Form 3160-5
(June 2015)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
OMB NO. 1004-0137
Expires: January 31, 2018

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to re-enter an abandoned well. Use form 3160-3 (APD) for such proposals.

Carlsbad Field Office
OCD Artesia

SUBMIT IN TRIPLICATE - Other instructions on page 2

5. Lease Serial No.
NMNM13996

6. If Indian, Allottee or Tribe Name

7. If Unit or CA/Agreement, Name and/or No.
NMNM132437

1. Type of Well
☒ Oil Well ☐ Gas Well ☐ Other

8. Well Name and No.
GAINES 22 FED 1

2. Name of Operator
OXY USA INCORPORATED
Contact: DAVID STEWART
E-Mail: david_stewart@oxy.com

9. API Well No.
30-015-35186-00-S1

3a. Address
5 GREENWAY PLAZA SUITE 110
HOUSTON, TX 77046-0521

3b. Phone No. (include area code)
Ph: 432.685.5717

10. Field and Pool or Exploratory Area
PIERCE CROSSING

4. Location of Well *(Footage, Sec., T., R., M., or Survey Description)*
Sec 22 T24S R29E SWSW 820FSL 990FWL

11. County or Parish, State
EDDY COUNTY, NM

12. CHECK THE APPROPRIATE BOX(ES) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION			
☒ Notice of Intent	☐ Acidize	☐ Deepen	☐ Production (Start/Resume)	☐ Water Shut-Off
☐ Subsequent Report	☐ Alter Casing	☐ Hydraulic Fracturing	☐ Reclamation	☐ Well Integrity
☐ Final Abandonment Notice	☐ Casing Repair	☐ New Construction	☒ Recomplete	☐ Other
	☐ Change Plans	☐ Plug and Abandon	☐ Temporarily Abandon	
	☐ Convert to Injection	☐ Plug Back	☐ Water Disposal	

13. Describe Proposed or Completed Operation: Clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recomplete horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports must be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompletion in a new interval, a Form 3160-4 must be filed once testing has been completed. Final Abandonment Notices must be filed only after all requirements, including reclamation, have been completed and the operator has determined that the site is ready for final inspection.

1. MIRU pulling unit & reverse unit. POOH w/ pump & rods, ND WH, NU BOP. POOH w/ tbg and scan.

2. RIH w/ pkr & RBP, set RBP @ approximately 7250', load hole, test RBP to 500#. Rel pkr, load hole, test casing to 6150# for 30 min., if test is good, rel pkr & RBP & POOH.

3. PU BHA and clean out to approximately 10752'M. Pump WF PLA fluid loss product to seal existing perfs, circ hole clean, POOH.

4. RIH w/ 4-1/4" X 5-1/2" Frac Patch liner & set @ approximately 7810-10690'M, see attached for detail.

5. ND BOP, RDPU, NU frac tree, perf & frac via 5-1/2" X 4-1/4" liner, in 15 stages w/ zone

GC 5-24-18
Accepted for record - NMOCD

RECEIVED
MAY 23 2018
DISTRICT II-ARTESIA O.C.D.

14. I hereby certify that the foregoing is true and correct.

Electronic Submission #409362 verified by the BLM Well Information System
For OXY USA INCORPORATED, sent to the Carlsbad
Committed to AFMSS for processing by PRISCILLA PEREZ on 03/29/2018 (18PP1420SE)

Name *(Printed/Typed)* DAVID STEWART — Title REGULATORY ADVISOR

Signature (Electronic Submission) — Date 03/26/2018

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved By **/s/ Jonathon Shepard** — Title PETROLEUM ENGINEER — Date 05/16/2018

Conditions of approval, if any, are attached. Approval of this notice does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.

Office CFO

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

(Instructions on page 2)

**** BLM REVISED ** BLM REVISED ** BLM REVISED ** BLM REVISED ** BLM REVISED ****

Additional data for EC transaction #409362 that would not fit on the form

32. Additional remarks, continued

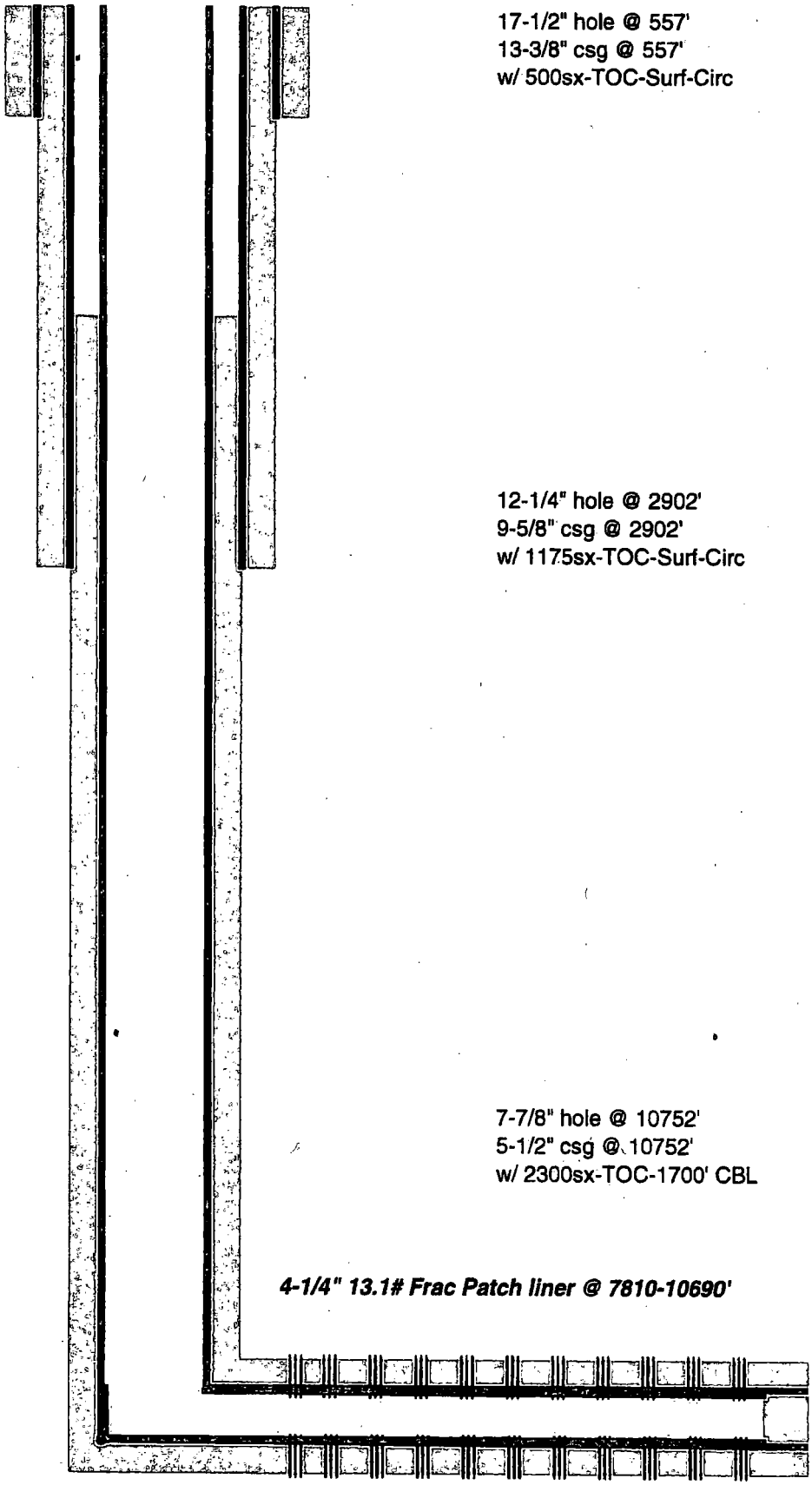
isolation w/ 14 flow through composite plugs from approximately 8230-10505', see attached for detail.

6. After frac, MIRU CTU, RIH & drill out plugs & CO to PBTD @ 10690'. Circ hole w/ N2, then flow back and test.

7. After flow back, turn well over to operations, artificial lift procedure to be decided.

See attached for detail of proposed work and WBD.

OXY USA Inc. - Proposed
Gaines 22 Federal #1
API No. 30-015-35186



17-1/2" hole @ 557'
13-3/8" csg @ 557'
w/ 500sx-TOC-Surf-Circ

12-1/4" hole @ 2902'
9-5/8" csg @ 2902'
w/ 1175sx-TOC-Surf-Circ

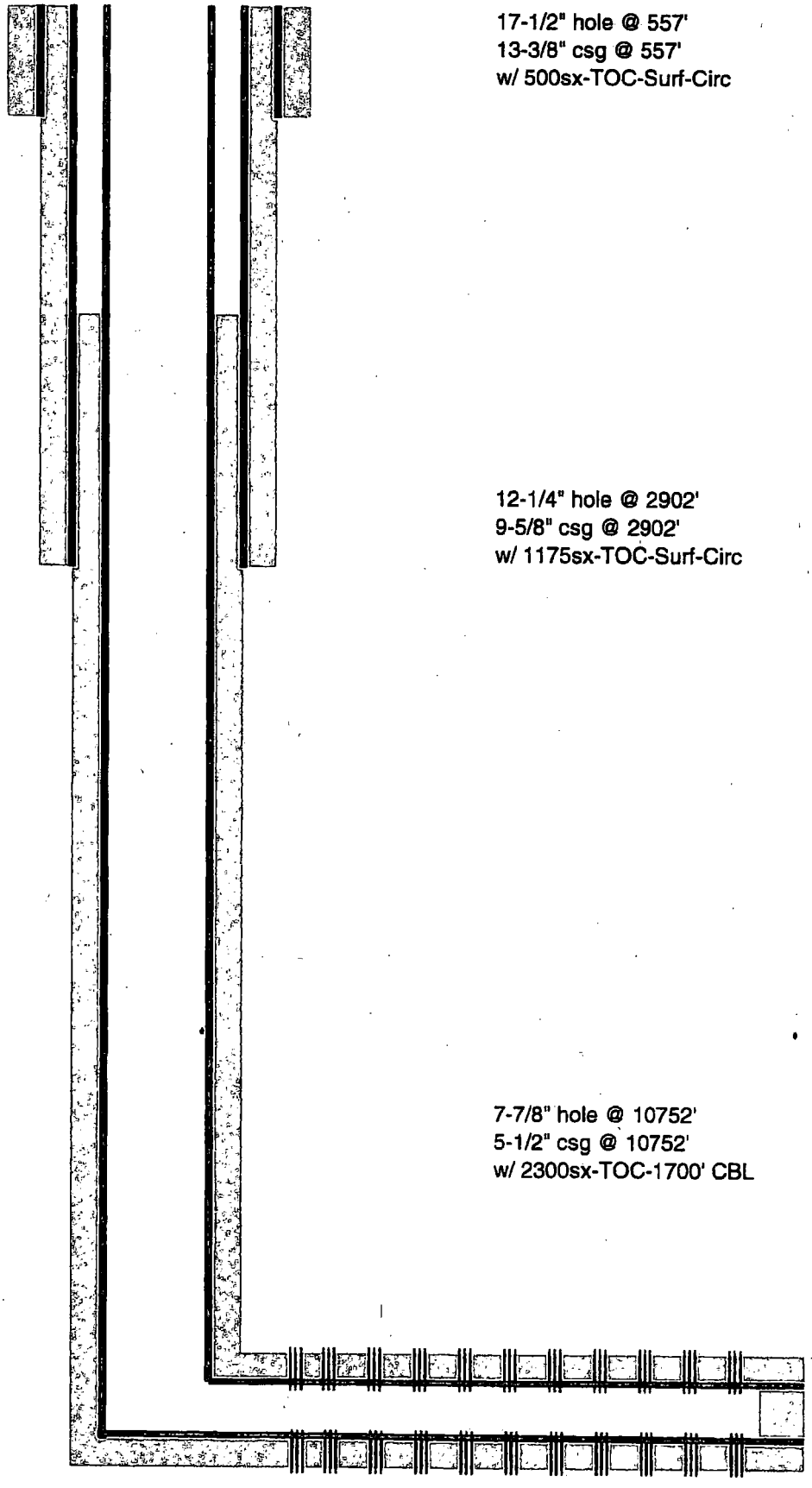
7-7/8" hole @ 10752'
5-1/2" csg @ 10752'
w/ 2300sx-TOC-1700' CBL

4-1/4" 13.1# Frac Patch liner @ 7810-10690'

Perfs @ 8074-10660'
Original Perfs @ 8110-10660'

TD-10752' M 7666' V

OXY USA Inc. - Current
Gaines 22 Federal #1
API No. 30-015-35186



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7-7/8" hole @ 10752'
5-1/2" csg @ 10752'
w/ 2300sx-TOC-1700' CBL

Perfs @ 8110-10660'

TD-10752' M 7666' V
PBTD-10694' M 7668' V

Equipment Pull

MIRU pulling unit and reverse unit. Record SITP. Ensure well is dead. If pressure exists on well, try to bleed off any psi and kill the well with fresh water or 10# brine needed. Ensure well is dead. Remove pumping unit head. Pressure test tubing to 500 psi for 5 min. Note in report whether successful or not. Prepare tools to pull rods. Unset pump. Pump tubing capacity of 10ppg brine to ensure well is dead. POOH and lay down rods according to best practices. Pull and inspect rods and pump. Add pressure gauge to production casing to monitor buildup pressure. Function test and NU 5K BOP with 2 7/8" tubing rams. Low pressure test to 250 psi. High pressure test to 4500 psi. Prepare rig floor to pull tubing. Unset TAC and POOH with 2-7/8" tubing. TOOH and send pipe in for inspection.

Vertical Casing Pressure Test

Pick up 2-7/8" PH6 workstring and 4.75" bit and 5.5" 17# Casing Scraper. RIH to 7,270' (20' below plug set depth). POOH with bit and scraper, making note of any paraffin or scale seen during cleanout run. PU RBP and RIH to 7,250' and set RBP. Test to 500 psi to ensure proper set. POOH with tubing. Nipple up Guardian Casing Test Isolation tool and test casing to 6150 psi for 30 min.

Initial Cleanout Run

Pick up 2-7/8" PH6 workstring (~10,700' 2 7/8" PH6 needed) and BHA as follows: RIH, set slips and apply safety clamp. Remove Lift sub. Pick up 2 joints of 2 7/8" PH6 and make up 2 7/8" PH6 check valve above and below tubing. Make up 2 7/8" PH6 check valve to the box looking up in the rotary. Torque all necessary connections. RIH and set in rotary. Pick up and run 30 joints of 2 7/8" PH6 tubing (capacity 4.87bbl). Make up 2 7/8" PH6 safety joint to 2 7/8" PH6 tubing in the rotary. Pick up 1 joint of 2 7/8" PH6 tubing and make up to safety joint. RIH and set in slips. Makeup VACS tool with screen made up to 2 7/8" PH 6 tubing looking up in the rotary and make up 2-7/8" PH-6 tubing on top of VACS and continue picking up workstring and continue running in hole to KOP @ 7,251' MD. Rig up power swivel and break circulation, circulate at a rate of 1 ½ to 2 BPM. Record weight up, weight down, free rotating torque, and pump pressure at a given rate. With pumps on, start rotating at 20 RPM and slowly lower BHA into curve watching weight on bit and torque. Wash thru curve and out into horizontal stopping every 5 joints to work the BHA up the hole one joint and then back down watching for significant drag. If significant drag is seen, begin POOH 1 joint then washing back down and then lay down a single or stand back that double and repeat as needed. Once cleanup is completed continue RIH. Repeat process until VACS tool comes up empty.

Cleanout w/ Mill BHA

Make up BHA as follows with 500' of cavity below VACS: Stop above KOP and check all of the parameters; up weight, down weight, rotating weight, static weight, free rotating torque, RPM, Circ Pressure etc. With pumps on, slowly lower BHA into curve watching weight on bit and torque. RIH to 50' above top of expandable liner set depth and start rotating at 40-45 RPM and pumping 3-4 bpm. Slowly RIH to 50' below bottom of expandable liner set depth While rotating slowly ream through any restrictions encountered. Make 6-8 reaming trips back and forth while rotating at 45 RPM to make sure the ID is clean and polished. Pick up and POOH to 8000' and then Trip back to 10,752' without rotation several times to ensure ID has no restriction and future 4.75" OD equipment can pass through with no restrictions. After confirmation of cleanwell bore from Liner rep on location, POOH. Move all 2-7/8" PH6 8RD tubing to the side of location. For the Mohawk clean out/drift run, we will need to pick up 162 joints (~5000') of 2-7/8" 7.9# P110 PH6 tubing and 210 joints (~6500') of 2-7/8" 10.4# S-135 AOH tubing. We will also need to order out 2 crossovers -- 2-7/8" 7.9# P110 PH6 Pin Down x 2-7/8" 10.4# S-135 AOH Box Up.

Proposed Expandable Liner Specs

4.25 inch, 0.31 wall x 5.5 inch, 17 lb/ft
FracPatch Specifications

Expandable Pipe Body					
Pre-Expansion			Post Expansion		
OD	4.250	*inches*	OD	4.805	*inches*
ID	3.630	*inches*	ID	4.218	*inches*
Wall Thickness	0.310	*inches*	Wall Thickness	0.293	*inches*
Weight	13.100	*lb/ft*	Drift	4.158	*inches*
Drift	3.505	*inches*	Internal Yield	9,895	*psi*
Seal Joint OD	4.490	*inches*	Collapse	5,600	*psi*
Seal Thickness	0.120	*inches*	Expansion Ratio	16.207	%

Expandable Connection					
Pre-Expansion			Post Expansion		
Connection OD	4.310	*inches*	Connection OD	4.865	*inches*
Connection ID	3.600	*inches*	Connection ID	4.218	*inches*
Drift	3.505	*inches*	Drift	4.158	*inches*
Tensile Rating	142,286	*lbs*	Internal Yield	9,895	*psi*
Compressive Rating	142,286	*lbs*	Collapse	5,600	*psi*
Max DLS	36.01	*°/100ft*	Tensile Rating	154,125	*lbs*
Optimum Torque	1,360	*ft-lbs*	Compressive Rating	138,713	*lbs*
Max Torque	1,496	*ft-lbs*	Yield Torque	1,700	*ft-lbs*

Proposed Expandable Liner Depths

Top of problem	8,110
Bottom of problem	10,660
Planned top of liner (TOL)	7,810
Bottom of liner (BOL)	10,690
Post expanded liner length	2,580

Proposed BHA's

Table 1: Recommended Clean Out/Drift BHA – (Exact BHA can change depending on connections)

Qty	Description	Mohawk Part Number	Connection Up	Connection Down	Supplier
210	2-7/8" 10.4# AOH		2-7/8" 10.4# AOH Box	2-7/8" 10.4# AOH Pin	Operator
1	Crossover		2-7/8" 10.4# AOH Box	2-7/8" 10.4# AOH Pin	Operator
162	2-7/8" 7.9# PH6		2-7/8" 7.9# PH6 Box	2-7/8" 7.9# PH6 Pin	Operator
1	Ball drop drain sub 625 psi/pin		2-7/8" 7.9# PH6 Box	2-7/8" 7.9# PH6 Pin	Mohawk
1	Crossover		2-7/8" 7.9# PH6 Box	2-7/8" API Reg Pin	Mohawk
1	4.798" String mill	O-00338	2-7/8" API Reg Box	2-7/8" API Reg Pin	Mohawk
1	Magnets		2-7/8" API Reg Box	2-7/8" API Reg Pin	Mohawk
1	4.798" String mill	O-00338	2-7/8" API Reg Box	2-7/8" API Reg Pin	Mohawk
1	Venturi Basket		2-7/8" API Reg Box	N/A	Mohawk

Table 2: Proposed Liner

Qty	Description	Mohawk Part Number	Connections	Length (ft)	Elastomer OD (in)
1	Exit Joint	A-00843	r2m Box (down) x Stub Acme Box (up)	7'	N/A
1	Upper Seal Joint	A-00887 ?	r2m Box (down) x Pin (up)	1'	4.490
1	Standard Joint	A-00842	r2m Box (down) x Pin (up)	~22'	N/A
1	Spacer Joint	A-00741	r2m Box (down) x Pin (up)	7'	N/A
1	Anchor/Seal Joint	A-00883	r2m Pin (up)	~3'	4.490

Table 3: Proposed Inner String BHA

Qty	Description	Mohawk Part Number	Connection Up	Connection Down	Supplier
210	2-7/8" 10.4# AOH		2-7/8" 10.4# AOH Box	2-7/8" 10.4# AOH Pin	Operator
1	Crossover		2-7/8" 10.4# AOH Box	2-7/8" 10.4# AOH Pin	Operator
162	2-7/8" 7.9# PH6		2-7/8" 7.9# PH6 Box	2-7/8" 7.9# PH6 Pin	Operator
1	Drain sub 625 psi/pin	O-00347	2-7/8", 7.9# PH6 Box	2-7/8", 7.9# PH6 Pin	Mohawk
1	Hydraulic disconnect 630 psi/pin	O-00346	2-7/8", 7.9# PH6 Box	2-7/8", 7.9# PH6 Pin	Mohawk
1	Mohawk latch in sub	A-00643	2-7/8", 7.9# PH6 Box	Latch	Mohawk

Drift Run Procedure

The liner will be received on location and unloaded using the specified Mohawk handling procedure to prevent damage to the equipment. Conduct a safety meeting. Go over parameters such as important depths, expected weights, drain sub pressure, and safe running speeds. Make up recommended Mohawk clean out / drift BHA (see Section 3.8, Table 1). Set drain sub activation pressure according to equipment available on site. Trip in hole picking up 2-7/8" tubing in singles. If in a horizontal, circulate joints through the curve. Rotate mills through setting depths with power swivel. Work any tight spots (if significant milling is needed POOH and change to an operator supplied BHA. Mohawk mills are for gauging the hole and are not dressed for significant work). If pickling, pickle the tubing and reverse the fluids out, if well allows. Drop the drain sub ball. Once the ball lands pressure up to 500 psi less than activation pressure, 10 cycles, to flex the tubing. On the last cycle pressure up to activation pressure to open the drain sub. Reverse circulate bottoms up, if well allows. POOH racking back 2-7/8" tubing. Lay down clean out/drift BHA. Gauge mills to check for significant wear. May have to repeat the cleanout/drift run based on assessment from Mohawk

Liner Installation Procedure

Maximum allowable pressures must be confirmed for all surface equipment. Maximum allowable pressure for the setting tool is 5,000 psi. Minimum flow rate must be confirmed for pumping equipment. Maximum allowable slack off / pull for the liner is 15,000 lbs down and 25,000 lbs up during RIH operations. If maximum slack off / pull for the liner is exceeded, consult Mohawk representative. Do no circulate through the setting tool without a Mohawk representative present. Clean fluid must be used during the expansion procedure. Mohawk recommends counting all joints on locations to confirm tally

Liner Make Up and Deployment

Conduct a safety meeting. Go over parameters such as number of joints to pick up, safe running speeds, safe running weights, and important depths. Mohawk rep will discuss circulation tool function. Discuss well control options before running the liner (see Section 3.10.4 for Liner Circulating Operations). Rig up Mohawk liner lifting subs, TIW valve, and circulating crossover subs. Rig up casing handling equipment including slips and bowls, flush joint elevators, and tongs (if used). Pick up setting tool with elevators using Mohawk's lift nubbin as a shoulder. Run in hole and set in slips (some applications require the slips to be set on the seal joint). Install a safety clamp. Make up liner in final proposed order per *ReFracPatch* liner tally sheet. Install lift nubbin on each joint. Mohawk's proprietary r2m thread is made up dopeless. Do not put dope on r2m threads. Make up each r2m connection with Mohawk provided wrenches or to 1,300 ft-lbs with casing crew tongs. Install safety clamp on every joint. Designate one man to watch the lift nubbin while making up joints to ensure it spins freely and does not back off while making a connection. After running all liner joints, pick up the exit joint with the exit joint lift nubbin. Land the exit joint as low as possible in the slips. Rig up the Mohawk false rotary table on top of the exit joint. Swap over to the Mohawk inner string circulating crossover assembly. Rig up the work string slips on top of the Mohawk table. Cover the hole. Swap all handling equipment to run work string inside of the Mohawk liner joints. Pick up the inner string BHA. Use minimum dope only on the pins. Check tally and have a meeting to discuss latch-in depth (the inner string BHA will latch into the setting tool and pick up the liner). Begin tripping in hole with work string: Confirm latch-in depth. 10ft above the setting tool, slow the trip in speed to 10 ft/min. Continue to run in hole and latch into the setting tool by slacking off. After latching in, pick up slowly and check to see the tool is latched and the liner lifts out of the slips. Set down and pick up again to check latch-in (resetting the slip and bowl may be required). Pick up out of the slips. Rig down the work string slips, rig down Mohawk table, and rig down the liner slips. Rig up the work string slips and begin running the liner in the hole. RIH 1 min/stand. If anything is tagged while RIH, notify a Mohawk representative. Use caution on and off slips to avoid jarring the liner. Circulate through tool at 0.5 BPM every 50 stands for 3 BBL. If in a horizontal, take pick up and slack off weights before entering the lateral. Monitor pick up and slack off weights. After entering the lateral, pump down tubing 0.5 BPM every 10 stands. Trip in hole to setting depth. If using a plug or no-go for depth correlation, tag the plug and pull up accordingly. If only using the tally for depth, run in past the target by at least 1 joint, pull back up to setting depth and measure depth while on up weight.

Liner Expansion

Once on depth, conduct a safety meeting. Review all tallies and confirm depths. Rig up the pump-in sub, tubing swivel (chicksan), high pressure hose, and expansion pump on to the tubing. Pressure test surface lines to 6000 psi: Ensure the liner is in exact position prior to starting the test. Ensure pump kick-outs (or pop offs) are working. Ensure there is a way to bleed pressure from tubing. Open tubing and pump through the Mohawk setting tool, break circulation if well allows. Ensure the liner is in exact position prior to circulating. Set kick-outs to 500psi. Do not exceed 0.5 BPM flow rate to circulate. If pressure increases while circulating, do not bleed off. After circulation, set kick-outs to 4000 psi. Increase rate to 1 BPM, pressure will begin to build. Bring pressure to 3,500 psi and hold for 1 minute (hold first stroke only). Bleed tubing down to zero pressure. Mark the work string at the slips for reference. With the rig, pull the tubing to reset the tool with 3,000-5,000 lbs over string weight or 3' (whichever occurs first). Mark the new position and measure. Repeat Steps 6 through 9 until all lower seals are expanded. After lower seals are expanded, begin pulling out with the rig: Mohawk will recommend max hook loads to ensure safe operations. Pull force will be string weight plus expansion force. Expansion force can vary as the expansion tool moves through connections and wellbore restrictions. If max hook load is seen, stop, slack down to neutral hook load, rig up the hose, and repeat Steps 6-9. Pup joints can be on location to help with slacking down. Stop expansion before reaching the upper seals. Check progress using pipe tally. Keep stretch in mind when calculating position. Rig up the high pressure hose on to the tubing. Increase rate to 1 BPM, pressure will begin to build. If liner compression is required, follow Mohawk direction. Otherwise, increase pressure to 3,700 psi. Bring pressure to 1,000 psi and hold. Slack down with pressure on tubing to compress the liner. Increase pressure to 3,700 psi. While holding pressure, pick back up to neutral. Bleed tubing down to zero pressure. Mark the work string at the slips for reference. With the rig, pull the tubing to reset the tool with 3,000-5,000 lbs over string weight. Mark the new position and measure. Repeat steps 14-16 until upper seals are expanded: Use pipe tally and pressure response to gauge when the upper seals have been expanded. Upper seals should be expanded with hydraulic expansion and not mechanical over pull. Clear the rig of all unnecessary personnel. Begin expanding the liner by pulling with the rig. Pull slowly. Hook load will decrease once the setting tool exits the liner. When exiting the top of the patch insure all pressure has been bled off the tubing. Tag the top of the liner and confirm depth. Drop 1.25" ball, load tubing and pressure up to open drain sub. Once the drain sub is open, load the hole. Close BOP's and pressure up to 4500 psi for 10 mins. This will test the pressure integrity of the expanded liner. Release pressure. POOH and lay down all Mohawk tools.

Setting Tool

Table 4: 4.25 Setting Tool Specifications

Tool connection up	2-7/8", 7.9# PH-6 Box
Tool weight	900 lbs
Tool length	40.0 ft
Expansion stroke	2.80 ft
Max. dog-leg severity	25 °/100ft
Axial load rating	200,000 lbs
Max. pressure	4,500 psi
Max. temperature	400 °F
Circulation flow rate	30 gpm
Valve shut off flow rate	46 gpm
Pressure/force conversion	44 lbs/psi

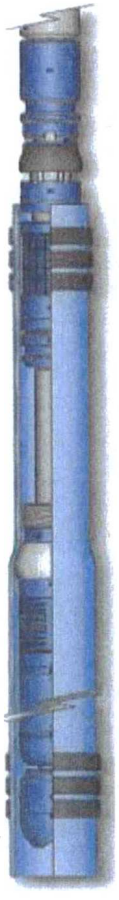

Table 5: 3.50 Tool Running Parameters

Event	Pressure or Force
Stabbing sub latching load	500 lbs
Max. slack off during deployment	15,000 lbs
Max. overpull during deployment	25,000 lbs
Drive unit shear disk	1,750 psi
Tool reset	3,000-5,000 lbs
Safety burst disk relief	5,000 psi

Liner Circulating Options

The Liner Lifting Sub and the Exit Joint Lifting Sub are to have a ball-type safety valve and lift cap (operator supplied) made up to the top connection and set aside for easy access on, or near the rig floor. Inspect that O-rings are installed in the liner connection box, or the stub acme pin. While picking up the unexpanded joints, if circulation is required, pick-up the Mohawk Liner lifting sub assembly and make up to the liner pin connection on the slips. Remove safety clamp and lower string below the BOPs to close pipe rams and TIW valve on circulating crossover assembly. While picking up the innerstring into the unexpanded liner sitting on the slips, (and circulation is required), pick up the Mohawk Exit Joint circulation crossover assembly, makeup onto work string, then remove slips/bowls, safety clamp and false table. Make up the circulating crossover assembly's pin connection onto the exposed box of the exit joint on the slips. (Four holes on the OD of the Lifting Cap are to assist with the makeup. Insert a bar or use chain tongs to rotate this sub to achieve full make up.) Pick up string, remove slips, and trip below the BOPs and close rams and TIW valve. During makeup be careful not to damage the sealing surface on the OD of the mandrel. Torque drill pipe connections to their required ratings.

Stimulation Procedure

MIRU stimulation equipment. Ensure high pressure lines are properly secured. Ensure area is restricted to, essential personnel only. Pressure test lines, hydraulic pop-off valve(s) and global pump kick-outs to pressures in Table 1. Stagger electronic kick-outs at 50 – 100 psi increments below the global kick-out. Verify the lowest kick-out is greater than the estimated treating pressure. Do not exceed max pressure (6150 psi) during active pumping. Prior to frac, ensure that computer van is monitoring all rates and pressures accurately. Review the frac treatment schedules. Execute the appropriate frac schedule for the current stage. Be prepared to modify pump schedule as needed. Report the following pressures for each stage: Break down pressure, ISIP, and estimated F.G. Shut-in pressure and shut-in time when the well is opened for the pump down perforating run. Break down the perforations. Use rate diversion for acid stages, increasing rate in ~5 bpm increments as pressure break-back dictates until the design treatment rate is achieved. Monitor pressures to avoid high-rate screen out events. Screen-out Guideline: If screen out leaves excessive proppant in the wellbore, flowback the well. Do not exceed 4320 bpd (~5-8 bpm). Once proppant has been unloaded, flowback one additional casing volume to verify the casing is clean. Establish injection rate and displace 100 vis sweep to the perforations to clean the wellbore for the following stage. Flush Procedure: When the in-line densitometer proppant concentration falls to 0.2 ppg, pump a 20 bbl slick water spacer and then mark flush. Flush with slick water to the top perforation depth. This should over-flush the 20 bbls spacer into the perforations. Shut down and record ISIP and F.G. Shut in the well and prepare for pump down perforating. Tree Saver: After each stage ND Guardian 10k Tree saver and NU Lubricator.

Table 1 – Pressures and Rates

CATEGORY	PRESSURES (PSI)
Max Allowable Pressure	6,150
Max Pressure	6,000
Global Kick Outs (Computer Control)	6,050
Pop Offs (Mechanical)	6,100
Test lines	6,150
Expected Treating Pressure	5,000

Pump Down Plug & Perforating Procedure (OW Phase: 50FRAC)

On the initial plug-and-perf run, tie-in the CCL with the markers listed in the casing summary. Make a CCL correlation log in the lateral section while POOH. Mark the perforation depths and plug setting depths for each stage on the correlation log. Adjust perforation intervals to avoid shooting casing collars. Ensure the pump operator and WL operator have working radio communication. Confirm the maximum pump rate and running speed with the plug vendor. Follow service company best practices for pump down. MU the plug-and-perf assembly as per service company standard procedures. Implement radio silence procedure to deploy and recover the plug-and-perf assembly. NU the 10M lubricator and test to 1000 psi over previous stage ISIP. Equalize lubricator to wellbore pressure. Turn on two-way radios and data acquisition system when the guns are 200' below the surface. Begin RIH to the plugs setting depth. Tie in depth in the vertical section. Idle the pump-down pumps at 1-2 bpm in the vertical section. At the kick-off-point depth, note the line tension and increase pump rate to ~3 bpm. In the horizontal section, increase the pump rate in 2-3 bpm increments until the optimum running speed is achieved. Monitor CCL to verify the tools are moving past collars at the expected speed. Be prepared to POH if the next stage cannot be reached, and attempt to clean the wellbore with viscous sweeps. Shut off the pumps when 20' below the plug setting depth. Log up to the setting depth and set the solid composite bridge plug. Setting depths to be verified by the WSM. All stages will be 5" 18# Boss Hog composite plugs (refer to plug and perforation info). Log up to the perforation depth and perforate each cluster. Perforation depths to be verified by WSM. POOH no

faster than 300'/min in horizontal section and 600'/min in vertical section. Verify that the tool string passes through the tool trap and the tool trap closes. Close the upper master valve and document with valve sign-off sheet. Bleed off pressure & close the crown valve. LD the tool string using service company standard procedures. Report the number of shots fired. Implement radio silence procedures to deploy and recover the perforating gun. Drop the ball. Verify ball was dropped. Open the crown valve. Close the crown valve. Open the upper master (hydraulic) valve and listen for the ball to drop. Once next well has been perforated, displace the ball at 10 bpm. Just prior to seating the ball, reduce rate to 3-5b pm seating rate when 80% of casing volume from heel to plug has been reached. Once the ball has seated, break down the perforations and establish injection rate slowly at 5 bpm increments.

Well Clean out and Flowback Procedure

Check well head pressure- bleed off pressure if any to grounded flowback tank. MIRU 2" CT unit, PU 3-1/2" JZ bit, (Mohawk liner, 4.25"0D, RIH and DO plugs and CO to PBTD. Circulate hole clean w/ N2 if needed. RDMO CT unit. MIRU PU and casing crew. RDMO PU. Turn well to production. An artificial lift procedure will be provided once flowback operations completed

			1500 #/ft_50 ft x 4 Clusters_Slickwater								
			Fluid Information					Proppant Information			
#	Time [min]	Type	Rate [bpm]	Clean [gals]	Dirty [gals]	Cum. Dirty [gals]	Description	Prop. Conc. [PPA]	Description	Stage Sand [lbs]	Cum. Sand [lbs]
1	2.38	Breakdown	20	2000	2,000	2,000	Slick Water			-	-
2	3.57	Acid	30	1500	1,500	3,500	15% HCl			-	-
3	8.04	Pad	80	15000	15,000	18,500	Slick Water			-	-
5	12.50	Sand-Laden	80	15000	15,339	33,839	Slick Water	0.50	100 Mesh	7,500	7,500
6	18.45	Sand-Laden	80	20000	20,679	54,518	Slick Water	0.75	100 Mesh	15,000	22,500
7	25.89	Sand-Laden	80	25000	26,131	80,649	Slick Water	1.00	100 Mesh	25,000	47,500
8	36.01	Sand-Laden	80	34000	35,923	116,572	Slick Water	1.25	100 Mesh	42,500	90,000
9	47.92	Sand-Laden	80	40000	42,715	159,287	Slick Water	1.50	100 Mesh	60,000	150,000
11	51.71	Sand-Laden	80	12750	13,038	55,753	Slick Water	0.50	40/70 White	6,375	156,375
12	56.18	Sand-Laden	80	15000	15,679	71,432	Slick Water	1.00	40/70 White	15,000	171,375
13	60.64	Sand-Laden	80	15000	15,848	87,280	Slick Water	1.25	40/70 White	18,750	190,125
14	66.22	Sand-Laden	80	18750	20,023	107,303	Slick Water	1.50	40/70 White	28,125	218,250
15	72.47	Sand-Laden	80	21000	22,663	129,966	Slick Water	1.75	40/70 White	36,750	255,000
16	79.17	Sand-Laden	80	22500	24,536	154,502	Slick Water	2.00	40/70 White	45,000	300,000
17	0.00	Flush	80				Slick Water		(Flush to Top Perf)		300,000

PERFORATING GUNS AND PLUGS

Stage or Cluster No.	Total Shots	EHD (in)	Gun Length (ft) & Charge Loaded Length (ft)	Description (carrier type, charge name, spf, phasing, and API EHD and TTP)
All Stages	32	0.42	1.33'	3.125" Carrier , 6 spf gun 60 deg, 8shots per cluster SGH-3119-330 Charges .5" EHD with 40" of penetration

Composite Plug Set for Stage No.	Plug Size (in) (casing size)	Running Tool	Description (make, model, WP)	Ball OD (in)	Ball Material or Description
Stage #1	5" / 18#	Baker	Solid Plug – Boss Hog Composite Bridge Plug	n/a	n/a
Remaining Stages	5" / 18#	Baker	Composite Plugs – Boss Hog 5" 18#	1.063"	Composite Ball

- *All wireline depths will be correlated using the first open log ran below the surface casing.*
- *In the event an open-hole log was not run in the well, depth correlation will be made using pipe measurements and casing pup joints.*

1.1 Plug and Perforation Depth

Stage (#)	Depth (ft)	Perforation Cluster				Plug top
		Cluster 1	Cluster 2	Cluster 3	Cluster 4	
1	Top	10,660	10,615	10,570	10,525	10,505
	Bottom	10,659	10,614	10,569	10,524	
	Hole	6	6	6	6	
	Phasing	60 Deg	60 Deg	60 Deg	60 Deg	
2	Top	10,485	10,440	10,395	10,350	10,330
	Bottom	10,484	10,439	10,394	10,349	
	Hole	6	6	6	6	
	Phasing	60 Deg	60 Deg	60 Deg	60 Deg	
3	Top	10,310	10,265	10,220	10,175	10,155
	Bottom	10,309	10,264	10,219	10,174	
	Hole	6	6	6	6	
	Phasing	60 Deg	60 Deg	60 Deg	60 Deg	
4	Top	10,135	10,090	10,045	10,000	9,980
	Bottom	10,134	10,089	10,044	9,999	
	Hole	6	6	6	6	
	Phasing	60 Deg	60 Deg	60 Deg	60 Deg	
5	Top	9,960	9,915	9,870	9,825	9,805
	Bottom	9,959	9,914	9,869	9,824	
	Hole	6	6	6	6	
	Phasing	60 Deg	60 Deg	60 Deg	60 Deg	
6	Top	9,785	9,740	9,695	9,650	9,630
	Bottom	9,784	9,739	9,694	9,649	
	Hole	6	6	6	6	
	Phasing	60 Deg	60 Deg	60 Deg	60 Deg	
7	Top	9,610	9,565	9,520	9,475	9,455
	Bottom	9,609	9,564	9,519	9,474	
	Hole	6	6	6	6	
	Phasing	60 Deg	60 Deg	60 Deg	60 Deg	
8	Top	9,435	9,390	9,345	9,300	9,280
	Bottom	9,434	9,389	9,344	9,299	
	Hole	6	6	6	6	
	Phasing	60 Deg	60 Deg	60 Deg	60 Deg	
9	Top	9,260	9,215	9,170	9,125	9,105
	Bottom	9,259	9,214	9,169	9,124	
	Hole	6	6	6	6	
	Phasing	60 Deg	60 Deg	60 Deg	60 Deg	
10	Top	9,085	9,040	8,995	8,950	8,930
	Bottom	9,084	9,039	8,994	8,949	
	Hole	6	6	6	6	
	Phasing	60 Deg	60 Deg	60 Deg	60 Deg	
11	Top	8,910	8,865	8,820	8,775	8,755
	Bottom	8,909	8,864	8,819	8,774	
	Hole	6	6	6	6	
	Phasing	60 Deg	60 Deg	60 Deg	60 Deg	
12	Top	8,735	8,690	8,645	8,600	8,580
	Bottom	8,734	8,689	8,644	8,599	
	Hole	6	6	6	6	
	Phasing	60 Deg	60 Deg	60 Deg	60 Deg	
13	Top	8,560	8,515	8,470	8,425	8,405
	Bottom	8,559	8,514	8,469	8,424	
	Hole	6	6	6	6	
	Phasing	60 Deg	60 Deg	60 Deg	60 Deg	
14	Top	8,385	8,340	8,295	8,250	8,230
	Bottom	8,384	8,339	8,294	8,249	
	Hole	6	6	6	6	
	Phasing	60 Deg	60 Deg	60 Deg	60 Deg	
15	Top	8,210	8,165	8,120	8,075	
	Bottom	8,209	8,164	8,119	8,074	
	Hole	6	6	6	6	
	Phasing	60 Deg	60 Deg	60 Deg	60 Deg	