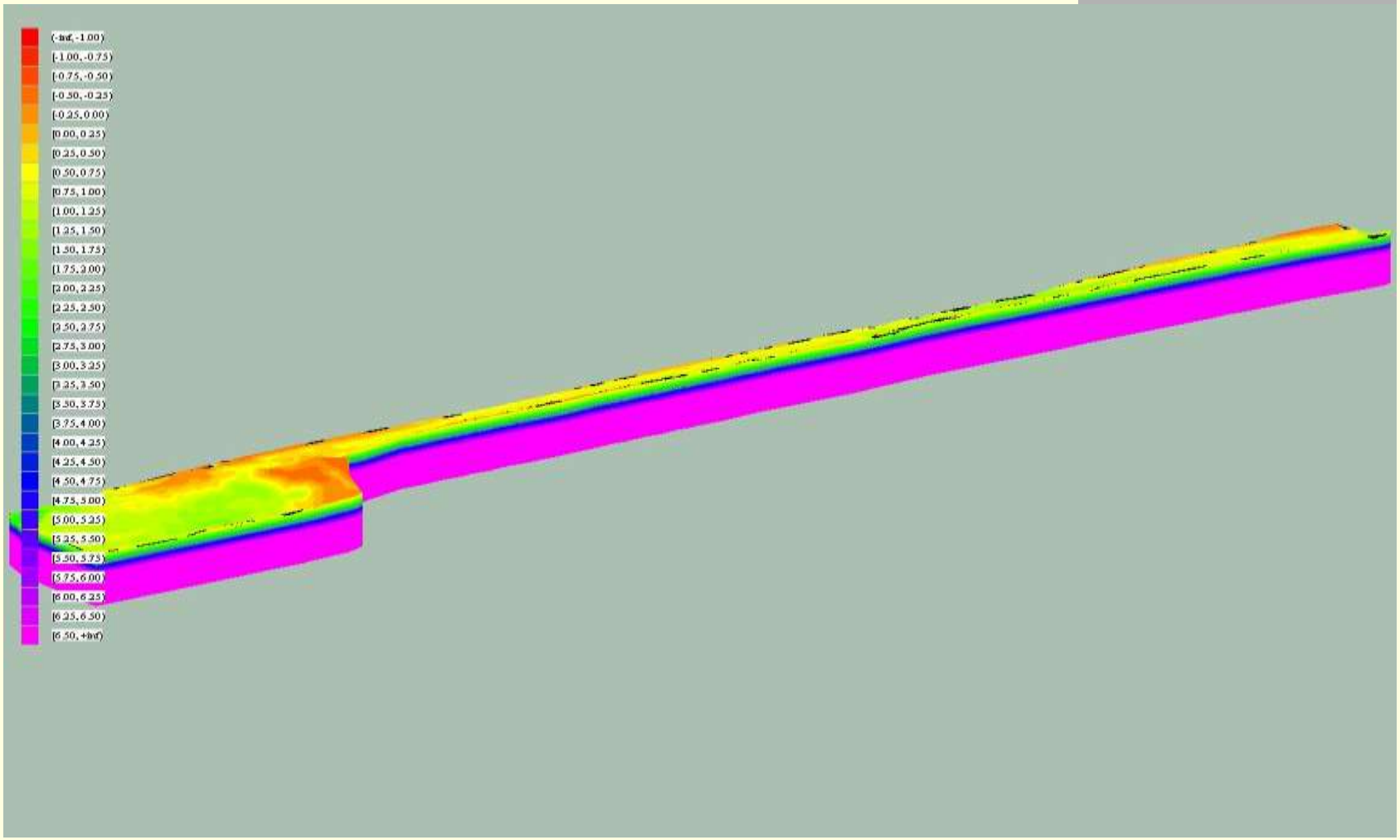


SURVEYS

- The survey showed the bathymetric and site specific hazard appraisal of the location and the access way of the entire project area covered.
- The location slot and the access way were dredged to the required depth of 3m LLWS for location slot and 3.5m LLWS for access way.
- The dredged spoil was contained in the prepared bund wall at the location.
- LLWS = Low Low Water Spring

SURVEY MAP OF LOCATION

Pre-dredge Survey: DTM Map of Location:



SURVEY OF LOCATION

Pre-dredge Survey: wrecks/sunken items positions

Positions of wrecks / sunken items as probed during Pre-dredge Survey.

PARKER-74 DRILLING RIG DEMOLITION

Progress Pictures

Parker-74 Rig prior to commencement of decommissioning works.

PARKER-74 DRILLING RIG DEMOLITION

Progress Pictures

Erection of scaffold on rig floor section.

Loading of scrap materials onto the barge.

PARKER-74 DRILLING RIG DEMOLITION

Progress Pictures

Side view of equipment section and living quarters.

Cutting of outer accommodation wall.

PARKER-74 DRILLING RIG DEMOLITION
Execution Strategy

- The project fully complied with the Nigeria Content Development (NCD) requirement.
  - All activities in this project were executed by local indigenous contractors and local community contractors.
  - Five (5) local community contractors were selected and used for the demolition/decommissioning work scope; while for the field support scope, four (4) local community contractors were selected and used.
  - The demolition/decommissioning scope of the rig was sectioned into:
    - ✓Demolition of rig floor section.
    - ✓Demolition of equipment section.
    - ✓Demolition of living quarters section.
    - ✓Diving, refloating and towing of rig hull.
    - ✓Scaffolding/fumigation/security/transport.

PARKER-74 DRILLING RIG DEMOLITION

Execution Strategy

- The field support scope was divided into:
  - Provision of security houseboat.
  - Provision of personnel houseboats.
  - Provision of barges and tug boats to transport scrap materials from Dibi to Warri.
  - Offloading scrap materials to Warri laydown area for disposal.
- The total contract amount for the 9 executed contracts covering all aspects of the project was $3.2 MM.
- Collaboration amongst the contractors and the various service contractors proved to be a key contributor to overall project success, as it mitigated the risk associated with Contractor Interface and had a positive impact on project and cost schedule.
- Completion of the Parker-74 Rig decommissioning project showcased the capability and competence of some of our indigenous Contractors to meet or exceed customers' expectations

PARKER-74 DRILLING RIG DEMOLITION
Project Timeline

- Construction Contractors mobilized to site on September 4th 2015.
- Demolition works commenced on September 6th 2015.
- The demolition scope was completed on October 31st 2015, versus Plan of December 12th 2015.
- Overall project was executed in 11 weeks, versus initial plan of 18 weeks.
- Project completed 7 weeks ahead of plan.

PARKER-74 RIG DECOMMISSIONING
Challenges

- The planned decommissioning of Parker-74 Drilling Rig posed significant safety, operational and logistic challenges due to the high risk activities required, such as critical lifts, hot work and working from heights at a creek/river location.

- The recovery and removal of wrecks and sunken items from the creek/river location during dredging posed significant safety challenges due to the high risk activities required.

PARKER-74 DRILLING RIG DEMOLITION
Project Highlights

- ✓ 73,839 cumulative labor man-hours completed with no incident.
- ✓ 1,945 cuts to form various simple and complex shapes and 835 crane lifts.
- ✓ 1,249 tons of scrap material loaded onto barges, resulting in 10 shipments to Warri for scrap sale/disposal by Investment Recovery Unit.
- ✓ Decommissioning and towing activities completed over thirty days ahead of schedule, driven by an optimized cut sequence performed by the local content (contractors).


11/17/2015

MY NIGER DELTA

BIOGRAPHICAL NOTES

- **Owhojeta Sylvester Efe,** Nigeria is a professional Registered Surveyor and a full member of the Nigerian Institution of Surveyors residing in Warri, Delta State, Nigeria. Graduated with a B.Sc. (Hons) degree in Surveying, Geodesy and Photogrammetry from University of Nigeria, Nsukka, Nigeria and obtained a Masters degree in Petroleum Economics from Ambrose Alli University, Ekpoma, Nigeria. He was registered to practice as a Surveyor in Nigeria in 2001 and since then, he has been in the practice of surveying and geo-informatics to date, working extensively in the Niger-Delta region of Nigeria. He has been on contract engagement with the GIS-Survey group, Chevron Nigeria Limited as a Survey Coordinator since January 2010. He co-presented a technical paper at the FIG Working Week 2008 and 2009 in Stockholm, Sweden and Eilat, Israel respectively with his Chief Surveyor - Surv. Ajayi E. O; and presented a technical paper on Early Production System (EPS) Barge Movement & Installation at the FIG Working Week 2011, Marrakech, Morocco.

CONTACT:

Owhojeta Sylvester Efe
GIS-Survey Unit,
Chevron Nigeria Limited, Warri,
Delta State, Nigeria
Telephone: +234-1-3672454
Mobile: +234-803-721-0631
Email: eowh@chevron.com
slyefejeta@gmail.com

Thank you.