SIGOR CORPORATION

SWTorpedo™ Well Stimulation Services

LIST of Exhibits

1. Competitive Advantages of SWTorpedo.
2. Effectiveness of SWTorpedo
3. FAQ
4. Dilatancy, tool, area of influence
5. Require equipment
6. Require information check up list
7. Some of the treated wells
8. Quotation sample

Presentation Available Upon Request
2008

Competitive Advantages of SWTorpedo™

SWTorpedo™ vs. Common high explosives

- Effect of dilatancy creates macro and micro-fractures rather than only macro
- No compaction zone or cavity created
- 10 times less of explosives used for each treatment
- Can be used in cased wells where casing is perforated
- Easier and safer to handle

SWTorpedo™ vs. Propellant tools

- Each tool is designed individually to meet specifics of producing formation
- Flat Fee for each type of services regardless of the treated area
- Significantly higher rate of success in sandstone, limestone and dolomites
- Initiates multiple fractures vs. 1 or 2 of two directional fractures
- Applicable in shallow and under pressured wells (only 90ft of fluid required above the tool)

SWTorpedo™ vs. Acidizing treatment

- Enhance acidizing by increasing area of acid-rock contact when used prior to the acidizing treatment
- Low risk of the well's integrity
- Higher predictability of outcome

SWTorpedo™ vs. Hydraulic fracturing

- Adjustable vertical growth
- Multiple fractures
- Aggregated permeability is higher
- Significantly lower cost
- Equipment requirements are minimal

Distinctive Advantages

SWTorpedo™ Fractures are stable over time and its stability varies from 4 years and longer.

If **SWTorpedo™** is used in combination with Slick Water Fracturing expected results are:

- Increase of the productive length of the fracture;
- Increased life of the fracture;
- In some cases may supplement use of proppant and associated with Hydraulic Fracturing (HF) chemicals and cut overall cost of HF ~ by 50%.

SWTorpedo™ can be used as diagnostic tool and/or as frac initiator for tough formations such as a Niobrara before applying HF, expected results are:

- Evaluation of perforated zone in deep tight sands for gas content before committing to spend more on HF;
- Decrease of sand's strength by ~40% and cost of HF can be cut substantially.

For more information call: Igor Skakovsky President/CEO
Telephone **720-480-4642,** Facsimile 303-337-5251, E-Mail Sigor@swtorpedo.com

Effectiveness of SWTorpedo Tool

Preferable depth of producing interval for:

- Oil wells up to 13,200ft
- Gas wells up to 14,800ft

Preferable characteristics or the source rock:

$\mathrm{E} = 3.5 \cdot 10^6 Psi$ $\rho = 0.25$ $\kappa = 0.1 - 20md$

Where: E -is Young's modulus; ρ -is Poisson's ratio; κ -is permeability.

Highly compressible components such as clay, loam, etc under 13%

Young's modulus **Psi**	**Representative Characteristics of the Rock Formations**	**Results of SWTorpedo Stimulation**
6 to 7× 10^6	**Sandstone** (strong and clean)	**Best**
4.5 - 5.5× 10^6 **3.0 - 4.5× 10^6** **3 to 3.5× 10^6** **2.5 to 3× 10^6** **2 to 2.5× 10^6** **1 to 1.5× 10^6**	**Sandstone** (medium strength) **Limestone** (strong and dense or medium strength) **Dolomite, Sandstone** (weak) **Granite** **Shale** (strong) **Shale** (medium strength) **Sandstone**(clayey) **Limestone** (clayey) **Coal** (hard)	**Good**
2 to 2.5× 10^6	**Shale** (weak with admixtures) **Sandstone** (weak with admixtures)	**Acceptable**
	Sandstone (weak with high moisture) **Shale** (strong and/or with high moisture) **Tuff** **Sulfuric ore** (with no < than 30 percent of sulfur)	**Questionable**
	Tuff (high moisture) **Sulfuric ore** (with < than 50% of sulfur) **Soil**	**Poor**

Frequently Asked Questions
About SWTorpedo Well Stimulation

1. **How SWTorpedo well stimulation is different from Common Explosives and Propellant Tools?**
2. **What is dilation?**
3. **How SWTorpedo is fielded?**
4. **What type of source rock will be more responsive to SWTorpedo?**
5. **What are the limitations for SWTorpedo well services?**
6. **What factors are used to determine amount of explosives?**
7. **Can size or spacing of perforations limit the applicability of SWTorpedo?**
8. **What is the maximum radius at which rock's permeability will be increased?**
9. **What type of fluid can be used when applying SWTorpedo?**
10. **When formation pressure is low, what is the minimum of fluid column above the Tool will be required?**
11. **Will SWTorpedo damage the casing?**
12. **Is there a chance of losing wireline when SWTorpedo is detonated?**

Answers to Frequently Asked Questions

1. **How SWTorpedo well stimulation is different from Common Explosives and Propellant Tools?**

SWTorpedo Tool is conceptually different from Propellant Tools and technologically different from Common Explosives.

- **All of Propellant Tools** use the burning process (deflagration) of solid propellants or gun powders to generate gas. Usually build-up pressure is enough **to create no more than 2 of two directional vertical fractures**. Gas will be forced through the perforations in to formation. As propagation of initial fractures progress gas will be consumed faster than propellant can generate it, as a result **no new** fractures can be created. This process explained by the law of A. Griffith.
- **Common Explosives** when used generate powerful impulse or wave which causes rock crashing. Its differential stress will reach a point when it is higher than effective normal stress and main fracturing force is a force of compression. Very often Common Explosives **reduce permeability near the wellbore**.
- **SWTorpedo Tool** uses charges of high explosives and proprietary ingredients. Multiple charges are detonated in such succession to initiate multiple radial fractures which growth can reach **up to ~70ft** and trigger **dilation** that initiates at about **7-9ft** from the wellbore overlaying radial fractures like an air tube, as far as **~45ft** from the wellbore like, resulting in increased permeability of 700% and higher.

2. What is dilation?

Rock dilation is a permanent deformation registered in rocks that are subjected to non-uniform dynamic stress. It can be best explained as volume changes, porosity increases more than 60% and permeability increase several folds as a result.

3. How SWTorpedo is fielded?

- Selected well must be prepared in the same manner as it would be for perforation. That includes: tubing and rods removal if any
- **If you prefer** to use wireline then wireline crew should confirm the depth of zone to be treated and mark the wireline with tape and/or paint.
- Water solution or other fluids used to depress the well must be pumped in to the well until its level reach the mark of at least 90 feet above the SWTorpedo Tool.
- One time use torpedo's head sub top must be attached to a cable head by the female adapter with 1 7/16 in. thread
- Electrical detonator must be wired and connected to a detonative cord
- Connect SWTorpedo to its reusable head and lower the Tool to the mark on wireline
- Safety meeting
- Initiate detonation
- Swab the with bailer or tubing, start pumping
- **If you prefer to run all New SWT M2** it can be run on production tubing it **doesn't require a wireline.** SWT M2 is sealed and can be used in any fluid; it is being tested several times in oil, diesel and HCl acid. (Call: **720-480-4642** for details)

4. What type of source rock will be more responsive to SWTorpedo?

SWTorpedo proved to be successful in most of the source rocks. Rock Types and SWTorpedo Applicability

5. What are the limitations for SWTorpedo well stimulation?

The limitations for SWTorpedo are:

- The depth limit is 36,000 feet
- The presence in the productive zone of more than 20% of highly compressible components such as clay, loam, etc
- Undesired water is closer than 18ft from center of the zone to be stimulated;
- Very low formation pressure (is not a limitation but a challenge to deliver significant improvement)

6. What factors are used to determine amount of explosives?

The quantity of explosive materials is determined based on the following factors:

- required increase of output or intake of the well
- distances between offset wells
- size of the interval to be stimulated
- physical condition of the casing and bore hole
- quality of the cement job
- physical properties of the rock
- types of the explosive materials

7. Can size or spacing of perforations limit the applicability of SWTorpedo?

Application of SWTorpedo is **NOT** limited by the size or spacing of the perforations. Due to a high speed of shock waves, bedrock will be fractured before fluid begins to move, movement of gas and fluid create a secondary flushing effect and plays major role in extending fractures to 70ft. Nevertheless, to transfer more energy in to formation and create enhanced flushing effect it is preferred to have larger size of perforated entry holes with a spacing of 4 or more holes per foot.

8. What is the maximum radius at which rock's permeability will be increased?

Maximum radius of effective rock fracturing in shear is calculated and designed for each well individually based on the pressure threshold at which rock dilation begins in each given formation and can be extended from the wellbore – 45ft in all directions horizontally, where vertical radius is ~ 30% smaller than horizontal extension, in addition major radial fractures can be extended **up to 70** feet.

9. What type of fluid can be used when applying SWTorpedo?

There are no specific requirements for fluid use. Any fluid desired by the Client such as water, brine, acid, oil or diesel can be used. Fluid around the Tool will act as a conductor that transfers shock waves to formation.

10. When formation pressure is low, what is the minimum of fluid column above the Tool will be required?

Previous experiences show that it is safe to maintain **as little as 90 feet of fluid** above the Tool but we prefer 500ft or more. Use of specially designed self distractible temporary bridges allows SWTorpedo well stimulation technique to be applied in **very shallow wells** (300ft). **In low pressure** carbonated formations 25 barrels of HCL acid toped with 3-5 barrels of KCL water is advisable to use to increase cushion above the tool.

11. Will SWTorpedo damage the casing?

As long as the information from the cement bond log is correct (current), casing protection is positioned accordingly and the Tool is detonated at the desired and verified depth NO casing damage is anticipated. If there is an issue with undesired water that can travel along the casing (closer than 18ft from the tool) then we can provide specially designed tool to deal with that problem.

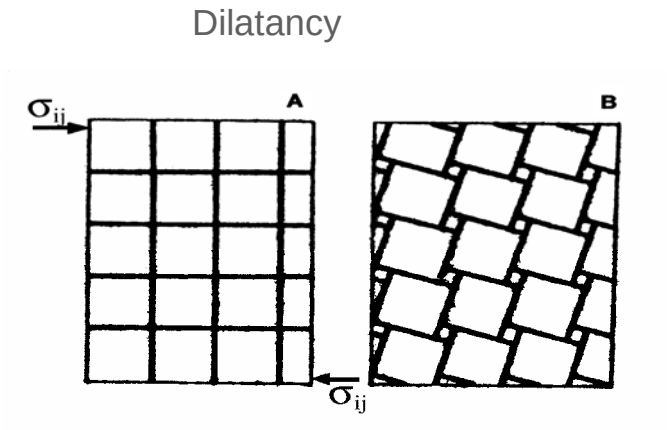
12. Is there a chance of losing wireline when SWTorpedo is detonated?

The Tool head is build to absorb the shock from SWTorpedo. We have 3 different designs of the Tool head; each is used for different applications. Through the development process and field tests we experienced some losses of the wireline. For the practical reasons some losses of wireline must be counted for, and if Tool will be run on production tubing there is chance to lose one joint.

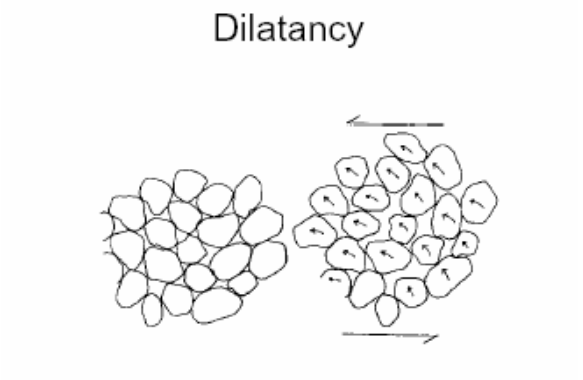
Rock's Dilation and it's Practical Applications

There are more than one definition of rock dilation:

1. Rock Dilation is a permanent deformation registered in rocks that are subjected to not-uniform dynamic stress. It can be best explained as volume changes, porosity increases from original state by several folds and permeability increases in come cases more than 700%, due to micro-fracturing.



2. Rock dilation is the increase in volume of a granular substance when its shape has been altered due to increasing the distance between its component particles.

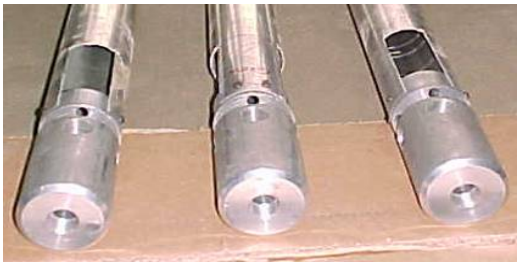


Dilatancy Concept from University of Texas at Arlington:
http://geotech.uta.edu/lab/Main/DIRECT%20SHEAR%20TEST.pdf

3. Rock Dilation is the deformation by expansion or volumetric change of the rock properties.
   Technologies that will use effect of shearing to fracture potentially productive zone during completion or for well stimulation can be considered cost-effective methods for hydrocarbon recovery.
   Each SWT M2 Tool is individually designed to be most effective for every zone that is treated.


A


B

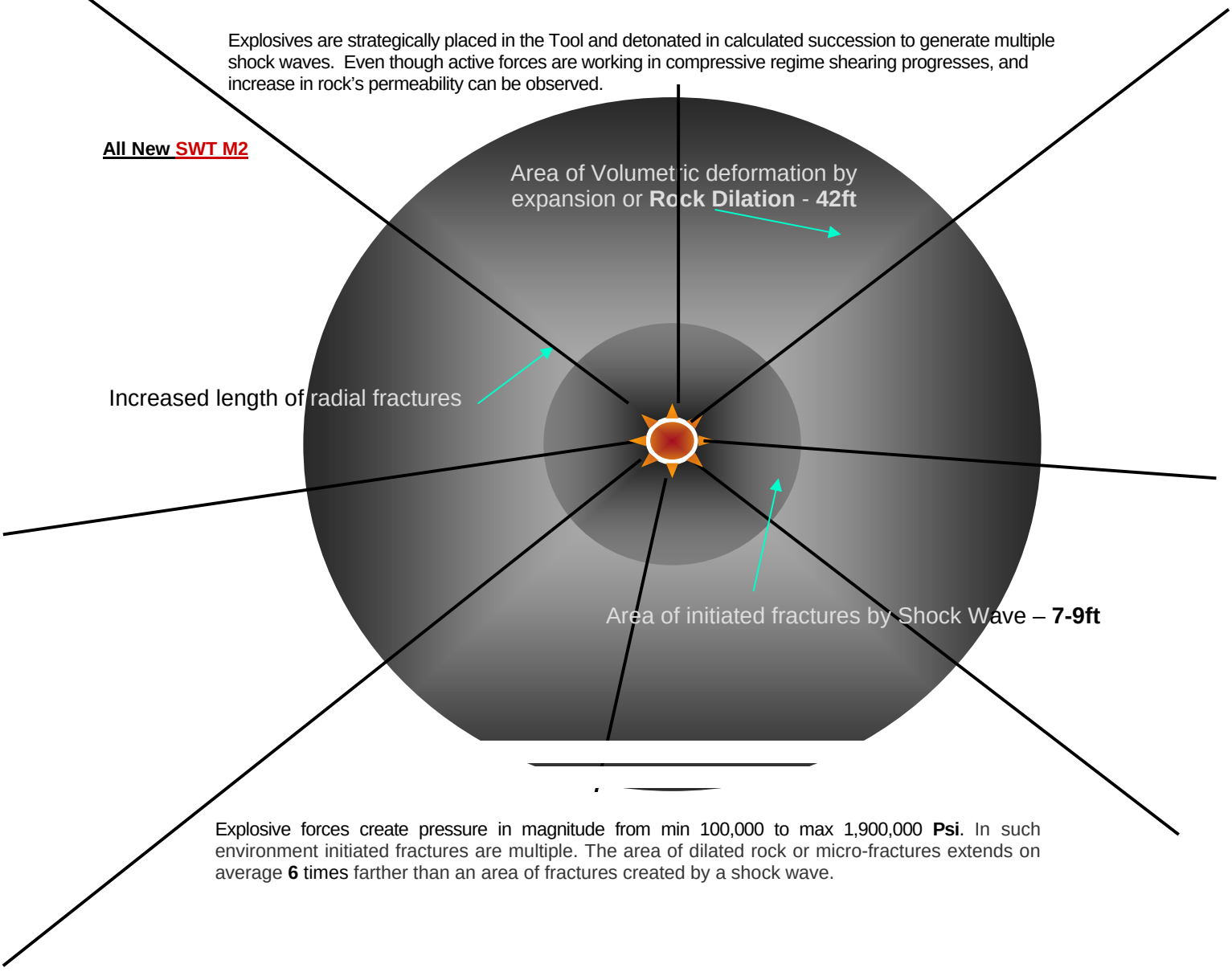


C **D** **E**

Figure 1 A and **B**-Tool Head; **C** -Top view Tool Head attached; **D** -Complete Tool assembly; **E**-Schematic view of internal design

Explosives are strategically placed in the Tool and detonated in calculated succession to generate multiple shock waves. Even though active forces are working in compressive regime shearing progresses, and increase in rock's permeability can be observed.

All New SWT M2



Explosive forces create pressure in magnitude from min 100,000 to max 1,900,000 **Psi**. In such environment initiated fractures are multiple. The area of dilated rock or micro-fractures extends on average **6** times farther than an area of fractures created by a shock wave.

Shear strength of rock's sediment depend on:

1. Normal stresses
2. Cohesion
    - Electrostatic forces important for particles < 1 micron
    - Chemical bonds are not important
3. Internal friction
    - Resistance of particles
    - Angle of internal friction depend on:
        1. Grain arrangement
        2. Grain size
        3. Shape of grain
        4. Resistance to crushing (strength)

Factors that affect deformation are:

1. Dilatancy
2. Grain crushing
3. Size of the grain
4. Thermal characteristics
5. Spatial variations in bed strength
6. Decoupling

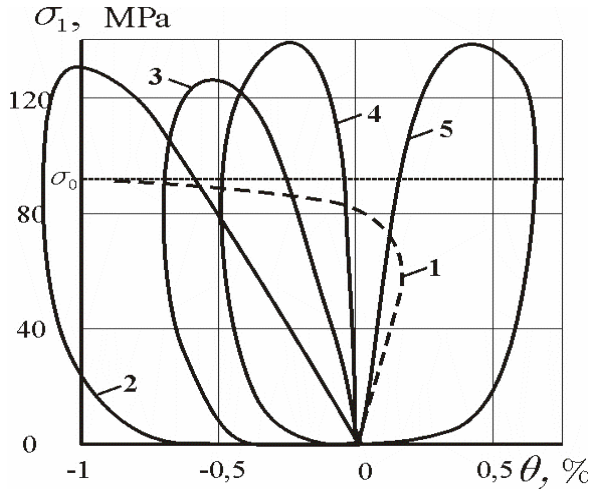


Figure 2

Volumetric deconsolidation of sandstone:
Line#1(dash) depict static loads as a precondition,
Line#2 3 and 4 depict dynamic stress generate by *multiple* shock waves
Where:

θ	Volumetric deformation by expansion or Dilatancy
σ_3/σ_1=-1	depict by Line#1and 2
σ_3/σ_1=0.144	depict by Line#3
σ_3/σ_1=0.132	depict by Line#4
σ_3/σ_1=0.7	depict by Line#5

REQUIRED EQUIPMENT

IF YOU CHOSE TO USE WIRELINE TO CONVEY SWT YOU WILL NEED:

- **Service rig with an operating crew**
  Pool out production tubing and rods; confirm that casing is perforated at selected zone, make sure there are no abstractions in the casing so, 3.5” SWT can pass through.

- **Wireline truck with an operating crew**
  Wireline crew must run collar locator or Gamma Ray to confirm depth of a zone selected for treatment and flag the line.

- **Water truck with an operating crew**
  Maintain water level at 300 to 500ft above SWT tool. In low pressure zones use 10 to 15 barrels of KCL, oil or diesel fuel.

IF YOU CHOSE YOU CAN RUN SWT-M2 ON PRODUCTION TUBING:

- **Service rig with an operating crew**
  Pool out production tubing and rods; confirm that casing is perforated at selected zone, make sure there are no abstractions in the casing so, 3.5” SWT can pass through.

- **Water truck with an operating crew**
  Maintain water level at 300 to 500ft above SWT tool. In low pressure carbonated zones use between 5 to 25 barrels of 10% HCl acid toped with 2 to 5 barrels with KCL.

Sigor Corporation

1	Client's Name	Tel.			
2	Name of the Well				
3	(Gamma Ray, Resistivity, Density, Neutron) Logs/ or actual data: **Density, Porosity** and **Compressibility** can replace the Logs.	Porosity			
4	Cement Bond Log				
5	Core (Diameter min. 1"; length min. dowble of diameter)				
6	**(psi)** Young's Modulus				
7	Poisson Ratio				
8	Uniaxial Compressive Strength				
9	Permeability (md)				
10	Production	Oíl	Gas	Water	
11	Initial Production				
12	Past 6 months Average				
13	Today's. Production				
14	Oil/Water Contact if any				
15	Type of Rock				
16	Perforated Intervals				
17	Potencially Productive Intervals				
18	Stratification Size and type of Rock adove and below interval to be treated				
19	Bottom of the Casing if Open Hole Completion				
20	Bottom hole - Temperature and Presure				
21	Size and Thickness of Lower Casing				
22	TD (Total Depth)				
23	Observation				

Rev.

PEMEX
EXPLORACION Y PRODUCCION

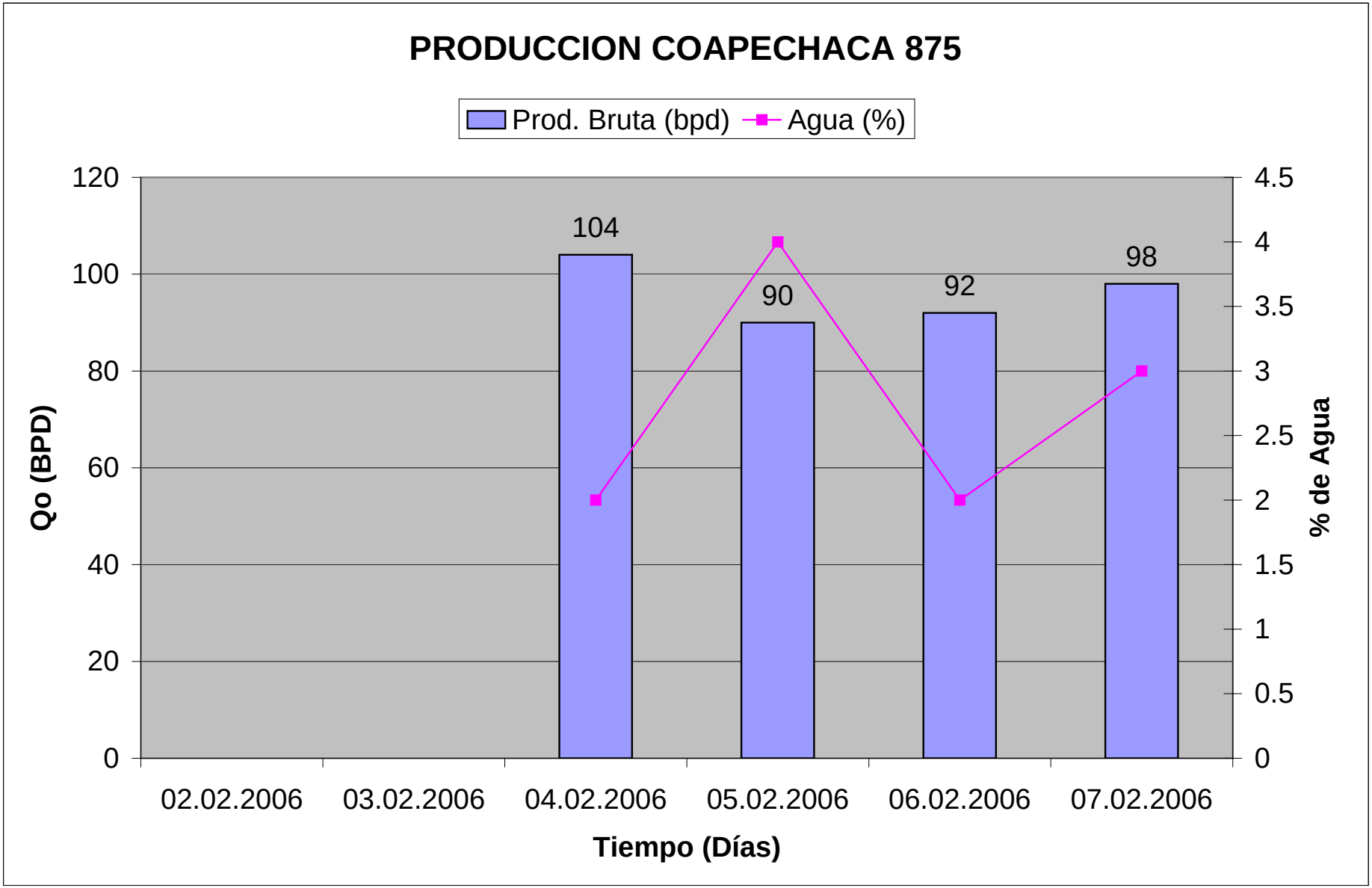
Coordinación Operación de Explotación, Activo de Producción Poza Rica

Departamento Operación de Pozos

Dato Base:

Pozo: AF - 569
Seguimiento: PRUEBA TECNOLOGICA
Sistema: F

Fecha	Hora	Ø (mm)	Presión (Kg/cm2)		Prod. Bruta (bpd)	Agua (%)	Prod. Neta (bpd)	Densidad (g/cm3)	Sedimento (%)	PH	Salinidad (ppm)	R.G.A. (m3/m3)	Gas Prod. (mmpcd)	Gas Iny. (mmpcd)	Lecturas		Observaciones
			TP-1	TP-2											Dif.	Est.	
22.12.2005	14:00	4	25														SE ALINEA POZO A TANQUE
	15:00	4	16			30		0.928			27690						
	16:00	4	14			60		0.980			24850	1405	0.992				
	17:00	4	13			40		0.934			28400	530					
	18:00	4	12			50		0.946			28400						
	19:00	4	12			35		0.928			27690						
	20:00	4	12			40		0.936			24850						
	21:00	4	12		**245**	**43**	**140**	0.898			24785						PROMEDIO AGUA 43%
23.12.2005	08:00	4	12			30		0.928			27690						
	09:00	4	12			60		0.980			24850						
	10:00	4	12			40		0.934			28400						
	11:00	4	12			30		0.946			28400						
	12:00	4	12			60		0.928			27690						
	13:00	4	12			40		0.928			27690						
	14:00	4	12			30		0.980			24850						
	15:00	4	12			60		0.934			28400						
	16:00	4	12			40		0.928			27690						
	17:00	4	12			50		0.980			24850						
	18:00	4	12			35		0.934			28400						
	19:00	4	12			40		0.946			28400						
	20:00	4	12			20		0.928			27690						
	21:00	4	12		**220**	**41**	**130**	0.936			24850						PROMEDIO AGUA 41%
24.12.2005	08:00	4	11			20		0.928			27690						
	09:00	4	11			18		0.980			24850						
	10:00	4	11			15		0.934			28400						
	11:00	4	11			15		0.946			28400						
	12:00	4	10			12		0.928			27690						
	13:00	4	10			18		0.928			27690						
	14:00	4	10			20		0.928			27690						
	15:00	4	10		113	**17**	**94**	0.980			24850						PROMEDIO AGUA 17%
25.12.2005	09:00	5	5			15		0.934			28400						
	13:00	5	5			12		0.946			28400						
	17:00	5	5		69	**14**	**59**	0.928			27690						PROMEDIO AGUA 14%
26.12.2005	09:00	5	5			12		0.980			24850						
	13:00	5	5			12		0.934			28400						
	17:00	5	5		69	**12**	**61**	0.946			28400						PROMEDIO AGUA 12%
27.12.2005	09:00	5	5			18		0.928			27690						
	13:00	5	5			25		0.928			27690						
	17:00	5	5		70	**22**	**55**	0.980			24850						PROMEDIO AGUA 22%
28.12.2005	09:00	5	5			20		0.934			28400						
	13:00	5	5			25		0.928			27690						
	17:00	5	5		57	**23**	**44**	0.980			24850						PROMEDIO AGUA 23%
	20:00																SE CIERRA POZO PARA RPF


PRODUCCION COAPECHACA 875
Prod. Bruta (bpd)
Agua (%)
120
100
80
60
40
20
0
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
104
90
92
98
Qo (BPD)
% de Agua
02.02.2006
03.02.2006
04.02.2006
05.02.2006
06.02.2006
07.02.2006
Tiempo (Días)

PEMEX

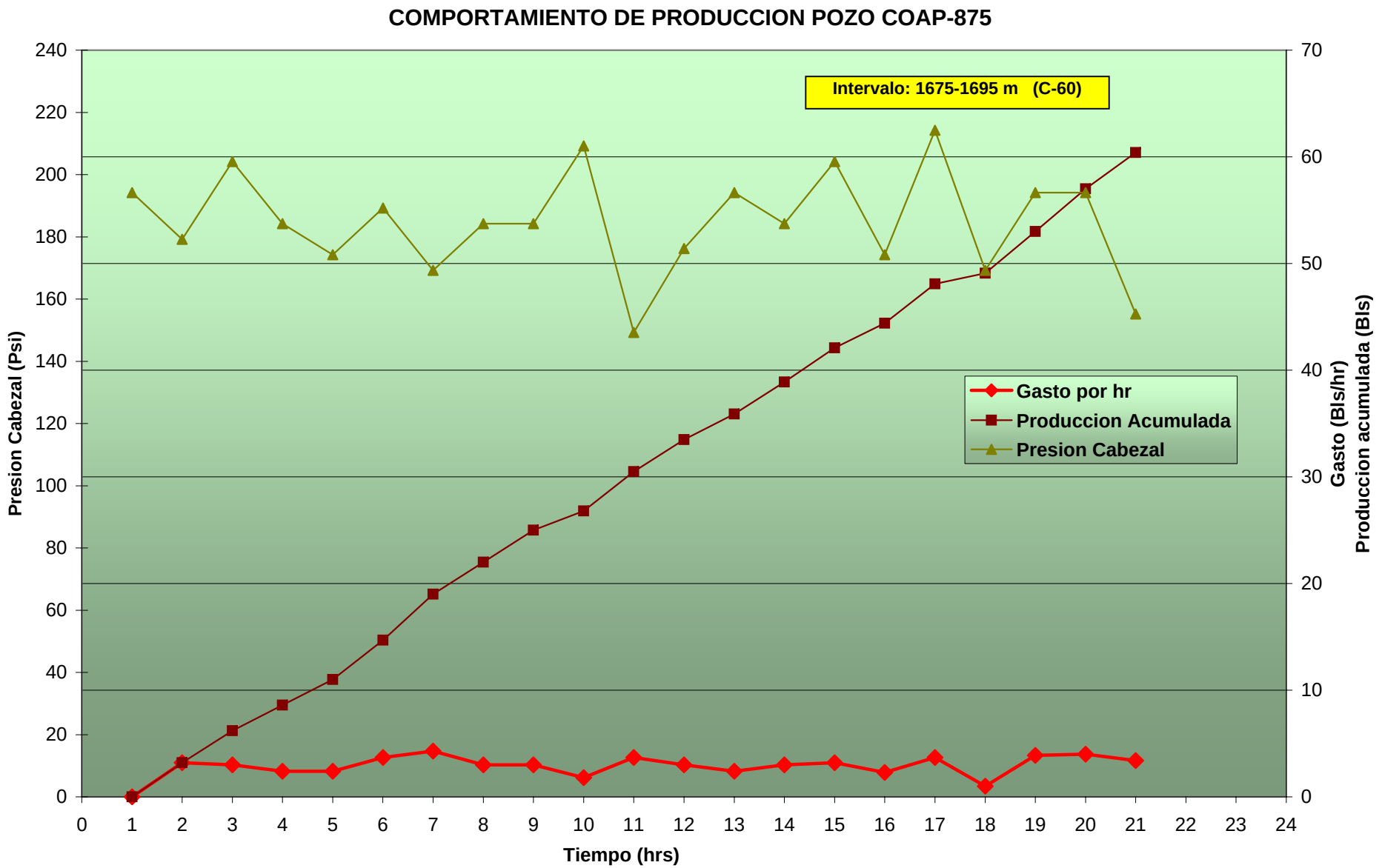
EXPLORACION Y PRODUCCION

Coordinación Operación de Pozos e Instaalaciones de Explotación

Departamento Operación de Pozos

Pozo: COAPECHACA 875
Seguimiento: PRUEBA TECNOLOGICA
Sistema: F

Fecha	Hora	Ø (mm)	Presión (Kg/cm2)		Prod. Bruta (bpd)	Agua (%)	Prod. Neta (bpd)	Densidad (g/cm3)	Sedimento (%)	PH	Salinidad (ppm)	R.G.A. (m3/m3)	Gas Prod. (mmpcd)	Gas Iny. (mmpcd)	Lecturas		Observaciones
			TP-1	TP-2											Dif.	Est.	
15.01.2006			INSTALA EQUIPO T.R.P. PARA PRUEBA TORPEDO														
02.02.2006			INDUCE POZO CON T.F. Y N2 BAJANDO HASTA LA PROFUNDIDAD DE 1705 MTS														
04.02.2006		5	16	5.5	**107**	**2**	**104**	0.890			-						
05.02.2006		5	15	6	**94**	**4**	**90**	0.894			-						
06.02.2006		5	15	5.5	**94**	**2**	**92**	0.890			-						
07.02.2006		5	15	5.5	**101**	**3**	**98**	0.894			-						
											-						


COMPORTAMIENTO DE PRODUCCION POZO COAP-875
Intervalo: 1675-1695 m (C-60)
Gasto por hr
Produccion Acumulada
Presion Cabezal
Presion Cabezal (Psi)
Gasto (Bls/hr)
Produccion acumulada (Bls)
Tiempo (hrs)
0
20
40
60
80
100
120
140
160
180
200
220
240
0
10
20
30
40
50
60
70
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

Prueba Tecnológica SWTorpedo

Pozo: COAPECHACA -875

Tiempo	Hora	Orificio	Presion Psi	Nivel Tanquecm	Gasto Bbl/h	Promedio/ dia	Volumen Acum. Bbls.	Observaciones
								11.02.2006
1	21:00:00	13/64	194	2.25	0	0.0	**0.0**	ABRIO POZO CON 194 PSI
2	22:00:00	13/64	179	3.75	3.2	76.8	**3.2**	Fluye Aceite
3	23:00:00	13/64	204	5.00	3.0	72.0	**6.2**	Fluye Aceite
4	00:00:00	13/64	184	6.00	2.4	57.6	**8.6**	*12.02.2006*
5	01:00:00	13/64	174	7.00	2.4	57.6	**11.0**	Fluye Aceite 20% de Agua
6	02:00:00	13/64	189	8.50	3.7	88.8	**14.7**	Fluye Aceite
7	03:00:00	13/64	169	10.25	4.3	103.2	**19.0**	Fluye Aceite
8	04:00:00	13/64	184	11.50	3.0	72.0	**22.0**	Fluye Aceite
9	05:00:00	13/64	184	12.75	3.0	72.0	**25.0**	Fluye Aceite
10	06:00:00	13/64	209	13.50	1.8	43.2	**26.8**	
11	07:00:00	13/64	149	15.00	3.7	88.8	**30.5**	
12	08:00:00	13/64	176	16.25	3.0	72.0	**33.5**	
13	09:00:00	13/64	194	17.25	2.4	57.6	**35.9**	
14	10:00:00	13/64	184	18.50	3.0	72.0	**38.9**	
15	11:00:00	13/64	204	19.80	3.2	76.8	**42.1**	
16	12:00:00	13/64	174	20.75	2.3	55.2	**44.4**	Fluye Aceite 20% de Agua
17	13:00:00	13/64	214	22.25	3.7	88.8	**48.1**	
18	14:00:00	13/64	169	23.00	1.0	24.0	**49.1**	
19	15:00:00	13/64	194	24.50	3.9	93.6	**53.0**	
20	16:00:00	13/64	194	26.00	4.0	96.0	**57.0**	
21	17:00:00	13/64	155	27.25	3.4	81.6	**60.4**	Fluye Aceite 20% de Agua