Internal Investment Proposal

Summary Information

Business unit and Company	The Shell Petrole	um Devel	opmen	t Compan	y (SPDC)										
Group equity interest	100% in SPDC, v	est share.		1				J							
Other Shareholders / partners	Nigerian Nationa (TEPNL): 10%, 1							Vigeria I	Limited						
Business or Function	Exploration & Pr	oduction	(EP)												
Amount	Request for approximation was an orapproved in the US\$58.6 million (verspent previous	on pre s IP, tl	vious IP.	US\$6.6 n	nillion	(Shell s	share) h	ad been						
Project	Rehabilitation of Forcados Terminal Crude Storage and Process Tanks Previously Estimate to Lifecycle This Proposal Total GIP														
Main Commitments	Description Previously Approved $Cost(b)$ Sunk $Cost(b)$ Complete $Cost(b)$ Estimate to $Complete$ Estimate $Cost(b)$ Complete $Cost(b)$ Cost $Cost(b)$ Cos														
	77204				., ., .,	J			Share						
	T201 T202	5.5	10.3	14.1 2.4	14.1 12.7	8.6 12.7	2.6	14.1 12.7	3.8						
	T203		10.5	11.7	11.7	11.7	3.5	11.7	3.5						
	T204	3.9	14.6	3.7	18.3	14.4	4.3	18.3	5.5						
	T205			11.6	11.6	11.6	3.5	11.6	3.5						
	T206	5	5		5	0	0	5	1.5						
	T205 11.6 11.6 11.6 3.5 11.6 T206 5 5 5 0 0 5 T207 13.8 13.8 13.8 4.1 13.8 T208 11.3 11.3 11.3 3.4 11.3 T209 13.9 13.9 13.9 4.2 13.9 T210 3.9 14.1 3 17.1 13.2 4 17.1 Process Tank 101, 102														
	T208		11.3	11.3	3.4	11.3	3.4								
	T209			13.9	13.9	13.9	4.2	13.9	4.2						
		3.9	14.1	3	17.1	13.2	4	17.1	5.1						
	601, 602	15.7	4.7												
	Process Tank 101, 102, 37 157 157 12 36 157														
	PMT (salaries, travels,		1.6	16.3	17.8	17.8	5.3	17.8	5.3						
	logistics etc.)		1.0												
	SCD Contingency			2.2 17.9	2.2 17.9	2.2 17.9	0.7 5.4	2.2 17.9	5.4						
	Total IP value	22	45.5	149.9	195.4	173.4	52	195.4	58.6						
	Total II Value	22	43.3	149.9	175.4	175.4	32	175.4	30.0						
Source and form of financing	This investment expenditure will I facility. Formal J	be met by	SPDC	's own ca	sh flow ar	nd/or t	he exis								
Summary cash flow	Valu	ue Loss due			RV-RT	ation Cas	hflow								
	300 250 200 200 150 150 100 25 50 100 105 105 105 105 105 105 105 105	300 250 250 250 250 250 250 250 2													
	Cuma ma a my again a maig	1	US\$mm F		US\$mm RT	7/10	7								
Summary economics	Base Case (P50) High Case (P90) Low Case (P10) Value Loss	S	NPV	7% (USD ml -11.0 -12.5 -9.8 -37.1	in)	-0.3 -0.3 -0.3 NA	2 2 2								

SECTION 1: MANAGEMENT SUMMARIES

The Proposal (Management Summary)

This investment proposal seeks supplementary approval for US\$52 million Shell share MOD 50/50, (US\$173.4 million 100% JV) for the rehabilitation of Forcados terminal crude storage and process tanks. Out of this, US\$7.1 million Shell Share (US\$23.5 million 100% JV) represents overspend on the previous IP as at July 2016, to cover completion of ongoing rehabilitation works on three crude storage tanks (Tank 202, 204 and 210) that are already out of service and to cater for enlarged scope covering rehabilitation of all crude storage and process tanks in the terminal either already out of service or being kept in service using Risk Based inspection waivers. Overspend as at end December 2015 was US\$5.1 million Shell Share (US\$16.9 million 100% JV). The learning from overspend on the original Investment Proposal has been documented and shared through a BCI in May 2015 when overspend was at \$2.4 million Shell Share, UPO/G approval was received for subsequent overspend to ensure critical work continued to ensure required crude export capability at the Forcados Terminal. The remaining part of this supplementary request is to cater for enlarged scope covering rehabilitation of all tanks in the Terminal.

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.	17.9	5.4
Cost increase due to change in strategy from original scope of partial tank rehab to full rehab	48.3	14.5
New Scope (Tanks 202, 203, 205, 207, 208, 209, 610, 620, 901, 1020)	87.2	26.2
Increase in PMT costs due to new scope and prolongation	20.0	6.0
Total	173.4	52.0

This (reframed) project has the objectives of securing uninterrupted crude export capability from the SPDC JV's western assets and third-party commitments by providing the required tank operating capacity (processing and storage), asset integrity, statutory compliance and ultimately maintain License to Operate (LTO). 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, five are currently in service, four (T202, T204, T205 & T210) are undergoing rehabilitation while one is not being used.

The table below summarises work progress on the tanks.

Tank	Description	Capacity (kbbl)	Remark
Currently undergoing	g rehabilitation (Lo	t 1)	
202, 204, 210	Crude storage	600 each	Project is ongoing. Overall completion status: T202 and T210 (78%), T204 (72%)
201, 205	Crude storage	600 each	Site preparation works about to commence.
206	Crude storage	600	Tank already completed
1020	Diesel storage	6	Work Order awaiting NAPIMS approval.
Next set of tanks to b	e rehabilitated (Lo	t 2)	
203, 207, 208, 209	Crude storage	600 each	
901	Diesel storage	6	
101, 102	Cont. dehydration	185 each	Rehabilitation is required to ensure uninterrupted processing and storage of crude in the terminal.
601, 602	Skim	53 each	ii tie ciiiiiai
610, 620	Fire water	53 each	

Background

The Forcados oil storage and export terminal facilities ("Terminal") have been in operation since 1971. Oil from all the wells operated by SPDC 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 have been 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 as a consequence, the water removal facilities at the 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 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 \$22.05 million (\$6.6 million Shell Share) was considered sound on 30th March 2010. The project scope included the refurbishment of 8 tanks (4 Process and 4 Storage). Strategy was changed from partial rehab to full rehab due to outcome of detailed condition inspection of the tanks. All 18 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. Contract for rehabilitation of all 18 tanks (8 Process and 10 Storage) was awarded in 2012 to three main contractors

SECTION 2: VALUE PROPOSITION AND STRATEGIC AND FINANCIAL CONTEXT

Executing the proposed Forcados 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 (203kbl/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 (1800kbls) that will be added after rehabilitation of the tanks. It will also help reduce potential tank-top situations in the terminal.

Economics

Cost Phasing Table (MOD JV100%) Economics

		Са	рех Сс	st Pha	sing i	ı US\$	mln. N	10D, (50/50	JV 100)%)		
Description	Prior	Prior Overspent	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Total
Tank Rehabilitation works (previous approval)	22.0												22.0
Additional sunk cost (overspent) on previous GIP		16.9											16.9
Sub-Total 1 (sunk cost)	22.0	16.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	38.9
Outstanding works													
Tank Rehabilitation Works			18.3	13.1	17.4	17.4	17.4	17.4	14.8	9.1	7.0	4.4	136.3
SCD			0.3	0.2	0.3	0.3	0.3	0.3	0.2	0.2	0.1	0.1	2.2
Contingency			2.4	1.7	2.3	2.3	2.3	2.3	1.9	1.2	0.9	0.6	17.9
Sub-Total 2 (forward look)	0.0	0.0	21.0	15.0	20.0	20.0	20.0	20.0	17.0	10.5	8.0	5.0	156.5
Total (100% JV)	22.0	16.9	21.0	15.0	20.0	20.0	20.0	20.0	17.0	10.5	8.0	5.0	195.4
Total (Shell Share, 30%)	6.6	5.1	6.3	4.5	6.0	6.0	6.0	6.0	5.1	3.2	2.4	1.5	58.6

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 a 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.
- VaR 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 \$10.2k Shell Share, which leads to loss of \$37.1mln 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		Γ \$/bbl or n btu)	Payout-Time (RT)	Maximum Exposure (RT)		
Cash flow forward from: 1/07/2016	0%	7%	7%	%	0%	7%				
Base Case										
RV	(12.3)	(11.0)	(0.32)	NA	NA	NA	NA	14.2		
Sensitivities (using RV)	-									
High Capex (Prob < 0.90)		(12.5)	(0.32)							
Low CAPEX (Prob < 0.10)		(9.8)	(0.32)							
Life-Cycle Economics		(15.0)	(0.32)	NA						
1 Year Delay		(10.1)	(0.32)							
Value Loss of 1 Year Delay		(37.1)	NA							

Table 2: Key Project Parameters Shell Share

Parameter	Unit	Bus Plan	Low	Mid	High	Comments ²⁾
		(RV)				
Capex (MOD)	US\$ mln	46.3	41.2	46.3	52.3	
Start Up Date		Dec-16	Apr-16	Dec-16	Oct-16	
Production	Mln Boe	NA	NA	NA	NA	
Opex	US\$ mln	0.66	0.60	0.66	0.75	Social Performance (SP) Opex

Chart 1: Value at Risk Cash Flow Plot (Shell Share RV-RT)

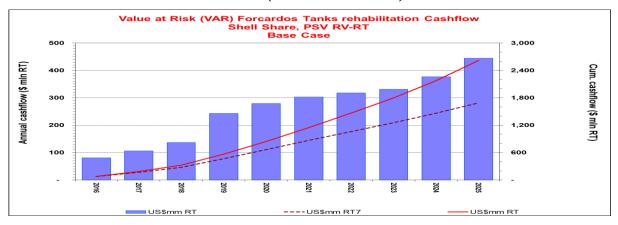
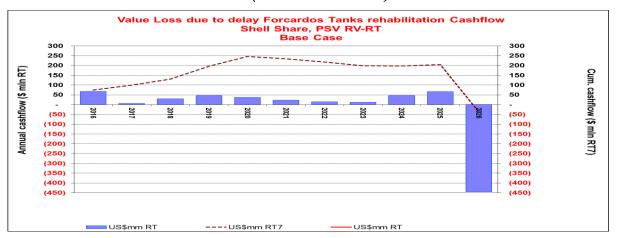


Chart 2: Value Loss Cash Flow Plot (Shell Share RV-RT)



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 West
- 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. Cash-flow impact from delayed payments	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 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.

S/N	Risk Description	Mitigation/Remedial Effort
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.
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 Forcados 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. Ogulagha and Odimodi Communities are being proactively engaged and an FTO was signed before commencement of work activities. The FTO 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 Western Swamp fields, especially with additional production coming from Southern 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:

US\$ mln	2015	2016	2017	2018	2019	2020	Post 2020
Total Commitment	5.0	6.3	3.8	6.0	6.0	6.0	18.2
SCD OPEX	0.0	0.1	0.1	0.1	0.1	0.1	0.3
Pre-FID	0.0	0.0	-0.7	0.0	0.0	0.0	0.0
Cash Flow							
Capital expenditure	5.0	6.2	4.4	5.9	5.9	5.9	17.9
Cash Flow from Operations	0.9	1.9	2.7	3.7	4.7	4.9	25.3
Cash Surplus/(Deficit)*	-4.1	-4.3	-1.7	-2.2	-1.3	-1.0	8.3
Profit and Loss							
NIBIAT +/-	0.2	0.3	0.2	-0.6	-0.6	-0.6	-4.9

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.

Taxation

No extraordinary tax issues would arise from this proposal.

Key Parameters

The key parameters of this supplementary proposal, which amounts to US\$52 million Shell Share are as follows:

• Con	k Rehabilitation Work atingency al Performance OPEX	US\$45.9 million Shell share US\$5.4 million Shell share US\$0.7 million Shell share	
Initiator:	Bayo Karunwi (PTP/	/O/NA)	
Supported b	py:	Supported by:	For Business Approval:
Toyin Olagı (PTP/O/N Date/))	Guy Janssens (FUI/OG) Date/	Markus Droll (UIO/G) 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 – Forcados Terminal Tank Rehabilitation Plan

s/N	Tank	Tank	Сар.	Proposed Compl.		2015			201	6		2017	<u> </u>		20	18		20	19		2020		20	021		202	2		2023			2024		2025	Amou	
3/14	IONK	Descr.	(kbbl)	Date	Q1 Q	2 Q3	Q4	Q1	Q2 Q	3 Q4	Q1	Q2 Q	3 Q4	Q1	Q2	Q3 Q4	Q1	Q2	Q3 Q4	Q1	Q2 Q3	Q4	Q1 Q2	Q3 Q4	Q1	1 Q2	Q3 Q4	Q1	Q2 Q3	Q4	Q1 Q	2 Q3	Q4	Q1 Q2 Q3	_{Q4} (\$ml	in)
1	201	Crude storage	600	Q1-19																															18.3	.7
2	202	Crude storage	600	Q4-16																															13.9	.9
3	203	Crude storage	600	Q2-21																															15.4	.4
4	204	Crude storage	600	Q4-16																															20.	.1
5	205	Crude storage	600	Q3-18																															15.3	.3
6	206	Crude storage	600																																5.0	ა
7	207	Crude storage	600	Q2-21																															18.3	.3
8	208	Crude storage	600	Q2-22																															14.9	.9
9	209	Crude storage	600	Q3-23																															18.3	.3
10	210	Crude storage	600	Q4-16																															18.2	.7
11	101	Cont. dehy.	185	Q2-19																															5.1	1
12	102	Cont. dehy.	185	Q4-20																															7.4	4
13	601	Skim	53	Q2-25																															4.1	1
14	602	Skim	53	Q3-23																															4.1	1
15	610	Fire water	53	Q2-25																															6.3	3
16	620	Fire water	52	Q2-22																					F										4.1	1
17	901	Diesel storage	6	Q4-24																															2.6	6
18	1020	Diesel storage	5	Q2-18																															3.1	1
	ı l		•						Tank	Out	of S	ervice			Tan	k In Se	ervio	е			Tank i	n Ser	vice wi	th RBI		Tanl	: Unde	er Rel	nabilita	ation				Total	195.	i.4

