The Shell Petroleum Development Company of Nigeria Limited

Internal Investment Proposal

Summary Information

<table>
<tr><td>Directorate</td><td>Finance 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>Amount</td><td>US$5.73 million Shell share, MOD, 50/50 of which US$0.28 mln is OPEX (US$ 19.09 million MOD 100% JV of which US$0.93 mln is OPEX).</td></tr>
<tr><td>Project</td><td>Tetra Systems for Emergency Response (from 2010 to 2015)</td></tr>
<tr><td>Main commitments</td><td>
<table>
<tr><th></th><th colspan="2">US$ MLN</th></tr>
<tr><th>Description</th><th>100% JV</th><th>Shell Share</th></tr>
<tr><td>CAPEX</td><td></td><td></td></tr>
<tr><td>Purchase of hardware /software</td><td>14.86</td><td>4.46</td></tr>
<tr><td>Licenses</td><td>0.69</td><td>0.21</td></tr>
<tr><td>Installation</td><td>1.33</td><td>0.40</td></tr>
<tr><td>Project management</td><td>1.28</td><td>0.38</td></tr>
<tr><td>OPEX</td><td></td><td></td></tr>
<tr><td>SCD</td><td>0.60</td><td>0.18</td></tr>
<tr><td>Post Installation Support</td><td>0.33</td><td>0.10</td></tr>
<tr><td>Total</td><td>19.09</td><td>5.73</td></tr>
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</td></tr>
<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. Formal JV partners' approval will therefore be obtained.</td></tr>
<tr><td>Summary cash flow</td><td>Cost only Project. Cash Flow chart not applicable.</td></tr>
<tr><td>Summary economics</td><td>
<table>
<tr><th>Summary economics*</th><th>NPV (USD mln)</th><th>RTEP (%)</th><th>VIR7%</th></tr>
<tr><td>Base Case</td><td>-1.1</td><td>NA</td><td>-0.26</td></tr>
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Section 1: The Proposal

Management Summary:

This proposal seeks support for the investment of US$5.73mln (Shell Share) for the implementation of Emergency Response Communication System (Tetra).

The objective of the Tetra project is to provide a reliable, fast and secure open channel communication for SPDC's emergency response, production operations, pipeline surveillance, HSE and security operations.

The 2010 scope will deploy Emergency Response communications systems to provide network coverage to Nembe FLB, Kidney Island, Nun River, Cawthone Channel, Soku and Diebu Creek areas in addition to existing operational pilot sites of PHC IA, Imo and Afam which have been operational since 2009. An emergency response communications vehicle with voice, data and video capability is also being provided as part of the 2010 scope for the Eastern division along with 80 hand portables and 35 mobile units.

A summary of the planned coverage of the Tetra communications system over the life of the project (2010 -2015) is shown below in table 1.

Table 1: Proposed Emergency Response Communication (Tetra) coverage / scope

East	West	Year
Soku, Cawthorne Channel, KI, Nembe1, Nun River, Diebu Ck, 1 ER Vehicle, 80 handportables, 35 Mobiles		2010
Bonny Terminal, Ekulama 2, Odeama, 90 Handportables, 102 Mobiles	1 ER Vehicle; 10 handportables, 3 mobiles	2011
Ekulama1, Nembe3, 1 ER Boat, 20 handportables, 110 mobiles	Warri Switch, 1 ER Boat, Jones Crk, UPC, Oroni, Uzere, Ogini, MOA, Benisede, Tunu, Opukushi, Forc Term, Forc OSLP, OGBO, Escr Beach, 130 handportables, 110 mobiles	2012
Kolo Creek FLB, Etelebou, Rumuekpe, Obele, Ahia, Ubie, 70 handportables, 110 mobiles	Utorogu, Escravos flow, Yokri, Odidi1, Batan, Egwa1, 70 handportables, 110 mobiles	2013
Mbiama, Oguta, Adib, Egbema FLB, Belem, Umue, Bonny CLP, 80 handportables, 175 mobiles	Opuama, Otumara, Kokori, Afiesere, Oweh, 60 handportables, 125 mobiles	2014
Egbema West, Assa, 52 handportables, 145 mobiles	Evwreni, Osioka, 53 handportables, 145 mobiles	2015

The predicted full Tetra coverage map at the end of the project is shown in **Appendix 1**.

Benefits to be derived include:

- Fast, secured and reliable open channel communications necessary for successful production, logistics, security and emergency response operations.
- Adequate and reliable IT communications usable in pipeline surveillance operations
- Connectivity with existing SPDC voice network from any remote area of operations where the system is deployed
- Easily deployable mobile emergency response communication systems with voice, data and video capability on vehicles and boats to cover emergencies in both land and swamp locations.

The investment will be spread over 2010 – 2015. The cost expenditure is shown in table 2 below:

Table 2: Phased expenditure overview (FUS$)

Phased expenditure breakdown (USD MLN)								
Description	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**100% JV**	**Shell Share**
CAPEX								
Purchase of hardware /software	1.12	1.03	4.16	3.48	3.56	1.51	**14.86**	**4.46**
Licenses	0.04	0.07	0.13	0.13	0.16	0.15	**0.69**	**0.21**
Installation	0.12	0.06	0.48	0.32	0.25	0.11	**1.33**	**0.40**
Project management	0.19	0.08	0.29	0.30	0.29	0.14	**1.28**	**0.38**
OPEX								
SCD	0.00	0.00	0.21	0.17	0.17	0.05	**0.60**	**0.18**
Post Installation Support	0.02	0.01	0.12	0.08	0.06	0.03	**0.33**	**0.10**
Total	**1.49**	**1.25**	**5.39**	**4.48**	**4.48**	**2.00**	**19.09**	**5.73**

Budget has been put forward for 2011 in BP10 and will be defended before JV stakeholders. Budget for subsequent years will be similarly obtained.

Section 2: Value proposition and strategic and financial context

Working in the Niger Delta poses a number of safety, security and logistics challenges amongst others. The evolving security situation in Nigeria has created a critical requirement for a reliable and secure Security and Emergency Response mobile communication system.

Currently, SPDC mobile communication infrastructure is based on two technologies:

1) Mobile cell phones (as part of 10-year Mobile Communications contract with Globacom): This type of service is good for standard office area type of communication, but does not meet the requirement for emergencies or security where fast call setup times, open channel and group type of communication are needed. Also, due to GSM technology limitation, coverage is limited and most facilities and pipelines are not covered.

2) VHF repeater radios in pockets of locations across the Niger Delta: These systems do offer some form of unsecured one-to-many (open channel) communication, but are not integrated into the overall telephone exchange network. Communication between users roaming on different VHF repeaters is also not possible.

The Emergency response mobile communications system (Tetra) therefore closes the gaps in the existing communications system ensuring fast and reliable data and voice communication is available for SPDC's emergency response needs.

The other benefits of the emergency response mobile communications system are:

- Alignment with Shell Group plan / Emergency response mobile communications system
- Availability of Emergency response communications in land locations providing emergency voice, data communication and video in support of real safety, security or production related emergencies
- Vehicle and boat mounted voice mobile communications system integrated with the SPDC voice network
- Availability of mobile communications in support of pipeline monitoring / protection activities

Summary Economics

The economics of the Tetra Communications systems for emergency response was evaluated as a cost only NOGI project using 50/50 level III cost estimate. The project returns an NPV7% of US$ -1.1mln RT10 and a VIR 7% of –0.26 with an associated maximum exposure of US$2.6 mln in 2014. Sensitivity was carried out to show the impact of high capex. See table 3 below for further details.

Table 3: Summary Economics Grid

PV Reference Date: 1/7/2010	**NPV (S/S $ mln)**		**VIR**	**RTEP**	**UTC (RT $/bbl or $/mln btu)**		**Payout-Time (RT)**	**Maximum Exposure$mln (RT)**
Cash flow forward from: 1/1/2010	**0%**	**7%**	**7%**	**%**	**0%**	**7%**		
SV ($50/bbl RT10)	-0.8	**-1.1**	**-0.26**	NA	NA	NA	NA	$2.6 mln (2014)
RV ($60/bbl RT10)	-0.8	**-1.1**	**-0.26**	NA	NA	NA	NA	$2.6 mln (2014)
HV($80/bbl RT10)	-0.8	**-1.1**	**-0.26**	NA	NA	NA	NA	$2.6 mln (2014)
Sensitivity (using RV)								
High Capex (+15%)		**-1.3**	**-0.27**					$2.9 mln (2014)

Key Projects Parameter Data Ranges (Shell Share)

	Unit	**Bus Plan (BP09)**	**Low**	**Mid**	**High**	**Comments**
Capex (MOD)	US$ mln	0.4		5.5	6.5	Provision for 2010 scope made in BP09, while 2011 to 2015 work scope will be presented to stakeholders and provided for 2011-2015 planning cycle.
Opex (MOD)	US$ mln	0.01	NA	0.1	0.1	
Production volume	Mmbbl	NA	NA	NA	NA	
Commissiom Date	mm/yyyy	NA	NA	NA	NA	
Production in first 12 months	Mmboe	NA	NA	NA	NA	

Economics Assumptions:

- Project cost treated as a Non-Oil and Gas Infrastructure Capex.
- NDDC Levy of 3% total expenditure.

Section 3: Risks, opportunities and alternatives

Risks & Opportunities

- Key risk is inability to provide basic voice and data communications in support of production and HSE emergencies within the Niger Delta especially against the current limited GSM coverage by GSM operators. The emergency response communications system provides communication to aid, search & rescue, oil spill management, pipeline protection, drilling, exploration and production activities
- **Existing investment:** A Tetra network already exists as a pilot which was done in 2008 as part of the CAST (Community and Shell Together) project. Not continuing with the emergency response communication system would mean jettisoning existing investment on pilot infrastructure a value in the neighbourhood of $1m and therefore inability to realize the benefit of that investment.
- Efficient and effective logistics support for operational activities would be limited without basic emergency response communications to accompany vehicles, trucks and boats
- **Funding**: The ability to execute the emergency response communication system project would depend on the following:
  - Ring-fenced funding for tower construction programme ($3m each for 2011 & 2012)
  - Ring-fenced funding for new Microwave links ($2m each for 2011 & 2012)
- **Availability of structurally sound towers:** The tetra system deployment requires structurally sound towers. Engineering commitment to deliver agreed/re-aligned tower construction and remediation programme would be key to delivering the project
- **JV support for use of more ad-hoc contracts for 2010 and 2011 scope**. The major contract for execution of the greater part of project scope requires NAPIMS approval and would be ready in Q4 2011. It would therefore be necessary to secure JV approval for use of ad-hoc contract for the execution of 2010 and 2011 project scope while progressing the major NAPIMS contract.
- **PIB Risk**: PIB is yet to be passed into law. Currently there are various versions and it is unclear what the final version will be. There is however the risk that the PIB may further depress the economics of the project. This is not expected to be significant as only costs incurred abroad are affected in this "cost only" evaluation.

Alternatives considered

- Alternative considered is to continually rely on the current GSM deployment by GLOBACOM (SPDC's strategic partner for mobile communications) but the GSM technology does not provide fast call setup times, open channel and group type of communication worthy of use as emergency communications. Besides recent user feedback about the quality of the GSM service in Nigeria attests to poor quality and frequent call drops which make it totally unsuitable for emergency response communication grade. Furthermore, the GSM providers preference is for rollout in favour of heavily populated areas (urban centres) as opposed to pipeline footprints in the Niger Delta which are sparsely populated and which is the core of SPDC's operations
- Another alternative is the use of VHF repeater radios in pockets of locations across the Niger Delta. Unfortunately while this provides some limited scope for emergency requirement, the voice capability is not integrated into the existing telephone exchange and roaming of voice calls between repeater stations is not possible. This system is also not flexible and not scalable.

- A 'do nothing' scenario is not applicable, as this will lead to huge gaps in our emergency response capabilities leading to avoidable exposure of facilities and personnel to unnecessary risk contrary to the company's goal zero aspirations

Section 4: Corporate structure, and governance

A Project Manager will lead the project and report to Head IT Telecoms project (who will also double as the project assurance manager). The project would have a steering committee to provide project governance. The project steering committee would be chaired by the GM HSE as the sponsor of the project and would have other key stake holders from the business as members. The project manager would run the day to day affairs of the project along with 2-3 company site representatives (CSRs) on behalf of IT. Other part time resources may be called in on part time basis from time to time as may be required during the life time of the project.

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

Functional Support (HSE, IT, and production) and Sign-off have been obtained from relevant functions and recorded in the proposal document.

Section 6: Project management, monitoring and review

The project will be executed in line with the 'IT Project Delivery Framework (PDF)'. 'Sign offs at the relevant stage gates by all stakeholders would be obtained as part of the project management framework.

Section 7: Budget provision

Budget for the 2010 scope has been fully approved both internally and by JV partners. Approval for 2011 and subsequent years' budget will be obtained following similar process. However, the overall project structure and investment has been presented already been presented to JV stakeholders to receive their support and buy-in.

Section 8: Group financial reporting impact

The impact on Shell Financial Statements is considered immaterial and so no financial table is applicable.

US$ mln	2010	2011	2012	2013	2014	Post 2014
Total Commitment	0.45	0.38	1.62	1.34	1.35	0.60
Cash Flow						
SCD Expenditure	0.01	0.00	0.10	0.08	0.07	0.02
Capital Expenditure	0.44	0.37	1.52	1.27	1.28	0.57
Operating Expenditure	0.01	0.01	0.05	0.04	0.04	0.02
Cash Flow from Operations	0.07	0.14	0.37	0.62	0.83	2.72
Cash Surplus/(Deficit)	(0.37)	(0.23)	(1.15)	(0.65)	(0.45)	2.15
Profit and Loss						
NIBIAT +/-	0.02	0.02	0.06	0.06	0.07	(0.87)
Balance Sheet						
Average Capital Employed	0.27	0.75	1.89	3.56	5.08	31.31

Section 9: Disclosure

Disclosure if required will be done in line with existing Group and SPDC policies and guidelines.

Section 10: Financing

The investment will be financed with JV funding and shell share capital & operating expenditure will be met by SPDC's own cash flow.

Section 11: Taxation

Taxation assumptions have been reviewed and no material tax risks have been identified.

Section 12: Key Parameters

This investment proposal seeks approval for US$5.73 mln (Shell Share) for the deployment of Emergency Response Communication System (Tetra) to identified areas of SPDC's operations in the Niger Delta between 2010 and 2015.

Section 13: Signatures

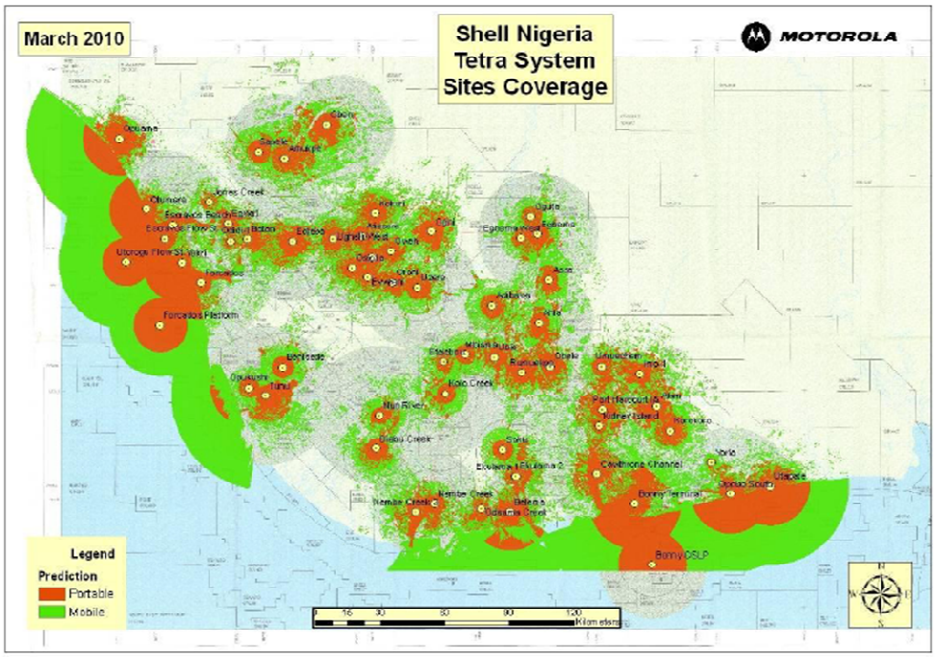
This Proposal is submitted to the VP Finance for approval.

Supported by:	For Business approval:
.....	.....
Rob van Velden	*Bernard Bos*
SPDC - Finance Manager	VP Finance Africa
FUI/FB	FUI/F
Date ..../..../....	Date ..../..../....

Initiator: *Mfon Usanga*
Project Manager (ITUI/IF)
Date …/…./….

Appendix 1: Planned scope and predicted Tetra coverage -Niger Delta

- 55 fixed repeaters; 4 mobile repeaters for ER
- 825 Hand-portables; 1,200 vehicle and boat mobiles



- ❑ Tetra will deliver far better coverage than GSM, but not all parts of SPDC operating area will be covered
- ❑ Additional repeaters will target important areas/routes with low signals
- ❑ Vehicle and boat radios will have further reach than Hand-portables