

ECHO



SPE Suez Canal University Chapter Monthly Magazine

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THE AMERICAN SOCIETY OF SAFETY ENGINEERS, ASSE

Egypt Chapter at a Glance
and a safety flash about Storage Tank Collapse

FISHING AND RE-ENTRY

UNCONVENTIONAL RESERVOIRS

Tight Gas Reservoirs

AN INTERVIEW WITH Mr. MOUSTAFA HASHEM


former QA Manager, Petroleum Air Services

ABILITY vs. COMMITMENT



PUBLISHED BY
Suez Canal University Student Chapter
Society of Petroleum Engineers



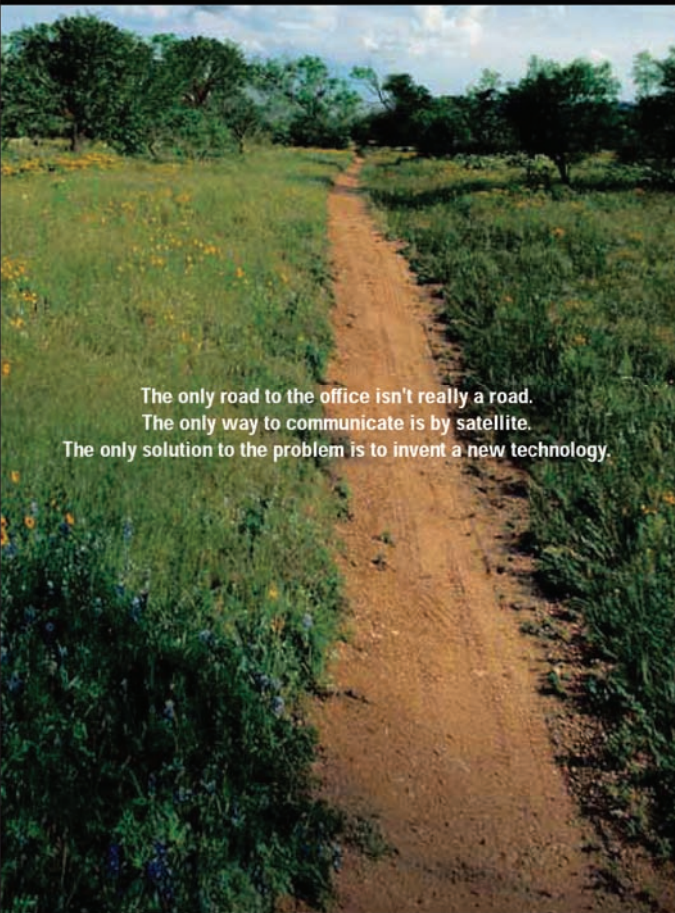


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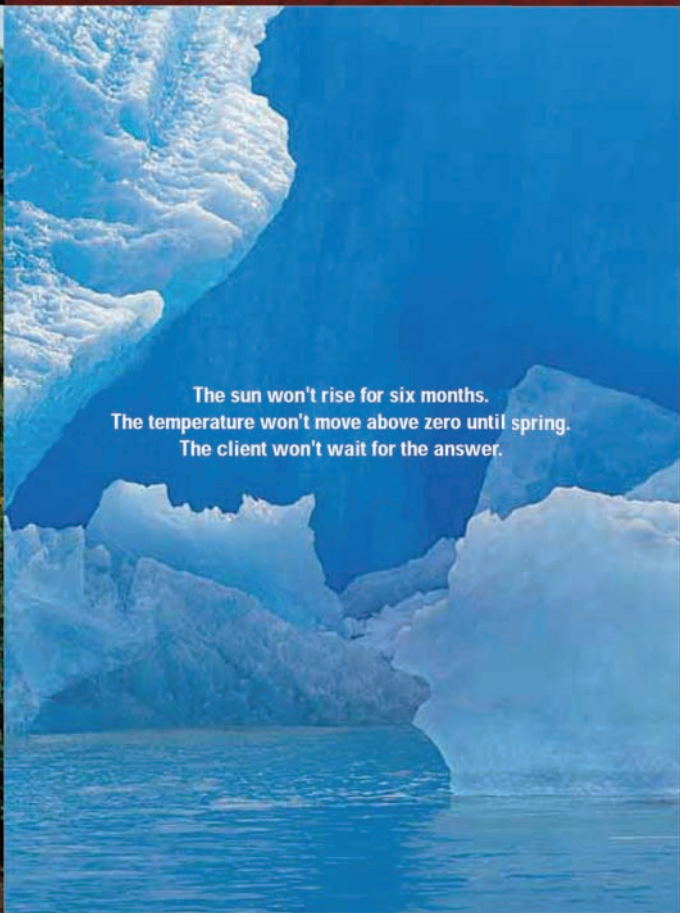


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AN INTRODUCTION TO THE FIRST ISSUE

Dear readers,

We humbly present you the first issue of our monthly magazine for the year 2009, in its newest dress, with a touch of elegance and a taste of professionalism, hopefully meeting your high standards on quality and not only reaching your perspective on life but also enriching your eager and enthusiastic minds.

Diversity and creativity is our new slogan in the upcoming era of the life of this chapter and its monthly magazine, I guess you are - as a reader – probably wondering; is any of this of any importance to me? And mostly, why should I keep reading? What's in it for me? Well, the answer to that is plain simple, your life is what you make of it, we as a student association give you a chance to turn your life in the right direction, help you get more acquainted with your field of interests as a student of petroleum engineering. The first couple of years as a college student can be confusing let a long harsh, sometimes all what you need is a push in the right direction, some help to find your true calling in life, and in this magazine you will find a gate that gives you a closer look to what your future might turn out to be.

In this issue we will try to cover several subjects in many areas of interests and on many levels scientifically or otherwise, with a historic overview of the SPE as both a worldwide recognized organization and as a student chapter, hopefully answering all your questions about us and what we do in the process and without any further delays we leave you to flip freely through the pages of this magazine, make your own opinion about it wishing you a great time reading it.

CHAPTER PRESIDENT'S WORD

at the publishing of our magazine

Ahmed Magdy
President

SPE - Suez Canal University Student Chapter



Leadership always comes with great responsibilities and can sometimes be a huge burden to the one who carries it and as part of the job description, a good leader should know how to give great speeches but a great leader would know how to motivate and fire up his crowd with enthusiasm and hope through his words, so let us take a look on how our chapter's president Ahmed Magdy managed to do so at the publishing of our new magazine

Great opportunities present themselves in different shapes and forms. Successful figures have been able to strive to one success after the other through paths of many difficulties and huge challenges simply by identifying these opportunities and seizing them. Every sunrise brings with it a set of new challenges and crossroads that enroll us into a series of decisions that sculpture the heart and core of our lives. Specially, if you are a young man or woman on the verge of taking your first couple of steps into the unknown, still capturing the essence of deeper more profound meanings in life, to life and out of it.

Vision without actions is merely a dream. Action without vision just passes the time. Vision with action can change the world. Once again we reach out our hands to share our vision with you. Our dreams are high, our goals are way far, but our wells are strengthened with faith and our spirits are filled with hope. Following our outmost belief in the fact that dedication alongside team work should be the heart and soul of our organization, I see no more adequate place or time to announce the new intakes for the season of 2009/2010. And what better place would that be than the first issue of our new monthly magazine - Echo magazine -. This magazine is our initiation to touch the untouchable, go where no one went before, crossing all borders and exceeding all the limits and expectations. Through this newly found beacon I invite you as readers, professors, members and mates to share with us the vision that led to realizing this dream into a solid reality.

My fellow young engineers, as we open a new page in this chapter of our lives, let us take this chance to renew our vows of committing to hard work, dedication and professionalism. Let this be a fresh start to a brighter future. Let today be the day in which we begin to write the first words of our books of success, let today be the day in which we take our first steps on the long road of glory, let today be the day in which we decide that our ambitions have no limits, that our potentials must be fulfilled, let today be the day in which we realize that our words means nothing without actions. Let today be an end to an era and a beginning to a new hopefully shining one in our lives.

FISHING AND RE-ENTRY



Ayman S. Bolty
Fishing Engineer
Weatherford Egypt

Books and references are good sources of information. But on great number of topics they can be sometimes vague, not to mention; complicated and overloaded with technicalities and unnecessary details, that is what led us to seek a different more adequate learning approach, one that depends on simplicity and directory. To achieve such a goal we went to the expert engineers of the major leading companies of the petroleum industry in Egypt. Here is some of what Mr. Ayman S. Bolty, Weatherford's fishing engineer, had to say about fishing and its important role in petroleum industry.

First of all, I would like to take this opportunity to thank all of the SPE team and members for their great efforts, wish them all the best of luck and hopefully a continuous success. I will start from here to give you a brief lecture about fishing.

What is fishing?

In simple words, fishing is the technology of removing or recovering any undesirable object from the well bore. This means that the fishing technology is an intervention in the oil industry.

The art and science of fishing covers a wide range of possibilities. If there is something in the hole that obstructs the progress of the process and the customer wants it removed, It is our job to figure out how to do so in the most effective and safe manner. Sometimes it can be as tough as picking up a ball out of mercury. You must love the challenge or you will never be a successful fisherman.

After defining fishing, we have to be aware of what fishing can do and get familiar with its tools.

Fishing operations (jobs) are mainly classified in to:

1. Open hole fishing.
2. Cased hole fishing.
3. Milling operation.
4. Electric line pipe recovery.
5. Other remedial operations.

Fishing is needed in cases like:

1. Junk
2. Parted/stuck drill string
3. Stuck/Damaged completion
4. Casing (stuck, damaged, cemented, parted, etc.)

There are other deviations in fishing, that's called RE-ENTRY fishing and It consists of:

1. Casing exit Technology.
2. Multilaterals Technology.

Like any other process, fishing is also subjected to various rules and principles, and before we get more involved with the subject on hand here, let us take a quick flash on a set of rules known as the "CARDINAL RULES":

1. Know your dimensions.
2. Know where the top of the fish is.
3. Know all tensile and torsion stresses.
4. Never rotate the fish out of the hole.
5. Fast trip time is not always the best.
6. Must be O. D. fishable.
7. Familiarize yourself with the fish.
8. Verify all pertinent information.
9. Record BHA/pipe in hole/driller.
10. Count all work string on location.
11. Tie off any pipe in derrick.
12. Clean out V door, mark first joint.
13. On first trip out, strap out of hole.
14. Verify pipe count/top of fish.
15. Stay with your number once you determine the depth.

No matter how much you are aware of all the rules and principles of fishing, it takes a lot of training and practicing to make a good fisherman. Now let us start in details; explaining different types of fishing cases, tools and the best way to deal with them.

Fishing for junk

Any undesirable object that is stuck or accidentally dropped in a well is referred to as "junk". Junk may include bit cones, tong dies, broken slips, reamer parts or debris created by fishing or milling opera

tions, or any other small debris that could impede normal drilling operations.

Junk could be categorized as follows:

1. Bit cones.
2. Float collar and wiper plug debris.
3. Rig tools.
4. Slip elements.
5. A joint of backed off casing.

Now, that you have decided what type of junk you are dealing with, it is now time to decide the fishing procedures that best suit your abilities and help you achieve your main goal of saving your customer's time and money. To come up with such a plan you need to ask yourself some questions:

What are the junk's specifications (size/weight/condition)?

Is it magnetic?

Will the junk fit into standard junk basket?

Is the junk mill-able?

Junk or Debris Evaluation

Any debris or junk in the borehole must be evaluated before any successful fishing attempt can be made. You will need a good description of exactly what the junk is, in order to make a good decision. Other than walling off the junk, there are only two other ways to fish a junk, those are; to pick it up with some type of fishing tool, or to mill it up. With enough time and money, you can mill up just about anything. Often, you will not know what tool to run next, until you get out of the hole and see what the results of the current trip are. Remember, all jobs are unique in one way or another. It is possible that the job will require a combination of different tools or runs.

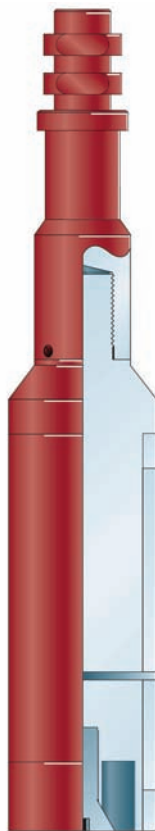
And here is a glance on the most common tools and methods used to fish a junk:

1. Fishing magnet.
2. Junk mill.
3. Boot basket.
4. Globe type junk basket.
5. Reverse circulating junk basket.
6. Junk shot
7. Poor boy basket.

FISHING MAGNET

Fishing magnets are primarily used to pick up bit cones, they can also be used to pick up all types of small objects with the magnetic properties. Magnets should be run on pipe instead of wire line which allows for more circulation and rotational

motion. It is necessary to wash the top of the fish sufficiently so that enough surface area is exposed to magnetic pole plate. Run a boot basket directly above the magnet to catch any loose bearings or small pieces of junk. Fishing magnets that run on wire line are usually used inside the casing after clearing the fluids in the hole. The OD - outside diameter - of the magnet should be 1/4- to 1/2-in., in other words, less than hole size.



Picture 1. Fishing Magnet

Running magnet procedures

1. Trip in the hole with the magnet and stop about 30-ft. from bottom.
2. Circulate and ream to the bottom a couple of times to rake any loose junk off the wall and top of the fish.
3. Circulate at a good rate a couple of inches off the fish to clean off any cuttings.
4. Rotate a couple of rounds while slackening off to help roll the fish into the face of the well bore.
5. Stop rotating and set 3,000 to 4,000 pounds of weight down on the junk, then shut the pump off.
6. Pull out of the hole slowly without rotating. The guide should prevent the fish from being rubbed off while pulling out of the hole.
7. Run the magnet more than once if the volume of junk in the hole warrants.

8. While running the magnet be careful, do not rotate too much as magnet is not a drilling tool.

BOOT BASKET

A boot basket is used to recover small objects. It runs in conjunction with a bit or mill. The bit or mill will break up the junk into small pieces which will be carried up the hole by fluid circulation. Turbulence in the annulus will cause the junk to drop off in the cup of the boot basket. Boot baskets can be useful when drilling up drillable material.



Picture 2. Boot Basket

How to work on BOOT BASKETS to load them with junk?

1. Pump at high flow rate while slaking off rapidly with work string.
2. Tag on bottom.
3. Shut-off the pump for minute while slowly raising the work string.

As the flow changes from turbulent to laminar, the junk will drop off into the boot basket cup. This procedure is repeated if necessary for more junk recovery.

This was a brief overview about fishing and re-entry and in the following essays we will explain the rest of the tools and methods in a more detailed fashion.

THE AMERICAN SOCIETY OF SAFETY ENGINEERS, ASSE

Egypt Chapter at a Glance

and a safety flash about Storage Tank Collapse

Said Mohammed Khalifa is an Environmental Health and Safety Professional with diversified experience in Oil and Gas, Petrochemical and Fertilizers industries. Thirty five years of experience total, around 30 years in Environmental Health and Safety, EH&S, field. Ten years experience in fertilizers industry. Worked for multinational companies in Egypt and in the Arabian Gulf Area. Worked in managerial capacity for more than 20 years. Presented a lot of technical papers in conferences in Egypt and around the world. Have excellent command of presentation skills in both HS&E operational and technical subjects.

Said Mohammed Khalifa
Certified Safety Professional, CSP
Authorized OSHA Outreach Training Instructor



The American Society of Safety engineers (ASSE) is a non-profitable organization, and was founded in October the 14th of 1911 in New York City. Its philosophy was to promote safety at work and educate members in all matters relating to industrial safety and accidents prevention. Since then the slogan for the society was "Protecting People, Property and the Environment" and this will also be the slogan for the Egyptian Chapter.

The Egyptian Section was founded in Cairo, A.R.E., by a petition meeting on Saturday, March the 11th of 2000 and the Inaugural Meeting held at Wednesday, June the 7th of 2000 and was honored by the presence of Mr. Fred Fortman, Executive Director of the ASSE.

The purpose for establishing the Egyptian Chapter, as proposed in the bylaws is as follows:

1. To develop and; or promote educational programs for obtaining the knowledge required to perform the functions of a safety professional.
2. To develop and; or disseminate locally, information and materials that will carry out the purpose of the chapter, the society, and serve the public.
3. To provide and; or support forums for the interchange and acquisition of professional knowledge among its members.
4. To foster liaison with local organization of related disciplines.
5. To inaugurate and implement such other programs and projects that are consistent with the purpose of the Chapter and the society.

6. To conduct its affairs in a manner that will reflect the standards purpose and objectives of the Society.

The Egypt section had at the beginning members from oil & gas sector. Over the past years, it has been recognized by the HSE professionals in all industry as an important forum that satisfy their professional needs. Number of ASSE members in Egypt has increased by three folds in the year of 2008/2009. Egypt members now are more than 140 members. Due to this increase in membership, and in addition to the increase in activities in year 2009, ASSE headquarter approved the promotion of Egypt Section to a Chapter with effect from 19/9/2009.

**The slogan of the society is
"Protecting People, Property and the Environment"**

Main achievements of ASSE, Egypt Chapter in the season of 2008/2009 :

1. Increased the membership by three folds in one year.
2. Developed the chapter website:
www.asse-egypt.com
3. Held three technical forums/ meetings in year 2009.
4. Developed the Chapter bylaws and ap-

proved by ASSE headquarter.

5. Arranged for the first time in Egypt a workshop on the process of certification for the accredited Certified Safety Professional, CSP. This certificate is considered one of the top four certificates in HSE field in USA. The first workshop is scheduled in the second week of November, 2009.

6. ASSE Egypt Chapter has a technical library that covers most of HSE fields.

7. Held a technical meeting last August in collaboration with World Health Organization, WHO, Center for Disease Control, CDC, USA and the National Institute of Occupational Health and Safety of Egypt, NIOSH.

8. Participated in a survey about how to include HSE in education on different levels.

ASSE members are committed to serve the Egyptian community in order to protect people, property and the environment. They commit themselves to abide with the code of conduct and act in a professional manner.

With that introductory is done, hopefully opening your eyes on how important these regulations are let us take you to the more technical side of this article .

SAFETY FLASH

The Collapse of an Atmospheric Storage Tank: The Power of a Plastic Bag

Introduction

Atmospheric storage tanks are designed mostly according to the American Petroleum Institute, API, standards. Any storage tank is designed to hold the static pressure of the stored materials, i.e., slightly above the atmospheric pressure, and still we call it as atmospheric tanks. However, storage tanks are very sensitive to vacuum pressure. The following scenario illustrates how powerful a plastic bag is.

The following are three photos, courtesy of the API showing a tank collapse as a result of drawing out of a tank when the vent valve was covered by a plastic bag to "protect" it during tank painting. This is a common cause for tank collapse. The third photo shows the full extent of damage. The other two are close ups of the bottom lifting off the foundation during the collapse and the top of the collapsed tank where the vent is covered with some plastic. The scaffolding around the tank is for painting.

Picture 1. A close up of the bottom lifting off the foundation during the collapse.



Picture 2. The top of the collapsed tank where the vent is covered with some plastic.

Picture 3. The full extent of damage.



Lessons Learned

1. Covering the vent valve during tank painting is fairly standard practice; unfortunately leaving it covered when drawing out of the tank is very non-standard practice.
2. This is an expensive, embarrassing mistake that is entirely preventable by adherence to good procedures and good communications between operations and maintenance.
3. This sort of thing nearly always results in total destruction of the tank. It is generally not cost effective to repair tanks with this extent of damage.

For some, it is hard to believe that the plastic over the vent valve is stronger than the steel tank under the vacuum conditions that are created when drawing product out of the tank. Seeing is believing.

Safety, health and environment regulations are becoming of great importance not just in the petroleum industry but also in every branch of the industry even in general life, some might even say that those regulations are more than just some preventive measures, it is a way of living. However; despite its great role in saving many lives on a daily basis, people might often take it for granted or even worst, ignore it!



Mr. Moustafa Hashem

Former QA Manager, Petroleum Air Services

Mr. Moustafa Hashem is the former QA Manager at Petroleum Air Services Company. He is an aviation engineer, graduated from Military Technical Academy in 1969. He served in the Egyptian Air Forces till 1984. October 1973 victory was a turning point in his career, when he was sent on mission to the USA to attend managerial studies. Two years after his retirement, he continued working for the same company as a consultant. During such time he actively acted as a prominent lecturer on managerial/technical subjects.

Mr. Hashem has been kind enough to spare a portion of his busy schedule to meet our interviewing team to talk about his role in his company, highlighting the role of Petroleum Air Service as a pioneer in its activity.

First of all, on behalf of SPE Suez Canal University Chapter we would like to express our appreciation for availing us this opportunity and we wonder if your company - Petroleum Air Services Company - is the only one specialized in this field here in Egypt?

Yes, indeed, our company is the only one serving in that field in Egypt. We undertake very specialized services. In fact, a lot of people do not know that we are just an aviation company, not a petroleum one.

Which petroleum companies are you dealing with?

We are currently dealing with BP (British Petroleum) and with Shell.

The global economic crisis has had a bad impact on petroleum industry, both internationally and locally. What is the impact on your company?

In fact, we were slightly affected. You could even say that such effects were almost negligible, mainly because we are serving petroleum companies, and their rates have not changed. Meanwhile, we are performing our services under valid contracts which accurately save our rights, thanks to their detailed and sophisticated provisions. So, basically the companies we deal with have not reduced their rates with us. In other words, there are two acknowledged rates in this field; fixed rates which are done at the planning phase, which includes the working out of the time table and many other details, even if the other part failed to deliver on time they still ended up paying for those reserved wasted hours because the plan remains unchanged, waiting to be carried out. The other rate is that

known as variable rate, which represents the actual work done during the process.

As an aviation engineer involved in the air transportation service, as one aspect of the variety of petroleum industry activities, what is your vision of the current situation of the industry in Egypt?

Here in Egypt, petroleum industry is a very organized one, having its own rules and regulations, and unlike many other industries, they care a lot about HSE regulations. However, I am a little short on the details of this aspect of the industry as it is not within my field of experience.

Are the newly graduated engineers qualified enough to work directly in this field, and, if not, what are the measures you have taken to overcome such a defect?

Unfortunately, they are neither qualified enough nor prepared to work directly in this field. So, we start by availing them the opportunity to attend aviation courses and grant them accreditation certificates. Then, they are availed enough aviation training hours on training planes, in order to qualify them. In other words, taking the SPE as an example your main goal as a student chapter is to train and qualify your faculty's undergraduates. We, on the other hand, deal with postgraduates. I recall that once there was a protocol about to be signed by and between Cairo University's Faculty of Engineering and the Ministry of Civil Aviation for training undergraduates, but unfortunately; it has not materialized.

Accidents in petroleum industry could turn into catastrophes in the split of a second; like the disaster that afflicted the famous Piper Alfa platform, which was

once the pride and joy of British industry. How do you see the HSE regulations nowadays and their importance in such a risky business?

HSE regulations are becoming a must nowadays; no plans, no designs, not even a single move gets to be done without being approved and authorized by HSE experts, especially that not any one wants the occurrence of another Piper Alfa on his hands. Such awful accident was basically the turning point in the of HSE regulations history. The term Risk analysis, was first introduced after 1988, and safety has become the core value of petroleum industry.

Let me tell you about the preventive measures that are usually taken, first of all, we locate the hazard that is most likely to occur, then prevent their occurrence by barriers that are gradually organized, since there is no barrier that is 100% safe. Is that all? Of course not; as an emergency response a plan must be ready around the clock, to be fully executed at any time in case all the barriers had been breached. That plan is also schemed to gradually reduce the chances of minor accidents turning into a disaster. All employees must be trained into that plan, and be fully aware of its aspects. In addition, we take into consideration hazard analysis and mitigation factors to pinpoint errors and plan ahead to avoid them. This is known as the "Diagnosis ". So, you can conclude that both aviation and petroleum are very organized fields which deal with dangers and face hazards on a daily basis. That is why they have their own strict manuals and regulations.

Reviewing the history of air transportation, what were, from your point of view, the main causes of accidents during the last few decades?

Statistically, accidents that occurred during the last few decades were mostly caused by human errors. Now, given such tremendous revolutionary advance in modern technology, human errors remains number one cause of accidents. Recent studies have been made to clarify the differences between human errors, showed that accidents caused by human errors could be reduced through the conduct of accurate investigations and afflicting appropriate recommendations. Further studies showed that accidents caused by human errors could be avoided with the aid of a check list of the twelve main factors behind such errors culminating in occurrence of accidents. This list is commonly known as 'The Dirty Dozen.'



Would you kindly explain what is meant by the "Dirty Dozen"?

After long extensive studies, researchers have managed to come up with a categorized list of the twelve main errors that lead to the occurrence of accidents, resulting from human errors, known as the "Dirty Dozen". Here is a hint on what you may find on such list:

- 1- Lack of communication.
- 2- Complacency.
- 3- Lack of knowledge.
- 4- Distraction.
- 5- Lack of team work.
- 6- Fatigue.
- 7- Lack of parts.
- 8- Pressure.
- 9- Lack of concentration.
- 10- Stress.
- 11- Lack of awareness.
- 12- Norms.

In your professional opinion , how can such problems be foreseen, avoided and potentially solved ?

Each point on the list has its own potential solution, and I will mention them in the same order as they were previously answered.

- 1- Discussing work to be done or what has been completed.
- 2- Train yourself to expect finding faults.
- 3- Use of up-to-date manuals.
- 4- Spot the uncompleted work.
- 5- Make sure that everyone understands and agrees.
- 6- Sleep well and exercise regularly.
- 7- Order and stock anticipated parts before they are required at short notice.
- 8- Be sure that pressure is not self induced.
- 9- Refuse to compromise your standards.
- 10- Be aware of how stress can affect your work.
- 11- Stop and look rationally at the problem, think of what might occur in the event of an accident, and finally ask work

as per instructions, or have the instructions changed.

12- Be aware the "norms" are accurately observed.

The success of any industry is based on such harmony between four main factors, Machine, Man, Management and Money, in your opinion which of these is the most important?

I think the most critical factor of such four items is "Man". Look at it from this perspective; man is the one who operates that machine, gains the money and manages the work.

So, an attention to this factor should start at very early stage. May be even as early as study stage, and here comes the role of student associations such as yours "The SPE", which aims to develop students' skills and techniques for improving the quality of life.

Would you kindly give brief definitions of the following terms? And what do they mean in your dictionary?

Quality: the best way of life.

Human power: no one can ever calculate how much his power is, it is a rechargeable power having no limits.

Advice to the youth who look forward to assume a position as yours: put that target in front of your eyes all the time and never give up, work hard and you will find in yourself powers you never expected anything to limit them, except fear.

Would you give a Final message to SPE?

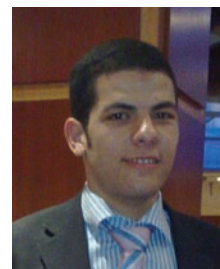
You are on the right track. Keep it up, You are the nerve of the petroleum society, the results of your hard work may not come to you as quick as you wish, but always have faith that you will eventually gain the results of your hard work. Only the man with vision succeeds, I guess what I am trying to say is, keep up good work.

UNCONVENTIONAL RESERVOIRS

Episode 1: Tight Gas Reservoirs

Abdel Aziz A. Jabr

Faculty of Petroleum Engineering
Suez Canal University



Young talented creative minds are the main artery that feeds the success of any industry, the inexhaustible spring of innovation that keeps the world rapidly growing and spinning around us, here at this magazine we are trying to be the beacon that shades the light on those minds.

There is no doubt that the world ;nowadays, suffers from the high prices of petroleum and its products. This occurs due to reasons some of which are the following:

1. The world production decreases every year by 1%.
2. The demand increases every year by 1.3%.
3. There will be a shortage about 20 MM bbl/day in year 2015.

In other words, our consumption rates exceed our production rates which might lead to catastrophic results that affect every aspect of our lives as human beings all over the world. Hence, the world must now start to look for other alternatives to fill that gap.

The unconventional reservoirs may be a very good solution for that problem if they were well exploited.

So, what are the conventional reservoirs and unconventional reservoirs?

Conventional reservoirs: they are those that can be produced at economic flow rates and will produce economic values of oil without large stimulation treatments or special recovery processes.

Unconventional reservoirs: they are those that cannot be produced at economic flow rates or that do not produce economic volumes of oil and gas with large stimulation treatments.

So, the reservoirs that are found in very deep water and in the Northern and Southern poles are considered unconventional ones although they have oil densities and viscosities similar to that is found in Gulf of Mexico, Arabian Gulf,

North sea, etc because they need a lot of money to extract them from underground .

Different types of unconventional reservoirs are:

1. Tight gas reservoirs.
2. Gas shale reservoirs.
3. Heavy oil reservoirs.
4. Oil shale reservoirs.
5. Sand tars reservoirs.
6. Gas hydrates reservoirs.
7. Coal bed methane.

So, what are the tight gas reservoirs? What is their economical importance? What are the countries that have the lion share of these reservoirs? How to exploit these reservoirs?

All these questions will be answered over the length of this series so stick with us to find out

TIGHT GAS RESERVOIRS

The Golden Age of Gas

Some experts believe that gas consumption will exceed that of oil by about 2025, when put in consistent units of barrels of oil equivalent per day (BOE/D).

What is tight gas reservoirs ?

"Tight Gas Reservoirs" have been coined for reservoirs of natural gas with an average permeability of less than 0.1 mD ($1 \times 10^{-16} \text{ m}^2$). It is often defined as a gas bearing sandstone or carbonate matrix (which may or may not contain natural fractures) exhibiting an in-situ permeability to gas of less than 0.1 mD. Many 'ultra tight' gas reservoirs may have in-situ permeabilities down to 0.001 mD.

Importance of tight gas reservoirs

1. Out of the 5500 TCF -Trillion cubic feet- of the world's gas reserves, a large percentage of the reserves is in tight formations of 1 mD down to 0.005 mD.
2. Estimates of gas-in-place contained within tight gas sands in the United States may exceed 15,000 TCF.
3. In Germany, the potential resources of undiscovered and tight gas is in the range of 50 to 150 x 10⁹ m³.
4. The Cretaceous limestone reservoir of Mara and La Paz oil field in western Venezuela have low permeability, much of it below 0.1 mD, the thick section of approximately 600 m is highly productive anywhere within the section where fracturing develops.

According to the last statistical estimates, we see that tight gas reservoirs have the lion share of all the future unconventional resources.

What makes a reservoir tight?

There could be a number of reasons that lead to that. These are controlled by depositional and post-depositional environments of which reservoir are subjected to.

The depositional setting: like deep basin sites or the over-bank levees in flood plain; areas are more prone to the deposition of very fine sand to silt and clays, which form poor reservoirs on lithification. Due to extensive cementation by authigenic clays, the matrix permeability of these sandstones is extremely low, on the order of micro darcies.

The post-depositional setting: diagenetic events act many times negatively, reduce the effective porosity and thereby make the rock less permeable.

Types of Tight Gas reservoirs

There are two types of tight gas reservoirs which are:

1. Basin-centered gas reservoirs.
2. Deep Basin Gas (>15,000 ft) reservoirs.

They are characterized by "an abnormally-pressured, gas-saturated accumulation in low-permeability reservoirs lacking a down-dip water contact".

Trapping Mechanism of Deep Basin Gas reservoirs

Deep basin gas reservoirs accumulation is characterized by gentle dip angles, subnormal pressure, gas water inversion and co-occurrence of reservoir and source rock. The major processes associated with deep basin hydrocarbon accumulation are related to hydrocarbon generation and accumulation dissipation.

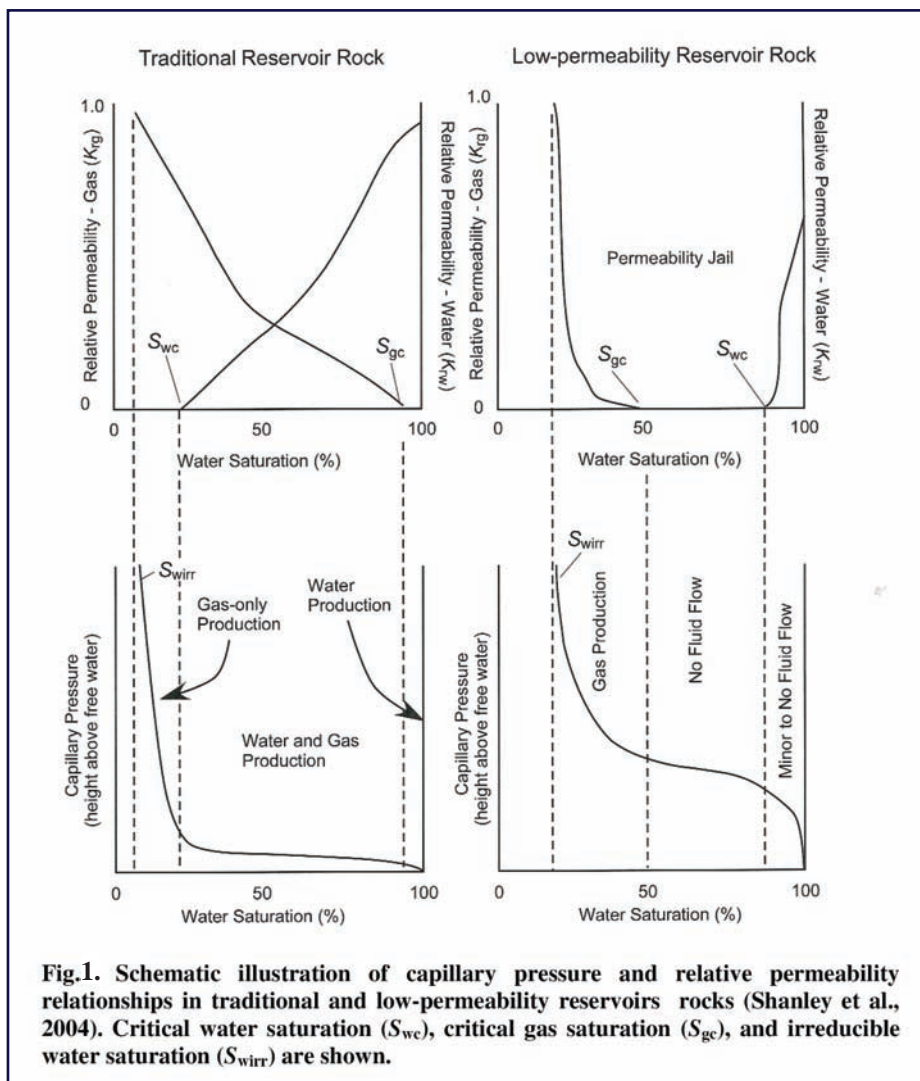


Fig.1. Schematic illustration of capillary pressure and relative permeability relationships in traditional and low-permeability reservoir rocks (Shanley et al., 2004). Critical water saturation (S_{wc}), critical gas saturation (S_{gc}), and irreducible water saturation (S_{wirr}) are shown.

The fundamental conditions favourable to the formation of deep basin gas accumulation include plentiful gas source, tight reservoir and tight seal under the reservoir.

Properties of tight gas reservoirs

There are four main criteria that characterize tight gas reservoirs.

1. Low permeability.
2. Abnormal pressure.
3. Gas saturated reservoir.
4. No down dip water leg.

Petrophysical Attributes of Low-permeability reservoirs and Implications for Trapping Mechanisms

The main difference between tight gas reservoirs and the other conventional reservoirs is that there is a wide range of water saturations where no fluid flow occurs. see fig.1.

Management of Tight Gas Reservoirs

Technology required to produce from Tight Gas Reservoirs needs :

1. Special formation evaluation methods.
2. Special reservoir engineering methods.
3. Special completion methods.

4. Massive hydraulic fracturing treatments.

5. Horizontal and multi-branched well-bores.

6. Advanced drilling methods.

One thing about the massive hydraulic fracturing treatments is that since tight reservoirs are massive, stimulation is done by pumping extremely large amounts of fluid and proppant. Massive hydraulic fracturing may require 500,000 gallons of gelled fluid and a million pounds of sand compared to 10,000 to 50,000 gallons and 30 to 160 x 10³ pounds for conventional fracturing. So, it is very expensive and rarely successful.

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ABILITY VS. COMMITMENT



Mohamed El-Seba'ee
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For most of us past is the time that has passed, present is the mean time and future is the unknown to come. For me, experiences represent the past, present is experiments and expectations are the future to come and in life we are driven by our experiences through a path of experiments to reach our expectations.

As a new comer in E&P (Exploration and Production) Industry I would like to address my experience with SPE as a former president of Suez Canal University Student Chapter to students who are seeking an E&P career.

SPE IS THE BEST EXPERIMENT TO ENRICH EXPERIENCE AND SHAPE EXPECTATIONS

The best scholar life is the one balanced between academic study and activities. But the perfect one is the one in which activities are not only to achieve self-satisfaction but also to support your academic progress and grow with you even after you start your first career steps.

Therefore, students must change their perspective about this important issue because if you start thinking of student activities as a good C.V. material you are already on the track missing all the benefits you can get.

INVOLVEMENT AND COMMITMENT IN SPE ACTIVITIES IMPROVE YOUR ABILITY

What can you get from SPE? That's the first question a lot of you would ask.

- Soft skills & Technical development.
- Global networking.
- Leadership & responsibility for actions.
- Visibility of career path.

In addition to countless other benefits. In fact the right question you should be asking to yourself is what are you going to add to the SPE? The more you give the more you get. SPE is a world of opportunities that suits every single one of you.

Thinking ahead towards your career, SPE simplifies the transaction for you, making your steps steadier toward your goals, keeping in mind that most people who fail in pursuing their dreams; fail not because of lack of ability but because of lack of commitment.

Success?! What is success? Am I successful? What does it take to be successful and do I have it? The interpretation of such a big word varies from one person to another but at the end of the day one can only agree that success is all about reaching goals and fulfilling potentials, it's a long rough road with many obstacles in the way, but with motivation and inspiration these obstacles can be demeaned nevertheless overcome leading the way to a world full of endless possibilities. Other people successes might just be the kind of inspiration that you are looking for at this critical point of your life as a college student, so stop! take a few moments of your time and find out how they did it?!

TIME MANAGEMENT



Sherif M. El-Sayed
Co-ordinator
Suez Canal University Student Chapter
SPE

“Working with NGOs like SPE exhausts me and takes away most of my studying time”, “I am always busy studying, I barely have time to sleep, how can you ask me to get engaged with other aspects in my life”, “I am a sports champion, I pass in exams miraculously, there is absolute zero free time for me to do anything else”, “Man chill, this time is supposed to be the best time in your life, enjoy it while you still can”. These are just some of the explanations you hear when you ask a college student about what they are missing out in life and why.

My article today is to encourage you to make a nice cocktail of those three directions; studying, having fun and preparing for your future career. Of course you are not getting a lot from each one, but you can list priorities and some directions can have greater shares on the account of the others according to your desires. I do know, it is a tough equation; but trust me it has a solution called “time management”.

Time management is the key to success, all successful people in the world are amazing time managers. Here comes the point where you can say “My friend, you just did the easy part; the chit chat, when it comes to act or in other words; the reality, it is not that simple” someone else might even say “Sherif, you are probably dreaming, it is the earth not paradise”. Yes I do know that, but look at the bright side: it is also not impossible.

First of all, sit down with yourself and list your targets and goals, things you wish to accomplish, start with the long term targets. For example “When I am 45, I want to be a CEO or a chairman”; take this long term target and mark your route to it. It is very likely to be vague to you and to clear the confusion, derive smaller goals from your long term goal, now; back to our example “Well, I need a bachelor degree, masters degree, a PhD could be nice too, I need various soft skills such as leadership, managerial, communication, risk assessment, negotiation, good technical experience in the corresponding field, many professional relationships etc.” and the list can go on and on forever!

Hey; do not get frustrated, I am not done yet, now look at the tasks you can get done now. I call those short-term targets; those are the ones you have to worry about in the time being. Always, work for a short target as it will look simple and accomplishable for you, do not get over worried about your long

term goals and how far away they are now, you will just end up getting tired from them and eventually slowly giving them up. Sometimes your mind can trick you into not worrying about achieving them at all! And that everything is going to turn out just the way you wanted, to those I say “my friend, you just bought yourself a one way ticket to fail-land, life is not a dream, GET REAL! “. The key factor to getting over that dilemma is balance; keep your long term goals in mind but in the mean time focus on the short term ones, the ones that you can actually achieve now, this way, you will feel that we are doing something out of life which keeps you motivated and on the right track.

An example of a short target here is the soft skills bunch. So, the first step that you should try taking is to get yourself enlisted in a specialized center that teaches those skills. Oops!! now two ideas automatically pop up in your mind .If you are the smart college, straight A's student type the “affect my studies” idea pops up. Well, I bet there is free time in your week that you waste on extra-sleep, watching lots of TV, having boring hang-outs with friends, you have to cancel those “unnecessary parts in your schedule, free some time for both your studying and career-related activities like soft skills courses”. If you are the cool guy type your brain will start thinking “OH OH, this means less time on the phone talking to the girlfriend, what about Real Madrid now they have Ronaldo; am I going to have to miss their matches too?! You got to be kidding me”. Well yes having fun, refreshment and recreation are necessary, in some cases, even more than studying or going to a course or you will simply malfunction and collapse causing huge setbacks both mentally and physically. But have fun for a limit before it turns out to become a big waste of time.

It will be tough to cope with both three directions in the beginning, but as soon as you start to realize successes, you will feel much better and proud of yourself . You will feel motivated, energetic, you will start enjoying life after it was just days passing... and as soon as you drive along the success road, earning further successes will become much easier as you just got your route simply marked.

Starting of SPE Academy

SPE Academy is a very remarkable activity that does not pass unnoticed inside the Faculty of Petroleum and Mining Engineering. It is an annual event that is based on the cooperation between students and faculty's young staff members. SPE Academy provides the following courses:

1. Reservoir Simulation
2. Well Control – IWCF
3. Well Testing
4. Heat Treatment
5. Mud Engineering
6. HYSYS

Each course consists of five lectures. Lectures are held in well prepared lecture rooms and computer laboratories where direct application of practical material is easily achieved. At the end of each course, students go through an examination to measure the level of comprehension achieved.

Upon completion of all the course lectures and examination, a certificate is provided to each student.



SPE Booth establishment

As a step to ease communication with its members, SPE Suez Canal University Student Chapter has recently established a permanent residence for itself, "SPE Booth". The purpose of this establishment is to facilitate and answer any inquiries that any member or even a student might have about our chapter and its activities inside and outside the walls of our University. The booth also offers application forms for new members, announcements for any new upcoming events including field trips or SPE academy lectures, as well as brochures, magazines and any other material that might help students in their academic studies. By establishing "SPE booth" it is now much easier for new students and college freshmen to get more acquainted with SPE and participate in its activities, get material, interact with heads, so practically the SPE has established a solid bridge of communication waiting for new members to take the walk.



Launching of SPE Virtual Campus

SPE Virtual Campus is a free platform for on-line learning. It covers technical and non-technical areas in life. Anyone can provide a topic to the virtual campus, alongside a test if desired. All the topics provided here are thoroughly checked with people of experience in the corresponding field. So, do not just admire the efforts, get involved and help make this platform a trade mark in the petroleum industry.

for more information, visit our website: suez.spe.org

SPE Virtual Campus

Leave Your Prints

www.spesuez.co.cc

WHAT IS SOCIETY OF PETROLEUM ENGINEERS, SPE ?

SPE INTERNATIONAL

SPE Society of Petroleum Engineers is a professional international organization which provides a key resource for technical information related to oil and gas exploration and production, and provides services on-line, through its publications, meetings and other programs.

SPE has student chapters all over the world in over 170 universities. Student chapters help university students enrich their technical academic backgrounds through events, courses, field trips, paper contests, and many other activities.

SPE History

The history of the SPE organization began well before its actual establishment. In the beginning of the 19th century the AIME (American institute of mining engineers) had foreseen a growing demand to establish a committee that is concerned with the rapidly growing petroleum industry. This committee was expanded during decades and eventually became a separate society which is now known for us as the SPE (Society of Petroleum Engineers).

The prolonged history of this rapidly growing organization goes way back to the roots of the petroleum industry itself which extends for over seven decades, here is some of the main highlights and events that helped make the SPE what it is now:

1. 6th of October of the year 1957: the petroleum branch of the AIME became a separate society which is now known as the SPE (which is mentioned as above).
2. During the seventies of the past century: the SPE membership grew rapidly reaching 18000 members by the end of the decade.
3. During the eighties of the last century: despite the downturn of the petroleum industry, the SPE membership remained stable, even experiencing growth throughout the decade.
4. During the 2000s: the SPE reached its highest number of members throughout its history reaching 88000 members, and became more culturally diverse as the growth rate of the international sections increased.

SPE Mission and Vision:

The SPE Mission and Vision are the principles upon which the society was founded.

The SPE mission is mainly concerned with collecting and exchanging technical knowledge concerning the petroleum industry and the related technologies for the public benefits, in addition; providing opportunities for professionals to enhance their technical competence.

In order to accomplish the SPE mission, the vision was to become a society of professional excellence providing its members the highest quality, lifelong learning, and continuous personal and professional growth.

Technical Discipline Categories

Several years ago, SPE organized many of its activities along six primary technical disciplines. While many activities are interdisciplinary, it was necessary to make decisions about the “primary” place SPE would consider these activities. The following illustrates how SPE has described what falls into each technical discipline:

1. Drilling and Completions.
2. Health, Safety, Security, Environment and Social Responsibility.
3. Management and Information.
4. Projects, Facilities and Construction.
5. Production and Operations.
6. Reservoir Description and Dynamics.

SPE.org

Following the outmost beliefs in SPE’s mission and vision, the SPE website was launched in December of 2005, with the aid of generous individual corporate and section donors, to interact with the members and followers of this committee all around the globe achieving the highest standards of productivity and collaboration....

OUR CHAPTER

Suez Canal University Student Chapter started in 2004, but it hasn’t become active until early 2009. We have managed to achieve a great progress since the beginning of this year. A team of enthusiastic, hard working, smart, volunteer students have been put together to reach our target.

Our chapter was awarded the official chapter of the month for Society of Petroleum Engineers in February 2009.



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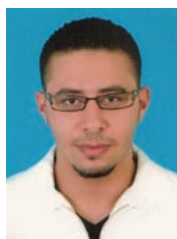
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OUR
SPONSORS

The Arabian Company for Technology & Petroleum Free Zone (ACOTS) commenced its activity as a Petroleum Service Company in Egypt in the year (2002), within one year the company managed to extend its activity covering contracts in Algeria, Morocco and Mauritania. Today (ACOTS) is considered to be one of the leading petroleum servicing companies in the Middle East and North Africa.

ACOTS provides a wide variety of petroleum services including:

1. Repairing of equipment using cold and hot welding under pressure leak sealing:

This category of servicing includes repairing and maintenance of various tools and tubular using cold and hot welding techniques. (ACOTS) is the sole agent in Egypt, Morocco and Algeria of the French (PETROSEAL) products, this enables (ACOTS) to carry out successful leak sealing under pressure and in presence of hot vapor, hydrocarbons or acids.

2. Surface treatment & dislodging:

ACOTS is also involved in the environmental treatment, cleaning and dislodging of storage tanks and pipes in co-operation with the Austrian partner (Rohrer Group), those services are based in Algeria and Morocco. Beside tanks, ACOTS also cleans separators and heat exchangers including the necessary scaffolding

3. Supplying tools & tubular such as drill pipes and drill collars:

Following ACOTS's policy of high standards of servicing, the company is in the process of establishing its (QHSE system) and applying for the (ISO certification).

As recent as it is to the world of industry; ACOTS has managed to build a strong foundation for itself in such a short period of time among the leaders of the petroleum industry, gaining in this process credibility and good reputation through dealing with some of the benchmarks of the industry such as:

- Weatherford Egypt
- Weatherford Algeria
- Schlumberger Algeria
- Sonatrach Algeria
- Sonelgas
- Mei Algeria
- Iron and Steel Factories Egypt
- BURAPETCO – Egypt
- Webco Petroleum Co.
- Egyptian Co. for water treatment
- Senotharwa drilling Co. Egypt
- Chipsy Egypt
- Medor Egypt
- Onhym Morocco

Delivering Upstream Performance

Kuwait Energy Company (K.S.C.C), is one of the largest independent exploration and production companies in the Middle East established in 2005. Kuwait Energy is the fastest growing non-governmental exploration and Production Company in the Middle East with operations across the Middle East, Eastern Europe, and Pakistan. Today, the company has a total of 19 exploration blocks in seven countries, 11 producing assets in six countries, and operates 10 fields in four countries.

Kuwait Energy Egypt (KEE) is the operating arm of KEC in Egypt; it was established in May 2006 and has acquired many important hydrocarbon assets since then. Three of these interests are located in the western desert with a 50% working interest in the Burg Al Arab Concession, 72% in the Abu Sennan Concession and 49.5% in the East Ras Qattara Concession. KEE is also the operator of the GPC Production and Exploration Service Agreement for Eastern Desert Area "A", adjacent to the Gulf of Suez, with 70% interest, and is a partner in the Mesaha concession, on the borders of Egypt and Sudan, with 30% working interest.

KEE had announced seven discoveries in Egypt since the start of its exploration program in the country. Six of which are in East Ras Qattara (ERQ) Concession in Western Desert, Egypt. It had found Shahd,

Ghard, Rana, Shahd SE, Rana SE and El Zahaa fields, with a combined daily production rate up to 5,800 barrels of oil. The latest discovery is Al Zahraa Field with a daily production rate of 2,615 barrels of oil. Currently KEE is developing Al Zahraa Field. Kuwait Energy's share and working interest of the field is 49.50% and it is operated by Sipetrol.

The seventh discovery is in Area A (Shukhair NW), with a daily production rate of 4,200 barrels of oil, and expected reserves of 8 million barrels of oil. Kuwait Energy is the operator of the GPC Production and Exploration Service Agreement for Eastern Desert Area "A", with 70% interest. This was part of the assets purchased from Oil Search Mena in 2008. The discoveries in Area A started about 50 years ago by different international companies. Today, with the new technologies used by Kuwait Energy, and by its dedicated staff, the Company was able to find new discoveries in this brown field area.

KEE has more exploration activities in Egypt at the moment, and it is expected to have more discoveries in the future.

KEE achieved one year without any recordable incidents (lost time incidents, medical treatment incidents, restricted work incidents).