Internal Investment Proposal

Summary Information

Business unit and Company	The Shell Petroleum Development Company of Nigeria Limited(SPDC)										
Group equity interest	100% in SPDC, whereas SPDC is the operator of an unincorporated JV with a 30% participating interest share.										
Other Shareholders /	1 0	Nigerian National Petroleum Company (NNPC): 55%, Total E&P Nigeria Limited									
partners	(TEPNL): 10%, Nigeria Agip Oil Company Limited (NAOC): 5%										
Business or Function	Exploration & Production (EP)										
Amount	Request for app (Shell share) ha Investment Prop	d been a	approve	d in the	previous	iP, t					
Project	Rehabilitation of	Bonny T	erminal	Crude St	orage Tan	ks					
Main Commitments	Description	Previously Approved	Sunk Cost (b)	Lifecycle Estimate	Estimate to Complete		Proposal (c)-(a) Shell	(f)=(d	1 GIP e)+(a) Shell		
		GIP (a)	Cost (b)	(c)	(d)=(c)-(b)	100% JV	Share	100% JV	Share		
	Tank 2			18.8	18.8	18.8	5.6	18.8	5.6		
	Tank 5 Tank 6	2.3	7.2	7 8.5	7 1.2	-3.4 6.2	-1 1.8	7 8.5	2.1		
	Tank 6 Tank 7	2.3	1.2	8.5	8.8	8.8	2.6	8.5	2.6		
	Tank 8	11		12.9	12.9	1.9	0.6	12.9	3.9		
	Tank 9	9.3		9.5	9.5	0.2	0.1	9.5	2.9		
	Tank 10			8.4	8.4	8.4	2.5	8.4	2.5		
	Tank 11	11		13.3	13.3	2.3	0.7	13.3	4		
	Tank 12			16	16	16	4.8	16	4.8		
	Tank 13 Tank 14	11	16.6	14.8	14.8	3.8	1.1	14.8 16.6	4.4 5		
	Tank 14 Tank 15	1.5	17.8	20.1	2.4	20.1	6	20.1	6		
	Tank 16	13	12.8	12.8	0	-0.2	-0.1	12.8	3.8		
	Tank 17	3.7		6.1	6.1	2.4	0.7	6.1	1.8		
	Tank 18	3.7		6.6	6.6	2.8	0.9	6.6	2		
	Tank 19	3.7		3.2	3.2	-0.5	-0.1	3.2	1		
	Tank 20	11		17.8	17.8	6.8	2	17.8	5.3		
	Tank 21	3.7		8.2	8.2	4.5	1.3	8.2	2.5		
	Tank 22 Tank 23	1	22.4	8.6 22.4	8.6	8.6 22.4	2.6 6.7	8.6 22.4	2.6 6.7		
	PMT (salaries, travels,		2	20.5	18.5	20.5	6.1	20.5	6.1		
	logistics etc.)	<i>5.</i> 2									
	SCD Contingency	5.3 5.3		4 29.2	4 29.2	-1.3 23.9	-0.4 7.2	29.2	1.2 8.8		
	Total IP value	117.5	78.8	294	215.2	176.5	53	294	88.2		
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											
cummary cash now	Value Loss due to delay Bonny Tanks rehabilitation Cashflow Shell Share, PSVRV-RT Base Case 400 350 350										
	Superior Superior	24 24	28 29	3	24 25 24 25 25 25 25 25 25 25 25 25 25 25 25 25	26.	300	500 250 200 150 100 50 (100) (150) (200) (250) (300)	Cum. cashflow(\$ min.RT7)		
	US\$mm RTUS\$mm RT7US\$mm RT										
Summary economics	Summary economic	cs	NPV	7% (USD m	nln)		R7				
, and the second second	Base Case (P50)		-14.5 -16.4			-0.33 -0.33					
	High Case (P90)										
	Low Case (P10)			-12.9		-0.33					
	Value Loss		I	-91.9		N	Α	1			

SECTION 1: MANAGEMENT SUMMARIES

The Proposal (Management Summary)

This investment proposal seeks supplementary approval for US\$53 million Shell share MOD 50/50, (US\$176.5 million 100% JV) for the rehabilitation of Bonny terminal crude storage tanks, to cover completion of ongoing rehabilitation works on four crude storage tanks (Tank 5, 6, 8 and 15) that are already out of service and to cater for enlarged scope covering rehabilitation of all crude storage tanks in the terminal either already out of service or being kept in service using Risk Based inspection waivers.

Summary of Supplementary Request

Description	Amount (USD\$ mln)
Description	100% JV	Shell Share
Cost increase on Original IP scope due to market escalation, standby cost etc.	23.9	7.2
Cost increase due to change in strategy from original scope of partial tank rehab to full rehab	30.3	9.1
New Scope (Tanks 2, 7, 10, 12, 15, 22, 23)	103.1	31.0
Increase in PMT costs due to new scope and prolongation	19.1	5.7
Total	176.5	53.0

This (reframed) project has the objectives of securing uninterrupted crude export capability from the SPDC JV's eastern assets and third-party commitments by providing the required tank operating capacity (storage), asset integrity, statutory compliance and ultimately maintain License to Operate (LTO).

There are twenty crude storage tanks in Bonny Terminal with a combined capacity of 7.8mbbls. Out of the twenty tanks, ten are currently in service with a capacity of 3.8mbbls, four (T5, T6, T8, & T15) are undergoing rehabilitation while six are not being used.

The table below summarises work progress on the tanks.

Tank	Description	Capacity (kbbl)	Remark					
Currently undergoing rehabilitation (Lot 1)								
5/8	Crude storage	156/335	Tank already handed over to the contractor. Site preparation works ongoing.					
14/16/23	Crude storage	341/341/485	Tank already completed					
6/15	Crude storage	170/335	Project is ongoing. Overall completion status: T6 (42%) T15 (86%)					
Next set of tanks to	Next set of tanks to be rehabilitated (Lot 2)							
2, 7, 9, 10, 11, 12, 13, 17, 18, 19, 20, 21, 22	Crude storage	Various	Rehabilitation is required to ensure uninterrupted processing and storage of crude					

Background

The Bonny oil and Gas Terminal has been in operation since 1960. Oil from all the wells operated by SPDC in the Eastern Division of Nigeria is fed to this Terminal, via a number of flow stations. These flow stations are all located onshore and fed into the terminal via the NCTL, TNPL and other 3rd Party Pipelines. Current production from the Terminal is about 300kbl/d.

As part of the Bonny Terminal Integrated Project (BTIP), the terminal was redesigned in 1999 so that it would be operated and maintained to meet all applicable safety and environmental regulations over the next 25 years. 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.

The Statutory and Group requirements on tank inspection and maintenance, stipulates that tank inspection and maintenance must be carried out every five years.

A proposal to restore the technical integrity of the terminal tanks at a cost of \$117.5mln (\$35.2mln Shell Share) was considered sound on 15th September 2010. The project scope included the refurbishment of 9 tanks and Statutory Inspection repair of 5 tanks. Strategy was changed from partial rehab to full rehab due to outcome of detailed condition inspection of the tanks. All 20 tanks are now proposed for rehabilitation in order to put them into normal service, as securing yearly waiver for tanks in service under RBI, is becoming

increasingly difficult. This major rehabilitation will increase the useful life of the tanks by up to 20 years. Contract for rehabilitation of all 20 tanks was awarded in May 2013 to three main contractors.

The net book value (NBV) of those parts of the tank to be replaced will be de-recognised in accordance with the Group Financial Reporting Manual (GFRM) AP11, Section 5.6. The current cost of refurbishment and the remaining useful life of the tanks prior to refurbishment will be used to estimate the NBV of the parts to be replaced.

SECTION 2: VALUE PROPOSITION AND STRATEGIC AND FINANCIAL CONTEXT

Executing the proposed Bonny terminal tank inspection and refurbishment works will give the following benefits:

- Ensure compliance with Statutory Regulations thus eliminate the need for waiver received so far for non-compliance from Department of Petroleum Resources (DPR).
- Restore 100% availability and reliability 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 received at the Terminal, thus ensure uninterrupted export operations, compliance with HSSE requirements and safeguard business reputation.
- Ensure uninterrupted processing of 3rd Party crude (140kbl/d) being handled in the Terminal, in line with SPDC's contractual obligations to such parties. This has additional strategic significance as the major 3rd party producer into the Terminal, NPDC, is a wholly owned NNPC subsidiary.
- Capex recovery is not captured in the current Crude Handling Agreements (CHAs) for 3rd Party injectors, but will be accounted for in future tariffs when the CHAs are renewed.
- There is a potential upside from income that will be generated from storage capacity that will be added after rehabilitation of the ongoing tanks. It will also help reduce potential tank-top situations in the terminal.

Economics

Cost Phasing Table (MOD JV100%) Economics

Description		Capex Cost Phasing in US\$ mln. MOD, (50/50 JV 100%)													
		Prior Underspent	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	Total	
Tank Rehabilitation works (previous approval)	117.5													117.5	
Additional sunk cost (overspent) on previous GIP		-45.5												-45.5	
Sub-Total 1 (sunk cost)	117.5	-45.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	72.0	
Outstanding works															
Tank Rehabilitation Works			18.7	19.1	17.0	14.5	17.9	18.3	17.0	19.6	21.3	19.6	6.0	188.8	
SCD			0.4	0.4	0.4	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.1	4.0	
Contingency			2.9	3.0	2.6	2.2	2.8	2.8	2.6	3.0	3.3	3.0	0.9	29.2	
Sub-Total 2 (forward look)	0.0	0.0	22.0	22.5	20.0	17.0	21.0	21.5	20.0	23.0	25.0	23.0	7.0	222.0	
Total (100% JV)	117.5	-45.5	22.0	22.5	20.0	17.0	21.0	21.5	20.0	23.0	25.0	23.0	7.0	294.0	
Total (Shell Share, 30%)	35.3	-13.7	6.6	6.8	6.0	5.1	6.3	6.5	6.0	6.9	7.5	6.9	2.1	86.1	

Overall cost is within the project's capital efficiency target and cost saving opportunities will be rigorously pursued.

Summary Economics

The IP was evaluated as cost-only using the 50/50 LE Cost estimates provided. In addition to the Base evaluation the following sensitivities were carried out to show their impact on the project's value:

- High and Low CAPEX.
- Value loss of 1 Year cost delay.

- Full Life Cycle (FLC) costs.
- 1 Year cost delay

The value at risk computation shows that for every day that there is a deferment of production due to supply disruption as a result of tank-related problems, there is a loss of \$25.2k Shell Share, which leads to loss of \$91.9mln Shell Share in one year. Some other incidental costs due to non-delivery of contractual volumes, and resource maintenance costs have not been factored in. There could be some reputational costs in addition.

Details of the economics results and sensitivities are shown in Table 1 below and Key project parameters in Table 2.

Table 1: Economics Grid (Shell Share RT16)

PV Reference : 1/07/2016	NPV (S/S \$ mln)		VIR	RTEP	UTC (RT \$/bbl or \$/mln btu)			
Cash flow forward from: 1/07/2016	0%	7%	7%	%	0%	7%		
Base Case								
RV	(17.1)	(14.5)	(0.33)	NA	NA	NA	NA	19.0
Sensitivities (using RV)								
High Capex (Prob < 0.90)		(16.4)	(0.33)					
Low CAPEX (Prob < 0.10)		(12.9)	(0.33)					
Life-Cycle Economics		(21.8)	(0.32)	NA				
1 Year Delay		(13.6)	(0.33)					
Value Loss of 1 Year Delay		(91.9)	NA					

Table 2: Key Project Parameters Shell Share

Parameter	Unit Bus Plan Low Mid H		High	Comments		
		(RV)				
Capex (MOD)	US\$ mln	65.4	58.2	65.4	73.9	
Start Up Date		Dec-16	Apr-16	Dec-16	Oct-16	
Production	Mln Boe	NA	NA	NA	NA	
Opex	US\$ mln	1.2	1.1	1.2	1.3	Social Performance (SP) Opex

Chart 1: Bonny Tank Rehabilitation Value at Risk Cashflow Plot

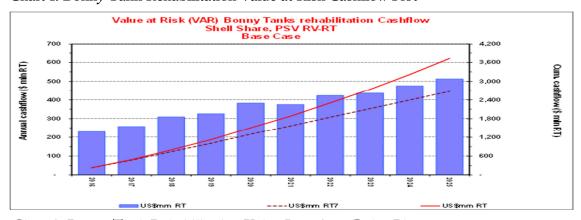
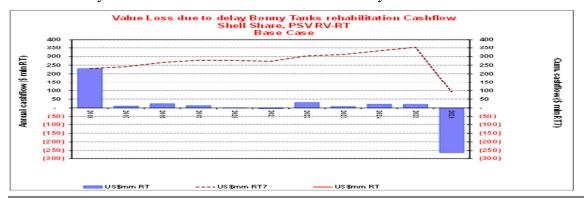


Chart 2: Bonny Tank Rehabilitation Value Loss from Delay Plot



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.

Value at Risk Computation

- 10 year NFA forecast for facilities in the East
- Oil Short term PSVs of \$42.5/bbl@MOD in 2016, \$50/bbl@MOD in 2017, \$60/bbl@MOD in 2018, \$60/bbl@MOD in 2019, with applicable offset applied. RV-RT16 price used from 2020 onwards
- NGMP (Nigeria Gas Master Plan) Domestic gas profile RV-RT16.
- Gas was taxed under CITA (Company Income Tax Agreement) with Associated Gas Framework Agreement (AGFA) incentive.
- GHV of 1000 Btu/scf for Domestic market.
- Generic OPEX variable Opex of US\$2.80/bbl
- 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	Budget Inadequate/delay in providing budget for 2016 activities and beyond.	Cut in 2016 budget and delay in providing adequate budget for activities in 2017 and beyond could delay completion of rehabilitation of the tanks. The tank rehabilitation has been phased in OP16 Plan over a 10-year period, following historical trends and current funding realities. Phasing of the work has been made robust enough to weather the storm of funding shortage without impacting too adversely on the project objective.
	Cash-flow impact from delayed payments	As a result of SPDC inability to meet 45 days payment obligation, contractor may not provide adequate resources as when due with likely consequence of slippage in rehabilitation works and potential standby costs. Major payment milestones have been broken down into smaller milestone elements to enhance cash-flow. Priority payment of contractor invoices is also being pursued due to project criticality. There is regular engagement with NAPIMS on project status to ensure timely approval of cash-calls.
2	Contracting NAPIMS/NNPC Board approval delay of Replacement Contracts	The current tank rehabilitation contract will expire in July 2017 and NAPIMS/NNPC Board approval of replacement contract may be delayed with consequence of work stoppage and delay of mobilisation for the next set of tanks in the plan after 2017. Engagement with NAPIMS is ongoing and the process of setting up a replacement contract has commenced. New contract to be in place by Q3 2017.
3	HSE Risk Harm to people and equipment. Pollution to the environment	The main risk is the pollution of environment due to structural failure and release of hydrocarbon. SPDC HSE policies will be strictly adhered to during the execution of all work with a view to minimizing the risk of accident/incident. A project-specific HSE plan incorporating all the potential hazards relating to these projects is in place. Mandatory Hazard and Effects Management Process (HEMP) activities are being carried out with a risk register (including security) developed for the work scope including contracted activities. Detailed job hazard analysis was done prior to commencement of high HSE risk work. Rigorous use of HEMP and other tools to control hazards are being deployed during the project execution. Contractor management for the execution of the site works is in line with the Group Standard EP 2005-0110 Contractor HSE Management.

S/N	Risk Description	Mitigation/Remedial Effort
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. This project is being executed in full compliance with the corporate security plans for operating in the field. An approved security plan for this project is in place and strictly applied through all phases of the project. The work is being done within the Bonny Terminal and therefore not as vulnerable as other projects carried out in the field or on the Island itself. The Integrated Production Security Surveillance (IPSS) is in place and there is adequate security framework. There shall be increased intelligence gathering and sharing with contractors. The security arrangement that will be implemented by SPDC at the Terminal during periods of political uncertainties shall also be extended to the contractors.
5	Community Risk of community disruption during project execution	SPDC SCD policies will be strictly adhered to with a view to minimizing the risk of disruptions. Bonny community is being proactively engaged and MOUs was signed before commencement of work activities. The MOU outlines specific benefits to the host communities in terms of employment, sub-contracting of services and supplies and community development projects. Contractor to comply with its community related obligations under the contract.

Opportunities

- Ensure continuity in meeting statutory obligations on integrity of oil and gas infrastructures.
- Ensure capability for export of crude oil at the terminal at maximum production potentials from the Eastern Swamp fields.
- Take on more production from third party injectors and thus generate additional 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 Ltd, JV and the stakeholders. Failure to comply with the statutory inspection and refurbishment has adverse impact on the reputation of the Company, with potential exposure to sanction by the regulatory authority.

Corporate Structure and Governance

The existing corporate structure and governance arrangements of SPDC JV with SPDC Ltd. 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.

Budget Provision

Project will be funded under the JV, it is unlikely to satisfy requirements for Alternative funding as there are no direct rewards accruing from the project.

Group Financial Reporting Impact.

There are no unusual accounting issues related to this GIP. Expenditure related to the project will be accounted for in line with Group Policy. The financial impact for project's full scope on Shell Group Financials is as indicated in the table below:

The approved GIP underspent of \$45.5mln was used to cover 2016 and 2017 commitments.

US\$ mln	2016	2017	2018	2019	2020	Post 2020
Total Commitment	0.0	0.0	5.8	5.1	6.3	35.8
SCD OPEX	0.0	0.0	0.1	0.1	0.1	0.6
Pre-FID	0.0	0.0	0.0	0.0	0.0	0.0
Cash Flow						
Capital expenditure	0.0	0.0	5.6	5.0	6.2	35.2
Cash Flow from Operations	-0.1	0.0	1.0	1.9	2.9	39.6
Cash Surplus/(Deficit)*	-0.1	0.0	-4.6	-3.1	-3.3	4.9
Profit and Loss						
NIBIAT +/-	0.0	0.0	-0.7	-0.7	-0.6	-3.8

Disclosure

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

Financing

This investment is being financed with JV funding and shell share of the expenditure will be met by SPDC's own cash flow and/or the existing shareholder loan facility.

US\$46.2 million Shell share

Taxation

No extraordinary tax issues would arise from this proposal.

Key Parameters

• Tank Rehabilitation Work

The key parameters of this proposal, which amounts to US\$53 million Shell share, are as follows:

• Conti	ngency and Social Performance OPEX	US\$6.8 million Shell share	
Initiator:	Bayo Karunwi (PTP/O/NA)		
	Date/		
Supported by	:	Organizational Support:	
Erwin Nijsse	(FUP/O)	Bart Van de Leemput (UPO)	
Date/	<i>/</i>	Date//	

SECTION 2: ATTACHMENT

Attachment 1 - Detailed Project Parameter Data

Project Focal Point / Indicator	James Aigboduwa
DRB: Decision Executive if applicable	Grzeg Kulawski
DRB: Members if applicable	Bayo Karunwi: BOM
	Toyin Olagunju
	Munster Robert

Attachment 2 – Bonny Terminal Tank Rehabilitation Plan



