

The Shell Petroleum Development Company of Nigeria Limited

Internal Investment Proposal

Summary Information

Directorate	Finance 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	Nigeria National Petroleum Company (NNPC: 55%), Total: 10%, Nigeria Agip Oil Company (NAOC: 5%) in SPDC-JV			
Amount	US\$1.23 million Shell share, MOD, 50/50 (US\$ 4.11 million MOD 100% JV).			
Project	Process Control Domain (PCD) IT Security Project (from 2011 to 2012)			
Main commitments				
		US\$ MLN		
	Description	100% JV	Shell Share	
	CAPEX			
	Purchase of hardware /software	2.03	0.61	
	PM + Installation Charges	1.99	0.59	
	SCD	0.09	0.03	
	Total	4.11	1.23	
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	Cost only Project. Cash Flow chart not applicable.			
Summary economics	Summary economics*	NPV (USD mln)	RTEP (%)	VIR7%
	Base Case	-0.3	NA	-0.26

Section 1: The Proposal

Management Summary:

This proposal seeks support for the investment of US\$1.23mln (Shell Share) for the remediation of identified IT Security gaps within all UIG process control domain (PCD) located in 38 field facilities.

The objective of the PCD IT Security project is to implement an enterprise world class IT Security standard in the PCDs that protects the facility from virus or malicious attacks. This requirement is driven by the impact of recent virus outbreak in at least 3 PCDs in Nigeria and a consequent audit that shows that the existing security implementation is not sufficient to protect production control systems.

The 2011 scope will implement and operate Virus Protection, Network Fortification, Intrusion Detection and Monitoring systems for five (5) PCDS – Bonga, SOKU, Bonny, Gbaran-Ubie and Totou (Gamba) with Access and removable media controls will be implemented in addition to these facilities and the remaining 33 PCDs to be completed secured within 2012

A summary of the PCDs where initial security will be implemented, operated and ready for assurance verifications during the life of the project 2011-2012 is shown in table 1 below.

Table 1: Proposed facilities PCDs in scope are listed in table below –

S/N	Assets	S/N		S/N	Assets
1	Afam PP	14	EA Sea Eagle FPSO	27	Nun River FS
2	Afremo A FS	15	Escravos F/S	28	Obigbo AGG
3	Afremo B FS	16	Estuary FS	29	Okoloma NAG
4	Agbada 2 AGG	17	Forcado	30	Opukushi F/S
5	Agbada 2 FS	18	Forcado CLP	31	Rabi (Gabon)
6	Alakiri GP	19	Gbaran Ubie	32	Rumuekpe
7	Awoba GP	20	Imo River 1 FS	33	SOKU GP
8	Benisede F/S	21	Imo River 2 FS	34	South Bank FS
9	Bonga (SNEPCo)	22	Imo River 3 FS	35	Totou (Gabon)
10	Bonny NAG	23	Imo-AGG	36	Toucan (Gabon)
11	Bonny Terminal	24	Isimiri FS	37	Tunu F/S
12	Cawthorne Ch GP	25	Koula (Gabon)	38	Yokri FS
13	Diebu Creek FS	26	North bank FS		

Benefits to be derived include:

- Production facility will become safer from both internal and external cyber crimes and virus attacks
- Increased production resulting from the offload of IT Security operations from production staff who need to focus on core tasks of optimizing production process
- Field staff will become more aware of IT Security and better appreciate role in mitigating threats and risks facing producing assets.
- Incidents within the process control domain can be reported to and managed by a dedicated responsible operations team.
- Verifiable and sustainable compliance with Enterprise Security Standard.

- Secure PCD will contribute to the required reputational and confidence assurance as well as business continuity that ensure that global energy demands are met.

The investment will be spread over two years, 2011 – 2012. The cost expenditure is shown in table 2 below:

Table 2: Phased expenditure table (MOD 100% JV)

Description	2011	2012	Total
Hardware purchase	0.99	1.04	2.03
PM + Installation charges	0.79	1.20	1.99
SCD	0.01	0.08	0.09
Total	1.79	2.32	4.11

Budget was not captured in the BP10 plan but due to the security exposure this presents to shell's valuable production assets, a decision was taken in Shell to accommodate this within the budget boundaries already marked for 2011. The JV stakeholder has been informed of this critical need and their approval is required to fully implement 2011 plan and beyond.

Approval for the 2012 Budget will be obtained during the BP11 process.

Section 2: Value proposition and strategic and financial context

Successful virus or malicious hacker attack within the process control domain can result in loss of control of the production plant. A loss of control may well mean inability to accurately determine hydrocarbon production and sale or risks and vulnerability in a field asset that require urgent attention. These can impact on production, safety of people and the environment as well as loss of profit or loss of an entire production facility.

At least one million viruses and malwares are produced each year. Tools and skill set for malicious Intrusion into a network are easy to acquire. These realities exist at a time when global energy demand is very high and the production facilities must operate optimally to meet the demands safely. The PCD IT security project is the initial response to this and at the core of ensuring that the security of the PCDs is taken very seriously and the control and safeguarding of the PCD is not compromised from internal and external sources.

Summary Economics

The process control domain (PCD) project was evaluated as a Non-Oil and Gas Infrastructure (NOGI) project using the 50/50 level III cost estimates.

Sensitivities were carried out on the project cost to show the impact of low and high CAPEX, 1 Year cost schedule delay and 1.5% cost mark up due to BVA (benchmarked verified and approved) issues. The details are shown in table 3 below.

Table 3: Economics Grid (Shell Share)

PV Reference Date: 1/7/2011	NPV (\$/\$ \$ mln)		VIR	RTEP	UTC (RT \$/boe)		Payout- Time (RT)	Maximum Exposure (RT)
Cash flow forward from: 1/1/2011	0%	7%	7%	%	0%	7%	yyyy	mln
Base Case								
RV-RT (\$70/bbl RT11)*	-0.2	-0.3	-0.26	NA	NA	NA	NA	US\$ 1.03 mln (2012)
Sensitivities (on base case)								
Low Capex (-10%)		-0.2	-0.26					US\$ 0.93 mln (2012)
High Capex (+15%)		-0.4	-0.27					US\$ 1.18 mln (2012)
1 Year Schedule delay		-0.3	-0.26					US\$ 1.03 mln (2013)
1.5% FID cost mark up due to BVA issues		-0.4	-0.30					

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

Key Projects Parameter Data Ranges (Shell Share)

	Unit	Bus Plan BP10	Low	Mid	High	Comments
Capex (MOD)	US\$ mln	NA	1.09	1.21	1.39	No provision in BP10. Approved in principle in BP11 work plan.
Opex (MOD)	US\$ mln	NA	0.02	0.02	0.02	SCD
Production volume	Mmboe	NA	NA	NA	NA	
On-stream Date	mm/yyyy	Jan-12	NA	Jan-12	NA	

Economics Assumptions

- Full project 50/50 cost estimates treated as CAPEX
- 2% of MOD Capex expenditure treated as SCD.
- 10% of total project RT CAPEX treated as abandonment cost.
- Infrastructure life span of 5 Years.
- NDCC levy 3% of total expenditure.

Section 3: Risks, opportunities and alternatives

Risks & Opportunities

Risk	Potential Consequence	Impact / Likelihood	Mitigation
a) Delay in budget approval and release	Delayed start and end of project implementation	High/Medium	- Provide information to aid decision making. - Determine costs, plan contract and procurement conclusively. - Place procurement in fast track once budget is approved
b) Resistance to change	Limited cooperation by asset teams. Lack of support for critical activities	High/Medium	- Hold workshops/awareness sessions on project goal and deliverables. - Production LT will be made champions of project work. - Share risk matrix with all stakeholders
c) Perception of Project as IT project by the asset team	Asset staff will not be committed to assigned project tasks	Medium/Medium	- Identify and assign asset staff to project - Make tasks part of staff GPA - hold regular reviews of milestones/pending tasks

Risk	Potential Consequence	Impact / Likelihood	Mitigation
d) Delay in procurement of key remediation equipment	Overall project completion date will be delayed since this is a key dependency.	High/Medium	<ul style="list-style-type: none"> - Initiate process and issue PO to contractor early each year. - Commit contractor to realistic delivery timeline. - establish strong communication relationship with the contractor
e) Control computers are old and need to be refreshed	Available security software may not run on older systems	Medium/High	<ul style="list-style-type: none"> - Raise awareness of the situation and suggest a refresh strategy similar to the office GI-D systems. - Engage Production Leadership on solution.
f) Insufficient clarity of roles/responsibilities in PCD operations	Delay in implementations and project completion	High/High	<ul style="list-style-type: none"> - Hold workshops with all known stakeholders and clarify
g) Lack of As built logical/physical drawings for PCD networks	Network remediation will be delayed because the drawings have to be re-produced from existing infrastructure	High/High	<ul style="list-style-type: none"> - Start early to identify all facilities with no drawing. - Plan required logistics for site visitations and OEM/vendor consultation. - Include task of tracing cables and devices into project work. - Make budget provision for this piece of work
h) Incidents due to change implementations within the PCD	Loss of control of plant leading to emergency shutdown(ESD) and loss of profit	High/Low	<ul style="list-style-type: none"> - Ensure work is captured in IAP - Use the MOC process for all tasks. - All changes within the PCD must be risk assessed
i) Limited number of staff assigned to project and lack of required skill in UIG	Slip in planned project completion timeline.	Medium/Medium	<ul style="list-style-type: none"> - Continue to make case for Adhoc resources to join project. - On board temp/Adhoc staff early for routine work - Equip Core project staff to deliver at optimum
j) Do Nothing	High risk of successful loss of control can harm staff, the environment and the bottom line profit of the company	High/Low	<ul style="list-style-type: none"> - Accommodate project in 2011 budget - Treat as a strong HSE position that support 'Goal Zero' -

- **Funding:** Project implementation would depend hugely on the following:
 - JV partner approval and funding of 2011 plan
 - Protected funding for 2012 plan and overall cost estimate of \$4.11M for 2 years.

- Project is not part of 2010 BP and considering the importance as must do, the OUs will realign 2011 budgets to accommodate this.
- This is an opportunity to acquire new skills and develop required competences in an area quite new to the IT Function. However project delivery and post-project operations support will seriously be impacted if this exposure lacks leadership support and funding.

Section 4: Corporate structure, and governance

A Project Manager will lead the project and report to BIM Programme Manager (who will also double as the project assurance manager). The project would have a steering committee to provide project governance. The project steering committee would be chaired by the IT Business Infrastructure Manager (project Sponsor) and would Production Leadership representative as key stake holders from the business as member. The project manager would run the day to day affairs of the project along with 6 staff nominated as Control Systems-IT. Other part time resources may be called in on part time basis from time to time as may be required during the life time of the project especially nominated Control Systems Engineers (CSEs) and Production IT Support staff in the field.

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

Functional Support (HSE, IT, and production) and Sign-off have been obtained from relevant functions and recorded in the proposal document.

Section 6: Project management, monitoring and review

The project will be executed in line with the 'IT Project Delivery Framework (PDF)'. 'Sign offs at the relevant stage gates by all stakeholders would be obtained as part of the project management framework.

Section 7: Budget provision

Budget for the 2011 scope of the project was not included in the SPDC BP10 submission for 2011. However considering the criticality of this project and the risk of inaction, it has been agreed that IT will accommodate this project with the 2011 approved work plan after a formal engagement is held with JV stakeholder and support obtained. The JV stakeholder engagement has been initiated.

Section 8: Group financial reporting impact

The financial impact of this proposal on Shell Group Financials is as indicated in the table below

US\$ Million	2011	2012	2013	2014	2015	Post 2015
Total Commitment	0.54	0.69				
Cash Flow						
SCD Expenditure	0.01	0.01				
Capital Expenditure	0.53	0.68				
Operating Expenditure	0.02	0.02				
Cash flow From Operations	0.01	0.15	0.16			
Cash Surplus/(Deficit)	(0.52)	(0.53)	0.16			
Profit and Loss						
NIBIAT +/-	0.02	0.03				
Balance Sheet						
Avg Capital Employed	0.27	0.82	1.02	0.95	0.95	0.95

Section 9: Disclosure

Disclosure if required will be done in line with existing Group and SPDC policies and guidelines.

Section 10: Financing

The investment will be financed with JV funding and shell share capital & operating expenditure will be met by SPDC's own cash flow.

Section 11: Taxation

The PCD IT security project shall have appropriate tax treatment in line with statutory requirements.

Section 12: Key Parameters

This investment proposal seeks approval for US\$ 1.23 mln (Shell Share) for the Process Control Domain (PCD) IT security project.

Section 13: Signatures

This Proposal is submitted to SPDC Manager for approval.

Supported by:

For Business approval:

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Shitta-Bey, Babajide O
SNEPCO-FUI/FP

James Stark
UIG/P/NR

Date / /

Date / /

Initiator:

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Nduagwuike, SK K
SPDC-ITUI/IF

Date / /

APPENDIX-

Budget Summary (MOD 100% JV)

Description	Year 2011			Year 2012			
	SPDC	SNEPCo	Gabon	SPDC	SNEPCo	Gabon	Total
Hardware purchase	806,481	83,998	100,000	833,003	57,812	147,268	2,028,561
PM + Installation charges	631,784	63,841	96,897	971,035	87,544	140,657	1,991,758
SCD	6,500	2,500	8,000	67,100	1,500	8,000	93,600
TOTAL	1,444,765	150,338	204,897	1,871,137	146,856	295,925	4,113,919