The Shell Petroleum Development Company of Nigeria Limited

Internal Investment Proposal

Summary Information

Directorate	Technical Directorate
Group equity interest	100% in SPDC, whereas SPDC is the operator of an unincorporated JV with a 30% interest.
Other shareholders / partners	Nigeria National Petroleum Company (NNPC: 55%), Total E & P Nigeria Ltd (TEPNG: 10%), Nigeria Agip Oil Company (NAOC: 5%) in SPDC-JV
Amount	US$36.77 mln Shell share, MOD 50/50 is requested for approval in this Pre-FID proposal of the 100% JV estimate of US$83.3 mln. This proposal includes Shell equity share (30%) of US$24.99 mln and extra Shell's MCA commitment of US$11.78 mln on the NNPC equity.
Project	**Nembe Creek Phase 2 FOD (Pre FID)**
Main commitments	

Cost	100% SPDC JV	Shell Share Equity	Shell Share MCA	Total Headline Size (Shell Share)
Drilling and completion materials	14.74	4.42	5.41	9.83
Flowline materials & Facilities (line-pipe)	17.39	5.22	6.37	11.59
Total Capex	**32.13**	**9.64**	**11.78**	**21.42**
Land acquisition and location Preparation	21.84	6.55	0.0	6.55
Other expensed cost (smartwell completion materials)	26.99	8.10	0.0	8.10
SCD & FEED Opex	2.34	0.70	0.0	0.70
Total Opex	**51.17**	**15.35**	**0.0**	**15.35**
Total (Capex + Opex)	**83.30**	**24.99**	**11.78**	**36.77**

All values are in $ million

Source and form of financing	This project is to be financed via the Alternative Funding (AF) mechanism. The premise for this proposal is the Modified Carry Agreement (MCA) funding vehicle and the proposal is part of the Trans Niger Pipeline Loopline (TNPL) MCA Bundle.
Summary cash flow (Shell Share)	This is a Cost-Only evaluation. Cash flow plot not applicable.
Summary economics	

Summary Economics (RV-RT12)	NPV7% (USD mln)	RTEP (%)	VIR7%
Pre-FID Base	-6.8	N/A	-0.33
Pre-FID High Capex	-8.1	N/A	-0.33
Full Project - Base Case	119.7	>50	0.65

Section 1: The Proposal (Management Summary)

This pre-FID Investment Proposal is required to secure funding USD 36.77 mln total Shell Share based on MCA funding (USD 83.30 mln 100% JV) for the execution of Pre-FID activities required for the earliest set of wells in the Nembe Creek Phase 2 Further Oil Development (FOD) project.

The key business driver for this project is to increase production through new oil addition and contribute to keeping the Niger Coastal Trunk Line (NCTL) and Soku Gas Plant full, and hence support SPDC's gas commitment to NLNG. The selected Nembe Creek Phase 2 FOD concept to address this, as described in the 2012 FDP Update, consists of drilling, completion and hook-up of 8 new oil wells and 2 Recompletions, leveraging smart wells technology, to develop 73.9 MMstb (expectation recovery) of oil with 35,500 bopd initial potential. The total cost estimate of the project as in the approved TNPL MCA Bundle GIP is $314 mln (100% JV).

Produced oil and gas from the wells will be evacuated via the four existing Nembe Creek Flowstations. The evacuation strategy is to utilise the ullage at the facility.

The 10 planned wells are currently on the 2013 Short Term Drilling Sequence (STDWS) and will be drilled in a campaign with the first well spudding from Q4, 2013. While final investment proposal for the full project scope is being pursued, preparation needs to be made for location constructions and procurement of long lead materials, especially flowlines and completion accessories. Average lead time for most of the wellhead and completion materials is 6-9 months.

This project was approved for Alternative Funding (AF) arrangement under the Trans Niger Pipeline Loopline (TNPL) MCA bundle for which a Group Investment Proposal (GIP) was endorsed in December 2012.

Table 1: Nembe Creek Ph2 FOD Pre-FID Scope-Phased Expenditure Table ($ MOD 100% JV)

Description	2012	2013	2014	Total
Long Lead Materials (line pipes, wellhead platforms, casing & tubulars, completion materials and smart accessories)	-	23.86	35.26	59.12
Land Acquisition for one well (250m x 250m)*	-	0.10	-	0.10
Location Preparation (10 locations total)#	-	6.45	15.29	21.74
Opex (FEED+SCD Expenditure)	0.32	0.76	1.26	2.34
Total	**0.32**	**31.17**	**51.81**	**83.30**

* Land acquisition is for one well requiring a new surface location. This well (UILP-2) is to be drilled from 2014.

\# Location preparation covers the first 8 wells on the drilling sequence; these wells are to be drilled off existing well slots and do not require land acquisition

Mitigation plan (in case FID does not materialize in 2013 as planned):

- **Long Lead Items (LLIs) for 10 planned wells:** Pre FID costs have been treated as opex unless long lead materials could be transferred to other committed projects within SPDC portfolio. Based on agreement with another project team, about 39% of this pre FID IP cover (amounting to $32.1 mln 100% JV for drilling and completion materials) can be utilised in the SSAGS+ project on which FID was taken in April 2012. The balance of $51.2 mln (100% JV) covering land acquisition, smartwell accessories and location preparation cannot be transferred to other projects presently. This fraction of the cost has been treated as opex in the economics in line with Group guidelines on capitalization of pre-FID costs. However, there is a chance that we could

get some of this expensed cost back into capex once drilling has commenced considering that we aspire to secure FID for the main project within 12 months.

- **Land Acquisition (250m x 250m**): Acquired land will be utilized whenever the FID finally materializes.

Section 2: Value Proposition, Strategic and Financial Context

The following considerations underpin the importance of this project:

- This Nembe Creek Phase 2 development project aligns with SPDC's oil production growth drive and also contributes to keeping the Nembe Coastal Trunk Line (NCTL) and Soku Gas Plant full. Initial potential (sum total from the 10 wells) is about 35.5 Mbopd with incremental production of up to 15 Mbopd taking into account surface facility constraints.
- This project was approved for Alternative Funding (AF) under the Trans Niger Pipeline Loopline (TNPL) MCA bundle comprising of TNP Loopline, Awoba FOD, Nembe Creek FOD Phase 2 and Nembe Creek Sidetrack projects. This proposed Nembe development supports cost recovery for the TNPL which is pipeline project. A GIP for the Trans Niger Pipeline Loopline (TNPL) MCA Bundle has already been endorsed (see commitment summary in the extract below).

Table 2: Trans Niger Pipeline Loopline (TNPL) MCA Bundle IP Summary Extract

Trans Niger Pipeline (TNPL) MCA 2 Projects	100% SPDC JV	Shell Equity Share	SPDC LTD MCA Share	Total Headline Size (Shell share)
Trans Niger Pipeline	929	279	323	602
Awoba FOD	196	59	71	130
Nembe Creek Phase 2	314	94	115	209
Nembe Creek Side Track	98	29	30	59
Total TNPL MCA 2 Bundle	**1537**	**461**	**539**	**1000**
All Values in $Million				

Summary Economics

The Pre-FID economic evaluation was carried out as a cost-only evaluation on a forward looking basis using 50/50 Level II cost estimates.

Long lead materials were generally treated as opex except for those elements/items where alternative use was identified in a scenario where this Nembe Creek Phase 2 project does not materialize. Thus, only 39% of this pre FID proposal is deemed capitalisable in the economics analysis (details are shown in Table 3 below).

The following sensitivities were carried out on the pre-FID base case to show the impact of the various scenarios on the value of the project.

- High Capex,
- 1 Year project delay,
- 1.5% cost markup due to Benchmark Verified and Approved (BVA) issues with NNPC.

Table 3: Nembe Creek Ph2 FOD Pre-FID Economic Grid (Shell Share)

PV Reference Date: 1/7/2013	NPV (S/S $ mln)		VIR	RTEP	UTC (RT $/boe)		Payout-Time (RT)	Maximum Exposure (RT- AT)
Cash flow forward from: 1/1/2013	0%	7%	7%	%	0%	7%	(yyyy)	$mln (yyyy)
Base Case								
SV ($70/bbl RT13) *								
RV ($90/bbl RT13)	-5.7	**-6.8**	**-0.33**	N/A	N/A	N/A	N/A	*12.6 (2014)*
HV ($110/bbl RT13) *								
Sensitivities (using RV)								
High Capex		**-8.1**	**-0.33**					
1 Year Project Delay		**-6.2**	**-0.33**					
1.5% Cost mark-up due to BVA issues		**-8.0**	**-0.37**					

* SV and HV same as RV as a cost only evaluation

Key Project Parameter Data Ranges (Shell Share)

Parameter	Unit	BP12 Provision	Low	Mid	High	Comments
Capex (MOD) *	US$ mln	73.60	N/A	21.42	25.70	* BP12 Value represents Full Project scope and based on JV funding
Opex (MOD)_Project	US$ mln	NA	N/A	15.35	18.42	SCD and Pre-FID Opex
Production Volume	mln boe					
Start Up Date	mm/yy					
Production in first 12 months	mln boe					

Further analysis was carried out to ascertain the value of the project's full scope when the project takes FID using the 50/50 level II full project cost estimates and the incremental production forecast. The details are shown in Table 4 below.

Table 4: Nembe Creek Ph2 FOD Full Project Scope Economic Grid (Shell Share)

PV Reference Date: 1/7/2013	NPV (S/S $ mln)		VIR	RTEP	UTC (RT $/boe)		Payout-Time (RT)	Maximum Exposure (RT- AT)
Cash flow forward from: 1/1/2013	0%	7%	7%	%	0%	7%	(yyyy)	$mln (yyyy)
Base Case								
SV ($70/bbl RT13)	176.3	**88.7**	**0.48**					
RV ($90/bbl RT13)	231.3	**119.7**	**0.65**	>50	10	15	2016	*33.9 (2014)*
HV ($110 RT13)	286.5	**150.5**	**0.82**					

Economics Assumptions

Pre-FID Investment

- NDDC levy 3% of total expenditure.
- Abandonment cost is estimated at 10% of total project RT CAPEX

Full Project Scope

- Oil PSVs of $70/bbl @SV-RT13, $90/bbl @RV-RT13 (base) and $110/bbl @HV-RT13 with appropriate Bonny offset applied.
- 2013 NLNG PSV was used.
- Oil was taxed under PPT (PPT tax rate of 85%).
- Gas was taxed under CITA with AGFA incentives.

- NDDC levy of 3% total expenditure.
- Education tax of 2% assessable profit.
- GHV of 1150 BTU/Scf used.
- Gas flare penalty of $3.5 /Mscf was applied and is not tax deductible
- Abandonment cost is estimated at 10% of total project RT CAPEX.

MCA Specific Assumptions

- All project costs on the MCA to be recovered through cost oil. Partial recovery of the carry costs through a Tax Relief against Petroleum Profit Tax currently at 85%.
- Oil PSVs of $70/bbl @SV-RT13, $90/bbl @RV-RT13 (base) and $110/bbl @HV-RT13 with applicable offset applied for Bonny.
- Remaining carry costs recovered through Carry Oil (following the fiscal depreciation schedule),
- Share Oil (to be paid as agreed amount over a minimum period, e.g. 36 months) calculated based on the agreed Profit Oil ceiling of IRR 8%.
- Recovery to be completed by 2019 (before expiry of the Oil Mining Lease).
- OPEX and PMT not carried under current MCA arrangement. This difference will be funded through the normal JV base budget cash calls.

Section 3: Risks, Opportunities and Alternatives

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

3.1 Risks

- **NCTL Outage During Ongoing Integrity Repairs:**
  The Niger Coastal Trunk Line (NCTL) evacuates oil from Swamp East fields including Nembe Creek, Belema, Santa Barbara, Ekulama and Awoba to Bonny Crude Oil Terminal for export. Following prolonged integrity concerns on this trunkline between 2005 and 2008, it was taken out of service and its refurbishment was completed in 2010 under the NCTL MCA Project Bundle. However, the NCTL has continued to suffer integrity issue as a result of 3rd party interference related to high level of bunkering activities going on in the swamp. It has again been shut down on 15th April 2013 and the repair work to address several leak points on the line is presently ongoing. The impact on Nembe Creek field production has significant implications for SPDC overall production capacity and cost recovery which is critical for MCA-funded projects, but this is however a portfolio challenge receiving utmost of SPDC Management.

  Mitigation: The ongoing repairs on the NCTL trunkline is expected to be completed by July 2013, well ahead of Nembe Phase 2 onstream date of Q2 2014.

- **Dependency on timely delivery of outstanding Nembe Creek FOD Phase 1 workscope:**
  Nembe Creek FOD Phase 1, a precursor project to Nembe Creek FOD Phase 2 that is part of NCTL MCA Bundle, has a remote field manifold and bulkline to enable evacuation of some wells (up to 4Nos., with combined potential of 16,500 bopd) from the latter project to Nembe 4 FS where there is significant ullage. Due to initial funding constraints, the delivery of this specific workscope was delayed even though the main workscope of the Nembe Creek FOD Phase 1 project – well drilling – has been completed.

  Mitigation: SPDC Asset Engineering Team has received extra funding (US$4.81 mln, 100% JV) required to deliver the outstanding workscope (RFM fabrication and linepipe procurement has already been completed). Budget is now in place and OSD LE is Q4 2013, which is in good time for the Nembe Creek Phase 2 project schedule.

- **Project under-funding going by approved MCA Cost Ceiling:**

This project is part of the approved Trans Niger Pipeline Loopline (TNPL) MCA bundle comprising of TNP Loopline, Awoba FOD, Nembe Creek Phase 2 and Nembe Creek Sidetrack projects. When the MCA approval was received, the costs approved for Nembe Creek FOD Phase 2 was US$137.8 mln (US$250.9 mln, 100% JV). This is US$63 mln lower than SPDC's proposal of US$314mln, 100% JV).

Mitigation: Given that estimated 80% of the total project spend is related to drilling activities, SPDC Well Delivery Team will need to be challenged to achieve top-quartile delivery during drilling and completion activities. Cost saving strategies and quantifiable targets need to be identified and included in the project execution plan. Approximately US$51.2 mln of this total pre-FID cost proposal has been treated as opex. If accepted by NAPIMS to be funded from SPDC JV budget, there will be reduction of pressure on the NAPIMS-approved MCA funding.

- **Performance of Lonestar Rigs:**
  The Nembe Creek FOD Phase 2 project wells are presently scheduled to be drilled by Lonestar Rigs (203 & 204) which have experienced performance challenges in SPDC operations in recent past. Furthermore, there are currently issues with the governance of the Lonestar company making payments to the company a little bit difficult and creating a potential for work suspension. The poor performance is believed to have contributed to cost overruns during the execution of Nembe Creek FOD Phase 1 project, an 8-well drilling campaign funded under NCTL MCA Bundle. The risk is that any cost overrun could translate to sole risk expenditure unless NAPIMS approval of expenditure is obtained.

  Mitigation: SPDC is presently exploring all avenues including available legal options to resolve the challenges with payments to Lonestar rig company. Furthermore, we shall implement drilling improvement practices and also consider switching the Nembe Creek FOD Phase 2 drilling campaign to another rig sequence, e.g. Passion Rig, should Lonestar rig performance challenges subsist.

- **Delay in land acquisition:**
  Delay in land acquisition will affect the timing of the location preparation for 1 of the 10 planned wells and related activities in particularly and the overall project schedule in general.

  Mitigation: The sequencing of the wells will be optimised in such a way that wells not requiring new land acquisition can be drilled first to allow more time to manage any uncertainties pertaining to acquiring land and preparing the attendant location.

- **Community and Enabling Environment (Security, Sabotage, Political Environment):**
  Hostage taking, existence of militant groups and (heightened) threat of insurgence are current realities in the Niger Delta especially in the swamp which could threaten project execution.

  Mitigation: Global Memorandum of Understanding (GMoU) with the host community is in place with provision of 2.5% of the total project cost made for community development activities and/or projects. With improvements in the Niger Delta security following the Nigeria Government Amnesty programme, it is envisaged that there will be a reduction in community-related NPT, although it is still perceived that a safe and secure environment relies on the presence of the government security outfits in the area. A project-specific Security Plan has been formulated by the Corporate Security Team in conjunction with the Nembe District Area Security Advisor. Specific threats will be managed through the Security & Surveillance Centre (SIS) and communicated in good time to those that need to "Know" and "Act" as required.

- **HSE:**
  The project is planned to be executed under challenging circumstances in the Niger Delta Eastern Swamp.

Mitigation: A HAZID workshop has been carried out to outline key HSSE risks that could impact on the project. Resulting from this, a Project HSSE Plan (which will be supported by an ALARP demonstration) has been finalized and will be embedded in the execution plan. In addition to this, an HSE Adviser will be assigned to support its execution.

3.2 Opportunities

- **Use of existing facilities:**
  The philosophy adopted for this project is to use existing facilities as much as possible in order to reduce surface footprint associated with this project. By using existing well slots for the proposed wells, only one (1) of the 10 wells will require new location acquisition. Also, opportunity to utilize existing flowline RoW by excavation of disused flowlines has been assessed for the project. This further reduces land take.

- **Well and Reservoir Management:**
  The planned smart well completions offer an opportunity to acquire subsurface more data that will allow effective reservoir management decisions during the future field life.

- **Proved Reserves Addition:**
  The project is expected to facilitate Proved Reserves Addition (PRA) of about 7 MMstb SS (2013)

- **Knowledge Sharing:**
  This project will provide a very good opportunity for the new Wellsite Petroleum & Well Engineers to obtain requisite operations experience under the close supervision of the more experienced field personnel.

3.3 Alternatives

There are no alternatives to drilling these wells to develop the reserves outlined in this proposal.

Section 4: Corporate Structure and Governance

There is DE mandate to progress this pre FID investment proposal.

The Nembe Creek FOD Phase 2 project is in Define Phase. It is being managed in line with the ORP and fits within the existing SPDC corporate structure and governance framework.

The well proposals have been matured through the Global Well Delivery Process (GWDP) and, at the time of preparing this document, all well proposals have been signed off and sent to NAPIMS and DPR for approval.

In January 2013, an integrated value assurance review was carried out for the project resulting in CCP rating. The main findings from the review were as follows:

- The integrated project schedule is considered realistic given proposed workscope but dependent on availability of approvals and budget.
- A number of critical activities, e.g., location construction, flowline laying, drilling are dependent on timing of MCA approval from NNPC Board. The approval of pre FID funding to address long lead materials is the main objective of this investment proposal, now that MCA approval by NNPC Board has been obtained.
- Lessons from Nembe Creek FOD Phase 1 – in particular in terms of smartfield infrastructure and interface management will need to be applied in the Execute phase of this project.
- Installation of smartfield facilities in the field during the project will require training of operator, field-based and office-based staff. The existing training plan needs to be made more robust to capture resources and capabilities required to manage the project.

- The execution team will be domiciled in Matrix Engineering and resourcing of the project needed to be executed. The project management team is being resourced presently and good progress has been made.
- Project handover from the present team to the PMT should be done early enough to allow for good understanding of the project before FID. The handover is in progress after further DRB support has been obtained.

The project team is presently closing out the high urgent actions in preparation of FID scheduled August 2013.

Section 5: Functional Support and Consistency with Group & Business Standards

This proposal complies with Group Business Principles, policies and standards. Functional support for this proposal has been provided by Finance, Social Performance, Supply Chain Management, HSE, Production Operations & Maintenance, Legal, Treasury and Tax functions.

Section 6: Project Management, Monitoring and Review

Assurance Events/Gates	Date
DG1	Jun 2006
DG2	May 2007
DG3	Apr 2008
Integrated Project Review (PAR4)	Jan-Feb 2013
DG4/FID	Aug 2013*
Spud Date for 1st well	Q4 2013
OSD	Q2 2014

* The schedule represents the view presented during PAR4 held in Jan-Feb 2013.
The project schedule is presently being updated by the Project Team.

The execution of the project is managed through the Corporate Engineering Matrix Team with support from Swamp East Asset Dev Team (Field Development & Execution), Wells Delivery and Asset Engineering Teams, in line with the SPDC organizational model. Following successful completion, the wells will be handed back to the Swamp East Production Operations Team. There will be regular progress report of the well delivery activities to Asset Development Manager, the Development General Manager and to the JV Partners. All significant reviews and follow up actions had been done in the Development and Engineering Teams.

Section 7: Budget Provision

Nembe Creek Ph2 FOD is included in SPDC's business plan and has JV Partners approval. It has been approved for Alternative Funding (AF) arrangement under the Trans Niger Pipeline Loopline (TNPL) MCA bundle for which a Group Investment Proposal was endorsed in December 2012. While anticipating final endorsement of MCA proposal by NNPC Board, the IOCs had provided limited sole risk funding to support 2012/2013 long lead materials for the TNPL sub-projects. In this regard, $6mln was allocated to both Awoba FOD and Nembe Creek FOD Phase 2 projects under TNPL Bundle IP. The MCA was approved by NNPC and signed by JV Partners in May 2013. Project seeks to progress further execution under full MCA funding.

Section 8: Group Financial Reporting Impact

MCAs are accounted for in the same way as ordinary course investments in JV projects i.e. recording resulting capex, depreciation, gross revenues, royalties and taxes and associated production and reserves in line with Group Policy. The financial impact of the MCA's are calculated in line with the base case MCA specific assumptions and are indicated in the table below.

US$ mln	2013	2014	2015	2016	Post 2016
Total Commitment	22.0	14.8	-	-	-
SCD OPEX	0.3	0.4	-	-	-
Pre-FID	6.6	8.1	-	-	-
Cash Flow					
Capital expenditure	15.1	6.3	-	-	-
Cash Flow from Operations	1.6	3.1	4.5	3.1	4.2
Cash Surplus/(Deficit)	- 13.6	- 3.2	4.5	3.1	4.2
Profit and Loss					
NIBIAT +/-	- 0.4	- 0.9	0.1	0.1	- 3.7
Balance Sheet					
Average Capital Employed	6.6	14.3	13.3	9.6	1.8

Section 9: ESHIA

SCD Plan
Nembe communities and some other satellite communities (of Nembe Local Government Area in Bayelsa State) make up the communities in the project area. Interface with the communities will be through the existing GMoU that covers the area.

The implementation of the SCD contents for the Nembe Creek FOD Phases 1 and 2 are largely being run back-to-back. The Social Performance Team began the community engagements for these projects in Q2 2006. All through, the community representatives were informed of the drilling campaign in Nembe Creek will comprise all planned wells for the two phases. However, there is need to review the community stakeholder engagement and social performance plans to reflect the revised schedule of the project considering the sensitivity of this area.

EIA
EIA approvals are available from both Directorate of Petroleum Resources (DPR) and Federal Ministry of Environment (FEMV). Below is specific outline of EIA approval history for the project:

FEMV: In 2001, approval was obtained for 43 wells under umbrella of Nembe FDP. Out of this scope, further revalidation was done in 2006 to cover 8-10 wells for Nembe Creek FOD Phase 1 project. In 2010, FEMV endorsed that SPDC could continue to execute further development activities under subsisting 2001 EIA approval provided there is no change in scope. Thus, FEMV approval for project is available.

DPR: Approval for Nembe FOD was first obtained in 2008 under an umbrella of 36 legacy SPDC projects. This approval was revoked by DPR in 2010 and SPDC was requested to revalidate the EIA. Following further data gathering and EIA scope revalidation/update carried out in 2011, a new approval was obtained in Mar 2012 for Nembe Creek FDP covering Phases 1 & 2 and other associated drilling activities.

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 will be financed by the Private Partners under Alternative Funding (AF)/Modified Carry (MCA) arrangement. 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 US$36.77 mln Shell Share (US $83.30mln MOD 100% JV) to cover Nembe Creek FOD Phase 2 Pre-FID activities costs.***

Section 14: Approvals

This Proposal is submitted to UIO Leadership for approval.

Supported by:

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Erwin Nijsse *(SIEP-FUI/O)*

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

Approved by:

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Markus Droll *(SEPA-UIO/G)*

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

Initiator: _____

Jude Ekwealor and Olaniyi Adenaiye(UIO/G/DSFSS)
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Date …/…./….