

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	\$13.65 mln (Shell Share, 50/50, MOD) is to be approved in this proposal.						
Project	ROCI- Computer Assisted Operations (CAO)/Supervisory Control and Data Acquisition (SCADA) Upgrade and Vandalised Facilities Revamp Project						
Main commitments		Activity		Cost Estimates (F\$M) <i>(Inc of 18% Proj. contingency, 2.2% inflation and 1.9m SPDC Sal.)</i>			
			2010	2011	2012	2013	Shell Share
	1	Refresh existing installation	6.19	7.99	10.63	6.28	31.10
	2	Revamp vandalized facilities	0.00	0.00	4.38	2.59	6.97
	3	SPDC Project Management & Security Costs	0.77	1.55	1.65	0.79	4.76
	4	Build Up to Operations	0.96	0.93	0.67	0.10	2.66
	5	SCD 2.5% of Total CAPEX	0.19	0.37	0.40	0.19	1.14
		TOTAL	8.12	10.85	17.73	9.95	46.64
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% -\$3.47 mln (Shell share) and VIR 7% -0.26 with an associated maximum exposure of \$9.82mln in 2012						

Section 1: The Proposal (Management Summary)

This investment proposal seeks management approval for CAPEX of US\$13.65Mln Shell Share (US\$46.64Mln 100% JV) to upgrade, standardise and enhance existing 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
- Revamp 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.

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 infrastructure project is being executed by the production support function to restore all existing CAO/SCADA implementations to a state where the performance is optimal and the reliability assured. The performance of these installations have degraded over time due to equipment aging, Obsolesce and disuse resulting from the close down of facilities for security reasons or in some cases complete vandalization of facilities. The timeline for the project is 2010 to 2012.

The essence of this project is to restore all existing CAO/SCADA installations to a stable working condition. This will be achieved by replacing all suboptimal or obsolete components 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.

Table 1: Project Activity by District

<u>SN</u>	<u>District</u>	<u>Facilities (2010)</u>	<u>Activities</u>	<u>Cost (\$mln)</u>	<u>Planned Yr of ex</u>
Eastern Operations					
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	4.35	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	EGBE MA	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	KOLO CREEK	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 Instruments Upgrade installation	1.64	2012
Western Operations					
9	LAND1	Ughelli(East and West), Utorogu	Power Upgrade, Climate conditioning air revamp, PCD Telecoms upgrade	0.36	2013, 2010

<u>SN</u>	<u>District</u>	<u>Facilities (2010)</u>	<u>Activities</u>	<u>Cost (\$mln)</u>	<u>Planned Yr of ex</u>
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
SUB TOTAL				35.11	
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		4.81	
Grand Total				46.64	

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	31.10	9.33
2	Revamp vandalized facilities	0.00	0.00	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	1.14	0.34
	TOTAL	8.12	10.85	17.73	9.95	46.64	13.65

\$13.65 mln (Shell Share, 50/50, MOD) is to be approved in this proposal,

Investment Proposal Tollgate

Strategy is to re-instate the CAO/SCADA installed base and upgrade any obsolete equipments focusing on IMOR initially and following the WRM waves to apply lessons learnt to the East-Land-1 ; West-Land; East-Land-2; and East & West Swamp Operational areas respectively arranged below in Tollgates.

A Go/ No Go decision is taken after each tollgate by the DE.

Scope of Restoration

1. CAO/SCADA repaired in affected facilities so that they work locally and support Well Testing requirements. This scope includes secondary power (UPS/Inverters – primary power is provided by Asset teams) and on-site data communications.
2. All Real Time Data transferred to the PI Database in the Office.
3. Improve Equipment uptime and reduce maintenance effort by upgrading obsolete equipments like DCS.

Measure of Success

1. Equipment uptime (i.e working locally) at least 95% of the time (i.e. available for Well Test & Data Gathering)
2. Real Time Data available in the Office at least 90% of the time i.e. in the PI database.

Tollgate success is measured during the last two weeks of the Tollgate month.

Toll-gate	Tollgate Date	No of Fac.	Operational Areas (Facilities)	Budget '000	Shell Share
1	Dec 2010	16	East Land-1: (Imo river-1 FS, Imo river-2 FS, Imo river-3 FS, Imo AGG, Imor-2 CS, Imor-3 CS, Obigbo AGG, Agbada-2 AGG) West Land: (Olom FS, Olom CS, Afie FS, Afie CS, Kokr FS, Kokr CS, Ogin FS) East Swamp-1: (Soku GP)	5,513 Agreed under the waiver	1,654
2	June 2011	17	East Land-1: (Nkali FS , Okoloma GP) East Land-2: (Gbaran Ubie IOGP) East Swamp-1: (Soku FS) West Land: (Utorogu FS, Utorogu GP, Ogini CS, Uzere FS, Ughe FS, Ughe CS, Ughe GP, Utor FS, Ughw FS, Ermu FS, Owheh FS, Uzer FS, Ughelli Pump Station, Owheh GL, Oroni FS)	3,233	970
3	Dec 2011	16	East Land-1: (Isimiri FS, Agbada-2 FS, Umuechem FS, Nkali BS, Obigbo FS, Obigbo NAG) East Land-2: (Nun River FS, Diebu Creek FS, Rumuekpe FS,) West Swamp-2: (Benisede FS, Opukushi FS, Tunu FS, Escravos FS) West Swamp-1: (Yokri GL, Forcados Terminal)	7,900	2,370
4	Dec 2012	25	East Land-1: (Agbada-1 FS, Obele FS) East Land-2: (Ogut FS, Ahia FS, Egbm FS, Egbw FS, Adib FS, Etel FS, Kolo creek FS) East Swamp-1: Cawc -1 FS, Cawc-2 FS, Cawc -3 FS, Cawc Gas Plant) East Swamp-2: (Ekulama-1 FS, Ekulama-2 FS, Nemb-1 FS, Nemb-2 FS, Nemb-3 FS, Nemb-4 FS, Odeam FS, Belema FS) West Swamp-2: , (Otumara FS, Ogbotobo FS, Otumara GL)	14,159	4,248
5	Dec 2013	21	East Swamp-1: (Bonny FS, Bonny GP, Bonny Terminal, Alakiri FS, Orubiri FS) East Swamp-2: (Krakrama FS, Awoba FS, Awoba GP, Santa Bab FS) West Swamp-1: (Saghara FS, Egwa-2 BC, Jones Creek FS, Jones Creek GL, Odidi-1 FS, Odidi-GP, Batan FS, Batan BC, Egwa-1 FS, Egwa-1 BC, Egwa-2 FS, Opuama)	15,825	4,749
Total		95		46,630	13,989

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 on a cost only basis with aim of assessing its value on a forward-looking basis. The base case evaluation was carried out using level III CAPEX estimates of \$14.2mln SS, which has been treated as an oil infrastructure cost. No revenue stream is applied in this evaluation.

The project yields an NPV7% of \$-3.5mln RT10 and VIR7% of -0.26, with a maximum exposure of \$9.8mln in 2012.

See grid below for more details.

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)	-2.4	-3.5	-0.26	NA	NA	NA		
RV (\$60/bbl RT10)	-2.4	-3.5	-0.26	NA	NA	NA	NA	9.82 (2012)
HV (\$80/bbl RT10)	-2.4	-3.5	-0.26	NA	NA	NA		
BEP (RT \$/bbl)					NA	NA		
Sensitivities(Using RV-RT)								
High Capex(+20%)		-4.2	-0.26				NA	11.79 (2012)

Table 4: Key Project Parameter Table

Parameter	Unit	Bus Plan (BP09)	Low	Mid	High	Comments
CAPEX (MOD)	US\$ mln	NA	NA	14.2	17.0	Full funds provided once IP is approved
Investment OPEX (MOD)	US\$ mln	NA	NA	0.3	0.3	SCD cost at 2% of CAPEX

Economics Assumptions

- NDDC levy of 3% of total expenditure.
- SCD at 2% project MOD CAPEX 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

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

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

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
Total Commitment	6.60	3.96	3.90	0.00	0.00	0.00
Cash Flow						
SCD Expenditure	0.13	0.08	0.08	0.00	0.00	0.00
Capital Expenditure	6.47	3.88	3.82	0.00	0.00	0.00
Operating Expenditure	0.20	0.12	0.12	0.00	0.00	0.00
Cash Flow from Operations	1.05	1.82	2.44	2.46	2.36	2.29
Cash Surplus/(Deficit)	(5.42)	(2.06)	(1.39)	2.46	2.36	2.29
Profit and Loss						
NIBLAT +/-	0.27	0.20	0.22	(0.17)	(0.17)	(1.97)
Balance Sheet						
Average Capital Employed	3.90	10.10	14.67	15.64	13.58	38.95

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:

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Bernard Bos

FUI/F

Date / /

Supported by:

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Mutiu Sunmonu

UIG/P

Date / /

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

Date: 18-Feb-2010