UICI – I – 8

EPA FALL OFF TEST (WDW-3)

2012

Submit I Copy To Appropriate District	State of New Me	exico		Form C-103
Office District 1 - (575) 393-6161	Energy, Minerals and Natu	aral Resources		evised August 1, 2011
1625 N. French Dr., Hobbs, NM 88240 District II - (575) 748-1283			WELL API NO. 30-015-27592	
811 S. First St., Artesia, NM 88210	OIL CONSERVATION		5. Indicate Type of Lea	ise
District III (505) 334-6178 1000 Rio Brazos Rd., Aztec, NM 87410	1220 South St. Fra		STATE 🛛	FEE
District IV – (505) 476-3460 1220 S. St. Francis Dr., Santa Fe, NM	Santa Fe, NM 8	/505	6. State Oil & Gas Leas B-2071-28	se No.
87505 SUNDRY NOTI	CES AND REPORTS ON WELLS	5	7. Lease Name or Unit	Agreement Name
(DO NOT USE THIS FORM FOR PROPOS DIFFERENT RESERVOIR. USE "APPLIC PROPOSALS.)			Mewbourne WDW-1	
	Gas Well Other Injection W	/ell	8. Well Number WDW	/-1
2. Name of Operator			9. OGRID Number	
Navajo Refining Company 3. Address of Operator			15694 10. Pool name or Wild	cat: Navajo Permo-
Post Office Box 159, Artesia, New	Mexico 88211		Penn 96918	
4. Well Location				
Unit Letter <u>O</u> :	660 feet from the South			
Section 31	Township 178	Range 28E		County Eddy
	11. Elevation (Show whether DR 3678' GL	, RKB, RT, GR, etc	.)	
THE REPORT OF THE PROPERTY OF				
12. Check A	ppropriate Box to Indicate N	lature of Notice	, Report or Other Data	ı
			-	
NOTICE OF IN PERFORM REMEDIAL WORK	PLUG AND ABANDON	REMEDIAL WOR		
	CHANGE PLANS			
PULL OR ALTER CASING		CASING/CEMEN		
DOWNHOLE COMMINGLE				
OTHER: PERFORM PRESSURE F PRESURE TEST	ALLOFF TEST, ANNULUS	OTHER:		
13. Describe proposed or comp	leted operations. (Clearly state all	pertinent details, a	nd give pertinent dates, inc	luding estimated date
of starting any proposed we proposed completion or rec	ork). SEE RULE 19.15.7.14 NMA ompletion.	C. For Multiple Co	ompletions: Attach wellbo	ore diagram of
May 12, 2014 - Perform a	mulus pressure tests on WDW-I, V	WDW-2, and WDW	V-3 at an annulus pressure	above 300 psig for 30
minutes on each well.	while servers into WDW 1 WDW		11.16	
wells.	omhole gauges into WDW-1, WDV	w-2, and $wDw-3$	by 11:45am. Continue inje	ction into all three
May 14, 2014 - Continue i	njection into all three wells.			
	A, the offset wells WDW-2 and WI			
	nd continue for a 30 hour injection , WDW-1 will be shut in for a 30-1			
	ells will continue to be shut in whi			
	, acquire downhole pressure gauge			
	ute gradient stops while coming our rface). Turn the wells back to Nav		1000 feet (7000 ft, 6000 f	it, 5000 ft, 4000 ft,
		ojo personanten		
Spud Date:	Rig Release D	Date:		
		L		
I haraby partify that the information	above is true and some late to it.		les end half of	
I hereby certify that the information	above is true and complete to the	o my knowled	ige and belief.	
Ti-II		Project E		4-24-14
SIGNATURE MOCH	m	rojeci E	ngineer DATE	10111
	-			

SIGN	ATURE

Type or print nam.	E-mail address:	74	PHONE:
For State Use Only		4	

APPROVED BY: Care Chance TITLE Environmental Engineer DATE 4725/14

The Fall-Off Test (Fot) shall Comply with Section III (Developing a Test Plan) of the Noil Conservation Division UIC Class I Well FOT Guidance" (December 3, 2007),



Procedure for Testing Well #1 (Mewbourne) April 21, 2014

Sunday, May 11, 2014

Subsurface personnel travel to Artesia, NM

Monday, May 12, 2014

Subsurface personnel and Pro-Well Testing personnel attend Navajo safety orientation. Subsurface personnel will perform an annulus pressure test on WDW-1, WDW-2, and WDW-3 using a chart recorder. The annulus pressure must be above 300 psig during testing.

Tuesday, May 13, 2014

 Install bottom hole memory gauges in all three wells and continue normal injection for 48 hours. Downhole Gauges need to be in wells by 11:45 am. Install surface pressure recorder on Mewbourne Well No. 1. Downhole Gauges to be set at the top of the perforations in all three wells as follows:

Mewbourne Well No. 1	7924 feet
Chukka Well No. 2	7570 feet
Gaines Well No. 3	7660 feet

Subsurface personnel will return to Houston,TX.

Wednesday, May 14, 2014

Continue normal injection into the wells.

Thursday, May 15, 2014

- At 2:00 pm, Navajo personnel will shut-in offset wells, Chukka Well No. 2 and Gaines Well No. 3, start the 30-hour injection period for Mewbourne Well No. 1 at rate of approximately 160 GPM. The Chukka Well No. 2 and Gaines Well No. 3 will have to be isolated at the wing valve, MOV, and at the main pipeline valve.
- 2. Navajo Refining is to maintain a constant injection rate of approximately 160 GPM into the Mewbourne Well No. 1 for a minimum of 30 hours prior to shutting in the well. The 30 hours was the agreed upon time interval by the OCD and Navajo in previous falloff tests.
- 3. The rate should be constant during the 30-hour injection period. This might be best accomplished



by opening the pipe line and wellhead valves wide open allowing full flow to the well. Record the rate and wellhead pressure in the control room on a minimum of 15 second intervals during the injection period. Do not exceed 1200 psig wellhead pressure.

- 4. Plant personnel will record rate, volume, and pressure during the injection period for all wells to confirm that a constant pre-falloff injection rate is maintained.
- Collect a grab sample of the injection fluid every 10 hours; analyze the fluid for pH and Specific Gravity.

Friday, May 16, 2014

6. At 8:00 pm, Navajo personnel will shut in Mewbourne Well No. 1 for the 30-hour falloff period. Chukka Well No. 2 and Gaines Well No. 3 will remain shut-in during the 30-hour falloff period. The Mewbourne No. 1 will need to be isolated at the wing valve, MOV, and at the main pipeline valve.

Saturday, May 17, 2014

 Leave all three wells shut in and continue to monitor falloff pressures in all three wells. Subsurface personnel (Tim Jones) to return to site.

Sunday, May 18, 2014

- 8. At 8:00 am, acquire downhole pressure memory gauges from all three wells.
- Tag bottom of fill and come out of hole very slowly (no faster than 30 feet per minute), making 7minute gradient stops while coming out of Mewbourne Well No. 1 every 1000 feet (7000 feet, 6000 feet, 5000 feet, 4000 feet, 3000 ft., 2000 feet, 1000 feet, Surface).
- 10. Turn well over to Navajo personnel. Subsurface personnel to return to Houston, TX.

Submit 1 Copy To Appropriate District Office	State of New Me		Form C-103 Revised August 1, 2011
<u>District J</u> - (575) 393-6161 1625 N. French Dr., Hobbs, NM 88240 <u>District II</u> - (575) 748-1283 811 S. First St., Artesia, NM 88210	Energy, Minerals and Nature OIL CONSERVATION		WELL API NO. 30-015-20894
District III - (505) 334-6178	1220 South St. Fran	an in the second s	5. Indicate Type of Lease STATE FEE
1000 Rio Brazos Rd., Aztec, NM 87410 District IV - (505) 476-3460	Santa Fe, NM 87	505	6. State Oil & Gas Lease No. 6852
1220 S. St. Francis Dr., Santa Fe, NM			0. Blate Off te Clas 10466 110. 0052
87505 SUNDRY NOTIC	ES AND REPORTS ON WELLS		7. Lease Name or Unit Agreement Name
(DO NOT USE THIS FORM FOR PROPOSA DIFFERENT RESERVOIR. USE "APPLICA PROPOSALS.)	LS TO DRILL OR TO DEEPEN OR PLU		Chukka WDW-2
	as Well 🗌 Other Injection W	ell	8. Well Number WDW-2
2. Name of Operator			9. OGRID Number
Navajo Refining Company 3. Address of Operator			15694 10. Pool name or Wildcat: Navajo Permo-
Post Office Box 159, Artesia, New I	Viexico 88211		Penn 96918
4. Well Location			
	980 feet from the North	line	and 660 feet from the West line
Section 12	Township 18S	Range 271	
	11. Elevation (Show whether DR,	RKB, RT, GR, etc	
	3607' GL, 3623' RKB		
	PLUG AND ABANDON CHANGE PLANS C	REMEDIAL WOI COMMENCE DF CASING/CEMEN OTHER:	
wells. June 17, 2014 – Continue inj June 18, 2014 – At 12:00 pm be established for WDW-2 at June 19, 2014 – At 6:00pm, June 20, 2014 – All three we June 21, 2014 – At 8:00am, very slowly, making 7-minut	ection into all three wells. a, the offset wells WDW-1 and W ad continue for a 30 hour injection WDW-2 will be shut in for a 30-h olls will continue to be shut in whi acquire downhole pressure gauges	DW-3 will be shut a period. Do not en our falloff period. le monitoring fallo s from all three we of the WDW-2 en	by 11:45am. Continue injection into all three t-in. A constant injection rate of 160 GPM will exceed 1200 psig wellhead pressure. WDW-1 and WDW-3 will remain shut-in. off pressure in all three wells. ells. Tag bottom of fill and come out of hole every 1000 feet (7000 ft, 6000 ft, 5000 ft, 4000 ft,
Spud Date:	Rig Release D		

SIGNATURE	Timete	Jan
		11

TITLE	hojet	Engineer	DATE	4-24-14

PHONE:

Type or print name ______ For State Use Only

APPROVED BY: Carly. Chiving TITLE Environmental Engineer DATE 4/25/14_ Conditions of Approval (if any):

E-mail address:

the Fall - Off Test (Fot) shall Komply with Section III (Developing a Test Plan) of the "NM oil Conservation Division UIC Class I well Fot Guidance" (December 3, 2007).



Procedure for Testing Well #2 (Chukka) April 21, 2014

Sunday, June 15, 2014

Subsurface personnel will travel to Artesia, NM

Monday, June 16, 2014

Install bottom hole memory gauges in all three wells and continue normal injection for 48 hours. Gauges need to be in wells by 12:00 pm. Install surface pressure recorder on Chukka Well No. 2. Gauges to be set at the top of the perforations in all three wells as follows:

Mewbourne Well No. 1	7924 feet
Chukka Well No. 2	7570 feet
Gaines Well No. 3	7660 feet

Tuesday, June 17, 2014

Continue normal injection into the wells.

Wednesday, June 18, 2014

- At 12:00 pm, Navajo personnel will shut-in offset wells, Mewbourne Well No. 1 and Gaines Well No. 3, start the 30-hour injection period for Chukka Well No. 2. The Mewbourne Well No. 1 and Gaines Well No. 3 will have to be isolated at the wing valve, MOV, and at the main pipeline valve.
- 2. Navajo Refining is to maintain a constant injection rate of 160 GPM into the Chukka Well No. 2 for a minimum of 30 hours prior to shutting in the well. The 30 hours was the agreed upon time interval by the OCD and Navajo in the approved test plan.
- 3. The rate should be constant during the 30 hour injection period. This might be best accomplished by opening the pipe line and wellhead valves wide open allowing full flow to the well. Record the rate and wellhead pressure in the control room on a minimum of 15 second intervals during the injection period. Do not exceed 1200 psig wellhead pressure.
- 4. Plant personnel will record rate, volume, and pressure during the injection period for all wells to confirm that a constant pre-falloff injection rate is maintained.
- 5. Collect a grab sample of the injection fluid every 10 hours; analyze the fluid for pH and Specific



Gravity.

Thursday, June 19, 2014

6. At 6:00 pm, Navajo personnel will shut in Chukka Well No. 2 for the 30-hour falloff period. Mewbourne Well No. 1 and Gaines Well No. 3 will remain shut-in during the 30 hour falloff period. The Chukka Well No. 2 will need to be isolated at the wing valve, MOV, and at the main pipeline valve.

Friday, June 20, 2014

- 7. Continue monitoring pressure falloff in Chukka Well No. 2. Saturday, June 21, 2014
- 8. Leave all three wells shut in and continue to monitor falloff pressures in all three wells. Subsurface personnel (Tim Jones) to return to site.
- 9. At 8:00 am, acquire downhole pressure memory gauges from all three wells.
- Tag bottom of fill and come out of hole very slowly (no faster than 30 feet per minute), making 7minute gradient stops while coming out of Chukka Well No. 2 every 1000 feet (7000 feet, 6000 feet, 5000 feet, 4000 feet, 3000 feet, 2000 feet, 1000 feet, Surface).
- 11. Turn well over to Navajo personnel. Subsurface personnel (Tim Jones) to return to Houston, TX.

Submit I Copy To Appropriate District Office	State of New Me			Form C-103 Revised August 1, 2011
District 1 - (575) 393-6161 1625 N. French Dr., Hobbs, NM 88240	Energy, Minerals and Natu	iral Resources	WELL API NO.	Kevised August 1, 2011
District II - (575) 748-1283	OIL CONSERVATION	DIVISION	30-015-26575	
811 S. First St., Artesia, NM 88210 District III - (505) 334-6178	1220 South St. Fra		5. Indicate Type STATE	of Lease
1000 Rio Brazos Rd., Aztec, NM 87410 <u>District IV</u> – (505) 476-3460 1220 S. St. Francis Dr., Santa Fe, NM 87505	Santa Fe, NM 8	7505	6. State Oil & Ga NM-0557371	
SUNDRY NOTICE (DO NOT USE THIS FORM FOR PROPOSAL DIFFERENT RESERVOIR. USE "APPLICAT		UG BACK TO A	7. Lease Name of Gaines WDW-3	r Unit Agreement Name
PROPOSALS.) 1. Type of Well: Oil Well Ga	s Well 🔲 Other Injection W	/ell	8. Well Number	WDW-3
2. Name of Operator			9. OGRID Numb	ber.
Navajo Refining Company 3. Address of Operator			15694	Wildcat: Navajo Permo-
Post Office Box 159, Artesia, New M	Iexico 88211		Penn	Whiteat. Navajo i ci mo-
4. Well Location				
Unit Letter <u>N</u> : 79				
Section 01	Township 18S	Range 27E		County Eddy
	3609' GL, ' RKB	, AND, AI, OA, ek		
12. Check App	propriate Box to Indicate N	lature of Notice,	, Report or Other	Data
NOTICE OF INTE	ENTION TO:	SUE	SEQUENT RE	PORT OF:
	PLUG AND ABANDON	REMEDIAL WOR		ALTERING CASING
				P AND A
PULL OR ALTER CASING		CASING/CEMEN		
_				
OTHER: PERFORM PRESSURE FAL	LOFF IESI	OTHER:		
 Describe proposed or complete of starting any proposed work proposed completion or recom). SEE RULE 19.15.7.14 NMA			
July 14, 2014 –Install bottoml wells.	hole gauges into WDW-1, WDW	V-2, and WDW-3 b	y 12:00 pm. Contin	ue injection into all three
July 15, 2014 – Continue inje	ction into all three wells.			
	the offset wells WDW-1 and W			
	d continue for a 30 hour injection /DW-3 will be shut in for a 30-l			
July 18, 2014 - All three well	s will continue to be shut in wh	ile monitoring fallo	off pressure in all three	ee wells.
	equire downhole pressure gauge lient stops while coming out of V			
	m the wells back to Navajo pers		0 1001 (7000 15,0000	1, 5000 1, 4000 1, 5000 1,
Spud Date:	Rig Release I	Date:		

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNATURE Timot

TITLE Project Engineer

PHONE:

DATE 4-24-14

Type or print name _ For State Use Only

APPROVED BY: Carly, Ching TITLE Environmental Engineer DATE 4/25/14 Conditions of Approval (if any):

E-mail address:

The Fall-off Test CFOT) shall comply with section III. (Developing a Test Plan) of the "NM Oil Conservation Division UIC Class I Well For Guidance" (December 3, 2007).



Procedure for Testing Well #3 (Gaines) April 21, 2014

Sunday, July 13, 2014

Subsurface personnel to travel to Artesia, NM

Monday, July 14, 2014

 Install bottom hole memory gauges in all three wells and continue normal injection for 48 hours. Gauges need to be in wells by 12:00 pm. Install surface pressure recorder on Gaines Well No. 3. Gauges to be set at the top of the perforations in all three wells as follows;

Mewbourne Well No. 1	7924 feet
Chukka Well No. 2	7570 feet
Gaines Well No. 3	7660 feet

Subsurface personnel will return to Houston.

Tuesday, July 15, 2014

Continue normal injection into the wells.

Wednesday, July 16, 2014

- At 12:00 pm, Navajo personnel will shut-in offset wells, Chukka Well No. 2 and Mewbourne Well No. 1, start the 30-hour injection period for Gaines Well No. 3. The Chukka Well No. 2 and Mewbourne Well No. 1 will have to be isolated at the wing valve, MOV, and at the main pipeline valve.
- Navajo Refining is to maintain a constant injection rate at approximately 160 GPM into the Gaines Well No. 3 for a minimum of 30 hours prior to shutting in the well. The 30 hours was the agreed upon time interval by the OCD and Navajo in the approved test plan.
- 3. The rate should be constant at 160 GPM during the 30-hour injection period. This might be best accomplished by opening the pipe line and wellhead vertices wide open allowing full flow to the well. Record the rate and wellhead pressure in the control room on a minimum of 15 second intervals during the injection period. Do not exceed 1200 psig, wellhead pressure.
- 4. Plant personnel will record rate, volume, and pressure during the injection period for all wells to confirm that a constant pre-falloff injection rate is maintained.
- Collect a grab sample of the injection fluid every 10 hours; analyze the fluid for pH and Specific Gravity.



Thursday, July 17, 2014

- 6. Continue constant injection into Gaines Well No. 3. The offset wells Mewbourne and Chukka will remain shut-in.
- 7. At 6:00 pm, Navajo personnel will shut in Gaines Well No. 3 for the 30-hour falloff period. Chukka Well No. 2 and Mewbourne Well No. 1 will remain shut-in during the 30-hour falloff period. The Gaines No. 3 will need to be isolated at the wing valve, MOV, and at the main pipeline valve.

Friday, July 18, 2014

8. Continue to monitor pressure falloff in Gaines Well No. 3.

Saturday, July 19, 2014

- 9. At 8:00 am, acquire downhole pressure memory gauges from all three wells.
- Tag bottom of fill and come out of hole very slowly (no faster than 30 feet per minute), making 7minute gradient stops while coming out of Gaines Well No. 3 every 1000 feet (7000 feet, 6000 feet, 5000 feet, 4000 feet, 3000 feet, 2000 feet, 1000 feet, Surface).
- 11. Turn well over to Navajo personnel. Subsurface personnel to return to Houston, TX.

Chavez, Carl J, EMNRD

From:	Chavez, Carl J, EMNRD
Sent:	Thursday, July 11, 2013 9:16 AM
То:	Holder, Mike (Mike.Holder@hollyfrontier.com)
Cc:	Sanchez, Daniel J., EMNRD; Dade, Randy, EMNRD; VonGonten, Glenn, EMNRD; Dawson,
	Scott, EMNRD
Subject:	FW: UICI-8 Post Mtg. Determination on FOTs & Lo P Differential in Wells 2 & 3
Attachments:	UICI-8 Post Mtg. Determination on FOTs & Lo P Differential in Wells 2 & 3

Mike:

Re: UICI-008 WDWs 2 & 3 Fall-Off Tests (FOTs) Low Pressure Differentials 2012

The New Mexico Oil Conservation Division (OCD) has considered the issue above and determined that it concurs with the operator's technical basis (see attachment) and explanation supporting satisfactory FOTs for the above subject well with accurate reservoir characteristics. The log-log charts indicate that radial flow conditions were achieved during the FOTs.

The operator performed the tests similar to past FOTs with similar flow rates. While the operator has indicated in recent communications with the OCD that the reservoirs are pressuring up, the operator indicated that it has been limited by the pressure capacity because the current pumps are located about 12 - 14 miles back at the refinery from the well heads. The OCD notes that it recently approved a modification request by the operator to install booster pumps near to the well heads, which may allow the operator to increase the pseudo-steady state injection rates to more effectively stress the reservoir during future FOTs, which may result in increased pressure differentials during FOTs. In addition, the booster pumps will increase the surface injection pressures closer to the permitted maximum surface injection pressures and increase the disposal capacity of the wells.

Please contact me if you have questions. Thank you.

Carl J. Chavez, CHMM New Mexico Energy, Minerals & Natural Resources Department Oil Conservation Division, Environmental Bureau 1220 South St. Francis Drive, Santa Fe, New Mexico 87505 Office: (505) 476-3490 E-mail: <u>Carl J. Chavez@State.NM.US</u> Website: <u>http://www.emnrd.state.nm.us/ocd/</u> "Why Not Prevent Pollution; Minimize Waste; Reduce the Cost of Operations; & Move Forward With the Rest of the Nation?" To see how, please go to: "Pollution Prevention & Waste Minimization" at <u>http://www.emnrd.state.nm.us/ocd/</u>environmental.htm#environmental

Chavez, Carl J, EMNRD

Subject:	UICI-8 Post Mtg. Determination on FOTs & Lo P Differential in Wells 2 & 3
Start: End:	Thu 7/11/2013 8:00 AM Thu 7/11/2013 8:30 AM
Recurrence:	(none)
Organizer:	Chavez, Carl J, EMNRD

Note to Daniel S and Randy D on 6/13/2013:

• UICI-008 Class I (NH) WDWs 1, 2 & 3 Wells Navajo Artesia Refinery:

Carl held a FOT 2012 communication meeting w/ Mike Holder and Subsurface Reps. (Thurman Witty and Tim Johnson) on 6/13 on the WDWs 1, 2 & 3 Fall-Off Well Tests (FOTs) conducted in 2012. WDWs 2 & 3 resulted in a pressure differential of less than 100 psi., which is a requirement of the OCD's UIC FOT Guidance. Subsurface indicated that as long as a radial flow condition is achieved as depicted in the FOT Log-Log Plots, the FOT results are accurate and the 100 psi differential should not apply. The OCD noticed that the well injection pressures during the FOTs ranged from 700 to 900 psi well below the permit MSIP ~ 1500 psi. While the injection intervals appear to be pressured up, the Operator is planning to install booster pumps closer to the well head in order to increase efficiency in achieving injection pressures greater than 700 – 800 psi (current max. inject. pressure w/ current pump system). Similar total volumes of fluids and injection rates were maintained during the FOTs as in past years. Operator will be sending modif. Request for booster pumps to be installed around 10/2013. C-103s for caliper surveys, acid stimulation (coiled tubing) and WDW-2 30 – 50 ft. perforation within approved injection interval forthcoming w/ copy to Artesia DO. An application for a 4th Injection Well will be submitted; however, the decision to do so may occur after the boosters pumps are installed, etc. from above. FOT is not an MIT.