Internal Investment Proposal

Summary Information

Business unit and Company	Shell Petroleum Development Company (SPDC)
Group equity interest	100%
Other Shareholders / partners	SPDC is the JV operator of an unincorporated Joint Venture with a 30% interest. The other partners are NNPC (55%), Total (10%) and Agip (5%)
Business or Function	Exploration & Production (EP)
Amount	Request for approval of additional US$28.7 million (Shell share). US$6.6 million (Shell share) had been approved in the previous IP, thus bringing the total to US$35.3 million (Shell share)
Project	Rehabilitation of Forcados Terminal Crude Storage and Process Tanks

Main Commitments

Description	Previously Approved GIP (US$mln)		This Proposal: 2015-2018 (US$mln)		Total (US$mln)	
	100% JV	Shell Share	100% JV	Shell Share	100% JV	Shell Share
Tank Rehabilitation Work	18.9	5.7			18.9	5.7
Mobilisation/Demobilisation			12.3	3.7	12.3	3.7
Detailed Condition Survey/ Design			4.4	1.3	4.4	1.3
Mechanical Works (Tank Roof, Shell & Bottom Plates, etc)			39.2	11.7	39.2	11.7
Civil Works (Tank Foundation, Pad, Bund-wall, etc)			8.0	2.4	8.0	2.4
Commissioning (Hydro-test, Calibration & Handover)			5.1	1.5	5.1	1.5
PMT (Salaries, travels, Logistics, etc)			15.6	4.7	15.6	4.7
Contingency	2.6	0.8	9.9	3.0	12.6	3.8
SCD	0.5	0.1	1.2	0.4	1.7	0.5
Total	**22.0**	**6.6**	**95.6**	**28.7**	**117.7**	**35.3**

Source and form of financing	This investment will be financed with JV funding and Shell's share of the expenditure will be met by SPDC's own cash flow and/or the existing shareholder facility. Formal JV partners' approval will therefore be obtained.
Summary cash flow	Cost only Project. Cash Flow chart not applicable.

Summary economics

Summary economics	NPV7% (USD mln)	RTEP (%)	VIR7
Base Case (P50)	-5.6	NA	-0.26
High Case (P90)	-6.4	NA	-0.26
Value at Risk	400.1	>50%	NA

SECTION 1: MANAGEMENT SUMMARIES

The Proposal (Management Summary)

This investment proposal seeks approval for US$28.7 million Shell share MOD 50/50, (US$95.6 million 100% JV), out of which US$3.6 million Shell Share (US$12 million 100% JV) was over spent on the previous IP as at end January 2015, to cover completion of ongoing rehabilitation works on three crude storage tanks (Tank 202, 204 and 210) plus rehabilitation of two new tanks (Tank 201 and 1020) that are already out of service, in Forcados Terminal. The project will be funded via the JV base budget and has been included in the BP14 budget requirement.

This project has the objectives of securing crude export capability from the SPDC West assets by providing the required tank operating capacity (processing & storage), asset integrity and statutory compliance during the period 2015 - 2018. The previous approved fund of $22 million 100% JV (US$6.6 million Shell Share) was exceeded by $12 million 100% JV (US$3.6 million Shell Share) arising from an emergency in 2012 that led to partial rehabilitation of Tank 206 at a cost of $6 million, to quickly bring it on stream, so as to avoid tank-tops at the terminal. Furthermore there was an increase in scope for the three tanks currently undergoing rehabilitation from partial to full scope rehabilitation, which substantially increased mobilisation and other associated costs thus increasing the spend on the approved IP value. Given the criticality of the project and the consequential loss/cost creep should the project stop, JV is still funding the project with SPDC cash calls still being approved by the JV Partners. Consequently, mobilised contractors are working on site, pending approval of revised GIP.

There are eighteen tanks in Forcados Terminal out of which ten are crude storage tanks (each/600,000bbls) while the remaining eight are process tanks (each/300,000bbls)

Out of the ten crude storage tanks, six (T203, T205, T206, T207, T208 and T209) are currently in service. T208 is only used for relief service due to a leaking roof drain in the tank.

Nine crude storage tanks are overdue for 5-yearly statutory inspection. Five out of the nine tanks (T203, T205, T207,T208, T209) are however in use on the basis of non-intrusive, Risk-Based Inspection (RBI) while three (T202, T204 & T210) are undergoing rehabilitation. T201 is not being used. LEC for T210 and T204 is 31st December 2015 while that of T202 is 30th June 2016.

All eight process tanks are overdue for the 5-yearly statutory inspection. Notwithstanding and for operational/business exigency of ensuring continuous an uninterrupted crude export from SPDC West, , seven out of the eight tanks (T101, T102, T601, T602, T610, T620, T901) are still being used on the basis of non-intrusive Risk-Based Inspection (RBI) while one tank (T1020) is not being used.

The summaries of work activities under this proposal include detailed condition survey and rehabilitation of each overdue tank. The table below summaries work progress on the tanks currently undergoing rehabilitation and justification for the two new tanks proposed for rehabilitation.

Tank	Description	Capacity (kbbl)	Remark
Currently undergoing rehabilitation			
202	Crude storage	600	Detailed condition survey is already completed. Now commencing blasting, painting and mechanical repair works. Overall completion is 10%.
204	Crude storage	600	Detailed condition survey is already completed and demolition of tank roof and bottom plates is in progress. Overall completion is 20%.
210	Crude storage	600	Tank already jacked up and roof/bottom plates demolished. Painting of tank shell almost completed. Tank roof/bottom plates already procured and tank bottom foundation surface repair completed. Now commencing tank bottom plate construction. Overall completion is 35%.
To be rehabilitated under this IP			
201	Crude storage	600	Rehabilitation of the tank started in 2012 but had to be abandoned when the roof collapsed. Rehabilitation of this tank is now critical so as to avert potential HSE issues
1020	Diesel storage	5	Rehabilitation of this tank is critical for the Asset Team as they currently store diesel in barges by the jetty, as a temporary arrangement, due to its unavailability. Apart from incurring a storage costs of about $130k/yr, there is also the HSE exposure that might arise from the continuous use of these barges.

Rehabilitation of the remaining tanks will be the subject of a separate IP, to be initiated 6 months before commencement of next Tank Rehab programme order to take on board learnings as well as updated scope closer to the time of execution.

Background

The Forcados oil storage and export facilities have been in operation since 1971. Oil from all the wells operated by Shell in the Western Division of Nigeria is fed to this Terminal, via a number of flow stations. These flow stations are all located onshore with the exception of the inshore Estuary Platform and the Forcados Offshore Drilling and Production platform, FODP-A. Gas is also supplied to the Terminal; this is fed from a gas well on the FODP-A Platform. Current production from the Terminal is about 246kbl/d

Over the years, the oil wells are gradually producing an increasing volume of water ('water-cut'), which in turn requires extra processing of the oil before export. It was considered inappropriate to install and replicate water removal facilities at each of the flow stations and in consequence the water removal facilities at Forcados Terminal have been upgraded as part of the Forcados Terminal Integrated Projects (FTIP) programme

The Statutory and Group requirements on tank inspection and maintenance, stipulates carrying out tank inspection and maintenance every five years.

The overriding business driver is to secure an uninterrupted crude export from the SPDC West assets by providing the required tank operating capacity (processing & storage), asset integrity and statutory compliance and ultimately maintain License to Operate (LTO).

A proposal to restore the technical integrity of the terminal tanks at a cost of $22.05 million ($6.62 million Shell Share) was considered sound on 30th March 2010. The project scope included the refurbishment of 8 tanks (4 process, and 4 storage). Contract for rehabilitation of these 8 tanks together with the remaining 10 additional tanks (4 process and 6 storage) was awarded in 2012 to three main contractors as shown below:

- Baywood Continental Limited, awarded in August 2012 at a value of $27.93 million
- Hopic Limited, awarded in August 2012 at a value of $27.93 million

- Adano Limited, awarded in August 2010 at a value of $11.02 million

The contract awards were significantly delayed, mainly as a result of late approvals by the NNPC Board. Work execution on the Tanks are ongoing but progressing at a slow pace due to inadequate Joint Venture Funding, Tank Contractors Performance, NAPIMS approvals of contract variations, community issues, etc

Value Proposition and Strategic and Financial Context

The Forcados Terminal tank rehabilitation project is necessary to ensure compliance with statutory and group requirements. Executing the proposed tank inspection and refurbishment works will give the following benefits:

- Ensure compliance with Statutory Regulations thus eliminate accumulated waivers received so far for non-compliance from Department of Petroleum Resources (DPR).
- Restore 100% availability and reliability of seven storage tanks and three process tanks and assure Technical integrity of SPDC Tanks in line with group minimum standards.
- Reduce to 'as low as reasonably practicable' (ALARP) the risk of failure to process the crude receipted at the Terminal, thus ensure uninterrupted export operations, compliance with HSSE requirements and safeguard business reputation.
- Ensure uninterrupted processing of Third Party crude (110kbl/d) being handled in the Terminal, of which SPDC already has a binding agreement. This has additional strategic significance as the major third party producer, NPDC, is an NNPC wholly owned company.

Cost Phasing Table (MOD JV100%) Economics

Description	Capex Cost Phasing in US$ mln. MOD, (50/50 JV 100%)					
	Prior	2015	2016	2017	2018	Total
Commitment Phasing	34.0					**34.0**
Tank Rehabilitation Works		17.9	15.3	15.3	23.9	**72.5**
Contingency		2.5	2.1	2.1	3.3	**9.9**
SCD		0.3	0.3	0.3	0.4	**1.2**
Total (100% JV)	**34.0**	**20.7**	**17.7**	**17.7**	**27.6**	**117.7**
Total (Shell Share, 30%)	**10.2**	**6.2**	**5.3**	**5.3**	**8.3**	**35.3**

Summary Economics

The Forcados Terminal Tanks Rehabilitation Project has the objective of securing crude export capability of SPDC West assets by providing the required tank operating capacity (processing & storage), ensuring asset integrity and most importantly to meet DPR Statutory and Group requirements. The project is expected to be funded through the JV base Budget.

The IP was evaluated as a cost only using the 50/50 LE Cost estimates.

In addition to the Base the following sensitivities were evaluated to show their impact on the project's value:

- High and Low CAPEX.
- 1 Year cost delay.
- 1.5% cost markup due to BVA (Benched marked verified and approve) issues due to NAPIMs cost dispute.
- Full Life Cycle (FLC) costs.
- Value at Risk to show the value of the Terminal (FOT) production that will be impacted over the 5-year period in the event existing tanks are not the rehabilitated as and when required.

Details of the economics results and sensitivities are shown in Table 1 below.

Table 1: Economics Grid (Shell Share)

PV Reference Date: 1/7/2015	NPV (S/S $ mln)		VIR	RTEP	UTC (RT $/boe)		Payout-Time (RT)	Maximum Exposure (RT- AT)
Cash flow forward from: 1/1/2015	0%	7%	7%	%	0%	7%	(yyyy)	mln (yyyy)
Base Case								
RV ($90/bbl RT15)*	-4.1	**-5.6**	**-0.26**	NA	NA	NA		*US$ 16.2 (2018)*
Sensitivities (using RV-RT15)								
High CAPEX (P90)		**-6.4**	**-0.26**					*US$ 18.3 (2018)*
Low CAPEX (P10)		**-5.0**	**-0.26**					*US$ 14.4 (2018)*
1 Year Cost delay		**-6.0**	**-0.30**					*US$ 16.2 (2019)*
1.5% cost markup due to BVA issues		**-7.1**	**-0.27**					
Full Life Cycle (FLC)		**-8.3**	**-0.26**					*US$ 18.4 (2018)*
Value at Risk**		**400.1**	**NA**					

* Same result applies to SV-RT and HV-RT since there is no revenue stream.

** Showing the value of 5 Year production that will be impacted if existing Tanks are not rehablitated at the Terminal as per statutory requirements.

Table 2: Key Parameter table Data Ranges (Shell Share)

Parameter	Unit	OP14 Provision	Low	Mid	High	Comments
Capex (MOD)	US$ mln	24.7	22.0	24.7	28.0	
Opex (MOD)	US$ mln	0.37	0.33	0.37	0.42	Social Performance (SP) Opex
Production Volume	mln boe	NA	NA	NA	NA	Cost only evaluation
Commissioning Date	mm/yy	Apr-18	Dec-17	Apr-18	Dec-18	

Economics Assumptions

Cost Only (Base).

- 10% RT CAPEX assumed as abandonment cost
- Project SP (Social Performance) Opex applied.
- NDDC levy 3% of total expenditure.
- Education tax of 2% assessable profit.

Sensitivity (Value at Risk):

- Oil PSV of US$90/bbl RV-RT15(Base)
- NGMP (Nigeria Gas Master Plan) Domestic gas profile RV-RT15
- Gas was taxed under CITA (Company Income Tax Agreement) with Associated Gas Framework Agreement (AGFA) incentive.
- GHV of 1000 Btu/scf for Domestic market
- OPEX Assumptions as follows:
  - SPDC Generic fixed OPEX assumptions was applied
    - Oil fixed - 3.0% of cum. oil CAPEX
    - Gas fixed - 3.5% of cum. gas CAPEX
  - Variable OPEX: $2.80/boe
- NDDC levy 3% of total expenditure.
- Education tax of 2% assessable profit

Risks and Mitigation

The principal risks associated with this proposal are presented in the table below:

S/N	Risk Description	Mitigation/Remedial Effort
1	**Technical / Operational.** Project not being completed to acceptable standard and within time specified.	Full scope of the tank rehabilitation can only be determined on site when each tank has been taken out of service, desludged/cleaned and then inspected in accordance with API 653. To take care of the potential additional scope, a contingency provision of about 14% on the tank rehabilitation cost estimate has been included in this IP budget proposal.
2	**Budget/NAPIMS Approvals** Inadequate/delay in providing budget for 2015 activities and beyond. NAPIMS/NNPC Board approval delay of Replacement Contracts	Inadequate or delay in providing adequate budget for the 2015 – 2018 activities could prevent the refurbishment of the tanks and further exposure to failures and release of hydrocarbon to the environment. Work has been phased based on OP14 approved Plan. Schedule to be signed-off with top Management. Current Tank Rehab contract shall expire in 2015. Due to envisaged delays in NAPIMS/NNPC Board's approval for a Replacement Contract which might delay mobilisation for rehabilitation of the next set of tanks in the plan after 2016, a replacement contract is being initiated while extension of the current contract shall be pursued in parallel
3	**HSE Risk** Harm to people and equipment. Pollution to the environment	The main risk is the pollution of environment due to structural failure, which can lead to loss of ISO14001 certification and consequently loss of production (LTO) and reputation problems, if the work is not carried out. SPDC HSE policies will be strictly adhered to during the execution of all work. Mandatory Hazard and Effects Management Process (HEMP) activities will be carried out with a risk register (including security) to be developed for the work scope including contracted activities. Detailed job hazard analysis will be done prior to commencement of high HSE risk work. Rigorous use of HEMP and other tools to control hazards will be deployed during the project execution. Contractor management for the execution of the site works shall be in line with the Group Standard EP 2005-0110 Contractor HSE Management.
4	**Security** General insecurity as applicable in the Niger-Delta area. (Political/Security)	The main risk is security during marine transportation of materials and equipment to the terminal and general security issues within the terminal during rehabilitation work. It is planned that this project will be executed in full compliance with the corporate security plans for operating in the field. An approved security plan for this project will be put in place. The Security Plan shall be developed and strictly applied through all phases of the project. The work will be done within the Forcados Terminal and will therefore not be as vulnerable as these other projects carried out in the field or in the Island itself. The Integrated Production Security Surveillance (IPSS) is in place and there is adequate security framework. The contractor will have own security arrangement approved by SPDC security officer. There shall be increased intelligent gathering and sharing with contractors and they shall be encouraged to lash on to convey movement
5	**Community** Risk of community disruption during project execution	SPDC HSE and SCD policies will be strictly adhered to with a view to minimizing the risk of accident/incident and disruptions. In addition, a project-specific HSE plan incorporating all the potential hazards relating to these projects will be put in place. Ogulagha and Odimodi Communities will be proactively engaged and MOUs signed (where none exist) before commencement of work activities. The MOU will outline specific benefits to the host communities in terms of employment, sub-contracting of services and supplies and community development projects.
6	Contractor may not provide Adequate resources	As a result of SPDC inability to meet 45 days payment obligation, contractor may not provide adequate resources as when due of which consequence will be slippage in rehabilitation works. Major payment milestones has been further broken down into smaller milestone elements to enhance cash-flow. Close monitoring/supervision of contractor's work execution method (Equipment and personnel) to be carried out as well as provision of additional SPDC site personnel for supervision. Early signals for company intervention will be monitored

Opportunities

- Ensure continuity in meeting statutory obligations on integrity of the oil and gas infrastructures.
- Ensure capability for export of crude oil at the terminal at maximum production potentials from the Swamp West fields, especially with additional production coming from Southern Swamp fields.
- Take on more production from third party injectors and thus generate income.

Alternatives

- **Do Nothing**: Failure to execute this project would imply that the anticipated opportunities would not be realised. This ultimately will mean attendant revenue loss for SPDC, JV and the stakeholders. Failure to comply with the statutory inspection and refurbishment has adverse impact on the reputation of the Company, with possible consequence of sanction by the regulatory authority.

Corporate Structure and Governance

The existing corporate structure and governance arrangements of SPDC-JV with SPDC as operator still subsist for this investment. The project fits within the existing SPDC corporate structure and governance.

Functional Support and consistency with Group and Business Standards

This proposal complies with Shell Group Business Principles, policies and standards. Functional support for this proposal is provided by Projects & Technology (P&T), Finance, Social Performance, Contracting & Procurement, HSE, Operations, Legal, Security, Treasury, Controllers and Tax functions.

Project Management, Monitoring and Review

Project Assurance is in place for all work scope and management of change. This is a "P&T executed" project with P&T being accountable for the delivery of technical project integration and execution. A DRB with UI Nigeria and P&T participation is in place.

SPDC's Corporate Asset Engineering will execute the project. In carrying out the project, relevant functional inputs will be applied to ensure seamless execution. SPDC HSE and SCD policies and 12 lifesaving rules will be strictly adhered to with a view to minimize the risk of accident/incident and disruptions. In addition, a project-specific HSE plan incorporating all the potential hazards related to the project will be developed.

Community will be proactively engaged and MOUs signed (where none exist) before commencement of work activities.

Project Engineers will be dedicated to monitoring progress on daily and weekly basis. The performance of the Tanks will be monitored monthly via SAP generated integrity report for critical equipment.

Budget Provision

It is proposed that the project budget requirement will be funded from the JV base budget.

Group Financial Reporting Impact

The financial impact of this proposal on Shell Group financial is as outlined in the table below.

USD mln	Prior Years	2015	2016	2017	2018	Post 2018
Commitment phasing (un-geared Shell share)						
Profit & Loss (NIBIAT)						
Balance sheet (capital employed impact, debt assumed)						
Cash flow:						
Cash from operations						
Capital investment						
Divestment receipts						
Revenue expenditure						
ROACE (if material impact on the Group)						

Disclosure

Material disclosures, if any, will be done in line with the Group Disclosure Guidelines.

Financing

Shell share of the capital expenditure will be met by OU's own resources and existing shareholder facility. Expenditure related to this project will be accounted for in line with Group Policy.

Taxation

No extraordinary tax issues would arise from this proposal.

Key Parameters

The key parameters of this proposal, which amounts to US$28.7 million Shell share are as follows:

- Tank Rehabilitation Work US$25.3 million Shell share
- Contingency US$3.0 million Shell share
- Social Performance OPEX US$0.4 million Shell share

Initiator: _____

Bello Bashir (PTP/O/NA)

Date …/…./….

Supported by:	Supported by:	For Business Approval
.....	……. .	.....
Toyin Olagunju (PTP/O/N)	Guy Janssens (FUI/OG)	Markus Droll (UIO/G)
Date ..../..../....	Date ..../..../....	Date ..../..../....

SECTION 2: ATTACHMENT

Attachment 1 - Detailed Project Parameter Data

Project Focal Point / Indicator	Bello Bashir
DRB: Decision Executive if applicable	Grzeg Kulawski
DRB: Members if applicable	Oluchi Uzor: BOM Toyin Olagunju Munster Robert Brown Boma

Attachment 2 – Forcados Terminal Tank Rehabilitation Plan

S/No	Tank	Tank Description	Capacity (kbbl)	Proposed Compl. Date	2013				2014				2015				2016				2017				2018				2019				Amount ($mln)
					Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	
1	201	Crude storage	600	Q4-17																													20.6
2	202	Crude storage	600	Q4-15																													21.3
3	204	Crude storage	600	Q2-16																													23
4	210	Crude storage	600	Q4-15																													9.2
5	1020	Diesel storage	5	Q2-17																													9.6
																															Total	83.7

Tank Out of Service | Tank In Service | Tank in Service with RBI | Tank Under Rehabilitation | Tank in Service with extended RBI