HEAL SYSTEMS

PROPOSED HEAL SYSTEM INSTALL

July 03, 2018

UWI: Cedar Canyon 22-15-34H
Surface Location: 30-015-44055
Company: Oxy

Revision: 2
Quote # PP18335

Program Type
Pod ESP

Well Data
TD (ft KB) 16100
TVD (ft KB) 9971
KOP (ft KB) 9499

Estimated Current Reservoir Pressure: 4500 psi
Estimated Static Fluid Level: near surf ft KB
Reservoir Temperature: 150 °F

Formation	Tubular	Size in	Weight lb/ft	Grade	Top ft KB	Top deg	Bottom ft KB	Bottom deg	ID in	Drift in
2nd Bone Springs	Casing	7.625	26.7	L-80	0	0.0	7000	5.2	6.97	6.84
	Casing (different weight)	7.625	29.7	HCL80	7000	5.2	9480	4.5	6.88	6.75
Basin	Liner	4.5	13.5	P110 DQX	9405	4.4	16044	90.0	3.92	3.80
Delaware	Production Tubing	2.875	6.5	L80	0	0.0	9078.0	7.8	2.44	2.35

HEAL System Details

Component Locations

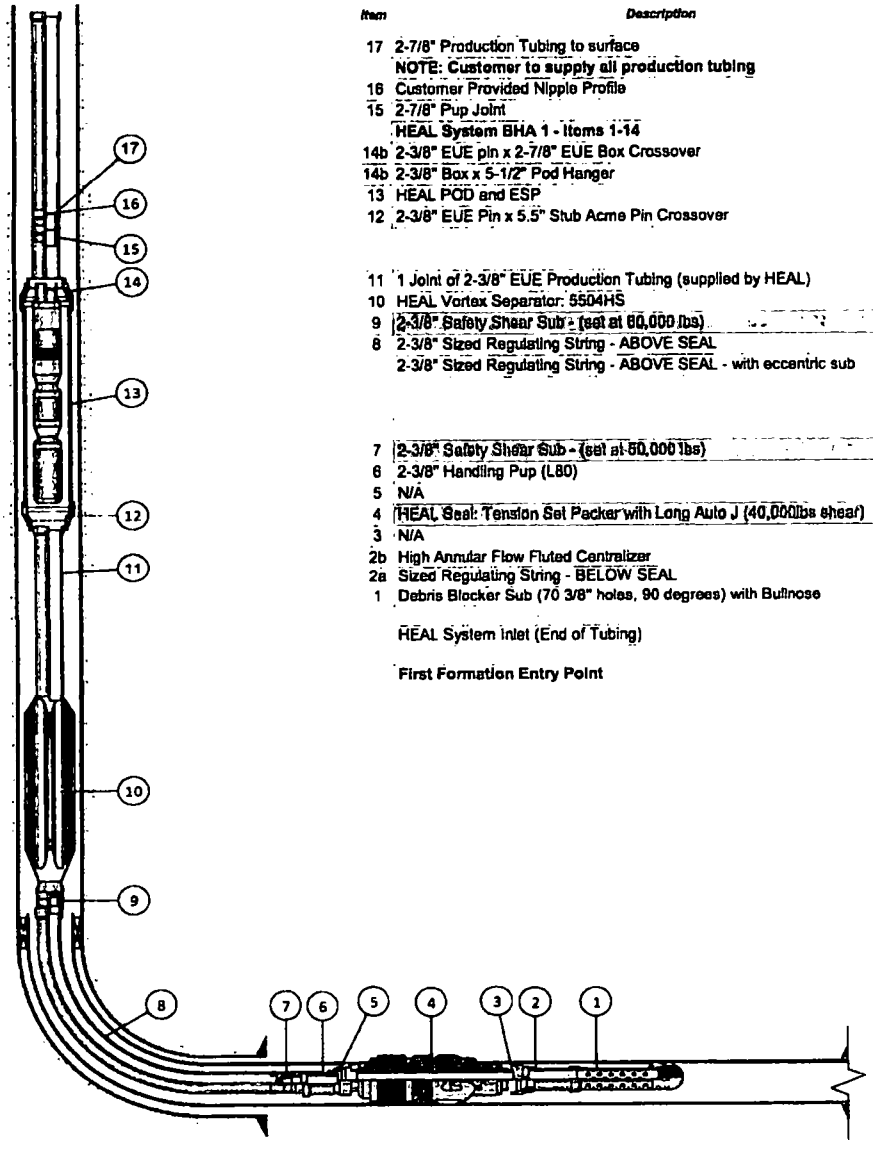
	Depth ft KB	Inclination Degrees
PSN	9085	7.7
Vortex Separator	9271	4.2
Bottom of SRS	10249	77.1
HEAL Seal	9940	50.7

Sized Regulating String (SRS)

Type	Metal Lined	SRS Above Seal (ft)	645.7
Tubing	2-3/8in EUE	SRS Below Seal (ft)	303.1
ID (in)	1.25/1.5	Total SRS (ft)	948.8
Drift(in)	1.1875/1.425	Distance to First	
Capacity (ft3/ft)	0.0015/0.0022	Formation Entry	-269.0
Tensile (lb)	71,700		

Dog Leg Severity at PSN (deg/100ft): 3.1
Max DLS above PSN (deg/100ft): 4.6

HEAL Vortex Separator Model 5504HS
HEAL Seal Model Tension Set Packer with Long Auto J (40,000lbs shear) *may substitute based on availability



Item	Description	ID (in)	Max OD (in)	Length (ft)	Top (ft)
17	2-7/8" Production Tubing to surface	2.44	3.67	9078.0	0.0
	NOTE: Customer to supply all production tubing				
16	Customer Provided Nipple Profile	2.31	3.67	1.0	9078.0
15	2-7/8" Pup Joint	2.44	3.67	6.0	9079.0
	HEAL System BHA 1 - Items 1-14				
14b	2-3/8" EUE pin x 2-7/8" EUE Box Crossover	2.00	3.67	1.0	9085.0
14b	2-3/8" Box x 5-1/2" Pod Hanger	2.00	5.50	1.0	9084.0
13	HEAL POD and ESP	N/A	5.50	155.0	9085.0
12	2-3/8" EUE Pin x 5.5" Stub Acme Pin Crossover	2.00	5.50	1.0	9240.0
11	1 Joint of 2-3/8" EUE Production Tubing (supplied by HEAL)	2.00	3.08	30.0	9241.0
10	HEAL Vortex Separator: 5504HS	N/A	4.25	16.0	9271.0
9	2-3/8" Safety Shear Sub - (set at 60,000 lbs)	2.00	3.08	1.3	9287.0
8	2-3/8" Sized Regulating String - ABOVE SEAL	1.50	2.91	450.0	9288.3
	2-3/8" Sized Regulating String - ABOVE SEAL - with eccentric sub	1.25	2.91	195.7	9738.3
7	2-3/8" Safety Shear Sub - (set at 50,000 lbs)	2.00	3.08	1.3	9932.7
6	2-3/8" Handling Pup (L80)	2.00	3.08	6.0	9934.0
5	N/A				
4	HEAL Seal: Tension Set Packer with Long Auto J (40,000lbs shear)	1.94	3.65	4.6	9940.0
3	N/A				
2b	High Annular Flow Fluted Centralizer	2.00	3.75	1.3	9944.6
2a	Sized Regulating String - BELOW SEAL	1.50	2.91	303.1	9945.9
1	Debris Blocker Sub (70 3/8" holes, 90 degrees) with Bullnose	2.00	2.37	10.0	10249.0
	HEAL System Inlet (End of Tubing)				10259.0
	First Formation Entry Point				9980.0

HEAL SYSTEMS™

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HEAL Systems™ recommends running speeds of no more than 10 sec / single and under no circumstances should the workover unit be set up with double fast line. The rig should be tied back with a single traveling line and static line weight indicator is highly recommended to ensure accurate readings.

Well Preparation Prior to Installing HEAL System

A. *If solids or debris are expected in the wellbore, it is highly recommended to run a full drift string mill and casing scraper cleanout trip to 75ft past the end of HEAL System (debris blocker). Perform a small flush of the completion fluid at bottom to flush any accumulated solids away from the HEAL System inlet.*

B. *If reverse circulation is performed, consider using different tubing to perform the reverse circulation than will be run in hole for production. This will ensure that no debris is left in the tubing when HEAL system is run.*

C *Consider running a static gradient or obtain a static fluid level to determine and/or confirm current reservoir pressure. If current reservoir pressure is found to be significant different than estimated, immediately contact HEAL Systems Engineering. The depth of the HEAL Vortex Separator may require adjustment to avoid start-up challenges.*

HEAL System Installation

1. Prior to running the HEAL System BHA and the HEAL Vortex Separator, the top and bottom saver subs and crossover must be installed and made up hand tight. This will protect the tool from accidental damage during running **Once picked up, torque the connections between the saver subs to optimum values for the connection type.**
2. Pick up, drift, and tally in the hole with the **HEAL System BHA 1** as described above on production tubing string. Prior to packer on depth, pump a volume fluid down annulus as required to flush debris from setting area

   Note: Although the HEAL Seal is a critical seal, when properly set, statistics show that these seal elements hold pressure; thus a pressure test is not required.

   Note: **Improper handling of lined tubing can result in damage.** Ensure end protectors are installed while picking up tubing and standing in the derrick. Only remove end protectors after the joint is hanging in tubing elevators. A stabbing guide should always be used while making up tubing.
3. Space out tubing and set packer to place packer in 25,000 lb tension. No pressure test is required.