INVITATION TO SUBMIT TECHNICAL AND COMMERCIAL OFFERS

Well Testing and Sample Analysis Services

We hereby invite qualified and experienced companies to submit their technical and commercial proposals for the provision of Well Testing and Sample Analysis Services in accordance with the scope of work outlined below.

Scope of Work

The scope includes the execution of well testing operations and sample analysis services for exploration wells in the designated area. The contractor shall provide all necessary equipment, personnel, and technical support to perform the services in compliance with industry standards and operational safety requirements.

Technical Specifications

The contractor shall supply equipment and systems for well testing including surface test equipment, separators, flowlines, data acquisition systems, and sampling tools. All equipment must be certified and suitable for high-pressure and high-temperature conditions. The contractor must ensure real-time data monitoring and provide detailed reports on flow rates, pressure, temperature, and fluid composition.

Personnel Requirements

Personnel assigned to the project must have proven experience in well testing and sample analysis operations. The team should include well test engineers, sampling specialists, and safety officers. All personnel must be certified in well control and safety procedures and capable of operating under remote and challenging field conditions.

Summary of Equipment and Services

The contractor shall provide the following equipment and services:

- Surface well test package including separators and flowlines
- Sampling tools and laboratory analysis kits
- Data acquisition and monitoring systems
- Safety and environmental protection equipment
- Transportation and logistics support
- Final reporting and documentation

Submission Guidelines

Offers must be submitted in sealed envelopes waxed in red. Both technical and commercial proposals must be included. Pricing details must be confined to the commercial offer only. Deadline for submission: within five (5) days from the date of this announcement.

SPECIFICATIONS OF EQUIPMENT AND SERVICES PROVIDED BY THE CONTRACTOR

4.2.11 SERVICES WELL TESTING ET SAMPLE ANALYSIS

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4.2.11.1. Work description

The scope of this work concerns the Re-entry of one suspended exploration well and the Drilling of new (02) onshore hydrocarbon exploration wells on Area 95/96, in **IPM** mode.

The tests DST will be carried out behind casing after cementing and perforations or barefoot in front of reservoirs presenting high oil/gas indications and according to logs evaluation results.

For the well re-entry based on the results already obtained in the previous offset wells, totally four (04) DST operations are planned for this well. However, the final number of DST operations will depend on the geological and petrophysical evaluation results.

For the new well Intent to Drill well 1 based on the results already obtained in the previous offset wells, totally five (05) DST operations are planned for this well. However, the final number of DST operations will depend on the geological and petrophysical evaluation results.

For the new well Intent to Drill well 2 based on the results already obtained in the previous offset wells, totally five (05) DST operations are planned for this well. However, the final number of DST operations will depend on the geological and petrophysical evaluation results.

The presence of dolerite formation at the top of the Al-Mamuniyat reservoir is considered an important factor in decision-making on the mode of execution of DST operations in the Ordovician reservoirs.

The test objectives were:

- No incident, No accident, Minimize damage to the environment.
- Prove hydrocarbon existence on the formation tested and produce hydrocarbons to surface.
- Establish flow rates and deliverability.
- Collect representative reservoir fluid samples for PVT analysis to allow full compositional and reservoir fluid property analysis.
- Determiner reservoir parameter: initial reservoir pressure and temperature, well productivity, Kh skin,
- Identify and measure any contaminants (CO2, H2S, …)
- Determine reservoir model and boundary.

In order to meet the client's needs, the contractor must:

- Provide, without limitation, all the equipment necessary for the successful completion of testing operations as defined by the client. This service shall include, but not be limited to, the provision of equipment, personnel and technical back up as specified below.

This service must include (but is not limited to):

- TCP and DST Equipment and Services,
- Well testing equipment,
- Wireline equipment,
- Surface Data acquisition services,
- Down hole slickline conveyed memory gauges, PLT’s (optional), tubing calliper and services,
- Slickline equipment,
- Provision of suitable qualified and experience personnel,
- Supply of technical assistance in the form of oral/written advice,
- Daily monitoring of performance / progress during well operations,
- Recommandations on job design,
- Optimization of slickline and well testing cost,
- End of well reporting,
- Coiled tubing, Nitrogen and nitrogen pumping equipment,
- Real Time data transmission and viewing through secure internet site.

4.2.11.2. Equipment

Equipment must include (but is not limited to):

The Contractor must:

- Perform all equipment tests before the start of test operations. If the equipment does not comply with the Customer request, the Customer has all the right to cancel the operation without any charge. The Contractor is responsible for providing adequate equipment,
- Provide certifications for each Test tool,
- Proceed with the transmission of Data,
- Provide data in LAS format for each pressure gauge for each DST,
- Report on each job log the exact information contained in the Intent to Drill (Block Name, Well Name, Calibrations, Repeated Section, Remarks, etc.),
- Provide on-site a detailed report of all events with timing in hard and soft formats.

A representative of the Client will be designated as contact person with the Contractor during the progress of all testing operations.

a. DST Tool String :

i. Downhole Equipment Consisting of :

- Mule shoe,
- Tail pipe,
- RTTS Packer with by-pass, the test string + Back up (diameter according to the casing),
- Safety joint,
- Hydraulic jar,
- Gauge carrier,
- Downhole tester valve, with a Lock Open system + Back up,
- Hydraulic Circulating Valve with Burst Disc (reverse circulating valves) + Back up,
- Drill collars,
- Sleep joints,
- Drill pipe ou tubing de production 4’’1/2 et 3’’1/2,
- Crossovers (to customers work string, collars and HWDP),
- Gauge Hardware / Software package including Pressure Transient Analysis Capability,
- Accessories, Consumable and Spares,
- An annular gauge carrier,
- One (01) pair of quartz gauge for recording annular pressure with new, good quality batteries + Back up,
- Integrated bottom sampler (optional),

All these tools must be full bore (full passage) minimum internal diameter 2’’1/4.

It is recommended to carry out DST operations with production tubings with a diameter of 4''1/2 or 3''1/2 to avoid the communication problem at the level of the threading of the different equipment of the DST tool string, particularly with the presence of gas in well reservoirs.

In this context, the Contractor must:

- If the DST tool string is made up of 4"1/2 and 3"1/2 production tubing, it is necessary to provide compatible connections to ensure the smooth running of all the tests requested by the customer.

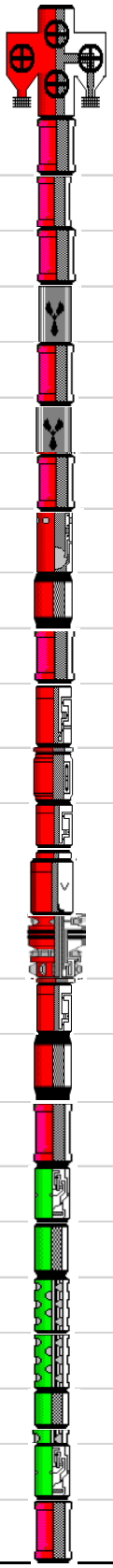
	Description	Top and Bottom Connection	Supplier
	FLOW HEAD	(+)	Contractor
	Crossover	(+)	Contractor
	4"1/2 - 3"1/2 Tubing or 5" Drill pipe	Premium Connection Integral or IF	SIPEX/Rig
	Crossover	(+)	Contractor
	Correlation Tubing joint	(+)	SIPEX
	4"1/2-3"1/2 Tubing or 3"1/2 Drill pipe	Premium Connection Integral or IF	SIPEX/Rig
	Correlation tubing joint	(+)	SIPEX
	4"1/2 -3"1/2 Tubing or 3"1/2 Drill pipe	Premium Connection Integral or IF	SIPEX/Rig
	Reverse circulating valve with Burst Disc	(+)	Contractor
	Drain Valve (optional)	(+)	Contractor
	4"1/2 - 3"1/2 Tubing or 3"1/2 Drill pipe	Premium Connection Integral or IF	SIPEX/Rig
	DownholeTester Valve with Lock Open System	(+)	Contractor
	Gauge Carrier	(+)	Contractor
	Big John Jar	(+)	Contractor
	Safety Joint	(+)	Contractor
	7" or 9"5/8 RTTS Packer with bypass	(+)	Contractor
	Vertical Shock Absorber	(+)	Contractor
	4"1/2" - 3"1/2 Tubing or 3"1/2 Drill pipe	(+)	Contractor
	Tubing Joint/Screen pipe (optional)	(+)	Contractor
	Drop Bar Firing Head	(+)	Contractor
	Safety Gun	(+)	Contractor
	TCP Gun	(+)	Contractor
	TCP Gun	(+)	Contractor
	Adapter	(+)	Contractor
	Pressure Firing Head	(+)	Contractor
	2"7/8 Tubing joint (Optional) and Mule Shoe	(+)	Contractor

Figure 1: DST Tool String Equipment

Note: Take into account the use of crossovers in the DST tool string.

ii. Surface Well Testing equipment:

- Flow Head (ID 3’’, OD 5’’, operating pressure 10000 psi) it is a temporary wellhead (set of mechanical safety barriers) which is used to direct the effluent towards the surface installations, it consists of:
    - Swivel,
    - Master valve above the swivel,
    - kill line,
    - Flow line,
    - Emergency Shut-Down (ESD),
    - Swab valve
- A couple of pressure gauge (quartz type) to record the pressure gradient,
- The necessary adaptations for the connection between the Flow Head and the drill string (3"1/2 or 5"') or the production tubing (3"1/2 or 4"1/2),
- Two co-flexibles 10 000 psi series, with an inside diameter 3", length : 45 or 60 ft,
- Data header used to connect sensors, gauges,
- A choke manifold to control the flow and the pressure with an adjustable choke (+spare parts) and a fixed choke (+spare parts),
- Gas manifold,
- Oil manifold,
- Piping,
- Flareline,
- Three phase Separator 1440 psi.
    - Line bore minimum 5.761",
    - All dial meters must be in service (Oil metring,Gas metring and Water metring) ,
- Gauge Tank 50 m3 of capacity,
- Surge tank
- Bronze hardware package on site during all DST operations.
- Laboratory cabin, equipped with:
    - Centriuge tubes for BSW (Basic Sediments and Water %).
    - Refractometer (Water Salinity).
    - Viscolite (Oil viscosity).
    - Hydrometer (liquid density).
    - Ranarex (Gas density)
    - Thermometers,
    - Pressure gauges different ranges,
    - Neutral balance, measuring instrument determining the rate of H2S and CO2
- Barton recorder to be installed at the chock manifold,
- Surface samplers,
- Laptop microcomputer,
- Color printer.

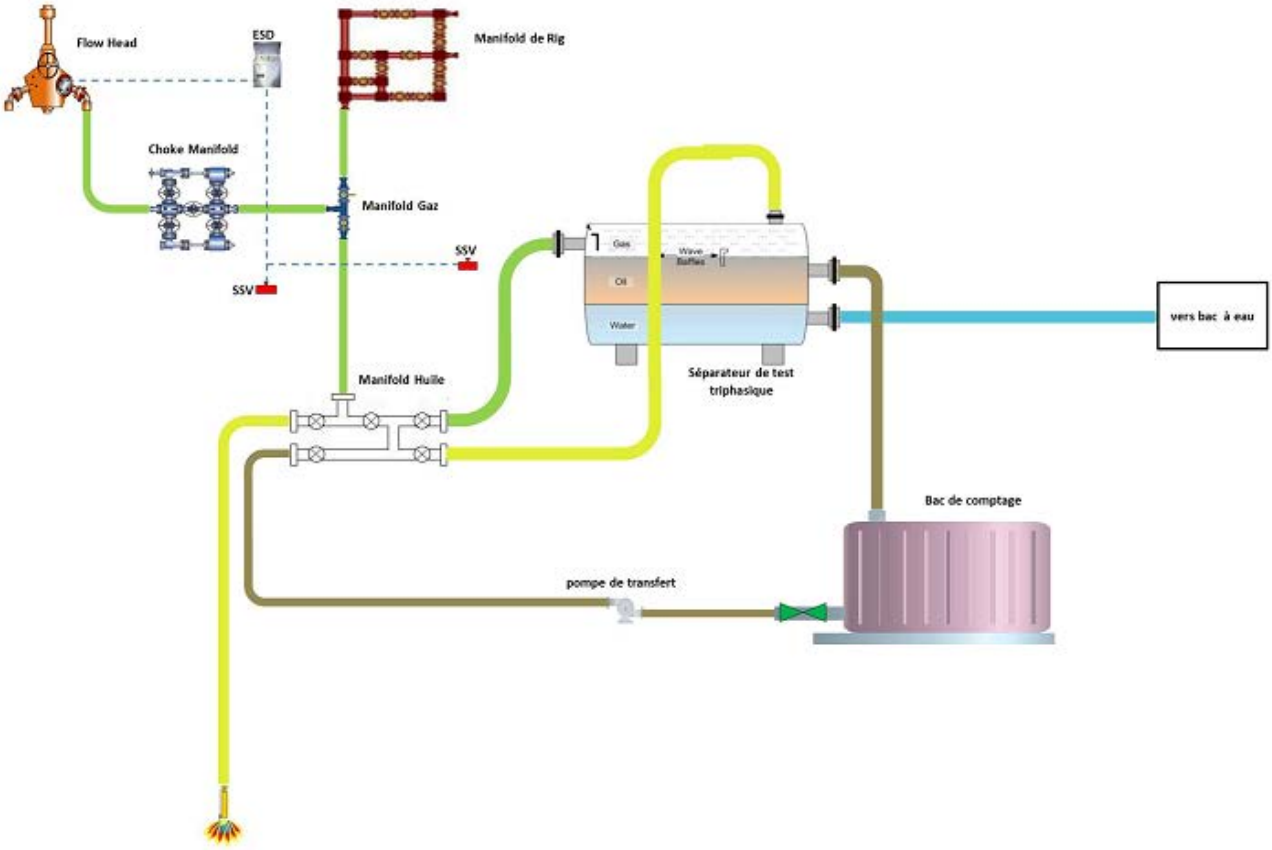


Figure 2: Process Flow Diagram Surface Well Testing

iii. Tubing Conveyed Perforating (TCP)

- TCP carrier for 4''1/2 liner –loaded (optional ,depends on the program),
- Spacer carrier for 4''1/2 liner (depends on the program),
- TCP carrier for 7"casing – loaded,
- Spacer carrier for 7"casing,
- TCP carrier for 9-5/8"casing – loaded,
- Spacer carrier for 9-5/8"casing,
- Dynamic Underbalance or Similar Loaded Carrier,
- Tubing Pup, 5ft, 2''7/8 6.40 lb/ft or heavier L80 EUE 8RD threads,
- Tubing Pup, 5ft, 2''7/8 6.40 lb/ft or heavier L80 EUE 8RD threads,
- Pressure Balanced Debris Sub, Glass or Ceramic Disk Type,
- Time Delay Hydraulic Firing Head,
- Time Delay Hydraulic Firing Head With Gun Disconnect Sub,
- Drop Bar Firing Head,
- Drop Bar Firing Head With Gun Disconnect Sub,
- Wireline Run Firing Head,
- Crossovers (to customers work string, collars and HWDP),
- Accessories, Consumable and Spares,
- RA Marker Sub,
- Perforating Job Design Deemed Included.

4.2.11.3. Personnel

- Well Test Supervisor

- Chief Well Test Operator
- Well Test Operator
- Well Test Assistant
- Data Acquisition Specialist
- Senior DST Operator
- DST Operator
- Senior TCP Operator
- TCP Operator

The number of personnel depends on the Test program:

- If the well will be open during the night, the DST operation requires two teams, one for the night and one for the day,
- If the well will be closed during the night, a single team will be sufficient for the DST operation.

4.2.11.4. Additional equipment

a. Slickline Unit

It allows the control of the tool string (drift), checking the position of the ball valve and the dynamic and static gradient recordings to locate the different levels of liquids in the well.

Slick line unit and PDS sampler can be performed also to take bottom hole fluid (PVT) during flowing by the client command.

Samples are to be collected by smaller choke size to make sure the bottom hole flow pressure is above the bubble point, and start sampling after the flow has stabilized through the separator for 1 hour.

Minimum sample requirement is 2 * 500ml of PVT samples from the bottom hole.

Also Perforating with a cable wire line before running the DST tool string is the most appropriate technique for these wells.

- **Equipment**
  - Cased Hole Slick Line,
  - Double Drum Skid Mounted Unit with cable 0.108” or 0.125”,
  - Wellhead Pressure Equipment 10,000 psi WP H2S with twin BOP,
  - Toolbox with complete basic string and necessary tools.
- **Personnel**
  - Chief Slick Line Operator
  - Slick Line Operator
  - Slick Line Assistant

b. Coiled tubing with Nitrogen unit:

It allows some interventions to be carried out quickly and under pressure on the well in particular for:

- Kick off the wells by injection of nitrogen, some wells require nitrogen injection to start up,
- Clean the well and the DST tool string (sand, salt, paraffins, etc.) by circulating a suitable fluid
- Acid treatment of the layer of interest.
- Injection of hot water or a diluent in the case of production of Heavy Oil
-

- **Basic Equipment**
  - Coiled tubing equipement,
  - Nitrogen and nitrogen pumping equipment,
  - Acid and acid pumping equipment for acidification.

Personnel

- Chief Coiled tubing Operator
- Coiled tubing Operator
- Unit and N2 Operator
- Unit and acid Operator

c. Equipment for Stimulation (optional):

Basic Equipment :

- **Surface Sampling Kit**
  - Mercury Free Surface Sampling Kit, SSK,
  - Conventional Sample Bottle, CSB (600cc),
  - Gas Sample Bottle, GSB (20L),
  - Sulphur/Carbon Dioxide Analysis Detection Tube Kit,
  - 11 Litre UN Certified Steel Drums,
  - 5 Litre UN Certified Plastic Container,
  - 1 Litre Glass Bottle
- **Personnel**
  - Stimulation specialist

Operational Context on Site :

In order to ensure that the DST operation runs smoothly and to take the necessary security measures, all parties involved must cooperate in the preparation of the test before the execution of the operation. It is necessary to carry out the following operations before running in hole of DST string:

- **Scrapper Opération :**

It is essential to scrape the casing from the setting zone, in order to ensure the passage, setting and sealing of the test packer (with two passes at least).

Note*: It is not necessary to repeat this scrapping operation if it was carried out just before.*

- **Mud Circulation Operations :**

It is essential to circulate at the bottom in order to clean the hole properly and homogenize the mud. This is to ensure proper handling of the bottom valves to avoid blockages.

Note: *The density of the mud must be confirmed before running in hole of DST string.*

The time between the last circulation and the running in hole of DST string must not compromise the homogeneity of the mud. Redo circulation if necessary.

- **BOP testing :**

It is mandatory to do a full pressure test for the BOP prior to the start of production testing operations to ensure its proper operation according to the current shutter testing procedure, Pressure test to be recorded on a chart recorder and witnessed by SIPEX Well Testing supervisor.

- **Surface equipment pressure test :**

- Closed Swab valve and master valve opened kill valve and flow valve.
- Open the choke manifold valves.
- Started flushing surface well testing lines with water.
- Connected flare line test cap.
- Start pumping with the cementing pump to pressure test Pressure test flare line @ 500psi, monitor the pressure during 10 to 15 min.
- Pressure test separator bypass and inlet seperatore @ 1000psi during 10 to 15 min.
- Pressure test downstream Choke-Manifold valves @ 3500psi during 10 to 15 min.
- Pressure test the upstream Choke-Manifold to 5000psi during 10 to 15 min.
  NB: Testing of surface equipment is done during the day.

- **Safety Measures:**

The DST supervisor in collaboration with the HSE supervisor of the drilling contractor must ensure compliance with HSSE standards and procedures in particular:

- Respect of minimum safety distances between the wellhead and the DST equipment :
  - The choke manifold 15 m
  - The separator and oil tank 25 m
  - Flare line 150 m
  - Degasser line 100 m

- Maintaining security access and exits,
- Good mooring of the flare line,
- The availability of fire extinguishers near the choke manifold and the separator.

- **Optional instructions :**

- As a general practice, the well must be perforated with the wellbore pressure greater than the formation pressure, this pressure differential may prevent optimum cleanup of the perforations, the situation is aggravated when perforating in drilling mud, the mud plugs are difficult to remove even when subjected to high reverse pressure.
- Perforating in clean liquids such as Brine or diesel is recommended.
- Fill up nitrogen or diesel to DST string as cushion if available.

4.2.11.5. DST Tool String Equipment

Description	Supplier ID	Stand by/d	Operational /d
Retrievable Packer			
Retrievable Packer back up			
Safety Joint			
Safety Joint back up		x	
Jars			
Jars back up		x	
Single shot Cir valve (x2)			
Single shot Cir valve back up		x	
Tester Valve			
Tester Valve back up		x	
Tubing tester valve			
Tubing tester valve back up		x	
Multi circulating valve			
Multi circulating valve back up		x	
Slip Joints (x2)			
Slip Joints back up		x	
Gauge Carrier			
Gauge Carrier back up		x	

4.2.11.6. Surface Well Testing Equipment

Description	Supplier ID	Stand by/d	Operational /d
Surface tree 10 K 3 1/16			
Coflexip Hose			
ESD			
Choke manifold			
Chemical injection pump (x2)			
Piping and manifolding			
Flare Pit Ignition System (x2)			

Surge tank 100bbls			
Gauge tank 100bbls			
Transfer pump			
Separator			
Lab cabin			
Data Acquisition System			

The consumable for sampling:

Description	Supplier ID	Stand by/d	Operational /d
Oil sample bottle			
Gas sample bottle			
Surface sampling kit			
200 liter lined drum			
IATA can 1 liter			
IATA can 5 liter			
IATA can 25 liter			
Plastic bottle 500cc or 600cc			
Plastic bottle 1 liter			
Plastic bottle 5 liter			
Draeger tube CO2			
Draeger tube H2S			

4.2.11.7. Average duration of DST Operations

The average duration of a DST operation is seven (07) days maximum for DST on Barefoot and Wireline perforation before Runing DST tool String.

For DST/TCP La durée moyenne d'une opération est de Neuf (09) jours maximum.

period	Duration (min)	Comments
Initial Opening	15	Opening the well on a 16/64'' adjustable choke
Initial Shutting	60	Chut in the well at downhole valve (ball valve)
1st Flow	720 if the well will be closed during the night, if not	**1er Clean up On various Sizes :** **If the well is naturally produced:**

	depending on the supervisor and the behavior of the well	Opening the well at downhole valve on an adjustable choke 16/64" to flare pit gradually increase the choke from 16/64", 24/64" to 48/64" depending on well head pressure value; continued clean up until at least two of BSW samples show less than 1% of sediment. **If the well is not naturally produced:** Confirm that the ball valve is open with the Slickline unit. Proceed with Coiled tubing for kick off the well.
1st Build Up	2 times the time of the 1st flow	Chut in the well at downhole valve (ball valve) in order to have a very good recording of the reservoir pressure.
2nd Flow	720 if the well will be closed during the night, if not depending on the supervisor and the behavior of the well	Open the well on the flare line, Before proceeding to metering, the DST supervisor must ensure that: • Stabilization of the pressure upstream of the choke manifold during clean up on the flare line, • Change the flow passage on a fixed choke and wait for the pressure to stabilize before starting metering. Fluid sample taken every half an hour to control BSW. After pressure stabilization and BSW; BSW < 1% or trace, we proceed to the switch on separator and metering on 24/64'' and 32/64'' choke size, and 40/64" (optional) The choice of choke sizes is determined by the technical test program. However, the DST supervisor can change the diameters of the choke depending on the circonstances of the test in terms of flow rates and pressures. - Don't forget the sampling on the separator and at the choke manifold
2nd Build Up	2 times the time of the 1st flow	Closure the well from the bottom (ball valve) in order to have a very good recording of the reservoir pressure. After confirmation of closure at the bottom by the pressure drop upstream of the choke manifold, sufficient pressure is maintained in the tool string above ball valve, such as a differential pressure, to ensure the next opening.

- **Sampling Analysis :**
  - **Equipment:** PVT equipment
  - **Personnel:** PVT specialist

Reverse circulation and Pull out of hole DST tool String:

- Safety meeting with concerned personnel,
- Fill with brine inside the tubing through Flow head kill valve with low rate,
- Set volume monitor, measure the mud tank level and observe the pumping pressure,
- Bleed off the WHP.
- Set the circuit to the Kill Line (BOP) to open the circulating valve.
- Apply annulus pressure according to service provider supervisor instructions to open the ball valve.
- Circulate interior volume until brine homogenization.
- Bleed off annulus and the wellhead pressures and open pipe rams
- Careful observation of the annulus before unset the packer, the packer by-pass must be open during observation.
- Set the Martin Decker to zero and monitor the mud tank level.
- POOH the tool string to unset the packer, Respect the max over-pull given by service provider supervisor,
- Do a 10-minute flow check,
- If the level is stable, clean the surface equipment with fresh water
- Rig down Flow head and Coflexip
- Start POOH the DST and continue rig down surface equipment.
- Pull out of hole the first drill pipe slowly to avoid the pistoning effect,
- Bleed off WHP to zero psi,
- Do a flow check every 300m,
- The rotation table must remain blocked until the BHA reaches the surface
- Disassembly of the BHA according to the tester man instructions,
- The safety clamp must be placed on all parts of the BHA placed with Drill Pipe Slips when the elevator is disconnected,
- Beware of the risk of pressure trapped in the DST tool string.

Verification and validation of the data:

After retrieving the bottom hole recording gauges, the DST supervisor must check the recorded data based on the following:

- Check the file headers as well as the serial number of the gauges,
- Check the timing in the data which should be correct,
- Read the atmospheric values (pressure and temperature) which should be logical,
- Calculate the density after reading the initial and final hydrostatic pressure and compare it with the used density,
- Read the initial and final pressure values for each flow rate,
- Read the pressure for the initial shutting and the other pressure for each build up,
- Plot the bottom pressure diagram for the three pressure gauges, compare them and choose only two to report.

4.2.11.8. Casing Program re-entry :

The A1-96/02 well security operations were completed open hole on February 3rd, 2018, and the reservoir section l is full with 9.1 ppg 3% Kcl Mud at that time, except above CP N°2 is filled by inhibited brine 10.5 ppg (Plot below).

This means that this section is probably damaged by this mud, so the logging evaluation can give preliminary information on the hole and near wellbore condition as a preliminary information's before to conduct the DST operations.

Phase	Casing Size	Setting Depth (ft)	Weight (ppf)	Connection	Grade	Burst (psi)	Collapse (psi)	Drift API (mm)
26"	20"	222	-	-	-	-	-	-
16"	13"3/8	2008	-	-	-	-	-	-
12"1/4	9"5/8	4628	-	-	-	-	-	-
8"1/2	7"	8085 (Drilled) 8440 (Planned)	29	-	-	-	-	-

Wel Re-entry **: Actual plan executed:**

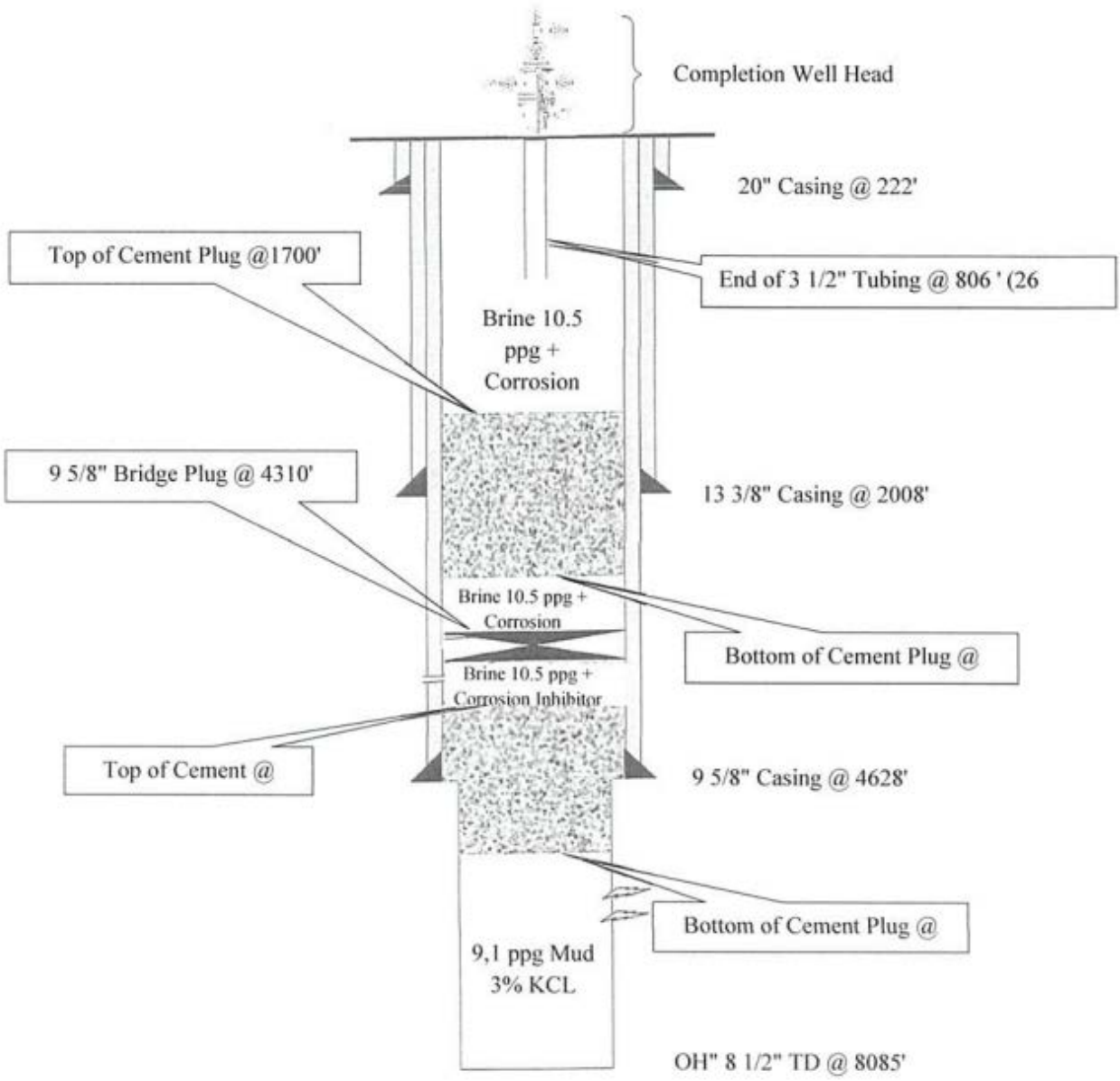


Figure 3: Well Schematic re-entry

4.2.11.9. Testing programre-entry well:

After running and cementing 7" Liner for all 8"1/2 Hole Section, while ascertaining a good cementing, a cased hole testing program will be conducted in front of Reservoirs presenting high oil/gas indications and according to logs evaluation results,

Totally four (04) test are planned to be executed for this well, the test reservoir information is as follow:

Objectives	DST planned for Re-entry	Results Offset well C1-96-01
Tahara	No DST is planned Formation Tester measurements or equivalent is recommended according to logs evaluation results	No encouraging results were recorded in previous well in the Area (Tight reservoir)
Awaynat Wanin	DST is planned will be carried out behind casing to be confirmed according to logs evaluation results	Producing a humid gas mixed with light Oil & water
Ouan Kasa	DST is planned will be carried out behind casing to be confirmed according to logs evaluation results	Producing a humid gas
Tadrart	DST is planned will be carried out behind casing to be confirmed according to logs evaluation results	Producing wet gas with low rates of condensate and water
Mamuniyat	DST is planned will be carried out behind casing to be confirmed according to logs evaluation results	Producing wet gas
Hawaz	No DST is planned RDT measurements or equivalent is recommended according to logs evaluation results	No encouraging results were recorded in previous well in the Area (Tight reservoir)

4.2.11.10. Casing Program well 1 :

The proposed ITD (well 1) is an exploration well to be drilled in Block 95/96,

The main objective is to explore Devonian reservoirs (Tahara, Awaynat Wanin A, Ouan Kasa -Tadrart) and the Ordovician reservoir (Mamuniyat) by testing structures highlighted by new seismic interpretations to the western part of 95/96 Area.

Phase	Casing Size	Setting Depth (ft)	Weight (ppf)	Connection	Grade	Burst (psi)	Collapse (psi)	Drift API (mm)
26"	20"	250	94	BTC	K55	2102.5	522	481
16"	13" ⅜	3300	61	BTC	K55	3088.5	1537	313.9
12 ¼"	9" ⅝	6150	47	VAM TOP or NEW VAM or HSC	N80	6858.5	4756	216.5
8 ½"	7"	9422	29	VAM TOP or NEW VAM or HSC	P110	11223	8526	153.9

4.2.11.11. Testing program well 1:

After running and cementing 7" Liner for all 8"1/2 Hole Section, while ascertaining a good cementing, a cased hole Testing program will be conducted in front of Reservoirs presenting high Oil/Gas indications and according to logs evaluation results,

Totally five (05) tests are planned to be executed for this well, the test reservoir information is as follow:

Objectives	DST planned for **Well 1**	Results Offset wells **B1-96/01** and **A1-96/01**
Tahara (Upper part)	No DST is planned RDT measurements or equivalent is recommended according to logs evaluation results	**A1-96/01 :**Very low gas production through the water cushion
Tahara (Lower part)	DST is planned will be carried out behind casing to be confirmed according to logs evaluation results	**B1-96/01 :**Producing wet gas mixed with condensate **A1-96-01**: Producing oil and gas
Awaynat Wanin	DST is planned will be carried out behind casing to be confirmed according to logs evaluation results	**B1-96/01 :**Producing wet gas mixed with condensate
Ouan Kasa	DST is planned will be carried out behind casing to be confirmed according to logs evaluation results	**B1-96/01 :**Producing a small amount of dry gas
Tadrart	DST is planned will be carried out behind casing to be confirmed according to logs evaluation results	**B1-96/01 :**Producing a humid gas mixed with condensate
Upper Mamuniyat	DST is planned will be carried out behind casing to be confirmed according to logs evaluation results	**B1-96/01 :** Producing a small amount of dry gas
Lower Mamuniyat (Ordovician)	No DST is planned RDT measurements or equivalent is recommended according to logs evaluation results	**B1-96/01 :**Non productive reservoir
Hawaz	No DST is planned RDT measurements or equivalent is recommended according to logs evaluation results	No encouraging results were recorded in both offset wells

4.2.11.12. Casing Program well 2 :

The casing program will be the same as well 1 (see 4.2.11.10)

The proposed ITD (well 2) is an exploration well to be drilled in Block 95/96,

The main objective is to explore Devonian reservoirs (Tahara, Awaynat Wanin A, Ouan Kasa -Tadrart) and the Ordovician reservoir (Mamuniyat) by testing structures highlighted by new seismic interpretations to the western part of 95/96 Area.

4.2.11.13. Testing program well 2 :

The casing program will be the same as well 1 (see 4.2.11.11)

After running and cementing 7" Liner for all 8"1/2 Hole Section, while ascertaining a good cementing, a cased hole Testing program will be conducted in front of Reservoirs presenting high Oil/Gas indications and according to logs evaluation results,

Totally five (05) tests are planned to be executed for this well, the test reservoir information is as follow:

Note:

- The presence of dolerite formation at the top of Mamuniyat reservoir is considered an important factor in decision-making on the mode of execution of DST operations in the Ordovician reservoirs
- In case of change of scope due to downhole problems, 6" Hole Section can be drilled so barefoot DST or cased hole DST operation can be conduct.
- The final number of DST operations for both wells will depend on the geological and petrophysical evaluation results.

4.2.11.14. Total cost Testing services

Surface Well Testing Package:					
Item	**Description**	**QTY (EA)**	**Daily Rental Charge/each (USD)**	**Estimated days by Test**	**Total cost**
1	Surface TMU Well Testing Package (Flowhead ,Coflex & data header, Emergency Shut-Down ,SSV, Choke Manifold,Gas Manifold , Manifold, Oil Three phase Separator, Surge Tank 50 psi, Lab Cabin with all instrumentation, Data acquisition system with software and laptop, Generator, Air Compressor, piping package 150 ft ,flare line,bronze material)+ including crew	1		7	
2	Oil Surface and Bottom hole Sampling Bottles with specialist	2		7	
3	Gas and condensat Surface Sampling Bottles	2		7	
4	Mobilization and Demobilization for Surface TMU well Testing Package per round trip	1		1	
5	Cancellation Charge per job	1		1	
Down Hole Memory Gauges Services:					
1	Down Hole Electronic Memory Gauges (Pressure and Temperature)	2		7	
2	Down Hole Memory Gauges Engineer	1		7	
3	Mobilization and Demobilization for Memory Gauges Services per round trip	1	included under SWT	1	included under SWT
4	Cancellation Charge per job	1		1	
Cased Hole Drill Stem Testing Services:					
1	Cased Hole Down Hole Tools (DST) Lump sum string including crew (TCP Engineer)	1		7	
2	Mobilization and Demobilization for DST Services per round trip	1	included under SWT	1	included under SWT
3	Cancellation Charge per job	1		1	