The Shell Petroleum Development Company of Nigeria Limited

Group Investment Proposal

Summary Information

<table>
<tr><td>Directorate</td><td>Technical Directorate</td></tr>
<tr><td>Group equity interest</td><td>100% in SPDC, whereas SPDC is the Joint Venture (JV) operator of an unincorporated JV with a 30% interest.</td></tr>
<tr><td>Other shareholders / partners</td><td>Nigeria National Petroleum Company (NNPC: 55%), Total: 10%, Nigeria Agip Oil Company (NAOC: 5%) in SPDC-JV</td></tr>
<tr><td>Business or Function</td><td>Upstream International</td></tr>
<tr><td>Amount</td><td>US$65.80mln Shell share (MOD), 50/50 (US$219.29mln 100% JV)</td></tr>
<tr><td>Project</td><td>Oil and Gas Facility Upgrade Projects – SPDC East & West</td></tr>
<tr><td>Main commitments</td><td>
<table>
<tr><th>Activity</th><th>Shell Share (US$mln MOD)</th><th>100% SPDC JV (US$mln MOD)</th></tr>
<tr><td>Oil and Gas Facility Upgrade Projects (Environmental, instrument, Flares and Asset integrity fix) - East</td><td>38.96</td><td>129.85</td></tr>
<tr><td>Oil and Gas Facility Upgrade Projects (Gas, Environmental, instrument, Flares and Asset integrity fix) - West</td><td>25.52</td><td>85.05</td></tr>
<tr><td>SCD</td><td>1.32</td><td>4.39</td></tr>
<tr><td>Total</td><td>65.80</td><td>219.29</td></tr>
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<tr><td>Source and form of financing</td><td>This investment will be financed with JV funding and Shell share capital expenditure will be met by SPDC's own cash flow.</td></tr>
<tr><td>Summary cash flow</td><td>Not applicable. Cost only evaluation.</td></tr>
<tr><td>Summary economics</td><td>
<table>
<tr><th>Summary economics (Shell Share)</th><th>NPV7% (USD mln)</th><th>VIR7%</th></tr>
<tr><td>Base case</td><td>-14.2</td><td>-0.26</td></tr>
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Section 1: The proposal

Management summary

This Investment proposal seeks approval for US$65.80mln Shell Share 50/50 MOD (US$219.29mln 100% JV) for 2011 - 2015 Oil and Gas Facilities Upgrade projects.

This proposal addresses the upgrade of SPDC Oil & Gas facilities for both East and West Divisions. The facilities in both divisions are averagely aged about 25years, the design life of the facilities. Some of these facilities have become obsolete and as such require extensive upgrade works to meet current environmental standards including MFR (Minimum Functional Requirement) and PSBR (Process Safety Basic Requirement) while equally enhancing production delivery. This is part of the ongoing environmental improvements to align with the Shell Global Environmental Standards.

In the same vein, there is an increasing need for the reconstruction of bund walls as well as replacement of smokeless flares and Remote ignition systems in the facilities to minimize the impact of the company's operations on the environment.

As part of the campaign to strengthen the company's process safety drive, it has become expedient that obsolete PD meter be replaced with modern USM ones. This is aimed at reducing maintenance cost, increase process safety, technical integrity and uptime of the facilities. The main works scope of this proposal is covered in *Appendix 1*.

Table 1 Cost Phasing ($mln)

COST US$ mln (MOD)	2011	2012	2013	2014	2015	Total
100% JV	40.22	41.64	46.31	41.55	49.56	**219.29**
Shell share	12.07	12.49	13.89	12.47	14.87	**65.80**

See Appendix 2 for Main activities Cost phasing (mln $, Shell share)

Section 2: Value proposition and strategic and financial context

Most of the SPDC's oil and gas facilities were built on the average over 25 years ago with the then technology and carbon steel materials. Over the years the facilities have deteriorated due to age, constrained access due to insecurity and obsolete equipment. To keep these facilities in operation, hence sustain oil and gas production, assure asset integrity and meet the current Health, Process Safety and DPR statutory regulatory requirements, there is need for planned and progressive upgrade, modification and repair of these facilities. The strategy is to implement preventive and corrective upgrade of the flow stations and gas plants within a five-year period with priority focus on areas that have immediate and direct impact on the facilities fit for purpose status.

Summary Economics

The FID economics for the Oil and Gas facilities upgrade project for East and West was evaluated as a cost only Oil and Gas (OGI) infrastructure project using the 50/50 project level III cost estimate.

Sensitivities were carried out on the project cost to show the impact of low and high CAPEX, and 1.5% cost mark up due to BVA (benchmarked verified and approved) issues. The details are shown in table 2 below.

Table 2: Economics Grid

PV Reference Date: 1/7/2011	**NPV (S/S $ 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)*	-10.6	**-14.2**	-0.26	NA	NA	NA	NA	US 29.8 mln (2015)
Sensitivities (on base case)								
Low Capex (-10%)		-12.8	-0.26					US 26.8 mln (2015)
High Capex (+15%)		-16.3	-0.26					US 34.2 mln (2015)
1.5% FID cost mark up due to BVA issues		-16.9						

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

Key Project Parameter Data (Shell Share)

	Unit	Bus Plan BP10	Low	Mid	High	Comments
Capex (MOD)	US$ mln	64.5	58.0	64.5	74.1	Provided in BP10. Mid & high based on Capex sensitivity.
Opex (MOD)	US$ mln	1.3	1.2	1.3	1.5	SCD
Production volume	Mmboe	NA	NA	NA	NA	
Commissiom Date	mm/yyyy	Dec-12	NA	Dec-12	NA	

Economics Assumptions

- Full project 50/50 cost estimates treated as CAPEX
- 10% of total project RT CAPEX treated as abandonment cost.
- Project specific SCD Opex applied and treated as Opex.
- NDDC levy 3% of total expenditure.

Section 3: Risks, opportunities and alternatives

Risks

The principal risks associated with this project and key mitigation measures are, but not limited to:

S/N	Risks Category	Risk Description	Mitigation/Remedial Effort
1	Commercial	Delay in project execution due to inadequate payment to contractors	Prompt processing of contractors work completion certificate for value of work done
		Delays in Internal & External approvals	Prompt and continuous engagement of JV partners will be ensured throughout the project execution.
2	Technical / Operational	Limited Indigenous vendor with adequate capacity	The technical evaluation criteria will be robust and stringent enough to screen out incompetent vendors. Provision of experienced personnel for the project and rigorous supervision of contractor using all available project management tools.
3	HSE Risk	HSE hazards and Interface problems with existing habitation.	Detailed job hazard analysis prior to commencement of work. Proper supervision throughout the execution period.
4	Managing community issues	Potential delay due to pressure to use labour from communities.	• Community will be proactively engaged and MOU signed (where GMOU does not exist), before commencement of work activities. • FTO will be secured via SPDC community relations officers for the various communities. • Vendors to employ community workers to execute non-technical scopes of the projects.
5	Security	Threat to Personnel & Assets. Disruptions to	• Front-end planning of projects includes development of activity-

		commencement/ execution/completion of Oil and Gas Facilities Upgrade projects.	specific security plans, in consonance with relevant Asset security plans. • SPDC Security Operating Level (SOL) will be routinely applied for evaluation of real-time risk on projects. • Use of government security forces (Joint Task Force – JTF) to provide protection for operational sites. • Use of information provided to the asset teams via the Integrated Pipeline Systems Surveillance (IPSS) contracts. • Own security arrangements by installation contractors subjected to review / acceptance by SPDC security dept prior to implementation. • It is noteworthy that the Nigerian crisis team headed by the managing director is in place to manage the security issues in our operating facilities and environs. • Freedom to Operate (FTO) will be guaranteed before moving to work sites. • Measures will be put in place to safely evacuate personnel in case of heightened securities breaches. • Appropriate provisions, including force majeure clause will be included in the contracts to minimize cost of serious security incidents.

Alternative Considered

Do nothing: This implies leaving the facilities as is. Failure to execute these projects would imply that the anticipated gains of keeping the facility in operation, sustaining oil and gas production, assure asset integrity and meet the current Health, Process Safety and DPR statutory regulatory requirements will not be realised. The 'do nothing alternative' however does not appear a viable alternative as there are many stakeholders both nationally and internationally who could object to this alternative. This ultimately will mean attendant revenue loss, production losses resulting from integrity related shut-ins and attendant corporate reputation issues for SPDC, JV and the stakeholders.

Opportunity

Opportunity exists to achieve the following:

- Reinstate integrity of the affected facilities
- Ensure continuity in meeting statutory obligations on integrity of the oil and gas facilities
- Assure continued oil and gas production in support of the production promise.

Section 4: Corporate structure, and governance

The existing corporate structure and arrangements of SPDC-JV with SPDC as operator will be used as the vehicle for the investment and operations. The project assurance model of the ORP-lite would be implemented.

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

Conducting our business in a safe and responsible manner is the bedrock upon which SPDC policies and practices are founded. Increasing and sustaining production is the primary commercial aspirations of the company. The safe and efficient execution of this project represents technical directorate's contribution to this overarching goal. Support from other functional teams will also be secured to ensure a seamless project execution.

SPDC HSE and SDCR policies will be strictly adhered to with a view to minimise the risk of accident and disruptions to work programme. The 3 Golden rules and 12 Life saving rules will be continually emphasised as an essential step in attaining GOAL ZERO.

In addition, a project-specific HSE plan incorporating all the potential hazards relating to these projects will be put in place. Contractor's HSE plan will be reviewed to ensure it adequately addresses all possible hazards of the project and communicated to contractor staff in kick-off meetings, daily tool box meetings and site inspections.

This IP is functionally supported by HSE, SD, Legal, Tax and Treasury.

Social Performance Management

Freedom to operate (FTO) will be secured from all affected communities. For communities covered by operational GMoU's this will be through their respective Cluster Development Board. For those without operational GMoU's individual FTO's will be through the community representatives.

The key benefits that will be offered are: employment opportunities, community support, sub-contracting to community vendors and associated community content initiatives. To manage social performance (SP) in the project, 2% of the total project cost will be used for the engagements and community support. The Asset/SDCR teams will manage social performance in the project.

Section 6: Project management, monitoring and review

A project Engineer will be dedicated to each project to monitor progress on daily and weekly basis.
Company site representatives (inspectors) will also be employed for these projects to ensure that vendors carry out the scope of work as stated in the contract document and that good quality project is delivered to the asset teams.

The individual projects will be managed via the ORP-Lite process, which was derived from the ORP for managing projects less than $10million. Decision Executive is the Asset Engineering Manager. It has various reviews and decision gates. Post-investment review for this project will be included in the overall scope.

Section 7: Budget provision

There will be budget provisions for the proposed commitments in the yearly business planning cycles. With proper project management, the financial commitments of these projects will not exceed the expenditure limits.

Section 8: Group financial reporting impact

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

US$ Million	2011	2012	2013	2014	2015	Post 2015
Total Commitment	**12.07**	**12.49**	**13.90**	**12.47**	**14.87**	**0.00**
Cash Flow						
SCD Expenditure	0.24	0.25	0.28	0.25	0.30	
Pre-FID Expenditure						
Capital Expenditure	11.83	12.24	13.62	12.22	14.57	
Operating Expenditure	0.36	0.37	0.41	0.37	0.44	
Cash flow From Operations	0.24	4.11	6.29	8.79	8.67	5.00
Cash Surplus/(Deficit)	(11.58)	(8.13)	(7.33)	(3.43)	(5.90)	5.00
Profit and Loss						
NIBIAT +/-	0.48	0.57	0.70	0.73	1.09	
Balance Sheet						
Avg Capital Employed	6.03	16.42	24.79	30.88	36.45	35.06

Section 9: Disclosure

Media Relations Protocol, Investor Relations Protocol and Market Abuse Directive Guidelines will follow approved SPDC procedures.

Section 10: Financing

The project will be funded from SPDC's JV budgetary provision for 2011 – 2015 activities to an amount not exceeding US$219.29mln.

Section 11: Taxation

Taxation is in line with general SPDC taxation of OPEX and CAPEX.

Section 12: Key Parameters

Approval is sought for Oil and Gas facilities upgrade projects requiring the total amount of US$65.80mln (Shell share).

Section 13: Signatures

This Proposal is submitted to SEPA/UIG for approval.

Supported by:	Approved by:
.....	.....
Bernard Bos	**Ian Craig**
SEPA-FUI/F	SEPA-UIG
Date ..../..../....	Date ..../..../....
Initiator: **OJO, Afolabi**	
UIG/T/PA	
Date …/…./….	

Appendix 1: Description of Main Commitment and Work scope

1. Environmental Upgrade (East and West)

- The objective of the project is to eliminate atmospheric venting of off gases from production vessels as well as the disposal into open drains of all liquid drains from production vessels. This is an integral part of the ongoing environmental improvements drive and aims to reduce to zero the quantity of liquid and gas effluents to the environment and achieve mandatory Process Safety Basic Requirement)

Scope of work:

East

- FEED, Detail Engineering design and procurement for Diebu creek FS
- Site Installation for Ekulama-2 and Belema FS environmental upgrade.
- Special Paint application in Cawthorne Channel - 1, 2 & 3
- Special Paint application in Odeama Creek, S/Barbara MPF, NEMC 3 & 4
- Project management

West

- Procure Electrical driven saver pit pump for Swamp Locations, including radar guided level controllers for each pump ($350).
- Installation of electric submersible pump in saver pits in Swamp (Northbank, Yokri, Otumara, South bank, Tunu) and Land (Eriemu, Uzere, Oweh, Oroni, Kokori, Utorogu).

2. Facility Management & Process Improvement West

The objective of the project is to ensure optimum facilities availability, maintain licence to operate (LTO) and improve/facilitate efficient oil and gas production in all Area teams in SPDC-West namely PAWL and PAWS.

Scope of work:

- Study on Otumara Saver Pit for possible resizing and reconstruction.
- Procure and Change out 12" valve equalizing line between Otumara SV 1 & 2.
- HAZOP Study for 10nos Facilities
- Upgrade Benisede F/S process vessels relief valves to a closed system and Install Instrument Air System in Opukushi F/S.

3. Instrument Upgrade (East and West)

This project is a stop gap arrangement aimed at fixing facility instrumentation challenges that might arise pending the execution of ROCI projects. The objective of the project is to safeguard the technical integrity of the flow stations by reducing the risk posed by existing OSD/ESD systems, Robertshaw fail-safe panel and the associated nuisance trips to As Low As Reasonably Practicable (ALARP). This further aims to sustain facility technical integrity, improve facility availability and improve hydrocarbon accounting in the facilities.

Scope of work:

East

- AGG/flowstation facilities control system integration (Obigbo North, Agbada and Imor).
- Instrument Engineering Intervention Activities in facilities in 4 Asset Areas (Land 1 & 2, and Swamp 1 & 2) with 4 jobs per Asset Area
- Replacement of obsolete PD meter with USM.

West

- Procure & Install Ultrasonic meters in South bank, Estuary, North bank and Yokri F/S for flare gas measurement.
- Design, procure and install Instrument Air System in Land compressor stations at Olomoro 1 & 2, Ughelli East, Kokori, Uzere and Decommission old Instrument gas system.

- Complete Process Optimisation Study in Benisede and change Instrument gas system to Instrument air.

4. Flares (East and West)

Some of the flares in the SPDC are non functional. The accompanying remote ignitions systems and pilot lines are either vandalized or malfunctioning. This is a safety critical issue as production operators light up these flares by throwing in a lit rag when the flares go down. The intent of this project is to procure new flare tips to improve smokelessness and to reactive the remote ignitions systems and the pilot line to improve the asset integrity and ensure safe operations of the flares.

This project will cater for both procurement & installation of flares tips and rehabilitation of Remote Ignition System to improve the flare quality and maintain it at less than 2 Ringlemann Number. In this project the concept of high turn down flare tips will be explored in areas where associated gas gathering plants are operating.

Scope of work:

West

- Procure and replace 2Nos 24" flare & Installation in South bank F/S
- Procure and replace 9 flare stack units in the SPDC's western operations.
- Procure and install Remote Ignition Systems in 15 facilities – Otumara, Tunu, Benesede, Opukushi, UghE, UghW, Utorogu, Olomoro-Oleh, Eriemu, Oweh, Afiesere, Kokori, Evwreni, Uzere

East

- Replacement of 7nos. flarestacks + RIS in Swamp facilities: Krakama, Bonny, Awoba, Ekulama 1, Ekulama 2 and Belema F/S.
- Installation of Pilot line + RIS, and 7nos flare stacks + RIS on land facilities: Agbada 1, Nkali, ImoR 1, Rumuekpe, Oguta, Kolo Creek and Diebu Creek.

5. Pump Replacement East

These activities are aimed at increasing the uptime of the pumps and by extension the facilities where they are installed.

Scope of works:

- Direct drive modification on export pump – 12nos. in PAEL 1 & 2
- Pump Modification works in 5nos station in PAEL 1 & 2
- Exhaust piping modification on 3nos. Pumps at Diebu creek
- Sulzer Pump Modification at Soku FS
- Direct drive modification on export pump – 5nos. in Awoba and 6nos. in Nembe Creek.
- Project management

6. Vessel Efficiency West

The objective of this project is to improve separator efficiency of process vessels hereby reducing the liquid carry over or gas carry under. Carry-over contributes to compressor downtime in the assets with AG solution, and flare tip burn-out in assets where flaring is the norm. It involves the retrofitting of vessel internals.

Scope of work:

- Design, Procurement and Installation of Vessel Desanders at Olomoro-Oleh, Kokori.
- Procure and Replace Otumara surge vessel with one that can be connected on site without interfering with the man way.

7. Electrical Facility Upgrade East

The objective of this electrical upgrade is to replace and upgrade the obsolete electrical equipment such as switchgears, circuit breakers, control switches, and power supply cables. This will reduce the operational costs due to frequent preventive maintenance and thereby reduce loss of man-hours and operational deferments.

Scope of work:

- Transmission works, Step up and step down substations works at Nun River.
- Procurement of cables (AAC and ACSR, armoured and earth) and L.V. switchgears.
- Construction of generator house at Nembe 1.
- Design for Nembe 2 (Ogbolomabiri and Bassambiri) works.
- Procure 2 nos. generators for Nun River. Procure 2 nos. generators

8. Bundwall Construction (East and West)

The objective of the project is to repair existing damaged bundwalls (sectional repairs) or construct new bundwalls to ensure safe flaring of produced associated gas at flow stations and ensure containment of crude oil within the bund wall in the event of crude carry-over.

Scope of work:

West

Reconstruction 6nos flares bundwalls, 3no for facilities in the swamp (Yokri, North Bank, Otumara) and 3nos for facilities on land.

East

Reconstruction of 15nos. flare bundwalls, 7nos. for swamp facilities (Awoba, Krakama, Bonny, Nembe Creek 2 & 3, Belema & Ekulama 1) and 7nos. flare bundwalls for land facilities (Ahia, Rumuekpe, Oguta, Diebu Creek HP & LP, Adibawa, Ubie & Nun River).

9. Marine Structure West

Scope of work:

Procure and Replace Defective Fenders, including replacement of Gratings and corroded access ladders at
- Estuary Boat landing FODPA,
- New Estuary and Estuary Clusters

10. Gas Facility West

Scope of work:

- Design F & G for Land area compressor stations at Olomoro 1 & 2, Ughelli E, Afiesere, Kokori, Uzere.
- Procure F & G for Land area compressor stations at Olomoro 1 & 2, Ughelli E, and Kokori CS.
- Design, procure, install and commission air compressor package for Otumara and South bank F/S, including 2yr running spares.

11. Surge vessel Modification Project - East

Scope of work:

- Procurement cost for Surge Vessel, piping and control system
- Installation of new surge vessel, piping and C&A Modification
- Trial Test & Performance monitoring
- Deployment of Surge Vessel Modification Project in 3 SPDC East flowstations
- Deployment of Surge Vessel Modification Project in reining 18 flowstations in SPDC East

12. Facility Mechanical Upgrade (East and West)

Scope of work:

East

- Mechanical upgrade works and vessels rehabilitation/replacement in land flowstations and gas plants - (Obigbo North, Agbada 1 & 2, Imo River 1,2, 3, Isimiri, Umuechem, Adibawa, Etelebou, Ubie, Oguta, Mini, Diebu Creek & Kolo Creek)
- Mechanical upgrade works and vessels rehabilitation/replacement in swamp flowstations and gas plant - (Alakiri, Cawthorne Channel 1,2,3, Ekulama 1 & 2, Nembe C 1 - 4, Odeama Creek, Soku, Bonny, Krakrama & Belema)
- Upgrade of Shell IA gas manifold.

West

Swamp

- Procure and Install "Y "strainers in Tunu, Opukushi & Benisede Pumps suctions.
- Install fuel meters for all gas engines in Tunu, Opukushi & Benisede.
- Misc Piping and Valve replacement works in Tunu, Benisede & Opukushi.
- Upgrade pump house lifting facility in Benisede, Otumara and Southbank.
- Misc Piping, Valve replacement and Electrical works in Otumara, Yokri, Northbank, Southbank and Saghara.

Land

- Upgrade lifting facility in Evwreni F/S & C/S, Olomoro F/S, Oroni F/S, and Uzere F/S & C/S.
- Procure and replace 2" choke valve for Ughelli east flow station.

13. Asset Integrity Fix Program East

Replacement/ repair of identified process safety critical equipment, structures and accessories in Land (Agbada, Ahia, Egbema, Imo River, Obigbo North and Oguta) and swamp (Diebu Creek, Ekulama 1, Nun River, Santa Barbara) oil and gas production facilities.

Appendix 2: Main activities, (mln $, Shell share)

Activity	2011	2012	2013	2014	2015	Total
	'000 (US$)					
Environmental Upgrade East	1,591.20	1,310.90	1,655.48	1,039.13	1,722.37	7,319.08
Surge Vessel Gas Gathering	918	936.36	1,591.81	1,623.65	3,312.24	8,382.06
Instrument Upgrade East	459	455.7	272.2	259.78	264.98	1,711.66
Bund wall East	612	624.24	795.91	811.82	0	2,843.97
Facility Mechanical Upgrade East	2,055.71	1,701.05	1,687.32	1,136.55	1,490.51	8,071.14
Electrical facility Upgrade East	346.39	802.46	818.51	834.88	851.58	3,653.82
Pump Replacement East	358.02	365.18	372.48	379.93	387.53	1,863.14
Flares East	918	1,004.71	1,270.27	970.94	1,321.58	5,485.50
Asset Integrity fix program East	198.9	93.64	127.34	0	0	419.88
Vessel Efficiency West	436.05	444.77	453.67	462.74	471.99	2,269.22
Environmental Upgrade West	344.25	218.48	222.85	227.31	231.86	1,244.75
Marine Structure West	1,224.00	1,990.08	2,029.88	2,070.48	2,111.89	9,426.33
Bund wall West	266.22	271.54	276.98	282.51	288.17	1,385.42
Gas Facility West	454.41	109.24	111.43	113.66	115.93	904.67
Instrument Upgrade West	436.05	444.77	453.67	462.74	471.99	2,269.22
Facility Management & Process Improvement West	296.82	302.76	308.81	314.99	321.29	1,544.67
Facility Mechanical Upgrade West	768.06	1,026.87	1,047.41	1,068.36	1,089.73	5,000.43
Flares West	382.5	390.15	397.95	405.91	414.03	1,990.54
Total (Shell share)	**12,065.58**	**12,492.90**	**13,893.97**	**12,465.38**	**14,867.67**	**65,785.50**