

# The Shell Petroleum Development Company of Nigeria Limited

## Internal Investment Proposal

### Summary Information

|                               |   |                                 |                |             |
|-------------------------------|---|---------------------------------|----------------|-------------|
| Directorate                   | Major Projects and Engineering Directorate  |                                 |                |             |
| Group equity interest         | 100% in SPDC, whereas SPDC is the Joint Venture (JV) operator of an unincorporated JV with a 30% interest.  |                                 |                |             |
| Other shareholders / partners | Nigeria National Petroleum Company (NNPC: 55%), Total: 10%, Nigeria Agip Oil Company (NAOC: 5%) in SPDC-JV  |                                 |                |             |
| Amount                        | US\$ 24.00mln Shell Share, MOD, 50/50 (US\$ 80.00mln 100% JV)   |                                 |                |             |
| Project                       | Pre-FID for Trans Niger Pipeline (TNP) Loop Project   |                                 |                |             |
| Main commitments              |   |                                 | US\$ Mln 50/50 |             |
|                               |   | Description                     | 100% JV        | Shell Share |
|                               |   | FEED                            | 0.40           | 0.12        |
|                               |   | Survey (As-Built, Land / River) | 0.66           | 0.20        |
|                               |   | Land Acquisition                | 0.22           | 0.07        |
|                               |   | SCD / ESHIA                     | 0.49           | 0.15        |
|                               |   | PMT                             | 1.23           | 0.37        |
|                               |   | (BP10) Sub Total                | 3.00           | 0.90        |
|                               |   | Line pipes Procurement          | 77.00          | 23.10       |
|                               |   | Total                           | 80.00          | 24.00       |
| 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 and / or the existing shareholder facility. Formal JV partners’ approval will therefore be obtained. |                                 |                |             |
| Summary cash flow             | Cost only Project. Cash Flow chart not applicable.  |                                 |                |             |
| Summary economics             | Summary economics   | NPV (USD mln)                   | RTEP (%)       | VIR7%       |
|                               | Pre-FID   | -3.3                            | NA             | NA          |
|                               | Full Project Scope (Cost only)  | -41                             | NA             | -0.29       |

### Section 1: The proposal (management summary)

This Pre FID investment proposal is a re-submission of the earlier approved investment proposal SPDC 100581 and a later proposal SPDC 100724 which was withdrawn. The initial proposal (SPDC 100581) for \$3.58m did not include the cost of steel pipes while the latter revision included \$32.00m for steel pipes based on the existing Framework Commercial Agreement with SCC for pipe grade X52 obtained circa 4yrs ago.

This latest revision includes the \$77.00m being the revised cost of steel pipes to accommodate the TNPL design requirements for line pipe grade X65. The SCC quotation for this steel pipes specification is \$77.00m. Current effort aims to engage NAPIMS, SCC and NCDMB to negotiate downward the cost of securing the line pipes to below current offer of \$77.00m.

|   | SCC    | GFA<br>(Broadview DDP) | Remark   |
|---|--------|------------------------|--|
| Cost of HSAW line pipe (DDP) - \$/ton         | 3026.3 | 2193.3                 | Latest quoted rates as at Jan 2011                   |
| Cost of TNPL Linepipe order (\$ m)            | 60.77  | 44.05                  | GFA 27% lower than SCC latest quote                  |
| Add 10% Premium on GFA Bench mark (\$m)       |        | 48.45                  | NOGICD Act provides for this and JV partners support |
| Impact of SCC monopoly + market forces (\$ m) | 12.32  |                        |  |

### **Evaluation of Premium on Linepipe Procurement In-country**

In terms of competitiveness, SPDC could save \$16.72m if a waiver to procure the pipes abroad is secured. However, a limited order will be placed with SCC to support the pursuit of the waiver process pragmatically. Should the waiver effort fail, the order placed will still be useful in executing TNPL with the regret that project implementation may suffer a delay of more than one year because SCC processes and level of support required remain untested by SPDC.

The proposal seeks organizational approval for the funding of US\$24.00mln Shell share (US\$ 80.00mln 100% JV) to facilitate the execution of Pre-FID activities required for TNP Loopline Project. It also covers the order for line pipes at the recent price quotation from the SCC pipe mill in Abuja.

Due to protracted Ogoni crisis, SPDC freedom to operate and gain operational access to Bomu – Bonny section of the existing TNP trunk lines was threatened. Consequently, the statutory routine maintenance activities on the 24” and 28” legs of the TNP could not be executed since 1993. The proposed TNP Loopline Project will ensure SPDC continuous freedom and license to operate and enable the evacuation of over 460 Mbpd of land east area production to Bonny terminal by 2013 and therefore improve the reliability of the pipeline system.

The objectives of executing Trans Niger Pipeline Project are to:

- To secure the evacuation of 460 Mbpd (gross) of current Land East production to Bonny Oil & Gas Terminal by providing an alternative route for the Oghale – Bonny section of the TNP which has outlived its design life, inaccessible for maintenance and has poor integrity status.
- Improve Trans Niger Pipeline technical integrity via system reliability enhancement.
- Overcome the production constraints in the TNP due to progressive de-rating of the TNP and its associated environmental risks.
- Provide ullage for developments from Gbaran Ubie, and thereby ensure gas supply to NLNG and support Afam Power Station.
- Provide easy access for maintainability, freedom to operate (FTO) and License to Operate (LTO).

The Trans Niger Pipeline Loopline (TNPL) Project was identified early 2007. An opportunity framing workshop was held on the 17<sup>th</sup> August 2007. A project initiation note passed DG-1 1<sup>st</sup> of April 2008. This was followed by project reframing which was done 17<sup>th</sup> April 2008. The project VAR2/3 was held from 15<sup>th</sup> – 17<sup>th</sup> of September 2008. While a DG 3 for the project was held on 26<sup>th</sup> May 2009. Front End Engineering Design (FEED) has been completed on 30<sup>th</sup> April 2010. However further optimization of the project scope was carried-out which changed the line size from a 36” pipeline to a 30” and 24” pipeline finger model. The new configuration for the TNPL has a

30” by 53km and a 24” by 20km sections. A provision for operating spares and route modifications for another 10km (making it 83km) shall be provided for in the line pipe procurement.

Leak detection system, Intruder detection gadgets, and Surveillance of the ROW are part of the provisions for the TNPL Pipeline; and appropriate depth of burial of the line based on the tidal data from Geomatics as well as provisions of reinforced concrete mats and slabs over the pipeline are being engineered to harden, foil or make difficult an act of sabotage attack. As a result, these measures will buy SPDC reasonable time within which to detect, intervene and trigger emergency response action in the event of audacious attack on the line.

Possible use of HDD in laying difficult sections of the route at major river crossings with extended reach of 1.5km up to 3.6km shall be explored. This is an alternative fallback for the traditional use of dredging and laying on river beds.

A revision of the FEED deliverables is in progress and scheduled for completion by January 2011. An EPC contract is expected to be signed by Q4 2011.

It is envisaged that advance payment will be required to place order for the line pipes. Therefore, arrangement is in place to accommodate this cost and reflected same in the ledgers on line pipe delivery. The line pipes procurement order will be place with SCC mills in Abuja, in line with the Nigerian Oil & Gas Industry Content Development (NOGICD) act. The line pipes and induction bends will be used in pipeline replacement campaign program East & West, which is currently in the maturation funnel, should the TNPL fail to receive FID approval e.g. West re-entry (Odidi CPF to ELPs) and future replacement of trans-Ramos pipeline.

Further, following the state of environmental devastation along the route of existing TNP particularly around the Patrick Waterside near Bomu, and the continuing illegal bunkering and refining of stolen crude oil along the corridor (RoW), SPDC MD has declared an emergency action on TNPL as an alternative route. NAPIMS support to handle this project as an emergency has also been obtained.

#### **Project Scope:**

The activities covered by this proposal are consistent with the latest revised plan to mature the project to VAR4 in Q3, 2011 and FID in Q4, 2011. The cost estimate of \$24.00mln Shell share for pre-FID scope essentially covers post VAR3 activities to further define the Trans Niger Pipeline Loopline Project that include FEED updates, and part of EIA and R.O.W Survey/Land acquisition.

**Table 1: Expenditure Phasing (US\$ Mln MOD 50/50)**

| <b>Description</b>           | <b>2010</b> | <b>2011</b> | <b>2012</b> | <b>2013</b> | <b>2014</b> | <b>2015</b> | <b>TOTAL<br/>100%<br/>JV</b> | <b>TOTAL<br/>Shell<br/>Share</b> |
|------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|------------------------------|----------------------------------|
| Current Approved Budget BP10 | 2.20        | 51.99       | 200.00      | 228.00      | 140.00      | 5.00        | 627.19                       | 188.16                           |
| Pre-FID                      | 3.00        | 77.00       | 0.00        | 0.00        | 0.00        | 0.00        | 80.00                        | 24.00                            |
| Post-FID                     | 0.00        | 43.00       | 400.00      | 104.22      | 0.00        | 0.00        | 547.22                       | 164.17                           |
| Current Expenditure Profile  | 3.00        | 120.00      | 400.00      | 104.22      | 0.00        | 0.00        | 627.22                       | 188.17                           |

## Section 2: Value proposition and strategic and financial context

Trans Niger Pipeline Loophline Project is an integrity assurance project that will ensure SPDC continual LTO for the greater Port Harcourt fields. In view of the fact that routine maintenance has not been allowed in the past seventeen years due to socio-political crises on the sections of existing TNP that goes via Bomu axis (within Ogoni land), its integrity status has remained uncertain. However, evidence gathered from failed spots/sections in the past, limited inspection and evaluation has led to line pressure de-rating and evidence of progressive loss of containment integrity.

A failure arising from oil theft (illegal bunkering) or third party attacks on the line in the Ogoni axis would result in deferred oil volumes and loss of revenue over a three-year re-construction period. This delayed monetization of the crude oil volume is the value at risk, which is to be gained from quickly initiating the TNP Loophline Project.

The proposed loophole therefore seeks to bypass Ogoni land as much as possible to forestall and mitigate impending HSE issues that are associated with the existing legs that go through Bomu. The HSE risks to avoid include environmental pollution, explosions/fire, fatalities and unending litigations.

This project particularly helps in securing liquids export from Gbaran-Ubie thereby ensuring gas export to NLNG in addition to other third party production and Okoloma liquids.

## Summary Economics

The TNP Loophline project is based on the premise to secure the evacuation of current Land East production to Bonny Oil & Gas Terminal.

The Pre-FID economics of the TNP Loophline project was evaluated as a cost only with the 50/50 cost estimate treated as OPEX. It is expected that the full project IP would be evaluated as CAPEX after final investment decision. Specifically as FID is expected in Q4, 2011, linepipe procurement can be booked as CAPEX.

Sensitivities were carried out for the project full life cycle 50/50 level II cost estimate which was treated as a CAPEX investment and the value at risk if this project is not executed at all. See table 2 below for details.

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

|                                   | NPV (S/S \$ mln) |        | VIR   | RTEP | UTC (RT \$/bbl or \$/mln btu) |    | Payout-Time (RT) | Maximum Exposure (S/S \$ mln) |
|-----------------------------------|------------------|--------|-------|------|-------------------------------|----|------------------|-------------------------------|
| Cash flow forward from:           | 0%               | 7%     | 7%    | %    | 0%                            | 7% |                  | AT                            |
| <b>Base Case</b>                  |                  |        |       |      |                               |    |                  |                               |
| SV (\$50/bbl RT10)                | -3.6             | -3.3   | 0.00  | NA   | NA                            | NA |                  |                               |
| RV (\$60/bbl RT10)                | -3.6             | -3.3   | 0.00  | NA   | NA                            | NA | NA               | 3.6 (2011)                    |
| HV (\$80/bbl RT10)                | -3.6             | -3.3   | 0.00  | NA   | NA                            | NA |                  |                               |
| BEP (RT \$/bbl)                   |                  |        |       |      | NA                            | NA |                  |                               |
| <b>Sensitivities(Using RV-RT)</b> |                  |        |       |      |                               |    |                  |                               |
| Full Project Scope - cost only    |                  | -41.1  | -0.29 |      |                               |    | NA               | 115.6 (2013)                  |
| Value @ Risk*                     |                  | 3042.9 | 0.00  |      |                               |    | NA               | 0.0                           |

\*Value using BP10 production forecast from facilities that feeds into TNP that is at risk if TNP fails and there is no alternative evacuation source

**Table 3: Key project parameter data ranges (Shell Share)**

| Parameter       | Unit     | BP10   | Low | Mid    | High | Comments                |
|-----------------|----------|--------|-----|--------|------|-------------------------|
| Capex (MOD)     | US\$ mln | 188.2  | -   | -      | -    | BP10 full project CAPEX |
| Investment Opex | US\$ mln | -      | -   | 24.0   | -    |                         |
| Sales Volume    | mln boe  | NA     | -   | NA     | -    |                         |
| Start Up Date   | mm-yy    | Jan-15 | -   | Jan-15 | -    |                         |

## **Economics Assumptions**

### **Pre-FID**

- Pre-FID Cost treated as Oil Independent OPEX
- Education Tax of 2% oil assessable profit.
- NDDC levy 3% of total expenditure

### **Full Project & Value at Risk sensitivities**

- Full project 50/50 cost (including Pre-FID) treated as CAPEX
- Facility life span of 20years
- Oil PSV of \$60/bbl RT10
- Production forecast provided by the project team.
- SPDC Generic Oil OPEX assumptions applied
- 2.5% of project cost applied as SCD
- Education Tax of 2% oil assessable profit.
- NDDC levy 3% of total expenditure.
- 10% of total project RT CAPEX treated as abandonment cost.

## ***Section 3: Risks, opportunities and alternatives***

| <b><u>RISKS</u></b>   | <b><u>MITIGATION MEASURES</u></b>   |
|---|---|
| <b>Technical / NCD</b> – Implementation of the Nigerian Oil & Gas Industry Content Development (NOGICD) act.<br><ol style="list-style-type: none"><li>1) In-country design capability is limited; and this can result in delay of the TNP Loop project schedule.</li><li>2) The use of HSAW linepipes which SCC mill in Abuja produces has no sufficient track record in hydrocarbon transportation when compared with LSAW formed pipes.</li></ol> | <ol style="list-style-type: none"><li>1) SciN FEED office will undertake TNPL Project Front End and Detailed Engineering design for early procurement / fabrication.</li><li>2) Project team is following up with discipline focal points in Shell reconfirm viability the TNPL project. Also with SCC to sort out the capability to cope with a large order.</li></ol>           |
| <b>Project Schedule:</b> TNPL project First Oil Date P (10/90) is Q4 2013 exploring options for acceleration. P (50/50) First Oil Date is Q2 2014. Niger Delta security situation may impact the delivery dates.  | Project strategy will adopt early engagement of JV partners (NAPIMS, NAOC & TOTAL) to get their buy-in, on key project decisions, so as to forestall funding and contracting challenges. Proactive engagement of communities that transverse the pipeline Right of Way will be adopted. National amnesty initiatives for the militants will douse the envisaged security tension. |
| <b>Economic, Commercial &amp; Statutory</b> – Any late placement of execution contracts due to delays in JV approvals, statutory approvals / licences – EIA, PTS, OPL will impact start of execution with attendant impact on the project delivery date.  | Regular engagement with NNPC – NAPIMS / NCD and other JV partners, DPR, NIWA etc.   |
| <b>Organizational-</b> Resourcing of the Major Projects Team UIG/T/PP managing project.   | Two Pipeline Engineers have been identified to join the project team during Q2 2010.  |
| <b>Political</b> – General election is scheduled to hold in the country early next year 2011. This could impact the collation of data & Land acquisition due to increase restive nature of the youth during this period.  | Continuous Community Engagement   |

|   |   |
|---|---|
| <p><b>Integrity</b> – Integrity of TNP line (Bomu – Bonny Axis) over 17years span is suspect, since access to carry out integrity checks or maintenance has been denied.</p>  | <p>Fast tracking of the TNPL project will forestall any eventualities, which may result in integrity issues.</p>  |
| <p><b>HSE</b> – Health and safety risks based on HSE-MS hazard registers.</p> <p>Implementation of Nigerian Oil &amp; Gas Industry Content Development (NOGICD) act is now a challenge for all projects to be executed henceforth.</p> <p>Delay in the issuance of EIA permit for the project execution phase commencement.</p> <p>Incessant illegal bunkering activities at the river banks using the block valve station, leading to catastrophic fire incidents and enormous fatalities.</p> <p>HSE Risks associated with pipeline operation (e.g. surge in pressure and stuck pigs during operation).</p> | <p>Measure will be carried out to ensure HSE risks are maintained at ALARP.</p> <p>In line with Nigerian Oil &amp; Gas Industry Content Development (NOGICD) act, preference will be given to communities and Nigerian contractors where in-country capability is established in contractor's selection. For example arrangements are in place to buy line pipes from SCC pipe mill in Abuja.</p> <p>Environmental regulators and relevant government agencies will be engaged during ESHIA activities for steer and approval of the project with complete integration of health, sustainable community development and environmental impact assessment and mitigation. Compliance to Group Minimum Health Management Standard (MHMS) and Human Factor Engineering (HFE) requirement will also be monitored.</p> <p>A Quantitative Risks Workshop will be organized to secure approval for Block Valve Station (BVS) deletion. DPR will be fully represented in the workshop.</p> <p>These risks have been identified during HAZID workshop. Mitigating measures have been proffered during HAZOP workshop.</p> |
| <p><b>Security</b> – The TNPL route transverse a lot of communities. As such, community interface, HSE and security issues are particularly significant on this route. This was heralded by the continuous hostage taking, armed attacks and attacks on the oil export pipeline and bunkering activities. Escalation in Niger Delta security situation can also impact this commitment.</p>   | <p>Continuous community / Local/State governments' engagement. Workshop held to identify communities and stakeholders and their interest. Action plan developed to meet and/or mitigate development. Allowance will be made for community assistance/development program within the project costs.</p> <p>A Security Plan shall be put in place for the project.</p>  |
| <p><b>Social Risks-</b><br/> <b>MOSSOP/Ogoni Issue (Oghale Manifold):</b><br/> Any E&amp;P activities in Ogoni by SPDC will result in a negative media backlash for SPDC.</p>   | <p>Top level engagement with Rivers State Government to lead stakeholder/issues management in Ogoni in line with SPDC</p>   |

|  |  |
|--|--|
| <p><b>Non-Deployment of GMoU in Ogoni:</b> GMoU is SPDC's interface model with cluster communities. Ogoni community will likely clamour for GMoU deployment in their area as part of FTO assurance.</p> <p><b>Alignment with Greater Port-Harcourt (GPH) Master Plan:</b> Proposed routes might conflict with GPH master plan which will necessitate re-route and design mid-way into project execution.</p> | <p>current issues management framework for Ogoni (Governor/SPDC MD). Project specific I-GMoU model will be deployed in Ogoni to manage interface with cluster communities.</p> <p>Project will latch on to on-going engagement with GPH on the AGBADA DOMGAS pipeline route to ascertain any impact on selected TNP route.</p> |
|--|--|

#### ***Section 4: Corporate structure, and governance***

NAPIMS and DPR were engaged severally and invited to project assurance review (PAR 2, 3), contract strategy workshop and VAR 3 audit exercise.

The existing corporate structure and arrangements of SPDC-JV with SPDC as operator will be used as the vehicle for the investment and operations. Meanwhile, an SPDC Decision Review Board (DRB) will continue to advice.

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

Functional support for the proposal is provided by Finance (EPF, GPB, FCG), Treasury (FT), Tax (FX), Legal (LG) and Contracting & Procurement (CP). The proposal has the strong support of the Nigerian government. In addition to supporting SPDC's license to operate, the project contributes to Shell's sustainable development efforts through improvement of Nigerian power generation and thus to economic development. Furthermore, the project directly enables the monetization of Shell equity gas.

#### **Sustainable Community Development**

A Social Performance & Community Affairs Plan is being developed for the project. The project will utilize the GMoU structure for interface management with about 44 communities in project area.

In line with Act 58 of 1988 an EIA process has commenced for the entire TNPL Route, with the collection of Biophysical, Social & Health data over two seasons before the end Q1 2011.

Continuous engagement of the community, including resolution of any legacy issues in impacted areas, shall continue in line with the new SCD principles / rules with regards to ensuring effective community engagement/participation, to guarantee Freedom to Operate (FTO) and eliminate community interface related to down time. All aspects of the project are being executed in line with the Statement of General Business Principles and other SPDC policies.

A stakeholder management framework will be developed to manage peculiar project interface in Ogoni land.

#### **HSE and Security Management**

The HSE performance for Trans Niger Pipeline Loopline (TNPL) Project will be consistent with SPDC's HSE targets. Since it is a swamp / offshore location, stringent HSE rules would apply, especially swimming and medical fitness of every personnel to be deployed. All water borne operations shall be carried out in accordance with SPDC's guidelines and policies. All land and marine transport activities shall comply with the procedures and standards set out in The Shell Transport Management system (LT-MS) Manual Doc. No SPDC 2000-082.

Site security management plan covering movement of materials, personnel and worksite will be in place and signed off.

#### ***Section 6: Project management, monitoring and review***

The Major Projects Team UIG/T/PP is managing the project. This project has been matured in line with the Opportunity Realization Process (ORP) and has undergone all the mandatory Value Assurance Reviews (VARs). An Estimate and Schedule Review was carried out in April 2010. Key decision gates have been reviewed by SPDC's main Decision Review Board and the Project Manager appointed. Value delivery will be ensured through regular (PERT) reviews and challenge from EP-Projects, SGSI and various Performance reviews within the Major Projects Team organization in SPDC.

#### ***Section 7: Budget provision***

The commitment of USD0.90mln Shell share is covered by the 2010 JV Base Budget. Additional \$23.10mln Shell share will be committed towards the procurement of line pipes which will be reflected in 2011 JV Base Budget. Internal offset has been identified for the shortfall between the required CAPEX for this proposal and the provision in BP10.

#### ***Section 8: Group financial reporting impact***

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

| <b>US\$ mln</b>             | <b>2010</b> | <b>2011</b> | <b>2012</b> | <b>2013</b> | <b>2014</b> |
|-----------------------------|-------------|-------------|-------------|-------------|-------------|
| <b>Total Commitment</b>     | 0.90        | 23.10       | 0.00        | 0.00        | 0.00        |
| <b>Cash Flow</b>            |             |             |             |             |             |
| SCD / Other Commitment OPEX | 0.90        | 23.10       | 0.00        | 0.00        | 0.00        |
| Capital Expenditure         | 0.00        | 0.00        | 0.00        | 0.00        | 0.00        |
| Operating Expenditure       | 0.03        | 0.69        | 0.00        | 0.00        | 0.00        |
| Cash Flow from Operations   | -0.26       | -6.67       | 3.30        | 0.00        | 0.00        |
| Cash Surplus/(Deficit)      | -0.26       | -6.67       | 3.30        | 0.00        | 0.00        |
| <b>Profit and Loss</b>      |             |             |             |             |             |
| NIBIAT +/-                  | -0.14       | -3.50       | 0.00        | 0.00        | 0.00        |
| <b>Balance Sheet</b>        |             |             |             |             |             |
| Average Capital Employed    | 0.06        | 1.72        | 1.65        | 0.00        | 0.00        |

#### ***Section 9: Disclosure***

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

#### ***Section 10: Financing***

The project will be funded with JV funding and Shell share capital expenditure will be met by SPDC's own cash flow, as other major investments in SPDC. Formal JV partners' approval is already obtained to commence project.



### ***Section 11: Taxation***

There are no unusual Taxation features.

### ***Section 12: Key Parameters***

Consideration is required of the soundness of the expenditure commitments for the following:

- Pre-FID commitment for the Trans Niger Pipeline Project requiring the amount of US \$24.00mln (Shell share).
- As the project is still at its pre-FID stage and pre-payment for the line pipe procurement may be required, we seek finance approval to accommodate the line pipe costs US\$23.10mln Shell share (US\$77.00mln 100% JV) which will be reflected in the ledger on line pipe delivery.

### ***Section 13: Signatures***

This Proposal is submitted to SPDC Technical OR Production Director OR Finance Director for approval.

Supported by:

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*Bernard Bos*

FUI/FB

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

Approved by:

.....

*Ian Craig*

UIG/SEPA

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

*Initiator:*

\_\_\_\_\_

*Akhibi Gregory*

*(UIG/T/PPL)*

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