

NM OIL CONSERVATION

ARTESIA DISTRICT

OCT 05 2017

RECEIVED

OXY USA Inc. - Current
Two Marks 36 State #4
API No. 30-015-34833

17-1/2" hole @ 1610'
13-3/8" csg @ 1610'
w/ 2350sx-TOC-Surf

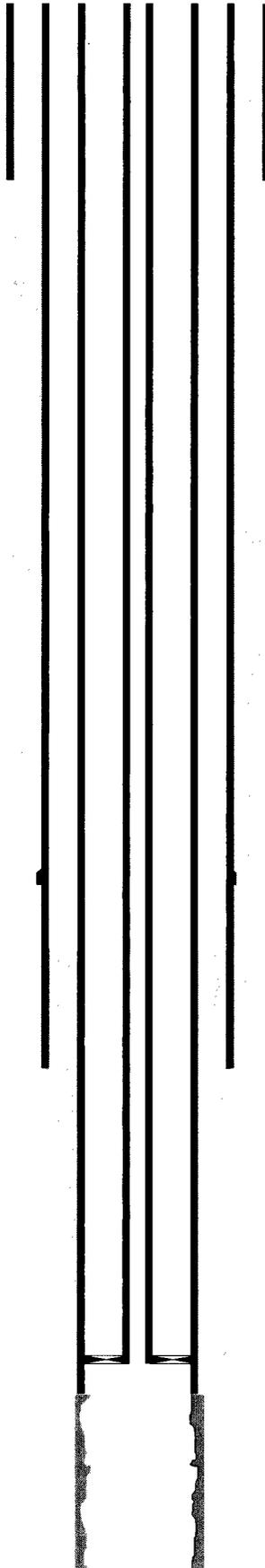
12-1/4" hole @ 8519'
9-5/8" csg @ 8519'
w/ 2050sx-TOC-590'-CBL
DVT @ 7198'

3-1/2" tbg & permo pkr @ 10993'

8-1/2" hole @ 12476'
7" csg @ 11099'
w/ 700sx-TOC-8000'-CBL

OH @ 11099-12476'

TD-12476'

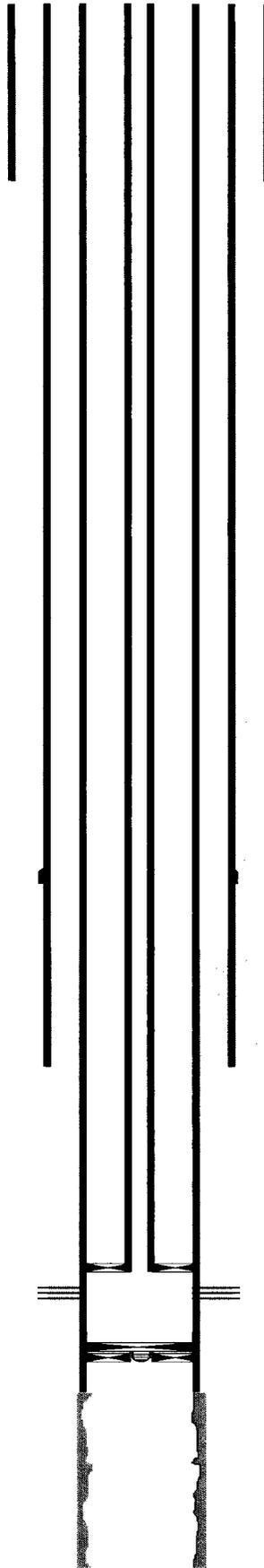


NM OIL CONSERVATION
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OXY USA Inc. - Proposed
Two Marks 36 State #4
API No. 30-015-34833

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17-1/2" hole @ 1610'
13-3/8" csg @ 1610'
w/ 2350sx-TOC-Surf

12-1/4" hole @ 8519'
9-5/8" csg @ 8519'
w/ 2050sx-TOC-590'-CBL
DVT @ 7198'

2-7/8" tbg w/ pkr @ 10410'

CIBP @ 10950' w/ 50' cmt to 10900'
Permo pkr @ 10993'

Perfs @ 10600-10640'

8-1/2" hole @ 12476'
7" csg @ 11099'
w/ 700sx-TOC-8000'-CBL

OH @ 11099-12476'

TD-12476'

ATTACHMENT C-101 – OXY USA INC – TWO MARKS 36 STATE #4 – 30-015-34833

PREP- PULL EQUIPMENT

1. Record SITP.
2. If pressure exist on well, Bleed off tubing and casing pressures.
3. Kill well with freshwater and ensure the well is dead. Calculate Kill weight Fluid – confirm calculations with CE.
 - a. Be prepared to pump 10 #brine (Have on location and confirm with shut in tubing pressure)
4. IF IT IS REQUIRED DUE TO HIGH PARAFFIN (Proceed with treatment 12hrs before rig mobilization):
 - i. Order hot oiler and paraffin removal chemicals such as EC6495A pre-mixed and a transport/vac truck.
 - ii. Rig up hot oiler on the tubing side and pump 25 barrels @ 0.5 bbl/min @ 150F (this step is to ensure the tubing is not already plugged)
 - iii. Continue pumping the remaining 50 barrels on the tubing side while steadily increasing the temperature and rate to 2 bbl/min and 205F-300F (reload the hot oiler from the transport/vac truck for step 6 and release unit)
 - iv. Paraffin chemical and hot oiler should be left to soak for AT LEAST 6-8hours. More time should be dedicated for soaking if needed.
5. MIRU Pulling Unit
6. Ensure well is dead, ND flange (Level 5 MOC for recompletes)
7. Function test and Pressure test BOP as below;
 - o Note: Need to function test BOP before ND anything to ensure BOP is working correctly
 - o NU 5k BOP (blind rams followed by pipe rams and then annular rams on top) with 2 1/16" 5k valve with 2" 1502 WACO flange attached to valve. Perform Low test to 250 psi charted for 15 min, increase pressure to 4,500 psi and chart for 15 min on all rams. When ordering BOP s from vendors you must request that the 2 1/16" 5k valve with 1502 connection wico flange be installed prior to delivery.
 - o Make sure while testing BOP's, buffer zone (20') is enforced
8. Unset packer and POOH with 3 1/2" tbg. Ensure to scan tubing while TOO. Replace all joints that do not scan yellow. Send scan report to engineering. Tubing will be stacked on side of location after job for reuse

PREP- CLEAN OUT RUN/SET CBP & RUN USIT LOG

1. RIH w/ open ended 2-7/8 WS and 6" watermelon mill for 7" 29# P-110 casing (6.059" drift) and RIH to depth of 10,950'
2. Circulate hole clean.
3. POOH with watermelon mill and tubing and record approximate amount of scale/paraffin seen
4. MIRU Wireline and 5K PCE.
5. Pressure test Lubricator to 4,500psi.
6. RIH with Slb USIT log to ~10,950' TVD
7. Make 1st pass at Opsi at ~500', repeat log with Opsi on casing and log to surface.
8. POOH and LD logging tools and RD loggers. Ensure data is very readable before rigging down equipment. Make up and RIH with Gyro to ~10,950' TVD
9. POOH while logging. Ensure data is readable

ISOLATE MISSISSIPPIAN FORMATION AND RUN FRAC STRING

1. RIH with WLU + 7" CIBP and set at 10,950'
2. Test plug to 500 psi for 10 min to ensure proper setting
3. POOH with WL
4. RIH w/ dump bailer and set 50' of cement on top of CIBP
5. RU 5K PCE
6. Pressure test PCE to 4500psi and ensure good pressure test
7. RIH w/ WLU and 7" x 4-1/2" globe permanent packer, Anchor Seal Assembly, 3.875" ID thru seals, Left hand threads, Bonded HNBR 90 duro seal stacks, 7" Dual Bore Optima Permanent Packer, Upper bore – 4.750" ID, Lower bore – 4.000" ID, Standard HNBR packing element, Opposing cast wicker slips, 4.5" 13.5lb/ft Tailpipe (25' length), 4.5" Wireline Entry Guide,
8. Set permanent packer assembly at 10,410' (~100' from top zone of interest)
9. Ensure permanent packer is properly set
10. POOH w/ WLU
11. RIH with 4-1/2" 13.5# P-110 BTC frac string and anchor seal assembly
12. Ensure to circulate packer fluid before latching onto 7" dual bore packer with anchor seal assembly

13. Pressure test casing to 500psi for 10mins and ensure packer holds
14. Bleed off casing & tubing and Land GE 11 X 4-1/2" DD trim tubing hanger and screw in lock down pins
15. Install BPV and ND BOP
16. NU 11 5K X 7 1/16 10K tubing head, LMV & UMV and ND BPV
17. Install TWC and test LMW and UMV to 9,500psi for 5mins
18. ND TWC
19. Pressure test tubing to 9,500psi (80% of burst) for 15mins and chart test.

PREP- PERFORATING BARNETT FORMATION

1. MIRU WL and 5K PCE
2. Pressure test PCE to 4,500psi and ensure test is good
3. RIH with WL and 3-1/8" gun , 21.5g charge, 60 degree phasing and 4spf (40 holes)
4. Perforate holes from 10,600' – 10,640' and verify ALL shots fired
5. POOH with WL and gun carrier
6. RDMO WLU
7. Install BPV in tubing hanger
8. RDMO Pulling Unit

DFIT

The purpose of the DFIT is to estimate breakdown pressure, closure pressure, pore pressure, and formation permeability.

1. Check location for any hazards.
2. MIRU pumping equipment and data acquisition instrumentation. Verify all requirements have been completed to open the toe-initiation sleeve and perform injection into the well.
 - Secure high pressure lines and restrict the area to essential personnel only.
 - Test the pop-off valve on the pump to prevent over-pressuring the production casing.
 - Have clean, inhibited 3.5% KCl fluid available to complete the casing test and injection test.
 - Install redundant casing valves to allow the pump-in line to be disconnected and removed at the end of the injection test.
 - Install the memory surface gauge. *Please read notes and recommendations from RDS (Reservoir Data Systems) in the appendix below. Verify the gauge is programmed to record the casing test, opening the toe-initiation sleeve, injection test and the minimum 15-day duration of the DFIT.
 - Car Seal Open the valve(s) between the memory surface gauge and the wellbore to prevent it from being inadvertently closed.
 - Install a digital flow meter to record all volumes and rates.
 - Verify the memory surface gauge and flowmeter are recording accurate data.
3. If separate pumps are used to test the casing and perform the DFIT injection test, ensure the pump-in lines are connected to a manifold to enable the injection test to be performed immediately after perforating.
4. Completely load the pump-in lines and the well with fluid. Verify there are no air pockets in the system.
5. Test the pump-in line to the casing-test-pressure against the closed inside casing valve on the production casing.
6. Test the production casing as per the completion program.
 - a. Open the casing valve for the intermediate casing and monitor for leaks during all pumping operations. After completing the DFIT injection, close the casing valve and install a pressure gauge.
7. Immediately after the sleeve has opened, perform the DFIT injection:
 - a. Break down the formation and establish injection at 3 to 5 bpm with 3.5%KCl fluid.
 - b. Maintain a stable injection rate for a total of 10-15 bbls.
 - c. After pumping 10-15 bbls, shut down the pump.
 - d. Do not pump more than 15 bbls of fluid.
 - e. Do not step down injection rates.
 - f. At the end of injection, do not flowback, bleed off pressure or inject into the well. This will corrupt the data.
8. If pumping stops for any reason (operation, leaks, etc.) use the following as a guideline:
 - a. If pumping stops for less than 30 seconds AND less than 5 bbls have been pumped, restart injection and finish pumping the planned fluid volume.
 - b. If pumping stops for less than 30 seconds AND more than 5 bbls have been pumped, do not re-start injection.
 - c. If pumping stops for more than 30 seconds AND less than 5 bbls have been pumped, wait at least 2 hours and re-start (repeat) the DFIT injection test using the original planned volumes.
 - d. If pumping stops for more than 30 seconds AND more than 5 bbls have been pumped, do not restart injection.

9. If there is any doubt regarding a re-start of injection, do not restart, but wait 2 hours and repeat the test from the beginning.
10. Close the inside and outside casing valves to isolate the pump-in line. Bleed pressure from the line, and disconnect the pump-in lines. RD and MOL pumping equipment.
11. Record SIWHP for a minimum of 14 days.
12. Report the following:
 - a. Type and density of fluid resident in the production casing at the beginning of the test.
 - b. Type and density of fluid injected to test the casing and perform the injection test.
 - c. Causes or observations regarding pressure spikes or leaks during the test.
 - d. Recorded pressure and rates in ASCII or CVS file.
 - e. Report all rates, pressures, and well open/close times to the completion engineer to allow correlating gauge and flow meter data.
 - f. Notify the completion engineer once the injection is completed and the well is shut in.

FRAC STACK PRESSURE TEST PROCEDURE

1. NU 7-1/16" 10K Hand Wheel Operated master frac valve
2. Ensure LMV is closed
3. Ensure Frac tree assembly is properly assembled and ready to be installed
 - a. 7-1/16" 10k x 4 1/16" 10k flow cross assembly
 - b. 7- 1/16" 10k goat head assembly and 7-1/16" 10k crown valve with H.P. wireline cap
4. Clean ring groove and install ring gasket
5. Lower frac tree assembly to a LMV, be sure the valve is properly aligned
6. Prior to removing the sling off the frac tree, install the nuts onto the pad studs to secure the assembly
7. Tighten all connections and ensure the ring gasket is evenly compressed
8. Close upper HV prior to moving the lifting device
9. Mark all valves with proper number of turns
10. Monitor HV both open and closed for any hydraulic leaks
11. Check all body greasing fittings
12. Make sure all valves are open with exception of the LMV
13. Ensure LMV is closed
14. Close outside wing valve at the flowcross
15. Nipple up MIT unit to the wing valve
16. When all air has been bled from the frac tree, close the needle valve on top of the flow cross
17. Perform low 250 psi test for 15 minutes
18. After successful test, bleed off everything to zero
19. Perform high 9500 psi test for 15 minutes
20. After successful test, bleed off everything to zero
21. Be sure to open all valves to ensure all pressure is bled off
22. ND MIT unit
23. Retrieve 2-way check and close all valves

PERFORATE AND FRAC

STIMULATION PROCEDURE:

1. MIRU stimulation equipment. Ensure high pressure lines are properly secured and that the area is restricted to essential personnel only.
2. Pressure test lines, hydraulic pop-off valve(s), global pump kick-outs to pressures in the aforementioned table.
3. 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.
4. Do not exceed Max Pressure during active pumping.
5. Prior to frac, ensure that Computer van is monitoring all rates and pressures accurately
6. Review the frac treatment schedules. Execute the appropriate Frac schedule for the current stage:
7. Be prepared to modify pump schedule as needed
8. Break down the perforations.
9. Use rate diversion for acid stages, increasing rate in ~5 bpm increments as pressure break-back dictates until the design treatment rate is achieved.
10. Monitor pressures to avoid high-rate screen out events.

11. Flush Procedure – When the in-line densitometer proppant concentration falls to 0.2 ppg, pump a 20 bbl Slickwater spacer then mark flush. Flush with slick water to the top perforation depth. Shut down and record ISIP and F.G. Shut in the well and prepare for pump down perforating.
12. Report the following pressures for each stage:
 - a. Break down pressure, ISIP, and estimated F.G.
13. Shut in pressure and shut-in time when the well is opened for the pump down perforating run.
14. Screen-out Guideline: If screen out leaves excessive proppant in the wellbore, flowback the well. Do not exceed 4,320 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.

MICROSEISMIC

1. Two Marks 36-2 will be used as a monitoring well for micro-seismic
2. The monitoring well will be hooked up with micro-seismic downhole gauges in a dry wellbore
3. WSM should ensure frac and micro-seismic (weatherford) are in constant communication before and after pumping frac job.

STIMULATION TREATMENT PUMP SCHEDULES

Pumping Schedule

Stages 1

Stage 1

Clean Fluid Totals

Slickwater + 7% KCl	358,280 gal
Acid HCl 15%	3,000 gal

Proppant Totals

SLC 40/70	299,999.9 lbm
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Bottom Hole Pumping Schedule

Stage	Fluid Type	Clean Fluid Vol gal	Cum Clean Fluid gal	Prop Type	B H Prop Conc PPA	Prop Per Stage lbm	Cum Prop Amt lbm	Stage Slurry Vol bbl	Cum Slurry Vol bbl	Pump Time h	Clean Rate bbl/min	Slurry Rate bbl/min
INITIATE	Slickwater + 7% KCl	500	500		0.0	0.0	0.0	11.9	11.9	0.01	20.0	20.0
ACID	Acid HCl 15%	3,000	3,500		0.0	0.0	0.0	71.4	83.3	0.08	15.0	15.0
Pad	Slickwater + 7% KCl	50,000	53,500		0.0	0.0	0.0	1,190.5	1,273.8	0.25	80.0	80.0
0.25 PPA	Slickwater + 7% KCl	30,000	83,500	SLC 40/70	0.3	7,500.0	7,500.0	722.5	1,996.3	0.15	79.1	80.0
0.5 PPA	Slickwater + 7% KCl	32,000	115,500	SLC 40/70	0.5	16,000.0	23,500.0	779.3	2,775.6	0.16	78.2	80.0
0.75 PPA	Slickwater + 7% KCl	35,000	150,500	SLC 40/70	0.8	26,250.0	49,750.0	861.9	3,637.5	0.18	77.3	80.0
Spacer	Slickwater + 7% KCl	10,000	160,500		0.0	0.0	49,750.0	238.1	3,875.6	0.05	80.0	80.0
1.0 PPA	Slickwater + 7% KCl	40,000	200,500	SLC 40/70	1.0	40,000.0	89,750.0	995.9	4,871.6	0.21	76.5	80.0
1.25 PPA	Slickwater + 7% KCl	45,000	245,500	SLC 40/70	1.3	56,250.0	146,000.0	1,132.7	6,004.2	0.24	75.7	80.0
Spacer	Slickwater + 7% KCl	10,000	255,500		0.0	0.0	146,000.0	238.1	6,242.3	0.05	80.0	80.0
1.5 PPA	Slickwater + 7% KCl	30,000	285,500	SLC 40/70	1.5	45,000.0	190,999.9	763.3	7,005.6	0.16	74.9	80.0
1.75 PPA	Slickwater + 7% KCl	30,000	315,500	SLC 40/70	1.8	52,500.0	243,499.9	771.5	7,777.1	0.16	74.1	80.0
Spacer	Slickwater + 7% KCl	10,000	325,500		0.0	0.0	243,499.9	238.1	8,015.2	0.05	80.0	80.0
2.0 PPA	Slickwater + 7% KCl	17,000	342,500	SLC 40/70	2.0	34,000.0	277,499.9	441.8	8,457.0	0.09	73.3	80.0
2.25 PPA	Slickwater + 7% KCl	10,000	352,500	SLC 40/70	2.3	22,500.0	299,999.9	262.6	8,719.6	0.05	72.5	80.0
Flush	Slickwater + 7% KCl	8,780	361,280		0.0	0.0	299,999.9	209.0	8,928.6	0.04	80.0	80.0
Totals:		361,280				299,999.9		8,928.6		1.93		

Pad 50,000 gal
Frac 269,000 gal
Pad% 15.7%

Material Summary

Fluid Summary				
Fluid Description		Additives		
Slickwater + 7% KCl	B487	Scale Inhibitor	0.30	Gal/mGal
	B534	Clay Control	1.00	Gal/mGal
	F114	Surfactant	1.00	Gal/mGal
	J627	Friction Reducer	1.00	Gal/mGal
	M117	KCl	592.000	lb/mGal
Acid HCl 15%	A286	corrosion inhibitor	2.00	Gal/mGal
	B526	Non-emulsifier	1.00	Gal/mGal
	U042	iron control	3.00	Gal/mGal

Totals By Stage					
Stage	Fluids	Clean Fluid Volume	Proppants	Proppant Mass	Pump Time
1	Slickwater + 7% KCl	358,280 gal	SLC 40/70	299,999.9 lbm	1.93 h
	Acid HCl 15%	3,000 gal			

Job Totals					
Fluids	Clean Fluid Volume	Proppants	Proppant Mass	Pump Time	
Slickwater + 7% KCl	358,280 gal	SLC 40/70	299,999.9 lbm	1.93 h	
Acid HCl 15%	3,000 gal				

INSTALL RETRIEVABLE PRODUCTION PACKER AND UNINSTALL 4-1/2" FRAC STRING

- MIRU WL and 5K PCE
- Pressure test PCE to 4,500psi and ensure test is good
- Pump full tubing volume of 3.5%KCl fluid and RIH w/ WL + gauge ring (3.92" ID of tail pipe) with multiple passes at 10,095 in tailpipe to ensure easy passage for retrievable packer. RIH w/ WLU and 4-1/2" x 2-3/8" globe retrievable packer, DT-2 On/Off Tool w/ Seal Nipple, 1.875" landing profile, HNBR bonded seals, 4.5" 13.5# VS1-X Wireline Packer, 3.650" OD, 1.940" ID, 4' x 2.375" Pup Joint, 10K Interventionless Magnum disk Pressure activated, Wireline entry guide
- Set retrievable production packer assembly 10ft inside tailpipe
- Ensure production packer is properly set
- POOH w/ WLU
- Perform positive pressure test on packer to 250psi for 5mins and ensure packer holds.
- Perform negative test for 15mins and record pressure after test.
- MIRU PU
- Install BPV with dry rods in tubing hanger
- ND frac stack and tubing head
- NU 11 5K BOP
- ND BPV and install TWC
- Function test and Pressure test BOP as below;
 - Note: Need to function test BOP before ND anything to ensure BOP is working correctly
 - NU 5k BOP (blind rams followed by 2-3/8" pipe rams and then annular rams on top) with 2 1/16" 5k valve with 2" 1502 WACO flange attached to valve. Perform Low test to 250 psi charted for 15 min, increase pressure to 4,500 psi and chart for 15 min on all rams. When ordering BOP s from vendors you must request that the 2 1/16" 5k valve with 1502 connection wico flange be installed prior to delivery.
- Retrieve TWC with dry rod and Pull out tubing hanger
- POOH with 4-1/2" 13.5# P-110 BTC frac string and unlatch from anchor seal assembly
- RIH w/ 2-3/8" 4.7# L-80 tubing and On/Off overshot and ensure to circulate packer fluid before latching on to production packer 10' inside tail pipe
- Pressure test casing to 500psi for 5mins and ensure packer holds
- Pressure test tubing to 1,000psi for 5mins and chart test. Observe any communication between casing and tubing.

INSTALL PRODUCTION TREE

- MIRU Cameron to install BPV in tubing hanger
- Confirm BPV is secure. ND BOP and nipple up production tree consisting of appropriate adapter 2 (two) full open master valves, 1 (one) swab valve, 1 (one) wing valve) and 1 (one) full opening crown valve above flow line outlet. Install bleed valve and 0-5000# pressure gauge in tree cap.
- Pull BPV, Install Two Way Check

4. Pressure test tree to 5000 psi
5. Pull Two Way Check after testing production tree.
6. Open master valve and swab valves.

BREAK PACKER DISK

1. MIRU Slickline and 5M Pressure Control Equipment (PCE)
2. RIH to break shear disk at 10,110' MD with
 - a. 3/4" chisel (*tool picture below*)
 - b. Spang jars
 - c. 10' 1-1/2 stem
3. RIH with the BHA above, prior breaking the disk apply ~2,000 psi (balancing for pressure below the disk and keep the tension of the disk)
4. Break packer disk
5. Verify that disks are broken- record pressure
6. RDMO Slickline and 5M PCE
7. Turn over to Production.
8. RDMO Pulling Unit.
9. Hand well over to production team