

## THE SHELL PETROLEUM DEVELOPMENT COMPANY OF NIGERIA

| Well Details            |                | <b>Proposal Objectives:</b><br>To replace the vandalized flowline of well <b>BELEMA 001S (D1000A)</b><br><br><b>Scope of Work:</b><br>- Replace vandalized 4" SCH 40 flowline of BELEMA 001 with 4" SCH 40 |                  |
|-------------------------|----------------|--|------------------|
| Field                   | BELEMA         |  |                  |
| Well                    | BELE001S       |  |                  |
| Flowstation             | BELEMA FS      |  |                  |
| Well type (Oil/Gas)     | OIL            |  |                  |
| Lift Type               | Natural Flow   |  |                  |
| Reservoir               | D1000A         |  |                  |
| Abandonment Watercut    | % 90           |  |                  |
| Timing                  | Q1-2018        |  |                  |
| Job duration            | (days) 30      |  |                  |
| Economic Summary        |                | Flowline Details   |                  |
| Conduit Production Rate | (bbls) 2176    | Length   | (km) 2.68        |
| Reserves                | (MM bbls) 3.82 | Size   | (inch) 4"        |
| Current BSW             | % 40           | Schedule   | (no.) 40         |
| Riskd NPV 7%            | (MM US\$) -    | Total Cost   | (x1000 US\$) 760 |
| Riskd VIR               | (-) -          | Account No.  | Dev/Eng Eng.     |

## Proposal contributors

| Name                            | Function   |
|---------------------------------|--|
| Iya, Ann                        | Bonny Node PT ( <b>originator</b> )  |
| Okporiri, Cyril                 | Bonny Node RE ( <b>contributor</b> )   |
| Amobi, Adeshina<br>Ndukwe, Agwu | Swamp Facilities Lead ( <b>reviewer</b> )<br>Swamp East Snr PT ( <b>reviewer</b> ) |

## Approval

| Name                | Function               | Signature | Date |
|---------------------|------------------------|-----------|------|
| Amaefuna, Magnus    | FMT Lead Bonny Node    |           |      |
| Onuoha, Udoka       | WRFM Lead Swamp East   |           |      |
| Nwadiuto, Onyekwelu | Head Swamp Engineering |           |      |

## Justification:

The well was flowing and producing at a rate of 2672 bopd net (BSW=40%, GOR=534 scf/bbl, Sand=1.2 pptb and FTHP =493psi) on bean 56/64" before the well was closed-in July, 2015 as a result of flowline vandalization. In view of the oil reserves (3.82 MMstb) and ca 2672 bopd potential, the well is proposed for flowline replacement. Simple economics with flowline cost of 760,000 USD yields payout of 15 days at assumed crude price of \$30/bbl hence the flowline replacement is justified.

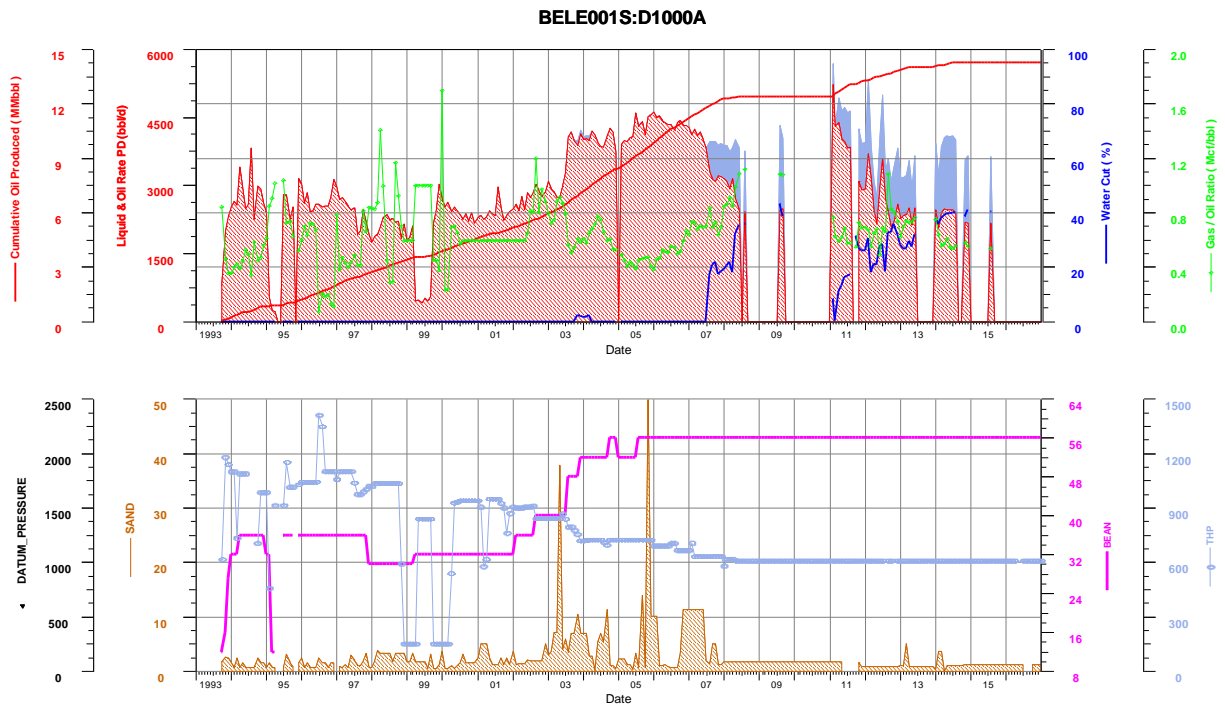
## Flowline size and rating

The last recorded oil rate was 2176 bopd with a FTHP of 493 psi as at July 2015. No erosional velocity problems or excessive pipeline pressure drops are expected. it is recommended to install 4" SCH-40 line.

## HSSE Issues:

No annular pressure cases recorded. All HSSE procedures for FLRR and well open up should be strictly followed.

## ATTACHMENT 1: PERFORMANCE PLOT FOR BELEMA 001S



## ATTACHMENT 2: CURRENT WELL SCHEMATIC

| STATUS AS AT INITIAL COMPLETION (PRESENT) |   |      |          |                   |  |                                 |              |                                    |            | WELL : BELEMA- 1 |           |        |  |  |
|---|---|------|----------|-------------------|--|---------------------------------|--------------|------------------------------------|------------|------------------|-----------|--------|--|--|
| CASING                                    |   |      |          |                   |  | WELL HEAD                       |              |                                    |            |                  |           |        |  |  |
| SIZE                                      | GRADE   | WT   | DEP (FT) | CEMENT            | SD   | ITEM                            | TYPE         | SIZE (INS)                         | WT (PS)    |                  |           |        |  |  |
| 24"                                       | STOVE   | PIPE | 172      | DRIVEN            |  | GATE VALVE                      | CAMFG        | 3' X3'                             | 5000       |                  |           |        |  |  |
| 13 3/8"                                   | K 95  | 68   | 4500     | 2000              | 1.62   | XMAS TREE                       | DSB          | 11 X 3 3/8 X 3 1/8 W/ CUP          | 5000       |                  |           |        |  |  |
|   |   |      |          | RECM-W/705X3S 'U' | 1.9  | ADAPTOR FLANGE                  |              |                                    |            |                  |           |        |  |  |
| 9 5/8"                                    | N80   | 47   | 10990    | 1700              |  | T CONNECTION                    |              |                                    |            |                  |           |        |  |  |
|   |   |      |          |                   |  | TUBING HEAD                     | DCB          | 11 X 3 1/2" HCS X 3 1/2" HCS       | 5000 WCLP  |                  |           |        |  |  |
| 7"  | N80   | 29   | 12290    |                   |  | TUBING HANGER                   | DCB          | 11" X 13 3/8"                      | 5000 X3000 |                  |           |        |  |  |
|   |   |      |          |                   |  | BACK PRESSURE VALVE             |              |                                    |            |                  |           |        |  |  |
|   |   |      |          |                   |  | CASING H HOUSING                | "WF"         | 13 3/8"                            | 3000       |                  |           |        |  |  |
|   |   |      |          |                   |  | CASING H SPOOL                  |              |                                    |            |                  |           |        |  |  |
|   |   |      |          |                   |  | SEAL BUSHING                    | "X"          |                                    |            |                  |           |        |  |  |
| TUBING                                    |   |      |          |                   |  | DEVILION                        |              |                                    |            |                  |           |        |  |  |
| STRING                                    | SIZE  | WT   | GRADE    | TYPE              | MAX 3.5" O AT 10541                            | FT                              | 17 1/2" 4500 | 1380 - 2280                        | ACTIVITY   | MAX SD           | RESERVOIR | DATE   |  |  |
| LS  | 3 1/2"  | 9.3  | N-80     | HCS               | K.O 99B  | FT                              |              |                                    | DRILLED    | 1.11             | ALL       | PROPOS |  |  |
| SS  | 3 1/2"  | 9.3  | N-80     | HCS               | DPE  | 454                             | FT           | 12 1/4" 4100                       | 1          | 1.97             | D1.0      | 10/06  |  |  |
|   |   |      |          |                   | ORDF - YCHH                                    | 31.27                           | FT           |                                    |            |                  | D2.0      | 10/06  |  |  |
|   |   |      |          |                   | ORDF - YOP XM'                                 |                                 | FT           | 8 1/2" - 19800                     |            |                  | F4.0      | 10/06  |  |  |
|   |   |      |          |                   |  |                                 |              |                                    |            |                  |           |        |  |  |
| SAND                                      | PERFORATIONS  |      |          | STATUS            |  | DEPTH (FT)                      | STR          | DESCRIPTION                        |            |                  |           |        |  |  |
| D1.0                                      | 8096 - 8106 FT<br>8120 - 8140 FT<br>(IGP)<br>(30FT) |      |          |                   |  |                                 | S/L          | X - OVER 3 1/2" HCS P&P            |            |                  |           |        |  |  |
|   |   |      |          |                   |  |                                 | S/L          | OTS ALLOY FLOW COUPLING 3 1/2" HCS |            |                  |           |        |  |  |
|   |   |      | +/- 90   | S                 | OTS 'XEL' BALL VALVE/LANDING NIPPLE 3 1/2" HCS |                                 |              |                                    |            |                  |           |        |  |  |
|   |   |      | +/- 120  | L                 | OTS 'XEL' BALL VALVE/LANDING NIPPLE 3 1/2" HCS |                                 |              |                                    |            |                  |           |        |  |  |
|   |   |      |          | S/L               | OTS ALLOY FLOW COUPLING 2 3/8" HCS             |                                 |              |                                    |            |                  |           |        |  |  |
|   |   |      |          |                   |  |                                 |              |                                    |            |                  |           |        |  |  |
|   |   |      | 7740     | L                 | OTS 'XA' SLEEVE 3 1/2" HCS                     |                                 |              |                                    |            |                  |           |        |  |  |
|   |   |      | 7770     | S                 | OTS 'X' NIPPLE 3 1/2" HCS                      |                                 |              |                                    |            |                  |           |        |  |  |
|   |   |      |          | S                 | BAKER SNAP LATCH SEAL NIPPLE 3 1/2" HCS        |                                 |              |                                    |            |                  |           |        |  |  |
|   |   |      | 7800     |                   | BAKER 'A-5' PACKER SIZE 518                    |                                 |              |                                    |            |                  |           |        |  |  |
| D2.0                                      | 8198-8208 FT<br>(SCON)<br>(10FT)                    |      |          |                   |  |                                 |              |                                    |            |                  |           |        |  |  |
|   |   |      |          |                   |  |                                 |              |                                    |            |                  |           |        |  |  |
|   |   |      |          |                   |  |                                 |              |                                    |            |                  |           |        |  |  |
|   |   |      |          |                   |  |                                 |              |                                    |            |                  |           |        |  |  |
|   |   |      |          |                   |  |                                 |              |                                    |            |                  |           |        |  |  |
|   |   |      |          |                   |  |                                 |              |                                    |            |                  |           |        |  |  |
|   |   |      |          |                   |  |                                 |              |                                    |            |                  |           |        |  |  |
|   |   |      |          |                   |  |                                 |              |                                    |            |                  |           |        |  |  |
|   |   |      |          |                   |  |                                 |              |                                    |            |                  |           |        |  |  |
|   |   |      |          |                   |  |                                 |              |                                    |            |                  |           |        |  |  |
| F4.0                                      | 12124- 12130 FT<br>(SCON)<br>(6FT)                  |      |          |                   |  |                                 |              |                                    |            |                  |           |        |  |  |
|   |   |      |          |                   |  |                                 |              |                                    |            |                  |           |        |  |  |
|   |   |      |          |                   |  |                                 |              |                                    |            |                  |           |        |  |  |
|   |   |      |          |                   |  |                                 |              |                                    |            |                  |           |        |  |  |
|   |   |      |          |                   |  |                                 |              |                                    |            |                  |           |        |  |  |
|   |   |      |          |                   |  |                                 |              |                                    |            |                  |           |        |  |  |
|   |   |      |          |                   |  |                                 |              |                                    |            |                  |           |        |  |  |
|   |   |      |          |                   |  |                                 |              |                                    |            |                  |           |        |  |  |
|   |   |      |          |                   |  |                                 |              |                                    |            |                  |           |        |  |  |
|   |   |      |          |                   |  |                                 |              |                                    |            |                  |           |        |  |  |
| LOGS                                      | DLSMS/GR/CL/DLS/ST/SHOT/DLS/CL/LOGS                 |      |          | TD = 13800 FT     |  | AUTHOR: PBE - PTC, SPDC NIGERIA |              | UPDATED BY: KINGSLEY OMVUSKA       |            | DATE: 06/06/2009 |           |        |  |  |

FILE NAME : C-TEMP18.PPT

## ATTACHMENT 3: VLP/IPR PLOT

