



Definitive

[dih-**fin**-i-tiv]

1. most reliable or complete.
2. serving to define, fix, or specify definitely: to clarify with a definitive statement.
3. having its fixed and final form; providing a solution or final answer; satisfying all criteria: a definitive answer to a dilemma.

Optimization

[op-tuh-muh-**zey**-shuhn]

1. the fact of optimizing; making the best of anything.
2. the condition of being optimized.
3. Mathematics, a mathematical technique for finding a maximum or minimum value of a function of several variables subject to a set of constraints, as linear programming or systems analysis

PAL CASING PLUNGER SYSTEM

U.S. PATENT NUMBERS: US 6,554,580 B1 and 6,971,856
Other patents pending

Definitive Optimization (855) 933-3678

APPLICATIONS

- *Liquid loading low pressure oil and gas wells less than 2000m*
- *Wells where tubing plungers are failing to perform*
- *Operator on demand swabbing*
- *4.5" and 5.5" casing wells where casing is in good condition.*
- *Wells where good plan for fluid movement and production is in place.*
- *Casing Plunger in conjunction with other lift technology for multi-zone production optimization*

The Plunger

Valve Shaft
not Subject to
Breakage

Corrosion
Resistant
Stainless Steel
Used Throughout

Both Cups are
Under Casing ID

Multiple
Rubber
Compounds
Available

Centralizer Springs
Used Top & Bottom

Cup Expands on
Contact with
Lower Stop

Undersized cup outside diameter allows the plunger to be effective in wells with varying casing weights or tapered strings.

The Lubricator

No Need to Break
Lines for Service

Hammer Unions
Facilitate
Easy Servicing

Reliable Plunger
Catch/Release
Mechanism

Easy, One Hand
Operation of
Hydraulic Lift

Service Openings

Full-Opening
Master Valve

Flexible control system allows for adaptability of plunger cycles according to individual well conditions.

Completed PAL Assembly



Wire line Access to Wellhead



PAAL Hinged Lubricator



5 ½ & 4 ½ PAAL Plungers



5 ½ & 4 ½ PAL Plungers

5 ½" WEIGHS
75 POUNDS

4 ½ WEIGHS
50 POUNDS



Old and new cup design



Diameter larger than I.D.



Diameter smaller than I.D.



Lower Cup Profile showing expansion of major diameter due to weight of plunger compressing the ring at the bottom of the cup. Once the lower cup expands and seals with the casing wall, the upper cup then expands and seals by inflation due to pressure build up in the internal chamber of the plunger.



MARLIN BOATES

REPLACE JETSTAR SYSTEM
WITH “PAL” SYSTEM.

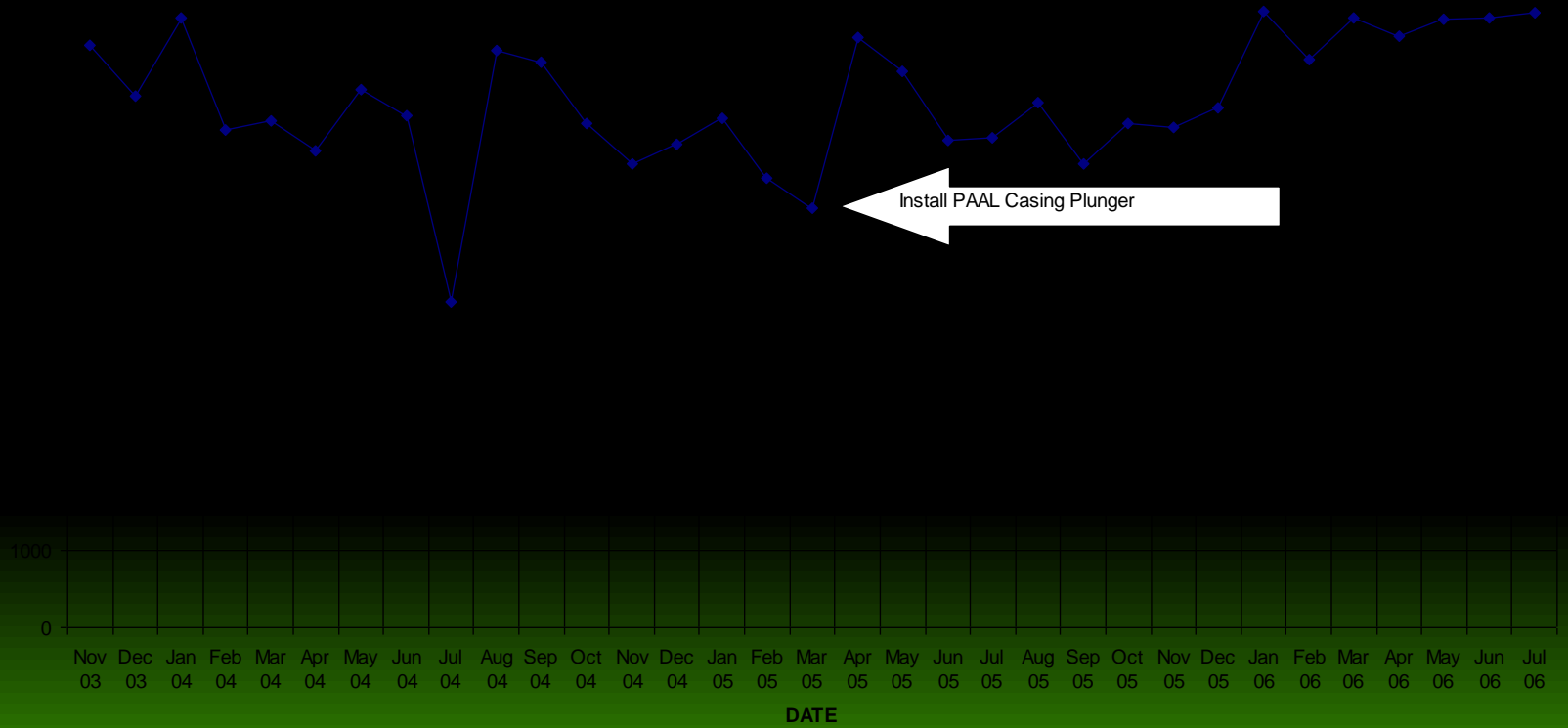
GAINED MORE ACCESSIBLE
LUBRICATOR AND
CONTROLLER.

POWER ASSISTED LIFT
BENEFIT TO PERSONNEL



Ruth 1-36





AMBER 1-31

Harper Co. OK

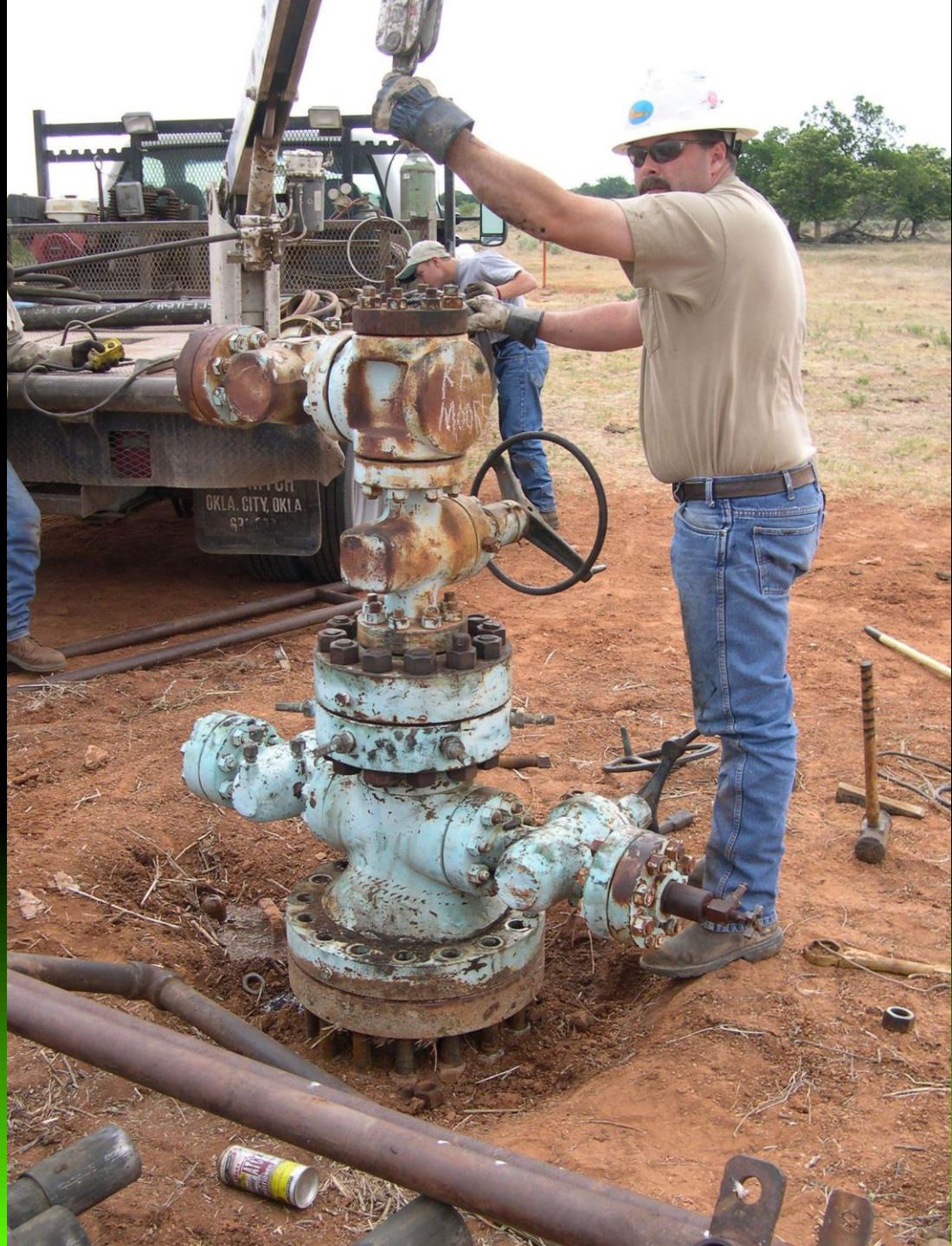
Perfs 7288-7314

Collar Stop @ 7251

Production 25 mcf/d

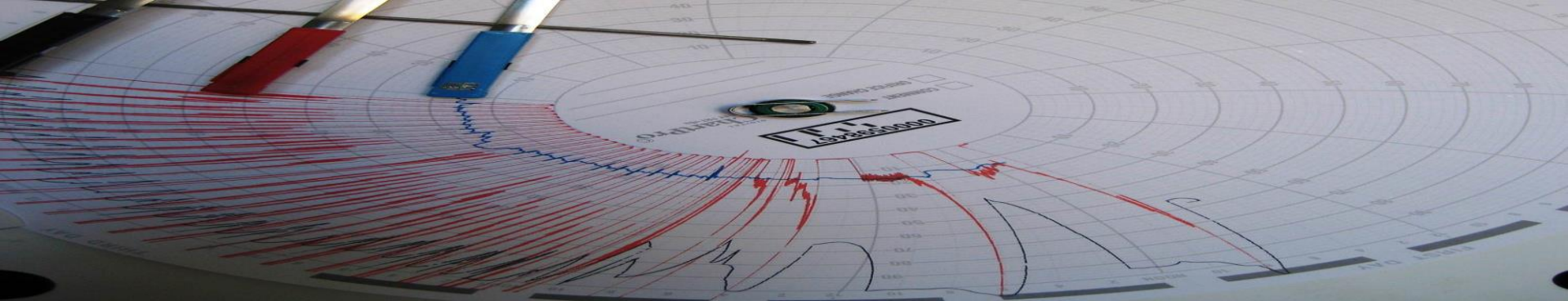
Increase with "PAL"

Over 80 mcf/d



AVAILABILITY

- 4 ½ “PAL” SYSTEMS, CURRENT
- 5 ½ “PAL” SYSTEMS, CURRENT
- MANUAL AND CONTROLLER OPTION
- SPECIALIZED TOOLS AVAILABLE



WWW.DEFOPT.COM



(855) 933-3678