

# The Shell Petroleum Development Company Limited

## Internal Investment Proposal

### Summary Information

Business Unit and Company	The Shell Petroleum Development Company of Nigeria Limited (SPDC)																					
Group Equity Interest	100% in SPDC, whereas SPDC is operator of an unincorporated JV with a 30% participating interest share.																					
Other shareholders / Partners	Nigeria National Petroleum Company (NNPC): 55%, Total E&P Nigeria Limited (TEPNL): 10%, Nigeria Agip Oil Company (NAOC): 5%																					
Business or Function	Exploration & Production (EP)																					
Amount	\$2.1 mln (Shell Share, 50/50, MOD) to be approved in this pre-FID proposal.																					
Project	Southern Swamp AG Solutions (SSAGS) Project plus, incorporating: - Opukushi, Benisede, Ogbotobo and Tunu Fields																					
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. Funds are being sought within the ring-fenced Domestic Gas projects budget.																					
Main Commitments \$USD mln (MOD)	<table><thead><tr><th>Description</th><th>This Proposal (100%)</th><th>Total IP (Shell Share)</th></tr></thead><tbody><tr><td>Scope rationalisation and FEED Update</td><td>2.5</td><td>0.8</td></tr><tr><td>Subsurface Maturation work (NAG &amp; Oil wells in SS )</td><td>2.2</td><td>0.7</td></tr><tr><td>Project Management</td><td>1.3</td><td>0.4</td></tr><tr><td>Survey, Permit &amp; Consents. (Incl. SCD)</td><td>1.1</td><td>0.3</td></tr><tr><td><b>Total US\$ mln Pre-FID 50/50</b></td><td><b>7.1</b></td><td><b>2.1</b></td></tr></tbody></table>				Description	This Proposal (100%)	Total IP (Shell Share)	Scope rationalisation and FEED Update	2.5	0.8	Subsurface Maturation work (NAG & Oil wells in SS )	2.2	0.7	Project Management	1.3	0.4	Survey, Permit & Consents. (Incl. SCD)	1.1	0.3	<b>Total US\$ mln Pre-FID 50/50</b>	<b>7.1</b>	<b>2.1</b>
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Summary Cash Flow (Full Project Scope)	<div><p><b>Southern Swamp AGS project + 2NAG + 12new Oil wells cashflow (Shell Share PSV RV-RT)</b></p><p>Annual Cashflow (\$mln RT2010)</p><p>Cumulative Cashflow (\$mln RT2010)</p><p>Legend: Annual Cash Flow (\$mln RT2010) - 7% (blue bars), RT CAPEX (light blue bars), Cum cashflow 0% (blue line with circles), Cum cashflow 7% (red line with triangles)</p></div>																					
Summary Economics	At Ranking PSV (\$60/bbl RT10)	NPV7% (\$mln)	VIR7%	RTEP (%)																		
	Base Case (50/50) – Pre-FID	-0.6	NA	NA																		
	SSAGS +2NAG + 12 New Oil wells	178.6	0.52	23.3%																		
	SSAGS +2NAG + 12 New Oil wells + FYIP (Ph1 + Ph2)	360.4	0.61	24.5%																		

## ***Section 1: The Proposal***

### **Management Summary<sup>1</sup>**

The Southern Swamp area comprises 10 fully appraised fields, 10 partially appraised fields (PAFs) and 4 un-appraised developments (UADs) with current Scope For Recovery (SFR) of 541.7 MMstb oil and 1.833 TCF gas. The fields are situated in OMLs 35, 36 and 46 in the coastal swamp area, 65km South of Warri. All existing production in the area is gathered into four existing flowstations at Tunu, Ogbotobo, Benisede and Opukushi. The produced oil in the area is evacuated via Trans Ramos pipeline (TRP) to Forcados Terminal whilst the associated gas is currently flared.

An opportunity has been identified to progress the southern swamp AGS in tandem with the completion of Forcados Yokri Integrated Project (FYIP). Indeed SSAGS and FYIP have since been identified as a source for domestic gas supply (Reference SPDC May 2009 plan conveyed to NNPC on letter CR/SPDC-2009-05-00000332 of 27th May 2009). The SSAGS is part of AGS2 programme that is funded in 2010 by all JV partners. The synergy between SSAGS and FYIP is based on utilising common infrastructure and ullage in the surface assets provided for in FYIP by progressing the SSAGS project alongside the completion of FYIP. The scheduling is such that FYIP onshore and offshore, including the FY NAG, will be completed ahead of the On-Stream Date (OSD) of SSAGS. This has been presented to UIG / UI leadership and considered a development worth progressing to FID decision (The economic indices are shown in page 1 as Full Project and summary of the execution strategy is attached as Appendix 1). Post On-Stream Date (OSD) SSAGS will have a peak production of 68kbopd and 153MMScf/d. And when combined with FYIP, production will peak at 122 kbopd oil and 212MMScf/d of gas. The gas volume will amount to 10% of SPDC's Domestic Supply Obligation by 2015. The two projects provides flares own solution in Forcados Yokri and southern swamp fields on dates shown in table below.

*Table 1: Summary Project Information*

<b>Project</b>	<b>First Gas (50/50)</b>	<b>First Gas (90/10)</b>	<b>Forecast oil peak (Mbopd)</b>	<b>Forecast sales gas peak(MMS cf/d)</b>	<b>(SFR) MMboe</b>	<b>Total Investment USD mln</b>
<b>SSAGS (2NAG+12 Oil wells)</b>	Feb-14	Jan-15	68	153	318.1 <sup>1</sup>	1,427
<b>FYIP (ph.1+2) + FY NAG</b>	Jun-13	Sep-14	59	61	329.3 <sup>2</sup>	1,984 <sup>3</sup>
<b>Full Project (SSAGS + FYIP)</b>	Feb-14	Jan-15	122	212	647.4	3,411

<sup>1</sup> Total SFR in the field is 857.7 MMboe. <sup>2</sup> Additional reserves of 205.4 MMboe is available for further development in FY. <sup>3</sup> FYIP Cost includes prior years spend.

The Gas Flaring (Prohibition and Punishment) Bill 2009 yet to be passed into law specifies Oil and gas companies that are non-compliant post deadline (to be set out by the bill) would be required to pay a fine not less than the cost of gas at the international market plus another 50% of the penalty sum to the Local Government Area for community development activities. The likely impact of this will be shut in of the affected fields (including Forcados Yokri field currently with AG solutions but not commissioned). Besides it will also cascade to the erosion of the Western Division re-entry successes, non-renewal of expiring Acreage Licenses due in 2019, loss of surface asset to vandalism and loss of opportunity to develop and book significant reserves (both NFA and FOD).

This pre-FID Investment Proposal is to cover the following scope:

- 1) **Scope Rationalisation and Updating Front End Engineering Design (FEED):** The original concept and FEED for the Southern swamp field AGS was carried out for the full SSIOGP case in 2004 with gas export to NLNG. A revised concept for SSAGS NFA and export to Domestic Market (through the RPA – Forcados Yokri – Odidi pipeline) was adopted at a selection workshop held in August 2009 following from DRB steers in 2008. The project proposal now is based on the same concept but with a mini FOD in order to maximize the benefit of the AG infrastructure to be provided. Therefore as part the pre-FID spend, F\$2.5m is budgeted to cover for the cost of engineering man-hours (third party costs in Shell FEED office and/or Projects & Technology organisation) to review impact on chosen concept, carry out scope rationalisation (of the original SSIOGP) and update the previous FEED. The sequence of activities is shown in *Figure 2* of the appendix.
- 2) **Subsurface Maturation work:** A mini FOD involving the drilling of 2 NAG wells and 12 Oil wells is being added to the project scope. Maturation of the 12 oil wells had earlier been conducted during the erstwhile SSIOGP, but need to be updated. The NAG development, which is aimed at keeping Gas production plateau above 100 MMscf/d for the project cycle, is relatively new and need some maturation studies to produce well proposals and update FDP. The cost of this study is estimated at F\$2.2m. .
- 3) **Project Management activities;** This is to cover cost of staff salaries, travels and incidental costs.
- 4) **Survey & Permits Acquisition/revalidation** As part of SSIOGP surveys and Permits had been sought including PTS and ESHIA and these have lapsed. It is therefore necessary to reengage efforts towards revalidating these permits as well as re-enlist the goodwill from host communities towards a secure Freedom To Operate. In addition, the cost will enable the acquisition of baseline data and to embark on the EIA process for the 2NAG wells in Dodo North
- 5) **Sustainable Community Development (SCD) activities:** As this is pre-FID, stakeholder engagement is minimal since project definition is still on-going. However, the provision in the pre-FID IP is to cater for preliminary community engagement to prepare ground for FTO. The full GIP post DG4 will provide for SP at 2.5% of the project CAPEX. The SCD estimates for pre-FID IP proposal (at 0.05%) is at Level-1 which represent current ‘best guess’ of what the project cost could look like eventually.

The full scope of the project will be the subject of GIP proposal to be issued in due course. Estimated full scope project phased expenditure is shown table below. Meanwhile, the circa \$1 bln required for the completion of FYIP (which is post FID) is split into:

1. Completion of original FYIP scope : \$460m
2. Asset Integrity works (re-entry type works on estuary clusters / bulklines): 480m
3. New Activities (Power, HC dew pointing + NAG Well): \$160m

It's noteworthy that >50% of the cost is coming from activities extraneous to FYIP and replacement due to natural equipment degradation arising from the security induced interregnum of 2006 to 2008. To absorb the additional cost a revised GIP proposal will be issued after VAR 3 & 4

Table 1: Full Project CAPEX phasing

in USD mln, MOD, (50/50), 100% (incl contingency)	Prior Years	2010	2011	2012	2013	2014	2015	2016	TOTAL
SSAGS CAPEX		7	278	457	366	281	30		1,420
SSAGS OPEX (SCD)		0	1	2	2	1	0	0	7
FYIP ph.-1 & 2 CAPEX	965	48	171	347	308	140	0	0	1,979
FYIP ph.-1 & 2 OPEX (SCD)		0	1	2	2	0	0	0	6
Total CAPEX (50/50)	965	55	456	922	719	365	30	0	3,513
Total SCD (50/50)		0	2	5	4	2	0	0	13
Grand Total	965	55	458	927	723	367	30	0	3,526

## Section 2: Value Proposition and financial context

This pre-FID Investment Proposal is required to complete early activities to define the project scope in full and have a clear idea of cost and production forecast as an input into full GIP proposal. The overall project is to eliminate routine flaring associated with oil production in the area and together with additional wells to be drilled, for ullage filling, will develop reserve volumes of 318.1 MMboe. Out of the total volume, NFA produces 150.2 MMboe and 167.9 MMboe will come from the new development. The project will also provide platform for future development of an additional SFR volume of 539.6 MMboe in the Southern Swamp Fields.

### Summary Economics

The Pre-FID economics was done on a cost only basis and expensed in the year it's incurred. The full value of the project can only be realized on full project execution post-FID.

The full project (including the pre-FID spend) was evaluated on a forward-look basis using the post flares down NFA + FOD production forecast (Oil and AG) for the affected fields and 50/50 level II CAPEX estimates. The gathered gas is expected to be sold to the domestic market.

**Table 2: Economics Grid - Pre-FID**

PV Reference Date: 1/7/2010	NPV (S/S \$ mln)		VIR	RTEP	UTC (RT \$/boe)		Payout-Time (RT)	Maximum Exposure (S/S \$mln RT)
Cash flow forward from: 1/1/2010	0%	7%	7%	%	0%	7%		AT
Base Case								
SV (\$50bbl RT10)	-0.6	-0.6	NA					
RV (\$60/bbl RT10)	-0.6	-0.6	NA	NA	0	0	N/A	\$0.9 (2010)
HV (\$80/bbl RT10)	-0.6	-0.6	NA					
BEP (\$/bbl)					N/A	N/A		

### Key Project Parameter Data (Shell Share)

Parameter	Unit	Low	Mid	High	Comments
Capex (MOD)	US\$ mln	0	0.00	0.0	
Investment Opex	US\$ mln	0	2.1	0.0	
Sales Volume	mln boe	0.0	0.0	0.0	
Start Up Date	mm-yy	NA	NA	NA	

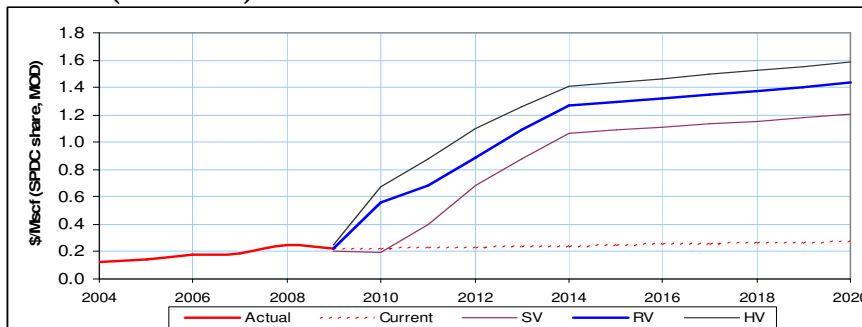
**Table 3: Economics Grid – Full Project**

PV Reference Date: 1/7/2010	NPV (S/S \$ mln)		VIR	RTEP	UTC (RT \$/boe)		Payout-Time (RT)	Maximum Exposure (S/S \$mln RT)
Cash flow forward from: 1/1/2010	0%	7%	7%	%	0%	7%		AT
Base Case (SSAGS+2NAG wells + 12 New Oil Wells)								
SV (\$50bbl RT10)	299.9	128.5	0.37					
RV (\$60/bbl RT10)	394.7	178.6	0.52	23%	6.9	9.2	2016	\$175.0 (2013)
HV (\$80/bbl RT10)	562.8	267.4	0.78					
BEP (\$/bbl)								
Sensitivities (using RV RT)								
PIB sensitivity for base case		156.3	0.46					
SSAGS +2NAG + 12 New Oil wells + FYIP	853.2	360.3	0.61				2016	\$305.8 (2013)
SSAGS +2NAG + 12 New Oil wells +FYIP (FLC)	829.4	296.2	0.28				2016	\$316.9 (2013)

### Economics Assumptions

- Oil PSV of \$60/bbl RT10 and 2009 Domgas RV PSV based on NGMP (see Fig 1 below) were used
- 31/12/2009 ARPR (Annual Review of Petroleum Resources) OPEX was used for existing facilities (except Ogbotobo) and SPDC Generic OPEX was used for new facilities as well as Ogbotobo.
- GHV of 1000 btu/scf for gas to Domgas.
- Associated Gas Framework Agreement (AGFA) incentive was assumed to apply.
- Flare penalty of \$4/Mscf non-tax deductible.
- NDDC levy of 3% total expenditure.
- Education tax of 2% assessable profit.
- Abandonment cost is estimated at 10% of total project RT CAPEX.
- SCD Cost was provided by project, 0.5% of CAPEX

**Fig 1: SPDC (Producer) share of Domestic Gas Price trend and PSV Profiles**



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

#### **Technical**

**Surface Facilities Capacity:** The export route for the SSAGS gas to the domestic market as conceived will utilise the existing RPA – Forcados Yokri Pipeline from whence it will flow through Yokri – Odidi Pipeline to ELPS. To prevent significant slugging, a minimum flow of 100MMScf/d is required in the RPA-FY line. But the NFA volume from SSAGS will be no more than 60MMScf/d which is insufficient to flow in the RPA-FY line. Therefore to meet this technical feasibility, it is necessary to drill additional wells (12 oil wells + 2 NAG well) at SS to support the use of this line. This additional scope, increases CAPEX and time required for development work (updating FDP and well proposals including regulatory approvals) which may significantly impair FID.

#### **Mitigation**

To shorten development time, recourse will be made to SSIOGP studies to quickly update FDP and produce well proposals for the best 12 wells and the NAG wells. Engagement with regulatory authorities shall be intensified in order to facilitate early approvals. Also from preliminary economics the value contributions from the additional wells outweigh the impact of the CAPEX increase.

**Scope creep from facility deterioration:** In view of the long project execution time (about 4 years) and other possible delays further deterioration of the existing facilities could occur, thereby leading to additional work.

#### **Mitigation**

Ongoing re-entry project is expected to address technical integrity issues on existing facilities and restore them to operation. Other facilities such as the RPA-FY pipeline will be pigged and preserved with Nitrogen whilst deliberate efforts will be put in place to develop/update brown field scope of work for the existing flowstation and interconnecting pipelines during the FEED and Detailed Engineering Design works and this will be included in the overall contract scope.

**Integrity of Trans Ramos Pipeline for Oil evacuation:** Recent integrity surveys by IP (2006) and hydrotest (2008) shows defects and the line could only hold pressure to 40bar, leading to de-rating of line to 30bar maximum operating pressure.

*Mitigation*

The current pressure rating of 30bar can support flow rate from Southern Swamp up to 180 mbpd, if no other field is evacuating through the line. The replacement of Trans Ramos Pipeline (TRP) is planned in BP09 with OSD of 2016. Acceleration of the replacement project OSD will be considered in BP10.

**Nigerian Content Development (NCD)**

An NCD bill has passed through the national assembly and is now awaiting approval by the executive. Full compliance with this bill, which will be required upon passage, will significantly delay this project as there is presently limited capacity in country to meet requirement in line pipes, steel plates and fabrication.

*Mitigation:*

Early engagement with the Government to see the need to grant waivers, as provided for in the bill, will be pursued.

**HSE**

The project though targeted at environmental conservation, is expected to have some Health, Safety, Environmental and security risks. These include but not limited to emissions into the environment and transportation hazards during construction phase. In addition, due to high risk involved during execution phase, contractor's HSE incompetence could lead to incidents.

*Mitigation*

The project will ride on earlier ESHIA approval granted for SSIOGP, with only updates to be made on EMP. Lesson learnt from on-going AGS1 projects will be applied in updating a fit-for-purpose project HSE case to manage all significant risks to ALARP. In addition, contractors to be nominated shall be competent to manage construction risks.

**Security & Social Risks:**

The project is located in the swamp of the Nigeria Delta; community interfaces, HSE and security issues are particularly significant in these areas, highlighted by the rampant cases of hostage taking, armed attacks and sabotage of the export pipeline systems.

*Mitigation:*

The amnesty programme of the federal government has helped to calm the situation down although uncertainty still pervades. Therefore the security Information Network Centre (SINC) will monitor Delta threat traffic and provide timely early warning to the project executors on a ``need to know and act`` basis. All work will be done within approved security plan through the Head of Security operations – West. Community interface will be managed through the Global Memorandum of Understanding (GMoU) to be deployed in alignment with project schedule. Community/ local government engagements have commenced. Also, allowance has been made for funding of social investment programmes and local participation under the GMoU. Remote fabrication works will be maximized and done at safe and secure location thereby limiting site activities to the barest minimum.

**Commercial**

Contracting: Without necessary enablers, the contracting process may go through open tendering, which may take significant length of time to place the contract, resulting in project delays.

*Mitigations*

Contracting strategy is premised on direct negotiation with lowest bidders from the 2006 tendering exercise, subject to NAPIMS approval. There is good chance of success as it aligns with NAPIMS original intention with Shell. In the unlikely event it fails, close tendering will be pursued.

## Political

SHELL Reputation: The SSAGS project is one out of many projects presented to NNPC / Government as one source of supply for the much needed gas to the domestic market, which has been accepted with NNPC providing required funds in 2009 / 2010. If this project is discontinued, it will significantly impact on Shell reputation as well as impair the ability to meet our Domestic Supply Obligation (DSO). The two projects supply circa 200MMScf/d or 10% of the DSO volume by 2015.

### *Mitigation*

Develop more efficient and economically viable concepts to secure FID approval.

### **Alternatives Considered**

- 1) Continue to produce the fields and pay flaring penalty till end of field life: Rejected: This is not recommended viewed against the environmental concerns, imminent stiffer penalties, the impact on company reputation and the Group commitment towards Flares Out.
- 2) Shut-in and divest from the fields: Rejected: Significant recoverable volumes and production will be lost..
- 3) 3<sup>rd</sup> Party Alternative Solutions: There are on-going bids from 3<sup>rd</sup> parties to collect and harness the AG presently flared from these fields. The evaluation of these bids is under way and when concluded will be ranked along with the value proposition from this project.

### ***Section 4: Carbon Management***

The purpose of this project is to limit green house gas emissions to the environment. Opportunity will be pursued to register the Project under the Clean Development Mechanism (CDM) in order to access an income stream from tradable Certified Emissions Reduction Certificates (CERTS) which will enhance project economics and make it more competitive compared to others in the investment funnel. In addition, the project will introduce technological solution for associated gas utilisation in Nigeria.

### **Section 5: Corporate Structure, and Governance**

This project fits within the existing SPDC corporate structure and governance. Consequently, it will comply and respect all relevant and existing governance.

### ***Section 6: Functional Support and Consistency with Group and Business Standards***

This proposal complies with Group Business Principles, policies and standards. Full functional support covering SCD is provided for in the full project scope. Additionally, there will be a focus on Nigerian Content Development (NCD) as already indicated above. The Finance, Supply Chain Management, Legal, and Tax functions have provided functional support for this Investment Proposal.

### ***Section 7: Project Management, Monitoring and Review***

The Major Projects Team under EPG-TPD is managing the project. The Project Assurance Plan is compliant with the ORP having project specific DRB, DE and BOM in place. A Project Control and Assurance Plan (PCAP) is being developed to define the applicable controls for the SELECT and DEFINE phases.

### ***Section 8: Budget Provision***

The project is in BP09 base plan as well as JV 2010 programme. .

### ***Section 9: 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>	2.12	0.00	0.00	0.00	0.00	0.00
<b>Cash Flow</b>						
SCD Expenditure	0.05	0.00	0.00	0.00	0.00	0.00
Capital Expenditure	2.08	0.00	0.00	0.00	0.00	0.00
Operating Expenditure	0.06	0.00	0.00	0.00	0.00	0.00
Cash Flow from Operations	0.34	0.38	0.35	0.35	0.34	0.06
Cash Surplus/(Deficit)	(1.74)	0.38	0.35	0.35	0.34	0.06
<b>Profit and Loss</b>						
NIBIAT +/-	0.08	(0.02)	(0.02)	(0.02)	(0.03)	(0.22)
<b>Balance Sheet</b>						
Average Capital Employed	1.25	2.30	1.99	1.79	1.57	2.82

### ***Section 10: Disclosure***

Material disclosures, if any, will be done in line with the Group and SPDC Disclosure policies and guidelines.

### ***Section 11: Financing***

This investment is expected to be financed with JV partners funding (within the IPP/Domgas budget), and Shell Share of capital expenditure will be met by SPDC's own cash flow.

### ***Section 12: Taxation***

There are no unusual taxation features at this stage

### ***Section 13: Key Parameters***

The following is the main aspect of this proposal:

- Approval for \$2.1 mln Shell Share, MOD, 50/50 (i.e. 7.1mln 100% JV) for the early works towards execution of AG Solutions for the Opukushi, Benisede, Ogbotobo and Tunu nodes.

### ***Section 14: Signatures***

This Proposal is submitted to UIG/P for approval.

Supported by:

For Shareholder approval:

.....  
Van Velden, Rob W SPDC EPF-G-T

.....  
Andrew Birch SPDC-EPG-TP,

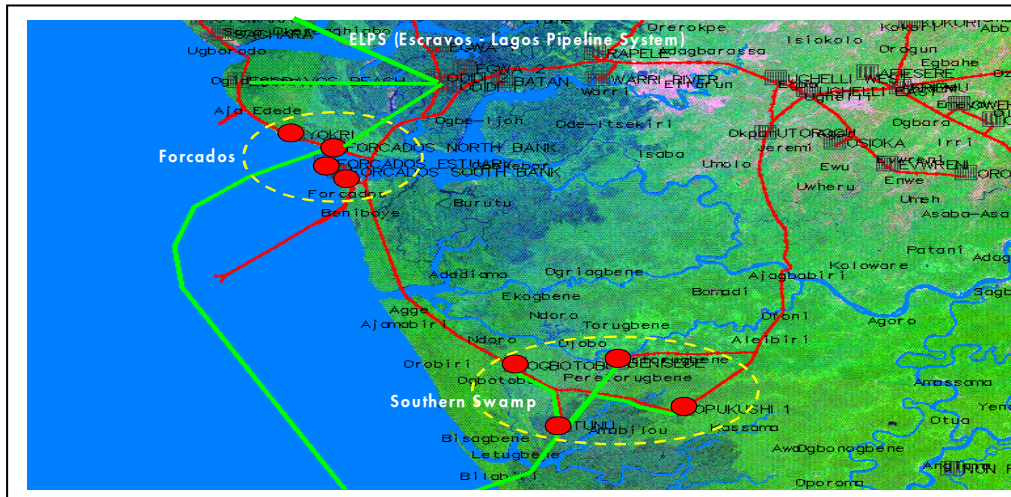
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*Initiator: Toyin Olagunju, SPDC-EPG-TPD*



## Appendix: Forcados Yokri Integrated Project and Southern Swamp AG Solutions (FASSAG)



### Background:

Currently with four flowstations each, oil production commenced in Forcados Yokri area (OML 43 and 45) and Southern Swamp area (OML 35, 36 and 46) in 1970 and 1976 respectively. These golden assets, at peak, produced over 300kb/d. After some 30yrs of production, re-development projects were envisaged for both in late 1990s. Unfortunately, both projects stalled at different stages in 2006 (FYIP – close to commissioning, SS – Pre DG4).

**FYIP** – With FID in 1999 (revised in 2007 to \$1.2bln), scope covered development of total expectation reserves of 292MMstb (proved reserves of 201MMstb) of oil and 92 bscf (proved reserves of 52bscf) of gas. At about 90% completion in Feb 2006, it was the site of first militant insurrection in Niger Delta. Project stalled and assets abandoned in a hurry without preservation. However, drilling of planned 25new oil wells and 1 sidetrack had been completed (12 hooked up); gas lifting infrastructure yet to commence; North Bank Gas CPF (230Mmscf/d), South Bank (45kb/d) and Estuary flowstation (120kb/d) were some 95-97% completed whilst North Bank (45kb/d) and Yokri Flowstation (60kb/d) were about 75 and 60% complete respectively. SPDC re-entered the field in 2008 and now producing about 50kb/d.

**Southern Swamp (SS)** – With total SFR in excess of 541MMstb and 1.8Tcf of oil and gas, it was initially conceptualised as AG gathering project in 1999. However, it mushroomed into Integrated Oil and Gas project through DG3 and to Contract award stage in 2006 when it stalled. It was planned to develop 599MMstb with 53 wells, upgrade Ogbotobo flowstation (45kb/d) and replace those of Benisede (60kb/d), Opukushi (90kb/d) and Tunu (135kb/d), and provide AG gathering alongside. The bids received were much higher than Company estimate. Being the first in the new trend in the Delta, it was difficult to rationalise at the time. Also, the expense of replacing 3 flowstations and ambitious drilling programme damaged the project economics. It therefore stalled.

### Re-conceptualisation and Scope:

Both projects were initially planned to export gas to NLNG via OGGS. With Govt drive for increase in Domestic gas production and backed-up with funding and contracting enablers since 2008, a new opportunity emerges to complete FYIP, re-conceptualise SSAGS for optimum infrastructure and open up these corridor - reserves protection (>300MMstb), oil production (>80kb/d), re-use of idle asset (valued> \$2bln), domgas/flares-out (>150MMscf/d), sustainable development, etc.

At SS, some 60MMscf/d of AG will be gathered from Benisede, Opukushi and Ogbotobo with simple screw/LP compressors and send to Tunu CPF for dew pointing and further compression to join OGGS at RPA where gas could be sent through Forcados to domestic grid or southwards to NLNG. 2 NAG wells at Dodo will compliment the AG to meet minimum flowrate on OGGS (eliminate huge and

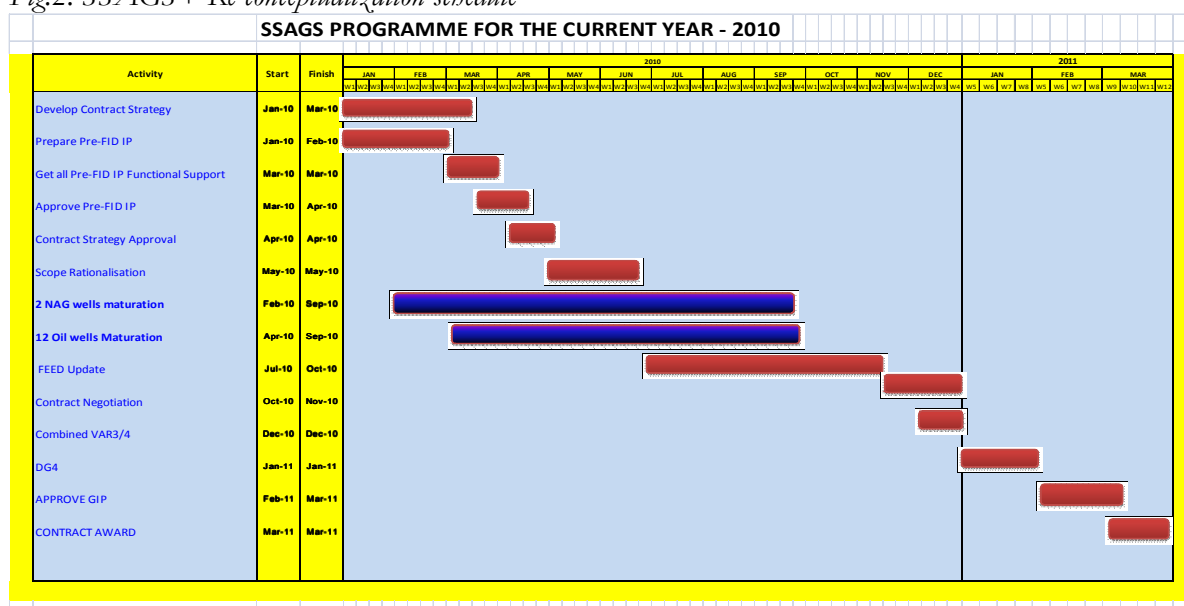
expensive slug catcher) and 12 oil wells will take advantage of the rejuvenation to increase production from current rate of about 40kb/d to some 80kb/d.

**FYIP** will be completed with some changes to the initial concept. Most of the \$900m worth of installation remained intact even after 4 yrs of abandonment, except \$32mln worth of marine cables that have been stolen and natural degradation of installed hardware. Also, the production from Yokri has deeped below 10kb/d from initial projections of > 30kb/d (unsuccessful drilling campaign).

**RP-A:** Scheduled shut-down of Riser Platform A (RPA) in Oct 2010 will provide the opportunity for minor modifications that will enable reverse flow of Northern leg of OGGs to Forcados and segregate/protect dedicated NLNG nominations from EA and Bonga. The cost modification is part of SSAG estimate but planning should commence in Q1 2010.

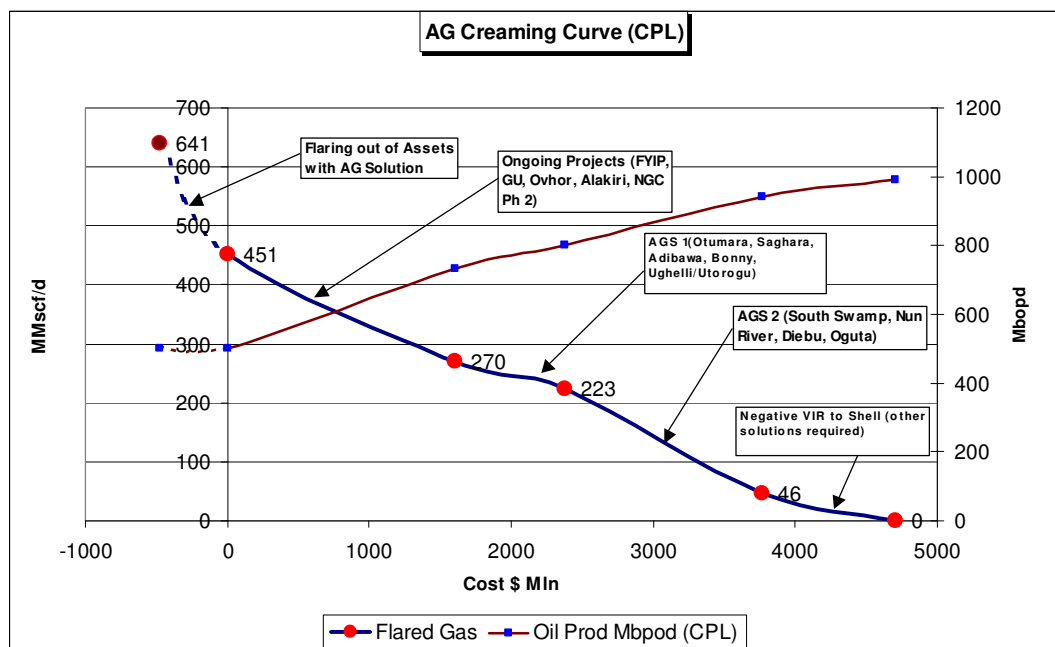
**Volumes and Figures:** Various scenarios have been evaluated for combined FYIP and SSAGS project. The leading concept (FYIP + 1NAG well+HC Dew Pointing and SSAGS + 2NAG + 12 best Oil wells) satisfies all the objectives and forward looking economics showed compelling values - VIR/NPV @7% (AGFA) of 0.61 and \$360.3m respectively. PIB4.2 sensitivity shows VIR/NPV @7% of 0.46 and \$156.3m respectively. It is important to note that a conservative approach have been adopted in light of recent experience in the delta e.g. 50-60% deferment on production.

Fig.2: SSAGS+ Re-conceptualization schedule



The two projects fits into the overall SPDC flares out programme as shown in the creaming curve below, with FYIP in the basket of on-going projects and SSAGS in the AGS2 basket..

Fig.3: AG Creaming Curve



Data for the above Creaming Curve derived from the overview of SPDC gas flaring performance/plans presented to the Executive Director E&P and the Chairman of the Royal Dutch Shell Board in February 2009 and is based on unconstrained potential field capacities, i.e. full flow, no security or funding constraints. It does not