

# The Shell Petroleum Development Company of Nigeria Limited

## Internal Investment Proposal

### Summary Information

Business Unit Company	The Shell Petroleum Development Company of Nigeria Limited																																																																						
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%; TotalFinaElf (10%); and Nigeria Agip Oil Company (NAOC) 5%.																																																																						
Business or Function	Upstream International																																																																						
Amount	\$13.99mln (Shell Share, 50/50, MOD) is to be approved in this proposal, of which \$13.64mln is CAPEX and \$0.35mln is SCD OPEX.																																																																						
Project	ROCI- Computer Assisted Operations (CAO)/Supervisory Control and Data Acquisition (SCADA) Upgrade and Vandalised Facilities rebuild Project																																																																						
Main commitments	<table border="1"> <thead> <tr> <th></th><th>Activity</th><th colspan="6">Cost Estimates (F\$M)</th></tr> <tr> <th></th><th></th><th>2010</th><th>2011</th><th>2012</th><th>2013</th><th>Total</th><th>Shell Share</th></tr> </thead> <tbody> <tr> <td>1</td><td>Upgrade of existing installation</td><td>6.19</td><td>7.99</td><td>10.63</td><td>6.28</td><td>31.09</td><td>9.33</td></tr> <tr> <td>2</td><td>Rebuilding of vandalized facilities</td><td>-</td><td>-</td><td>4.38</td><td>2.59</td><td>6.97</td><td>2.09</td></tr> <tr> <td>3</td><td>SPDC Project Management &amp; Security Costs</td><td>0.77</td><td>1.55</td><td>1.65</td><td>0.79</td><td>4.76</td><td>1.43</td></tr> <tr> <td>4</td><td>Build Up to Operations</td><td>0.96</td><td>0.93</td><td>0.67</td><td>0.10</td><td>2.66</td><td>0.80</td></tr> <tr> <td>5</td><td>SCD 2.5% of Total CAPEX</td><td>0.19</td><td>0.37</td><td>0.40</td><td>0.19</td><td>1.15</td><td>0.35</td></tr> <tr> <td></td><td><b>TOTAL</b></td><td><b>8.11</b></td><td><b>10.84</b></td><td><b>17.73</b></td><td><b>9.95</b></td><td><b>46.63</b></td><td><b>13.99</b></td></tr> </tbody> </table>								Activity	Cost Estimates (F\$M)								2010	2011	2012	2013	Total	Shell Share	1	Upgrade of existing installation	6.19	7.99	10.63	6.28	31.09	9.33	2	Rebuilding of vandalized facilities	-	-	4.38	2.59	6.97	2.09	3	SPDC Project Management & Security Costs	0.77	1.55	1.65	0.79	4.76	1.43	4	Build Up to Operations	0.96	0.93	0.67	0.10	2.66	0.80	5	SCD 2.5% of Total CAPEX	0.19	0.37	0.40	0.19	1.15	0.35		<b>TOTAL</b>	<b>8.11</b>	<b>10.84</b>	<b>17.73</b>	<b>9.95</b>	<b>46.63</b>	<b>13.99</b>
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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	N/A																																																																						
Summary economics	The project returns an NPV 7% -\$3.4 mln (Shell share) and VIR 7% -0.29 with an associated maximum exposure of \$9.14mln in 2013																																																																						

### ***Section 1: The Proposal (Management Summary)***

This investment proposal seeks management approval for CAPEX of US\$13.64Mln Shell Share (US\$46.63Mln 100% JV) to upgrade, standardise and enhance existing obsolete computer assisted operations (CAO)/supervisory control and data acquisition (SCADA) infrastructure. This will be achieved by;

- Upgrade of existing Remote Operations Controllers(ROC), DCS, field devices to a more reliable and updated version (Obsolescence management)
- Rebuilding of the vandalized station with more reliable and updated equipment
- Fixing of other basic problems by restoring CAO/SCADA infrastructure which includes all Distributed Control System (DCS), associated communications system and portable power in all Remote Operations Capability Implementation (ROCI) facilities-(Opportunity).

The implementations of CAO enabling hardware in 80 SPDC facilities have delivered positive gains on the way we operate our facilities. This has encouraged increased business reliance on these systems for critical activities such as Gas lift, well Testing, Remote production monitoring, etc.

The ability of the CAO/SCADA systems implementation to continue to deliver intended business gains is being challenged by various problems. Consequently, the non-availability or sub-optimal performance of CAO/SCADA services hinders the derivation of the intended benefits of these facilities for which the company has already invested huge sums of money and above all impacts negatively on the production optimization activities and invariably the bottom line.

Some of the current problems with the CAO/SCADA systems include;

- Equipment obsolesce (hardware and software of DCS and ROC)
- Vandalised and neglected systems
- Data Acquisition and Control Architecture (DACA) implementation and compliance issues
- Power failure, IT infrastructure availability, system stability and support
- Data quality and Integrity

These CAO/SCADA systems form the foundation for remote operations and real time systems capabilities. Addressing the above enumerated issues will help improve operational efficiency and HSE records by reducing exposure occasioned by frequent visits to operation's remote location facilities, while at the same time making information required for management decision on production optimization available in real time.

Sustaining the gains above requires robust CAO/SCADA infrastructure that will be more reliable and not obsolete, compliant with the DACA requirements and have required OEM support. Thus, there is an urgent need to upgrade all existing obsolete CAO/SCADA systems, restore faulty installations and revamp vandalized facilities. The successful completion of this project will ensure that quality and reliable production information are communicated to the point of use securely and in real time.

### Project Description

This project is an infrastructure obsolescence management project being executed by the production support function intended to rebuild existing CAO/SCADA DCS, RTUs, Field devices and other ancillary devices. The performance of these facilities degraded over time due to equipment aging, Obsolescence and disuse resulting from close down of facilities on security reasons or in some cases complete vandalized of facilities. The manufacturers of this equipment have long stopped providing support for them making it impossible to source spares to continue to sustain them.

This project will refresh existing CAO/SCADA assets by replacing the obsolete and degraded systems with Enhanced and updated equivalent. There will be no requirement for re-design as the original design will be used. The table below provides a brief summary of the work activities planned by district with the affected fields shown. The timeline for the project is 2010 to 2013.

**Table 1: Project Activity by District**

<b>SN</b>	<b>District</b>	<b>Facilities (2010)</b>	<b>Activities</b>	<b>Cost (\$mln)</b>	<b>Planned Yr of ex</b>
<b>Eastern Operations</b>					
1	PH1	Obigbo, Agbada, Umuechem	Power Upgrade, Climate conditioning air revamp, PCD Telecoms upgrade, ROC upgrade, DCS upgrade, Water Cut meter Upgrade, Instrument Air compressor package installation, Field Instruments Upgrade installation	4.28	2010,2013
2	PH2	Imo, Isimiri, Nkali	Power Upgrade, Climate conditioning air revamp, PCD Telecoms upgrade, ROC upgrade, DCS upgrade, Water Cut meter Upgrade, Field Instruments Upgrade installation	4.25	2010, 2013(2)
3	EGBEMA	Ahia, Egbema, Rumuekpe	Power Upgrade, Climate conditioning air revamp, PCD Telecoms upgrade, ROC upgrade, DCS upgrade, Water Cut meter Upgrade, Field Instruments Upgrade installation	2.24	2011
4	KOLOCR EEK	Adibawa, Etelebu, Diebu creek, Nun-River	Power Upgrade, Climate conditioning air revamp, PCD Telecoms upgrade, ROC upgrade, DCS upgrade, Water Cut meter Upgrade, Instrument Air compressor package installation, Field Instruments Upgrade installation	1.90	2011
5	SOKU	Alakiri, Etelebu	ROC upgrade, Field Instruments Upgrade installation	0.85	2011
6	CAWC	Bonny, Awoba, Krakama, CawC	Power Upgrade, Climate conditioning air revamp, ROC upgrade,	2.63	2011
7	NEMC	Nembe, Odeama	Power Upgrade, Climate conditioning air revamp, PCD Telecoms upgrade, ROC upgrade, DCS upgrade, Water Cut meter Upgrade, Instrument Air compressor package installation, Field Instruments Upgrade installation	4.16	2012
8	EKL	Ekulama, Belema	Power Upgrade, Climate conditioning air revamp, PCD Telecoms upgrade, DCS upgrade, Water Cut meter Upgrade, Field	1.64	2012

<u>SN</u>	<u>District</u>	<u>Facilities (2010)</u>	<u>Activities</u>	<u>Cost (\$mln)</u>	<u>Planned Yr of ex</u>
			Instruments Upgrade installation		
<b>Western Operations</b>					
9	LAND1	Ughelli(East and West), Utorogu	Power Upgrade, Climate conditioning air revamp, PCD Telecoms upgrade	0.36	2013, 2010
10	LAND2	Kokori, Eriemu, Afiesere, Ughelli, Olomoro, Oweh, Ogini, Uzere, Oroni	Power Upgrade, Climate conditioning air revamp, PCD Telecoms upgrade, , DCS upgrade, Water Cut meter Upgrade, Instrument Air compressor package installation, Field Instruments Upgrade installation	4.72	2010, 2013
11	NTS2	Escravos, Saghara, Otumara, Otumara, Opuama, Jones Creek	Power Upgrade, Climate conditioning air revamp, PCD Telecoms upgrade, ROC upgrade, DCS upgrade, Water Cut meter Upgrade, Instrument Air compressor package installation, Field Instruments Upgrade installation	4.25	2011
12	STS1	Forcados	Power Upgrade, PCD Telecoms upgrade, ROC upgrade, DCS upgrade, Water Cut meter Upgrade, Instrument Air compressor package installation, Field Instruments Upgrade installation	0.61	2010
13	STS2	Tunu, Opukushi, Benisede,	Power Upgrade, Climate conditioning air revamp, DCS upgrade, Water Cut meter Upgrade	1.46	2010, 2013
14	Revamp Vandalized facilities	Otumara, Saghara, Benisede, Diebu Creek, Ekulama, Nambe, Odeama creek, Cawthorne	Replacement of Field cables, Equipment housing, Instrument panels, sensors, Transmitters, DCS systems, Recalibration and recertification of all replaced components. etc	7.32	2010, 2013
15	Owners Cost	All Sites	Made up of SPDC Project Management, Security Costs and Build Up to Operations	4.81	
16	SCD	All sites	2.5% of CAPEX	1.15	
<b>Grand Total</b>				<b>46.63</b>	

**Table 2: Project Cost Phasing (US \$Mln MOD)**

	Activity	Cost Estimates (F\$M) <small>(Inc of 18% Proj. contingency, 2.2% inflation and 1.9m SPDC Sal.)</small>					
		2010	2011	2012	2013	Total	Shell Share
1	Refresh existing installation	6.19	7.99	10.63	6.28	31.09	9.33
2	Revamp vandalized facilities	-	-	4.38	2.59	6.97	2.09
3	SPDC Project Management & Security Costs	0.77	1.55	1.65	0.79	4.76	1.43
4	Build Up to Operations	0.96	0.93	0.67	0.10	2.66	0.80
5	SCD 2.5% of Total CAPEX	0.19	0.37	0.40	0.19	1.15	0.35
	<b>TOTAL</b>	<b>8.11</b>	<b>10.84</b>	<b>17.73</b>	<b>9.95</b>	<b>46.63</b>	<b>13.99</b>

\$13.99 mln (Shell Share, 50/50, MOD) is to be approved in this proposal,

## Section 2: Value Proposition, Strategy and Financial Context

Several benefits are realizable from the project. On completion, it will help to:

- Facilitate fast response to production upsets by providing access to production information on real time
- Reduce Logistics cost by reducing the need for frequent facility visits
- Improve HSE record by reducing exposure encounter along the way to our facilities
- Improve the security of Remote facilities by enabling real time monitoring of the facility.
- Enable optimization of Production process by facilitating fast response to production upset.

The upgrade of the facilities will both complement the WRM efforts to automate the gas lifting process and bring the facility to ROCI minimum compliance (level 1).

All upgraded facilities will be integrated to the Divisional Production Management Centre

### Summary Economics

The ROCI-CAO/SCADA Upgrade and Vandalised Facilities Revamp project was evaluated as a cost only project with aim of assessing its value on a forward-looking basis. The base case evaluation was carried out using level III CAPEX estimates of \$13.64mln SS, which has been treated as an oil infrastructure cost. No revenue stream is applied in this evaluation.

A sensitivity of high CAPEX was also carried out. Details of the results are shown in table 3 below.

**Table 3: Economics grid**

PV Reference Date: 1/7/2010	NPV (\$/S \$ mln)		VIR	RTEP	UTC (RT \$/bbl or \$/mln btu)		Payout-Time (RT)	Maximum Exposure (\$/S \$)
Cash flow forward from: 1/1/2010	0%	7%	7%	%	0%	7%		AT
Base Case								
SV (\$50/bbl RT10)	-2.7	-3.4	-0.29	NA	NA	NA		
RV (\$60/bbl RT10)	-2.7	-3.4	-0.29	NA	NA	NA	NA	9.14 (2013)
HV (\$80/bbl RT10)	-2.7	-3.4	-0.29	NA	NA	NA		
BEP (RT \$/bbl )					NA	NA		
Sensitivities(Using RV-RT)								
High Capex(+20%)		-4.1	-0.29				NA	10.96 (2013)

**Table 4: Key Project Parameter Table**

Parameter	Unit	BP09	Low	Mid	High	Comments
Capex (MOD)	US\$ mln	NA	-	13.64	16.37	Full funds provided once IP is approved
Investment Opex	US\$ mln	NA	-	0.35	0.41	SCD cost
Sales Volume	mln boe	NA	-	NA	NA	
Start Up Date	mm-yy	NA	-	NA	NA	

### Economics Assumptions

- NDDC levy of 3% of total expenditure.
- SCD treated as Oil independent OPEX
- 10% of the project CAPEX is assumed as abandonment cost
- PPT tax rate of 85% applied

### **Section 3: Risks, Opportunities and Alternatives**

Upgrading the facilities is a multi-discipline project where IC&A, civil, Electrical, mechanical, IT, software tools development and integration aspects converge. Upgraded facilities and gas lift manifold will be integrated into the Divisional Production Management Center (DPMC), where accurate hydrocarbon accounting, Status and surveillance of facilities and operations shall be immediately available to personnel designed to use such information. There is an opportunity to develop local competence, (i.e., local instrumentation and control companies etc in order to deliver SPDC's growing requirements. Furthermore, future facilities will be considered, thus presenting opportunities and leverage for contracting strategy.

The principal risks associated with this proposal and key mitigation measures are as follows:

The project risks and opportunities tables are presented below.

#### **RISKS**

<b>Area</b>	<b>Risk</b>	<b>Mitigation</b>
Technical	Few number of indigenous vendors with adequate capacity	The technical evaluation criteria will be robust and stringent enough to screen out incompetent vendors Consortiums encouraged, to ensure all possible aspect of the projects are covered
HSE	HSE hazards and interface problems with existing habitation.	Project specific HSE Management Plan has been developed, consistent with SPDC's HSE Management System and the Group HSE-MS. Hazards and Effects Management Process (HEMP) tools are being applied to reduce risks to levels as low as reasonably practical and to manage residual risks in manner consistent with SPDC's HSE Risk Tolerability Criteria. The HSE Management process applied to this project will result in the existing asset's ISO 14001 / OHSAS18001 certification being maintained.
Contracting Process	NAPIMS requires tendering (typically 9 – 12 months duration)	Prior engagement with NAPIMS representatives has been conducted and will continue throughout this project to ensure fast approval timeline.
Manpower and Resourcing	Interface Management	This project has a DRB with the PS&O Manager as the Decision Executive. It will be managed by the ROCI FUP team with interface and support from the following departments/disciplines: IT-Telecommunications, Central Engineering, BSUs, SCM, and HSE.
Security/ Access to Niger Delta	Deteriorating security and lack of access to SPDC area of operations	The Nigerian crisis team headed by the MD is in place to manage security issues in our operating environment. Freedom to Operate and security plans will be secured before moving to any site. Additional, the project will ensure it follows any existing Global MOU before working in any community
Commercial Risk	Current Funding situation may lead to delay or rephrasing of project	Early engagements with NAPIMS and SPDC Senior Management to secure funding for the project- NAPIMS have already shown commitment to the project by approval of \$8.00MLN in the 2010 budget.

## OPPORTUNITIES

Area	Description
Technical	<ul style="list-style-type: none"><li>• Reduction of deferment</li><li>• Integrate facilities into DPMC for improved oil accounting</li><li>• Improve opportunities for collaborative working environment in SPDC</li></ul>
Economic	<ul style="list-style-type: none"><li>• Reduce associated overhead OPEX (Travels, corrective mtce etc)</li><li>• Improved management of gas lifting</li><li>• Reduce project man-hour cost by combining facility instrumentation Upgrade with WRM projects</li><li>• This local resource will serve to complement existing SPDC IC&amp;A resources</li></ul>
Organization	<ul style="list-style-type: none"><li>• Standardisation of facilities instrumentation across multiple facilities thereby impacting positively on cost of support and spares.</li><li>• Latch onto WRM projects Use of same recourses and effort by latch facility upgrade instrumentation projects to WRM wave</li><li>• Reduction of travels between facilities</li></ul>
Political	<ul style="list-style-type: none"><li>• Community Development of local resources to work with Shell standards IC&amp;A to deliver business solutions for SPDC.</li></ul>

### Alternatives

Alternatives considered were:

- “Do nothing” - This is not considered a viable option because the obsolete equipments are not reliable and it will be difficult to get the required parts when they fail. This will lead to long down time of CAO services, the implication of which would be avoidable equipment downtime and associated disruption of hydrocarbon production in SPDC.

### ***Section 4: Corporate Structure and Governance***

The existing corporate structure and arrangements of SPDC-JV with SPDC as operator will be utilised. Direct responsibility for project execution and supervision rest with the ROCI CAO/SCADA restore Project team, within ROCI and the production support functions of SPDC Production Directorate. The ROCI project operates under the guidance of the Decision Review Board with the Decision Executive being PS Manager.

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

This proposal is consistent with strategy and objectives for the Corporate Production Operations philosophy for remote operations of assets and Smart well/field implementation plan. The investment proposal is supported by:

- Production Surveillance & Optimization Manager of SPDC.
- SEPCiN Country Chair, SPDC Managing Director and EPG Vice President of Production
- Finance, Legal, HSE and Security Functions

### ***Section 6: Project Management, Monitoring and Review***

Project performance is reviewed and reported regularly (weekly and monthly) through SPDC Management and at the monthly Projects review with JV Partners.



**Section 7: Budget Provision**

Provisional activity phasing for 2010-2011 has been made in the BP2010 capital budget proposal. CAO/SCADA restore project budget was approved in the 2010 budget by the DEVCOM.

**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	Post 2014
<b>Total Commitment</b>	2.43	3.25	5.32	2.99	0.00	0.00
<b>Cash Flow</b>						
SCD Expenditure	0.06	0.11	0.12	0.06	0.00	0.00
Capital Expenditure	2.38	3.14	5.20	2.93	0.00	0.00
Operating Expenditure	0.07	0.10	0.16	0.09	0.00	0.00
Cash Flow from Operations	0.38	0.94	1.83	2.37	2.34	4.08
Cash Surplus/(Deficit)	(1.99)	(2.21)	(3.37)	(0.55)	2.34	4.08
<b>Profit and Loss</b>						
NIBIAT +/-	0.10	0.14	0.24	0.18	(0.16)	(2.08)
<b>Balance Sheet</b>						
Average Capital Employed	1.43	4.75	9.74	14.58	15.04	50.12

**Section 9: Disclosure**

Project compliance to the requirements of Risk & Internal Control Policy, Media Relations Protocol, Investor Relations Protocol and Market Abuse Directive Guidelines as appropriate shall apply and in accordance with SPDC guidelines.

**Section 10: Financing**

This capital expenditure will be met through SPDC's own cash flow

**Section 11: Taxation**

The income tax from the project would be in accordance with Petroleum Profit Tax Rate and relevant income tax applicable

**Section 12: Key Parameters**

This proposal seeks organisational support and approval for CAPEX amount of \$13.65mln shell share

**Section 13: Signatures**

This Proposal is submitted to SPDC MD for approval.

Supported by:

Supported by:

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**Bernard Bos**

**FUI/F**

Date .... / .... / ....

.....

**Mutiu Sunmonu**

**UIG/P**

Date .... / .... / ....

Prepared by: Oraka U.C. UIG/P/SR

Date: 18-Feb-2010