CAPILLARY AND STRAPPING TRAILERS

The team members at Drover Energy Services have played a significant role in the growth of the capillary industry. Our team has a combined 100 year experience in this industry and an excess of over 8000 installations. The success of the customer has been the main reason for growth and the simple proven concept of a precise continuous delivery of chemicals downhole directly at the area of need! With all the experience and shared success, we pride ourselves on still being an original, fresh-thinking group. We understand the importance of listening to your needs and in return offer an innovative and comprehensive service package that's cost effective. Eliminate the inefficient methods of batch treatments and “trickle of chemicals” down the backside!!

FEATURES OF CAPILLARY STRINGS

Figure 6- Capillary Installation

- Tubing can be removed and re-installed multiple times.
- Minimal wellhead modifications.
- Eliminates down time.
- Accelerates Production and Maximizes recovery.
- Precise placement and continuous delivery of chemicals.
- Provides multi solutions for deployment of temperature and pressure monitoring.
- Proven success and variety of alloys in severe, high pressure environments.
- Small footprint, versatile, modular equipment.

Figure 7- Modular Units for Offshore or Land

CHEMICAL APPLICATION

- Scale and corrosion inhibitors
- Paraffin inhibitors and solvents
- Asphaltenes
- Emulsion breakers
- Salt deposition
- Foamers for liquid loading applications
- Hydrates

Figure 8-- Single and Dual-Barrier Packoff Assemblies

Figure 9- Geothermal Installation

OTHER APPLICATIONS

- Downhole Corrosion Coupons
- Dual Capillary Installations at Different Depths
- ¼" or 3/8" strapped to production tubing in conjunction with gas lift, ESP, or Rod Pump Wells.
- Ported Tubing Sub for Chemical Injection
- Capillary encapsulating Fiber Optics or TEC Line for monitoring pressures and temperatures (DTS)
- Permanent Offshore Installations

LIQUID-LOADING ANALYSIS and SELECTION SOFTWARE OVERVIEW (LASSO)

Drover Energy Services well candidate selection software is backed by years of experience and 1000's of well review and evaluations with our customers identifying liquid loading applications for capillary. The software is backed by proven equations established by the Turner's Liquid Loading tendencies and also takes into account a foaming agent's ability to reduce surface tension and the density of produced water. The example below is provided for a customer's individual well and calculates critical velocities needed to unload fluid based on input parameters provided. These calculations also provide a foamed velocity needed to keep your well bore dehydrated of fluids and increase production back to its natural decline curve. Drover's LASSO software also take into account the importance of understanding temperatures, chlorides and depth to select the proper alloy for each installation. Drover's years of hands-on experience, growth in the industry and our selection software all combine to provide a valuable tool for our customers. If there is a well in your field that needs liquid-loading attention, click the link below and let us get started for you!! A good resource for managing each and every well in your field and finding the right liquid-loading candidate for a Drover Energy capillary installation.

DROVER ENERGY SERVICES

Liquid-loading Analysis and Selection Software Order (LASSO)

Well Production/Completion Data

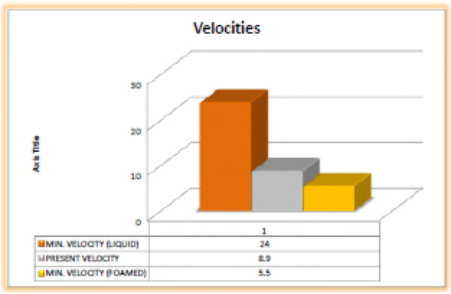
PERFORATION DATA		
BEGINNING UPPER PERFORATION	9000	FEET
ENDING LOWER PERFORATION	10542	FEET
PRODUCTION VIA		
PACKER	Y	Y/N
PRODUCING UP TUBING/ANNULUS	1	T=1,A=2
MEASURED 30 DAY AVG.		
SURFACE FLOWING PRESSURE	80	PSI
SURFACE FLOWING TEMPERATURE	95	DEG F
BOTTOM HOLE TEMPERATURE	325	DEG F
PRODUCTION TUBING DATA		
TUBING INSIDE DIAMETER	2.441	INCHES
TUBING OUTSIDE DIAMETER	2.750	INCHES
DEPTH TO END OF TUBING	9250	FEET
CASING DATA		
CASING INSIDE DIAMETER	6.778	INCHES
WATER		
AVG WATER PRODUCTION/24 HOUR	20.00	BPD
DENSITY OF PRODUCED WATER	8.50	LBS/GAL
SURFACE TENSION OF PRODUCED WATER	72	DYNES/CM
CHLORIDES	8500	PPM
PH	7	
CONDENSATE		
AVG OIL and CONDENSATE / DAY	8.00	BPD
GRAVITY OF CONDENSATE	56	DEG API
SUFACE TENSION CONDENSATE	20	DYNES/CM
GAS		
AVG. GAS/24 HOURS	150	MCFD
GRAVITY OF PRODUCED GAS	0.65	
H2S	0.000	%
CO2	0.00	%
SHUT-IN CONDITIONS		
SHUT-IN SURFACE PRESSURE	0	PSI
CORROSION		
O2 OR FREE SULFUR	N	Y/N
MAX WELL DEVIATION	0	DEGREES

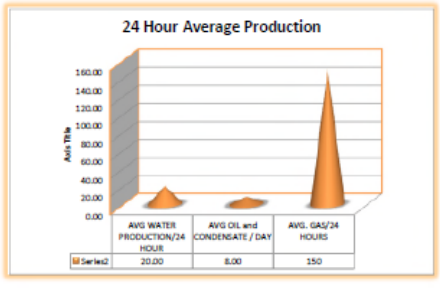
Output Data

PRESENT SURFACE CONDITIONS			
PRESENT VELOCITY: if tubing	FT/S	9	English/Metric
PRESENT GAS FLOW RATE	MCFD	150	
PRESENT VELOCITY: if annulus	FT/S	1	
PRESENT BOTTOM HOLE CONDITIONS			
PRESENT BH VELOCITY IN TUBING	FT/S	4	
PRESENT BH VELOCITY IN CASING	FT/S	1	
ACHIEVABLE BH FLOWING PRESSURE	PSI	131	
MINIMUM LIQUID VELOCITY/FLOW RATE			
MINIMUM CRITICAL GAS VELOCITY: LIQUID	FT/S	24	
MINIMUM CRITICAL GAS FLOW RATE: LIQUID	MCFD	408	
ASSUMED LIQUID RATE	BPD	76	
MINIMUM FOAM VELOCITY/FLOW RATE			
MINIMUM CRITICAL GAS VELOCITY: FOAMED	FT/S	6	
MINIMUM CRITICAL GAS FLOW RATE: FOAMED	MCFD	94	
ANTICIPATED LIQUID RATE	BPD	18	

Operator Information

COMPANY	Big Boy Oilfield
WELL NAME	Dragon #34523
FIELD	Eagleford Shale
STATE	Texas
COUNTRY	USA
DATE	10/8/2014
ANALYST	KKEE





RECOMMENDATIONS

% Hydrocarbon to water ratio reported, acceptable
Warning! The liquid to gas ratio is high.
This well appears to be liquid loading.
Model criteria achieved, foam will have a positive effect

Capillary Tubing		
Tubing O.D.	1/4	inches
Recommended Alloy	2507	
Suggested set point	9514	feet

Figure 1-- Coil Operations in Australia

DROVER ENERGY SERVICES is a team of dedicated personnel with over 100 years combined experience and expertise in the capillary and coil tubing markets. In 16 years our experienced group has been responsible for installing in excess of 6000 capillary injection systems and a variety of coil tubing jobs in over 34 different countries. This depth of varying knowledge provides you with a valuable resource to address your needs concerning capillary and coil tubing services internationally and domestic, whether land based or offshore. We provide engineered solutions, built to spec equipment and experienced deployment crews that are well control certified.

Intermediate Coil Tubing Equipment

Control Cabin

- Electronic and hydraulic controls
- Real-time data acquisition
- 4-station closing unit

Tubing Work Reel

- Wide variety of depths and tubing sizes capable of servicing up to 14000 ft in depth
- Depth encoder for accurate depth readings
- High pressure inlet iron

Tubing Injectors

- 20,000 lb and 35,000 lb Injector Heads
- 5/8" to 1" tubing sizes
- 72" arch radius
- Infinite depth rate control
- NACE spec stripper assembly with 10,000 psi working pressure

Figure 2-- Manufacturing and Test Well Facilities

INTERMEDIATE COIL APPLICATIONS

CLEANOUTS

Coiled tubing can be used to remove scale, produced sand, frac sand and debris from the wellbore. Coiled tubing is run into the wellbore, fluid is pumped down the coiled tubing and returns are circulated through the annulus. Coiled tubing can rig up and get to depth quickly without killing the well or pull the production tubing.

NITROGEN INJECTION

Coiled tubing allows the injection of nitrogen at depth into a dead wellbore to displace the wellbore fluid with nitrogen. This lowers the bottom hole pressure and allows the well to resume flowing.

STIMULATION

Coiled tubing treatments are designed to restore the natural permeability of the near-wellbore formation by injecting treatment fluids into the formation. Coiled tubing stimulation can be performed on live wells and combined with other operations such as nitrogen injection.

WORKOVER APPLICATIONS

- **Backwashing**
- **Milling**
- **Sand Washing**
- **Solid Removal**
- **Thru-Tubing Fishing**
- **Well Circulation**
- **Foam Washing with Nitrogen**
- **Deployment of Downhole Pumps and Cameras**

PRODUCTION ENHANCEMENT

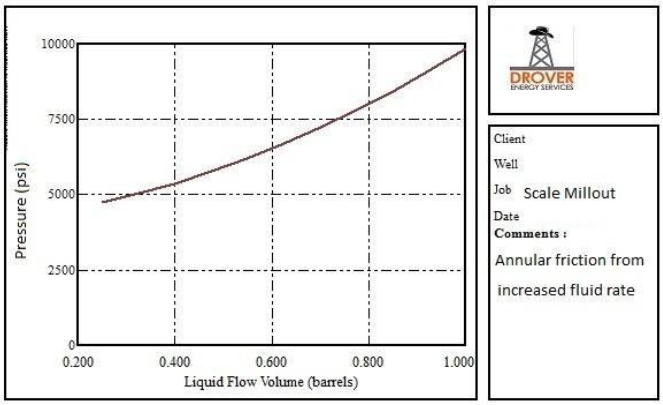
- **Acid Stimulation**
- **Paraffin Removal**

CRITICAL WELL APPLICATIONS

- **CO2 and H2S Services**
- **High Temperature and Pressures**

Figure 3-- 20,000 lb Injector Head

DRAG & BUCKLE AND TUBING FORCE ANALYSIS SOFTWARE



Drover Energy has full engineering capabilities for drag and buckle, determining the required surface equipment for the job, as well as downhole tool design and optimization. With full pre-job planning and fluid analyses, the job becomes safer and more efficient, leading to better results for the customer. The onboard data acquisition system monitors tubing life for proper string retirement before failure.

With pre-established operating limits calculated from job-to-job, operations are conducted within the limits of the equipment, field personnel work smarter, and the well is left in a better state than when started.

Figure 4-- Drag and Buckle Modeling Software

Figure 5—Intermediate Coil / Capillary Unit

SAFETY TRAINING AND PERSONNEL

Drover Energy Services' operators have a unique advantage compared to many other companies providing services. Our operators are trained for work both domestically and internationally in capillary, coil tubing and unique high pressure jobs. Our operators have attended and been certified for:

- ✓ Well Control School Certification
- ✓ Safe-Land School
- ✓ Drover PPE and Operator Safety
- ✓ JSA Training and Participation
- ✓ I. S. NetWorld Member.
- ✓ OHSPro Web Based Safety System.
- ✓ Achilles Audit and Safety Assessment

Figure 10- Drover International Coil Job

HISTORY OF SERVICE EXCELLENCE THROUGH TEAM EXPERIENCE

Drover Energy Services,LLC. is the recent collaboration of a select group of experienced capillary and coil tubing management and field personnel. To understand the level of excellence represented at Drover, we need to go back several years to DynaCoil in Kilgore, Texas.

DynaCoil was founded in 1997 by Lloyd and Jeff Bolding and several partners. Over the course of the next several years, Dyna-Coil emerged as the world leader of small diameter capillary tubing applications. With thousands of installations in the domestic US for a variety of production problems, DynaCoil set out to conquer the international market. Growing from one single unit in East Texas to over 30 worldwide in just six short years. Expansion began in Canada, and was followed by contracts in Indonesia, Mexico, and Australia.

Drover's combined team has worked in over 34 international locations and has a diverse background in numerous oilfield disciplines. With our experience, Drover can solve your well-producing issues with a dedicated and broad approach. With work experience ranging from offshore drilling, production, coil tubing application, to electronics and instrumentation, Drover's team will address your problems the most efficient way possible utilizing our field experienced team.

Drover's reactive management team will analyze your problems with the most expedient, cost-effective, and successful solutions. Our team consists of original, fresh-thinking members who understand the importance of job safety and efficiency. By keeping the customer's concerns first, from the beginning design stages to job completion, our solutions will emphasize cost control by streamlining operations and minimizing waste, whether it be producing unique downhole tools to reduce the number of runs on your job or using our powerful software to maximize effectiveness.

DROVER
ENERGY SERVICES