Arena Offshore

South Timbalier Block 172
OCS-G- 1256
Well No. C-3

Stimulation Prognosis

6/2/06

Arena Offshore
OCS-G-1256, Well C-3
South Timbalier block 172

Well Information:

Production Casing:	7”, 26 ppf, P-110
Production Tubing:	2⅞” 6.4 ppf, 8 rd EUE N-80
Current PBTD:	8164’ MD
KOP:	1800’
Packer Fluid:	8.8 ppg filtered seawater
Minimum I.D.	2.313” in SCSSV & “S” LN’s
Tree:	National 3” 5M
Hanger Threads:	3 ½” NU 8rd Lift/Suspension

Reservoir Information:

Formation	C11 B Sand Res D
Perfs (MD):	8038’ to 8053’
BHP (psi):	2771 psi
BHT:	160° F

Objective:

The subject well is currently on gas lift and the produced oil is associated with paraffin that is causing restrictions in the tubing as well as significant skin across the producing formation. The intention is to remove this skin by stimulating the well. Since a coil tubing unit is needed to sand wash wells on the existing C platform, it though that it would be ideal time to perform this stimulation treatment. The proposed treatment should increase the production rate and minimize pressure drop across the gravel pack.

A per the “GeoSafe Laboratories” previously supplied report, the available well data, and the “design meeting” held with all pertinent parties (4/25/05), it was determined to pump the stimulation job described below, as is, and to pump it thru coil tubing and overdisplace it to the formation w/ nitrogen. We will utilize a separate but sequential HCL & Fluoride acid phase to create a “selective” treating system specific to “clay mineral dissolution” (i.e. the AF will dissolve the silicate portion of the clay where as the HCL post-flush will then remove the Aluminum portion of the clay, separately, thus slowing the reaction as well as limiting the potential to form secondary “Fluosilicate” precipitates formed by conventional HCL:HF “mud acid”, as there is significant data to show an abundance of clay minerals present, which could impact conventional HCL:HF acid systems negatively. This is a “Mix-on-the-fly” job.

Product Discussion;

- **AZ-DynoWash-A10 & M10; "Acid/Solvent Blended System"**, which incorporate the latest in surfactant technology to produce a highly effective acid/solvent wash that selectively & efficiently treats "oil" bearing rock without de-stabilizing the entire mineral matrix and leaves the formation preferentially water wet for enhanced oil flow.
- **AZMS-25; "Mutual Solvent",** clean rock surface and establish "water wet" formation to allow acid more efficient contact with minerals and initiate the lowering of the surface tension of the treating fluid to <40 dynes/cm³.
- **AZAFA; "Ammonium Fluoride Acid Solution",** utilized in conjunction, but separate from, HCL acid in order to reduce the overall acid reaction while dissolving only selective minerals specific to each acid solution specifically.
- **AZCI; "Corrosion Inhibitor**" for conventional carbon steele tubing.
- **AZIC-100; "Iron Control"** additive.
- **AZP-50; "Penetrant",** further enhances flowback/clean up as well as ensure rock is "water wet" post treatment, does not adsorb as readily as mutual solvent.
- **AZCS-1; "Clay Stabilizer",** neutralizes charge on clay particles to stabilize post treatment.

Primary Vendors:

Company	Service/ Equipment:	Contact:	Phone No.:
Coil Tubing Services	Coil tubing & Nitrogen/Pump	Darro Fredrick	337-839-2004 Off
A toZ	Acid	Joe Esslinzer	337-560-9100
Petro Tools	Coil tubing rentals	Mo Francis	337-344-7324
Arena – Martin North Dock	Fourchon	Jonathan	985-396-2002
Arena		Bebbs Nelson	281-210-3111 Off 281-793-8177
Arena Rep		Elias Bouwaked	504-914-3360 Cell

Stimulation Procedure
OCS-G-1256, Well C-3
South Timbalier Block 172

1. Mobilize a 220' class jack-up boat to Well #C-3 in South Timbalier Block 172. Approach and set up on structure with boat heading facing 55 deg from true north. Preload then jack up to working level. Spot CT, N2 & associated auxiliary equip, and chemical tanks on liftboat

   Conduct and document pre-job Safety and Operations meeting. **Ensure that all personnel understand the procedure, their respective responsibilities, and any hazards involved. Be certain to discuss all emergency contingencies and each person's responsibilities. Also ensure that all personnel are familiar with the surrounding facility/boat, the safety stations, and emergency procedures.**

2. Shut well in and isolate supply gas lift to the production casing. Record SITP and document SICP. Cycle SCSSV to open position and close needle valve to isolate hydraulic pressure. Lock open SSV and install fusible cap.

3. R/U slickline. Make up a paraffin scratcher for 2 7/8" tubing. Run in a cut any paraffin build up down to 3000'. POOH & R/D slickline

4. Rig up 1 ¼" coiled tubing unit on tree top. Tree top flange is 2 9/16", 5 M psi. Test BOP's to 250/5,000 psi as per MMS procedures. Pull test coil connector to 15000 #.

5. Make up wash tool BHA w/ dual check valves. Stab injector head, close master valve on tree, open return line, circulate the following pickle thru coil tubing

   - 150 gals 15% HCL w/.2% AZCI plus 50 ppt AZIC-100

6. Displace pickle thru coil tubing with nitrogen taking returns into a tote tank.

7. Open master valve. RIH with coil tubing dry to the top of the gravel pack assembly at 7970'. R/U acid and mixing tanks. Rig up on the choke manifold to be able to pump down the coil tubing as well as down the 1 ¼" x 2 7/8" annulus at the same time.

8. With the backside closed, pump in the following stimulation treatment:

   A. 750 gals AZ-DynoWash-A10
   B. 1500 gals 13.5:1.5% DynoWash-M10 + 3% Acetic Acid
   C. 500 gals 10% HCL + 5% AZMS-25 + .2% AZP-50 + 3% Acetic Acid + .3% AZCI + 50 ppt AZIC-100 + 1% AZCS-1

D. **1000 gals 3% AZAFA + 5% AZMS-25 + .2% AZP-50**
E. **1000 gals 10% HCL + 5% AZMS-25 + .2% AZP-50 + 3% Acetic Acid + .3% AZCI + 50 ppt AZIC-100 + 1% AZCS-1**

9. Pump the first 12 bbls (Reel capacity) into well then bullhead the remaining 101 bbls of acid (113 bbls total) at a rate of ½ BPM until all acid clears tanks. Record initial and final injection pressures. Overdispace acid to perfs with nitrogen by pumping down the coil as well as down the backside at the same time. The total nitrogen volume needed to overdispace the acid should be about 47,000 SCF. Adjustment of nitrogen volume overdisplacement should be made on location based on injection pressure and volume required to bullhead any present tubing fluid away. Shut down pump and let acid soak for one hour while POOH w/ coil tubing. R/D coil tubing.

10. Initiate gas lift operation and return well back on production.