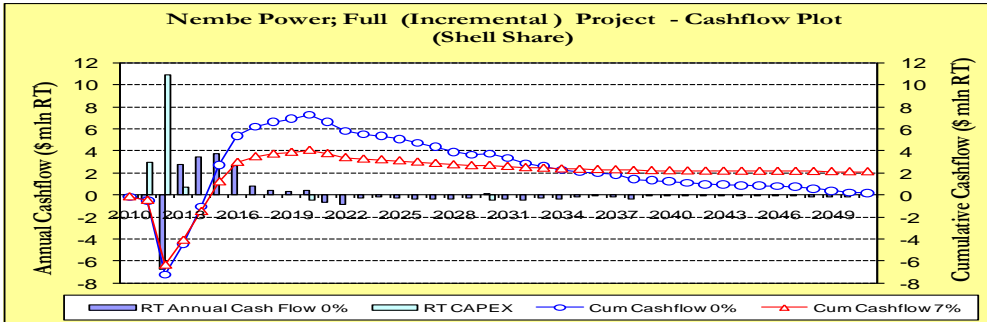


# The Shell Petroleum Development Company of Nigeria Limited

## Internal Investment Proposal

### Summary Information

Directorate	Technical Directorate																																																				
Group equity interest	100% in SPDC, whereas SPDC is the Joint Venture (JV) operator of an unincorporated JV with a 30% interest.																																																				
Other shareholders / partners	Nigerian National Petroleum Corporation -NNPC (55%), Total FinaElf (10%), and Nigerian Agip Oil Company –NAOC- (5%)																																																				
Amount	US\$2.19mln Shell share, MOD, 50/50. (US\$7.31mln JV 100%)																																																				
Project	Nembe Electric Power Interdependency Project Updated Pre-FID IP																																																				
Main commitments	<table><thead><tr><th></th><th colspan="3">(US\$Mln)</th><th></th></tr><tr><th></th><th colspan="3">Shell Share</th><th rowspan="2">JV</th></tr><tr><th></th><th>Previously Approved</th><th>New request</th><th>Total</th></tr></thead><tbody><tr><td>Geomatic Survey of Gas Line route</td><td>0.16</td><td>0</td><td>0.16</td><td>0.53</td></tr><tr><td>Soil Survey</td><td>0.02</td><td>0.09</td><td>0.11</td><td>0.35</td></tr><tr><td>FEED and Detailed Design</td><td>0.40</td><td>0</td><td>0.40</td><td>1.33</td></tr><tr><td>EIA Revalidation/PTS</td><td>0.01</td><td>0.02</td><td>0.03</td><td>0.10</td></tr><tr><td>SITE PREPARATION (sand search/sand filling)/Jetty construction</td><td>0</td><td>1.05</td><td>1.05</td><td>3.50</td></tr><tr><td>Procurement of gas line pipes</td><td>0</td><td>0.45</td><td>0.45</td><td>1.50</td></tr><tr><td><b>Total</b></td><td><b>0.59</b></td><td><b>1.60</b></td><td><b>2.19</b></td><td><b>7.31</b></td></tr></tbody></table>					(US\$Mln)					Shell Share			JV		Previously Approved	New request	Total	Geomatic Survey of Gas Line route	0.16	0	0.16	0.53	Soil Survey	0.02	0.09	0.11	0.35	FEED and Detailed Design	0.40	0	0.40	1.33	EIA Revalidation/PTS	0.01	0.02	0.03	0.10	SITE PREPARATION (sand search/sand filling)/Jetty construction	0	1.05	1.05	3.50	Procurement of gas line pipes	0	0.45	0.45	1.50	<b>Total</b>	<b>0.59</b>	<b>1.60</b>	<b>2.19</b>	<b>7.31</b>
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<b>Total</b>	<b>0.59</b>	<b>1.60</b>	<b>2.19</b>	<b>7.31</b>																																																	
Source and form of financing	This investment will be financed with JV funding and Shell share capital expenditure will be met by SPDC’s own cash flow. Formal JV partners’ approval will therefore be obtained.																																																				
Summary cash flow	<div>Nembe Power; Full (Incremental ) Project - Cashflow Plot (Shell Share)</div> 																																																				
Summary economics	<table><tr><td>At Ranking PSV (\$60/bbl RT10)</td><td>NPV7% (\$m)</td><td>VIR7%</td><td>RTEP (%)</td></tr><tr><td>Base Case Pre-FID</td><td>-0.3</td><td>NA</td><td>NA</td></tr><tr><td>Base Case Full Project</td><td>1.9</td><td>0.01</td><td>NA</td></tr></table>				At Ranking PSV (\$60/bbl RT10)	NPV7% (\$m)	VIR7%	RTEP (%)	Base Case Pre-FID	-0.3	NA	NA	Base Case Full Project	1.9	0.01	NA																																					
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### ***Section 1: The proposal (management summary)***

This proposal seeks management approval of US\$2.19 mln (Shell Share), for funding the activities, which need to be executed prior to Final Investment Decision (FID) currently scheduled for April 2011. This updated pre-FID Investment Proposal is premised on the outcome of the project DRB meeting held on 23<sup>rd</sup> September 2010 Please refer to attachment-1 for *Minutes of the Nembe Electrical Interdependency Project DRB Meeting*. The initially approved pre-FID IP (Attachment II) did not cover the site preparation and gasline procurement workscope.

Currently, the Nembe Creek district is the largest district in the Eastern swamp and consists of the Nembe-1 to 4 and Odeama Creek flowstations. Nembe Creek is currently the single largest producing field in SPDC East. Premised on BP09, the Nembe 1, 2, 3 and 4 flowstations are planned to export an average of 65Mbopd to Bonny Terminal and 38MMscf/d to NLNG. As at 31.12.09, the Nembe fields had undeveloped oil reserves of 724MMstb and undeveloped gas reserves of 1318Bscf (NNS reserves).

Secondly, SPDC has a total of 4nos. diesel power generating sets (2nos. -1000kVA and 2nos. – 800kVA) installed at Ogbolomabiri and Bassambiri. The monthly diesel requirement for the generator sets is 240,000 liters. Currently, SPDC incurs an annual diesel procurement cost of approximately US\$3.9 mln, to ensure the continued operation of the power generating sets. The cost of diesel for power generation is borne by SPDC. Previous instances when SPDC has defaulted in the supply of diesel for the generating sets have resulted in various threats from the communities. Currently, the freedom –to-operate for the Nembe Creek Trunkline replacement works and SPDC operations in the area is under threat.

The Nembe (Ogbolomabiri and Bassambiri) Electrical Interdependency Project is premised on the deployment of gas-driven power generator that will eliminate the need for the diesel generators currently installed in Ogbolomabiri and Bassambiri. The base case option is to lay about 13.7km gas line from SPDC Nembe 4 manifold to the Power Plant, which will be located at the outskirts of Nembe Ogbolomabiri and Bassambiri Communities. Power generated from this Plant will be transmitted to Ogbolomabiri and Bassambiri communities, via a combination of overhead and underground cables and then step down for tie-in to the existing distribution network which would have been upgraded to receive the incoming supply.

The scope of work includes

- ❖ Preliminary works, which includes route and geotechnical Surveys, land acquisition and site preparation (sand filling and shore protection)
- ❖ FEED and Detailed Design for Manifold tie-in, gaslines, Power plant, transmission and Town Distribution Network works
- ❖ Power generation works, which covers the procurement, installation and commissioning of 4Nos. 2.6MW Gas generators and ancillaries, 11kV switchgear, auxiliary transformer, gas handling facilities, Electric pylons.
- ❖ Construction of generator house, switchgear, control and utility buildings, jetty, access roads and walkways
- ❖ Procurement, coating and Installation of the gas line, including securing and clearing of the gasline right-of-way
- ❖ Piled extension at the manifold for tie in of the 6” gas line and procurement, installation and commissioning of pig launcher and receivers.
- ❖ Upgrading of Ogbolomabiri and Bassambiri Town Distribution Network

- ❖ Construction of the River crossing Electric towers and installation and commissioning of transmission lines.

The cost phasing 100% JV, for the full project is detailed below:

**Table 2: Project Cost Phasing (100% JV)**

		Prior	2009	2010	2011	2012	2013	Total
<b>OPEX \$mIn (100%)</b>	Pre-FID			3.3				<b>3.3</b>
<b>CAPEX \$mIn (100%)</b>	Post FID	0.0			9.91	42.09	2.5	<b>50.5</b>
	<b>Total</b>	<b>0.0</b>	<b>0.0</b>	<b>3.3</b>	<b>9.91</b>	<b>42.09</b>	<b>2.5</b>	<b>57.8</b>

The 2011 budget is included in the SPDC business plan and has been recommended for funding by the JV Partners' lower Committee (Devcom). It is expected that the project will be funded as part of the SPDC base case budget.

## ***Section 2: Value proposition and strategic and financial context***

This proposal is consistent with the strategy and objectives of SPDC, which is to reduce deferment due to the 3<sup>rd</sup> party shutdown, by creating an interdependent “umbilical” relationship between the Nembe flowstations and the main host communities. The project is consistent with the SPDC Business plan and a Step-out approval, from SPDC Community Electrical Interdependency Policy has been obtained to progress this project. The project will add value to the business in form of reduction in the disruption of production at Nembe-1, 2, 3 and 4 flowstations. Additionally, the project will result in a reduction in OPEX, premised on eliminating the need for diesel utilisation by community generators.

### **Summary Economics**

The base economics for this pre-FID IP was evaluated on a forward-looking and cost only basis. The full value of the project would only be achieved on full project execution post-FID.

The pre-FID cost has been treated as OPEX.

The full project scope was evaluated on a forward-look basis using 50/50 MOD (level 3) cost estimates and the incremental (acceleration) production forecast gained from improvements in 3<sup>rd</sup> party deferment on BP10 corporate production forecast for the Nembe Node

The ‘*opportunity*’<sup>1</sup> value of the gas (3MMscf/d) that will be utilized by the electrical interdependency project was treated as a cost to the project, while the savings on diesel (\$3.9mIn/annum) as well as 4MW diesel generator replacement (\$1.7mIn RT10 in 2020 and 2030 respectively) was credited to the project.

The incremental value of the project was evaluated as the difference between the: -

1. NFA production with a 33% improvement on 3<sup>rd</sup> party deferment, ARPR OPEX net-of the annual diesel cost, the ‘*opportunity*’ value of the fuel gas treated as additional OPEX. And the facility cost was treated as Oil infrastructure<sup>2</sup> cost
2. BP10 NFA production forecast without an improvement in 3<sup>rd</sup> party deferment and ARPR OPEX (assumed to already include the cost of diesel provided to the Nembe communities annually to enable LTO) for Nembe FS.

<sup>1</sup> The gas will be taken from AG in the node that is usually sold to NLNG T1-6; the fuel gas cost was computed as the value of the fuel gas - if it were sold to NLNG under the T1-6 supply contract.

<sup>2</sup> All Facilities assumed to be owned by SPDC

The results for the full project base case (as described above) and sensitivities are presented in table 4.

**Table 3: Economics Grid –Pre FID**

PV Reference Date: 1/7/2010	NPV (\$/S \$ mln)		VIR	RTEP	UTC (RT \$/boe)		Payout-Time (yyyy)	Maximum Exposure \$mln (RT)
Cash flow forward from: 1/1/2010	0%	7%	7%	%	0%	7%		AT
<b>OPEX View</b>								
SV-RT (\$50/bbl & \$1.37/Mscf RT10)	-0.3	-0.3	N/A					
RV-RT (\$60/bbl & \$1.63/Mscf RT10)	-0.3	-0.3	N/A	N/A	N/A	N/A	N/A	0.3 (2010)
HV-RT (\$80/bbl & \$2.15/Mscf RT10)	-0.3	-0.3	N/A					
BEP (\$/bbl)					N/A	N/A		
<b>Sensitivities</b>								
CAPEX View	-0.3	-0.5	-0.25					

**Key Project Parameter Data (Shell Share)**

Parameter	Unit	BP10	Low	Mid	High	Comments
CAPEX (MOD)	US\$ mln	1.55	-	-	-	BP10 captures the Pre-FID spend for 2010 as CAPEX
OPEX (MOD)	US\$ mln	0	0	2.19	0.0	Pre-FID spend treated as OPEX Per finance recommendation
Sales Volume	mln boe	N/A	0.0	0.0	0.0	
Start Up Date	mm-yy	N/A	NA	NA	NA	

**Table 4: Economics Grid – Full Project**

PV Reference Date: 1/7/2010	NPV (\$/S \$ mln)		VIR	RTEP	UTC (RT \$/boe)		Payout-Time (yyyy)	Maximum Exposure \$Mln (RT)
Cash flow forward from: 1/1/2010	0%	7%	7%	%	0%	7%		AT
<b>Base Case*</b>								
SV-RT (\$50/bbl & \$1.37/Mscf RT10)	-0.4	0.8	-0.02					
RV-RT (\$60/bbl & \$1.68/Mscf RT10)	0.2	1.9	0.01		3.1	11.1	2015	7.9 (2012)
HV-RT (\$80/bbl & \$2.15/Mscf RT10)	1.2	4.0	0.08					
BEP (\$/bbl)								
<b>Sensitivities (using RV-RT)</b>								
NFA with Nembe Power Project	247.0	154.9	15.65				2010	0.1 (2010)
NFA without Nembe Power Project	246.9	153.1	0.00				2010	0.14 (2010)
High Capex (+40%)*	-0.9	0.4	-0.04				2015	12.5 (2012)

*\*This represents the value difference between NFA with Power Project and NFA without the Power Project*

### **Economics Assumptions**

- Oil taxed at PPT.
- Gas taxed under CITA with Associated Gas Framework Agreement (AGFA) incentive
- 31/12/2009 ARPR (Annual Review of Petroleum Resources) OPEX for Nembe 1-4 flow stations was used and SPDC Generic OPEX was used for new facilities.
  - SPDC generic OPEX assumptions:
    - Oil fixed OPEX of 3% of cum. oil CAPEX respectively
- NDDC levy of 3% total expenditure.
- Education tax of 2% assessable profit.
- GHV of 1150btu/scf
- Abandonment cost is estimated at 10% of total project RT CAPEX

### Section 3: Risks, opportunities and alternatives

S/No.	Risk	Risk Description	Mitigation /Remedial Effort
1	<b>Commercial / Cost</b>	Reduced Budget funding caused by inadequate funding from the JV	Project is in SPDC Base Plan under SODA team. If there is reduction in budget from the JV, additional fund required will be sought during BCC alignment.
		Financial incapability of the Contractor	Ensure proper milestone payment breakdown that will align with the Project Execution plan thereby providing for adequate remuneration of actual work down by the Contractor
2	<b>Technical</b>	Poor interface management between activity executors	All required interfaces based on the contracting strategy and Execution plan will be identified and collated in the interface plan to ensure proper implementation
		Inability to run the O & M contract and eventually exit from Operations / Improper Operation and Maintenance of the Plant after handling over to Community person	The Community Utility Committee will be integrated from the construction stage to ensure exit from the O & M contract and also there will be provision in the O & M contract to extend the contract for another 1 year
3	<b>Schedule</b>	Late Delivery of Equipment	Ensure that FEED deliverables are adequate to place order for LL items and that EPC Contract is awarded on time so that LLIs are ordered has scheduled
4	<b>Stakeholder</b>	Potential conflict between the two Host Communities over location of Power Plant and work sharing	The two Host Communities had been engaged and continue engagement is planned throughout the life of the Project. Sharing formula for available work allocation will be agreed up front amongst the two Host Communities and Government and this shall apply to works that are common to the two Communities
5	<b>Health, Safety, Security and Environment</b>	HSE Hazards during mobilization and construction	Specific Project HSE Management Plan will be developed in line with SPDC's HSE Contractor HSE Management (EP2005-0110-ST) Also learning learnt from recent Projects will be applied in managing HSE risk to ALARP.
		Improper handling and theft of condensate	An ALARP workshop was held and to mitigate against theft of condensate, an atomizer was suggested to process the condensate for re-use as fuel gas for the gas engines. This will be further define during FEED
		Renewed arm struggle in	Project security plan will be developed in

		the Niger Delta/ Security of life and Asset of Company/ Contractor	line with SPDC security policy and Project will strictly adhere to SODA team security arrangements and journey management

### **Alternatives Considered**

- (i) **Option 2A:** Gas Engines located adjacent to Nembe-4 manifold and overhead lines used for transmitting power to Nembe-Ogbolomabiri and Bassambiri.
- (ii) **Option 2B:** Gas Turbines located adjacent to Nembe-4 manifold and overhead lines used for transmitting power to Nembe-Ogbolomabiri and Bassambiri.
- (iii) **Option 3A:** Gas Engines located adjacent to Nembe-4 manifold and sub-marine cable used for transmitting power to Nembe-Ogbolomabiri and Bassambiri.
- (iv) **Option 3B:** Gas Turbines located adjacent to Nembe-4 manifold and sub-marine cable used for transmitting power to Nembe-Ogbolomabiri and Bassambiri.

The Concept Selection Decision process involved evaluating each option against a screening criteria developed at the concept selection workshop. Based on the criteria, the option- Utilise Gas Engines (9MW) installed in a remote location at the outskirts of Nembe-communities and installation of a gas line from Nembe-4 manifold- was selected, as being within the confines of being the most cost effective and standard solution that can be quickly deployed to meet the aspirations of the host communities, thereby sustaining the SPDC license-to-operate for the area. Locating the facility adjacent to the Nembe-4 manifold would require extensive piling work in order to install the overhead transmission lines, or extensive mobilisation to install submarine cables within navigable water ways. Either of these two options involves very high installation and operating risks and considerable OPEX

### ***Section 4: Corporate structure, and governance***

The existing corporate structure and arrangement of SPDC-JV with SPDC as operator will be used. A Decision Review Board approved for the SPDC Electrical Interdependency Project will govern the project. The Opportunity Realisation Process will be implemented for the project.

### ***Section 5: Functional Support and consistency with Group and Business Standards***

This proposal complies with the Group Business principles, policies and standards. In order to progress the project through the ORP process relevant functional input and support will be sought to ensure seamless execution, this includes discipline teams, SCM, Finance, Social performance and Community Affairs, HSE, Legal, and Treasury.

### ***Section 6: Project management, monitoring and review***

The Nembe Electrical Interdependence team, from SPDC Major Projects has been mobilised for project execution. The Project Manager is on seat and has assumed full responsibility for this project after DRB-2/3. The project team has been constituted and resources is from the SODA/Domgas team which will include a project service group consisting of Contracting and Procurement (SCM), discipline team, Accounting, Information Management, Cost, Planning and QA/QC.

### ***Section 7: Budget provision***

The approved budget for 2011 is F\$9.9mln, the balance budget requirement for this expenditure will be provided for in the JV programme budgets for 2012 and 2013.



### ***Section 8: Group financial reporting impact***

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

US\$ mln	2010	2011	2012	2013	2014	2015
<b>Total Commitment</b>	2.19					
<b>Cash Flow</b>						
SCD Expenditure						
Commitment OPEX	2.19					
Capital Expenditure						
Independent OPEX	0.07					
Cash flow From Operations	(0.96)	0.62				
Cash Surplus/(Deficit)	(0.96)	0.62				
<b>Profit and Loss</b>						
NIBIAT +/-	(0.33)					
<b>Balance Sheet</b>						
Avg Capital Employed	0.31	0.31				

### ***Section 9: Disclosure***

Disclosures if any will be done in line with the Shell Group and SPDC Disclosure policies and guidelines.

### ***Section 10: Financing***

The base case assumption is that SPDC will fund the project. After the deployment of the Interdependency project, SPDC will also fund the operations and maintenance of the facility. However, the option of surcharging a stipulated tariff for power consumption, beyond a certain consumption threshold is also being considered. The tariff structure will be implemented and reviewed by the Nembe Utility Board. This tariff structure if implemented will help SPDC reduce the annual operations and maintenance cost of the Power project.

### ***Section 11: Taxation***

The Operating and Capital expenditures are tax deductible at the statutory rate of 85% under the Petroleum Profit Tax Act-2004. Fiscal depreciation in respect of the capital expenditure is given over 5 year's straight line with 1% retention in the fifth year. In addition, a one-off investment allowance of 5% is claimable on capital expenditure.

### ***Section 12: Key Parameters***

This investment proposal seeks approval of an additional \$1.6mln Shell share, MOD,, to bring the total approval for the Pre-FID activities on Nembe electric power interdependency project to S2.19mln .

### ***Section 13: Signatures***

This Proposal is submitted to EPG-TP for organisational approval

*Supported by:*

-----

*Okunade, M.O.*

*FUI/FB*

*Date: .../.../...*

*Approved by:*

-----

*Birch, Andrew*

*UIG/T/P*

*Date: ..../.../....*

*Initiator:*

\_\_\_\_\_

*Gbole-Wikina, Ema*

*UIG/T/PD*

*Date .../..../....*



**2010-09 DRB**  
**minutes 23sept2010**

| Attachment I



**IP Nembe Electric**  
**Power Project - Pre-F**

Attachment II