Additional Information

Updated application packet 7/26/21

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL
RESOURCES DEPARTMENT

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, New Mexico 87505

FORM C-108
Revised June 10, 2003

APPLICATION FOR AUTHORIZATION TO INJECT

I. PURPOSE: _____ Secondary Recovery _____ Pressure Maintenance X Disposal X Storage
Application qualifies for administrative approval? X Yes _____ No

II. OPERATOR: Redwood Operating LLC

ADDRESS: PO Box 1370, Artesia, NM 88211-1370

CONTACT PARTY: Jerry W Sherrell PHONE: 575-748-1288

III. WELL DATA: Complete the data required on the reverse side of this form for each well proposed for injection. Additional sheets may be attached if necessary.

IV. Is this an expansion of an existing project? _____ Yes X No
If yes, give the Division order number authorizing the project: _____

V. Attach a map that identifies all wells and leases within two miles of any proposed injection well with a one-half mile radius circle drawn around each proposed injection well. This circle identifies the well's area of review.

VI. Attach a tabulation of data on all wells of public record within the area of review which penetrate the proposed injection zone. Such data shall include a description of each well's type, construction, date drilled, location, depth, record of completion, and a schematic of any plugged well illustrating all plugging detail.

VII. Attach data on the proposed operation, including:

1. Proposed average and maximum daily rate and volume of fluids to be injected;
2. Whether the system is open or closed;
3. Proposed average and maximum injection pressure;
4. Sources and an appropriate analysis of injection fluid and compatibility with the receiving formation if other than reinjected produced water; and,
5. If injection is for disposal purposes into a zone not productive of oil or gas at or within one mile of the proposed well, attach a chemical analysis of the disposal zone formation water (may be measured or inferred from existing literature, studies, nearby wells, etc.).

*VIII. Attach appropriate geologic data on the injection zone including appropriate lithologic detail, geologic name, thickness, and depth. Give the geologic name, and depth to bottom of all underground sources of drinking water (aquifers containing waters with total dissolved solids concentrations of 10,000 mg/l or less) overlying the proposed injection zone as well as any such sources known to be immediately underlying the injection interval.

IX. Describe the proposed stimulation program, if any.

*X. Attach appropriate logging and test data on the well. (If well logs have been filed with the Division, they need not be resubmitted).

*XI. Attach a chemical analysis of fresh water from two or more fresh water wells (if available and producing) within one mile of any injection or disposal well showing location of wells and dates samples were taken.

XII. Applicants for disposal wells must make an affirmative statement that they have examined available geologic and engineering data and find no evidence of open faults or any other hydrologic connection between the disposal zone and any underground sources of drinking water.

XIII. Applicants must complete the "Proof of Notice" section on the reverse side of this form.

XIV. Certification: I hereby certify that the information submitted with this application is true and correct to the best of my knowledge and belief.

NAME: Jerry W Sherrell TITLE: Production Supervisor

SIGNATURE: Jerry W Sherrell DATE: 7/26/2021

E-MAIL ADDRESS: jerrys@mec.com

* If the information required under Sections VI, VIII, X, and XI above has been previously submitted, it need not be resubmitted. Please show the date and circumstances of the earlier submittal: 6/2/2019

DISTRIBUTION: Original and one copy to Santa Fe with one copy to the appropriate District Office

III. WELL DATA

A. The following well data must be submitted for each injection well covered by this application. The data must be both in tabular and schematic form and shall include:

(1) Lease name; Well No.; Location by Section, Township and Range; and footage location within the section.

(2) Each casing string used with its size, setting depth, sacks of cement used, hole size, top of cement, and how such top was determined.

(3) A description of the tubing to be used including its size, lining material, and setting depth.

(4) The name, model, and setting depth of the packer used or a description of any other seal system or assembly used.

Division District Offices have supplies of Well Data Sheets which may be used or which may be used as models for this purpose. Applicants for several identical wells may submit a "typical data sheet" rather than submitting the data for each well.

B. The following must be submitted for each injection well covered by this application. All items must be addressed for the initial well. Responses for additional wells need be shown only when different. Information shown on schematics need not be repeated.

(1) The name of the injection formation and, if applicable, the field or pool name.

(2) The injection interval and whether it is perforated or open-hole.

(3) State if the well was drilled for injection or, if not, the original purpose of the well.

(4) Give the depths of any other perforated intervals and detail on the sacks of cement or bridge plugs used to seal off such perforations.

(5) Give the depth to and the name of the next higher and next lower oil or gas zone in the area of the well, if any.

XIV. PROOF OF NOTICE

All applicants must furnish proof that a copy of the application has been furnished, by certified or registered mail, to the owner of the surface of the land on which the well is to be located and to each leasehold operator within one-half mile of the well location.

Where an application is subject to administrative approval, a proof of publication must be submitted. Such proof shall consist of a copy of the legal advertisement which was published in the county in which the well is located. The contents of such advertisement must include:

(1) The name, address, phone number, and contact party for the applicant;

(2) The intended purpose of the injection well; with the exact location of single wells or the Section, Township, and Range location of multiple wells;

(3) The formation name and depth with expected maximum injection rates and pressures; and,

(4) A notation that interested parties must file objections or requests for hearing with the Oil Conservation Division, 1220 South St. Francis Dr., Santa Fe, New Mexico 87505, within 15 days.

NO ACTION WILL BE TAKEN ON THE APPLICATION UNTIL PROPER PROOF OF NOTICE HAS BEEN SUBMITTED.

NOTICE: Surface owners or offset operators must file any objections or requests for hearing of administrative applications within 15 days from the date this application was mailed to them.

Side 1

INJECTION WELL DATA SHEET

OPERATOR: _Redwood Operating LLC_____

WELL NAME & NUMBER: __Choate Davis 13 State SWD #3_____

WELL LOCATION: __660 FNL 600 FWL_____D_____13_____18S_____27E_____
FOOTAGE LOCATION UNIT LETTER SECTION TOWNSHIP RANGE

WELLBORE SCHEMATIC

Liner

6 1/8" hole drilled to 8800' 4 1/2" from 7450-8800'

Cement with 100sx
Top of Cement @ 7450

WELL CONSTRUCTION DATA

Surface Casing

Hole Size: __17 1/2"_____ Casing Size:_13 3/8"_@ 300'____

Cemented with: _350_____ sx. *or* _____ ft^3

Top of Cement: _Surface_____ Method Determined: _Circ_____

Intermediate Casing

Hole Size: __12 1/4"_____ Casing Size:__9 5/8"_@ 2800'___

Cemented with: _850_____ sx. *or* _____ ft^3

Top of Cement: __Surface_____ Method Determined: _Circ_____

Production Casing

Hole Size: ___8 3/4"_____ Casing Size:___7"_@ 7650'_____

Cemented with: _1000_____ sx. *or* _____ ft^3

Top of Cement: _Surface_____ Method Determined: _Circ_____

Total Depth: _____

Injection Interval

__7650_____feet to__8800_____

(Perforated or Open Hole; indicate which)

Side 2

INJECTION WELL DATA SHEET

Tubing Size: __4 1/2"_____Lining Material: __IPC_____

Type of Packer: __AS-A_____

Packer Setting Depth: __7450'_____

Other Type of Tubing/Casing Seal (if applicable): _____

Additional Data

1. Is this a new well drilled for injection? _X__Yes _____No

   If no, for what purpose was the well originally drilled? _____

   _____

2. Name of the Injection Formation: _Cisco, Canyon_____

3. Name of Field or Pool (if applicable): _____

4. Has the well ever been perforated in any other zone(s)? List all such perforated intervals and give plugging detail, i.e. sacks of cement or plug(s) used. _No._____

   _____

5. Give the name and depths of any oil or gas zones underlying or overlying the proposed injection zone in this area: __Overlying-Wolfcamp, Underlying-Strawn_____

   _____

   _____

   _____

District I
1625 N. French Dr., Hobbs, NM 88240
Phone: (575) 393-6161 Fax: (575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone: (575) 748-1283 Fax: (575) 748-9720
District III
1000 Rio Brazos Road, Aztec, NM 87410
Phone: (505) 334-6178 Fax: (505) 334-6170
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505
Phone: (505) 476-3460 Fax: (505) 476-3462

State of New Mexico
Energy, Minerals & Natural Resources Department
OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-102
Revised August 1, 2011
Submit one copy to appropriate District Office

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

[1] API Number	[2] Pool Code	[3] Pool Name
30-015-45444		Cisco

[4] Property Code	[5] Property Name	[6] Well Number
329370	CHOATE DAVIS 13 STATE SWD	3

[7] OGRID No.	[8] Operator Name	[9] Elevation
330211	REDWOOD OPERATING, LLC.	3556.7

[10] Surface Location

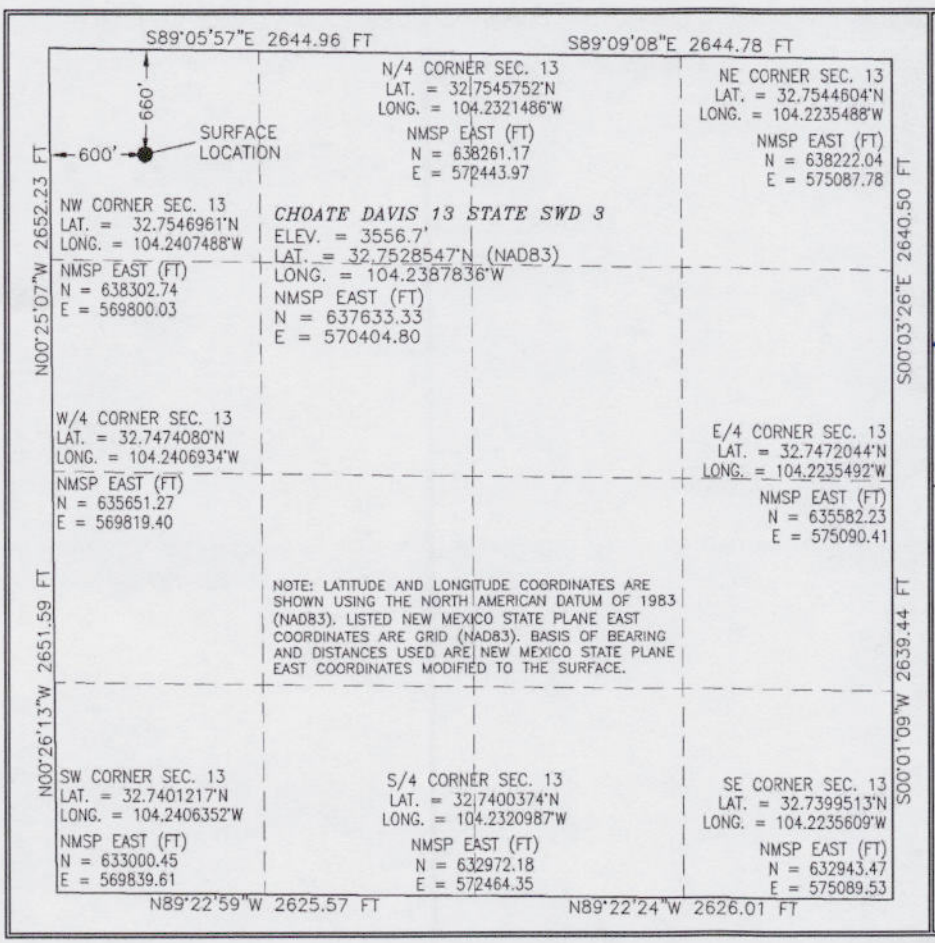
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
D	13	18 S	27 E		660	NORTH	600	WEST	EDDY

[11] Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
D	13	18 S	27 E		660	NORTH	600	WEST	EDDY

[12] Dedicated Acres	[13] Joint or Infill	[14] Consolidation Code	[15] Order No.

No allowable will be assigned to this completion until all interests have been consolidated or a non-standard unit has been approved by the division.



[17] OPERATOR CERTIFICATION

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

Jerry W Sherrell 7/26/2021
Signature Date

Jerry W Sherrell
Printed Name

jerrys@mcc.com
E-mail Address

[18] SURVEYOR CERTIFICATION

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.

JANUARY 12, 2020
Date of Survey

Signature and Seal of Professional Surveyor:

Certificate Number: GILMON F. JARAMILLO, PLS 12797

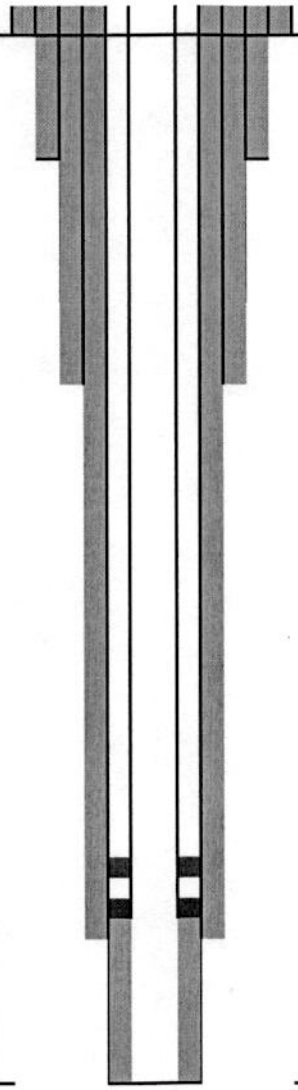
WELL PROGRAM & SUMMARY | **Proposed** | **Date:** 7/13/2021

Choate-Davis 13 State SWD #3

Operator: Redwood Operating LLC
Location: 660 FNL 600 FWL Sec. 13 T18S R27E
GL Elevation: 3556

Drlg. Contractor:
Rig No.:
Objective: Cisco

Deviation Survey	Sand Tops & Markers	Depth	Hole Size & Cement	Casing Detail	Perfs & Completion	Max Dog Leg Severity	Artificial Lift
None	None	120	Pre-Set	20" Conductor	None	None	None
	Yates 260'	300	17 1/2" hole 350sx Class C 100% Excess	13 3/8"-48#-J-55		<1°/100	
	Seven Rivers 545' Queen 1180' Grayburg 1630' San Andres 2040'	2800	12 1/4" hole 850sx Class C 100% Excess	9 5/8"-36#-J-55		<2°/100	
	Glorieta 3640' Abo 5260' Wolfcamp 6900' Cisco 7600'	7650	8 3/4" hole 1100sx Class C 40% Excess	7"-26#-L-80	4 1/2' 11.6# Tubing AS-A Packer @ 7350' Liner Top 7400'	<2°/100	
	Strawn 8920'	8800	6 1/8" Hole 140sx Class C 40% Excess	Liner 4 1/2"-11.60-L80 7,450'-8,800'	Perf Holes 7650-8800' Max psi 1530#		



REDWOOD
OPERATING LLC
PO BOX 1370 ARTESIA NM 88211-1370

July 26, 2021

VIA CERTIFIED MAIL 7019 1640 0002 0377 9129

Commissioner of Public Lands
PO Box 1148
Santa Fe, NM 87504

Dear Sir or Madam:

Enclosed for your review, is a copy of Redwood Operating LLC's application for a Cisco SWD well. Produced water will be injected at a proposed depth of 7650-8800'. The Choate Davis 13 State SWD #3 located 660 FNL & 600 FWL, Sec. 13 T18S R27E, Eddy County.

This letter will serve as a notice that Mack Energy Corporation has requested administrative approval from the NMOCD to drill and complete this well as a water disposal well. If you have any objections, you must notify the Oil Conservation Division in Santa Fe in writing at 1220 South St. Francis Drive, Santa Fe, NM 87505 within fifteen (15) days of receiving this letter.

Sincerely,

MACK ENERGY CORPORATION

Jerry W. Sherrell
Regulatory Supervisor

JWS

O: 575.748.1288
F: 575.746.9539
INFO@REDWOODOPERATING.COM

Choate Davis 13 State SWD #3

Surface- 17 ½" hole 300'
13 3/8" 48# J-55

nStage 1	Slurry	Density	Yield	Mix H2O Gals./sk	# of Sacks	% Excess	Slurry Top
Lead							
Tail	Class C+1%PF1	14.8	1.34	6.307	350	100	Surface

Comments	20bbls Gel Spacer. 50 sacks of 11# Scavenger cement.	Cu/Ft per Lin /Ft 208

Intermediate- 12 ¼" hole 2,800'
9 5/8"-36#-J-55

Stage 1	Slurry	Density	Yield	Mix H2O Gals./sk	# of Sacks	% Excess	Slurry Top
Lead	Class C +4%PF20+1% PF1+0.125#/skPF29+.4%PF 45	13.5	1.72	9.102	500	100	Surface
Tail	Class C+.1%PF1	14.8	1.34	6.307	350	50	1,800'

Comments	20bbls Gel Spacer. 50 sacks of 11# Scavenger cement.	Cu/Ft per lin/Ft 876.96

2nd Intermediate-7,650 7"-26#-
L-80

Stage 1	Slurry	Density	Yield	Mix H2O Gals./sk	# of Sacks	% Excess	Slurry Top
Lead	35/65 Perlite/C 5% PF44+6%PF20+.2%PF13+3ppsPF 42+.4ppsPF45+.125ppsPF29	12.9	1.82	9.21	225	35	Surface
Tail	PVL+1.3%PF44(BWOW)+5%PF1 74+.5%PF506+0.1%PF153+.4#PF 45	13	1.48	7.57	775	35	2,000'
Comments	20bbls Gel Spacer.						

	50 sacks of 11# Scavenger cement.	Cu/Ft per lin/Ft 976.95

Production Liner 4 ½"-11.60#-L-80 LT&C 8,800'-7,450'

Tail	PVL+1.3%PF44(BWOW)+5%PF174+.5%PF506+0.1%PF153+.4#PF45	13	1.48	7.57	100	35	7,450
Comments	20bbls Gel Spacer. 50 sacks of 11# Scavenger cement.	Cu/Ft per lin/Ft 110.71					

Prior to any cement job it is Redwood policy to circulate bottoms up 1 time before commencing with cement operations. On wells where hole conditions have been an issue during the drilling and reaming process the number or circulations needs to increase to a minimum of 2 times around.

All production cement figured with an additional 10% for washout unless otherwise noted. Flush is figured with a 40' shoe joint. Do not displace more than 2bbls over calculated flush without prior approval.

Casing Design Well: Choate Davis 13 State SWD #3

String Size & Function: 13 3/8" in surface x intermediate

Total Depth: 300 ft

Pressure Gradient for Calculations (While drilling)

Mud weight, collapse: 9.6 #/gal Safety Factor Collapse: 1.125

Mud weight, burst: 9.6 #/gal Safety Factor Burst: 1.25

Mud weight for joint strength: 9.6 #/gal Safety Factor Joint Strength 1.8

BHP @ TD for: collapse: 149.76 psi Burst: 149.76 psi, joint strength: 149.76 psi

Partially evacuated hole? Pressure gradient remaining: 10 #/gal

Max. Shut in surface pressure: 500 psi

1st segment	300 ft to 0 ft			Make up Torque ft-lbs		Total ft = 300
O.D.	Weight	Grade	Threads	opt.	min.	mx.
13.375 inches	48 #/ft	J-55	ST&C	3,220	2,420	4,030
Collapse Resistance	Internal Yield	Joint Strength		Body Yield		Drift
740	2,370 psi	433 ,000 #		744 ,000 #		12.559

2nd segment	0 ft to 0 ft			Make up Torque ft-lbs		Total ft = 0
O.D.	Weight	Grade	Threads	opt.	min.	mx.
inches	#/ft					
Collapse Resistance	Internal Yield	Joint Strength		Body Yield		Drift
psi	psi	,000 #		,000 #		

3rd segment	0 ft to 0 ft			Make up Torque ft-lbs		Total ft = 0
O.D.	Weight	Grade	Threads	opt.	min.	mx.
inches	#/ft					
Collapse Resistance	Internal Yield	Joint Strength		Body Yield		Drift
psi	psi	,000 #		,000 #		

4th segment	0 ft to 0 ft			Make up Torque ft-lbs		Total ft = 0
O.D.	Weight	Grade	Threads	opt.	min.	mx.
inches	#/ft					
Collapse Resistance	Internal Yield	Joint Strength		Body Yield		Drift
psi	psi	,000 #		,000 #		

5th segment	0 ft to 0 ft			Make up Torque ft-lbs		Total ft = 0
O.D.	Weight	Grade	Threads	opt.	min.	mx.
inches	#/ft					
Collapse Resistance	Internal Yield	Joint Strength		Body Yield		Drift
psi	psi	,000 #		,000 #		

6th segment	0 ft to 0 ft			Make up Torque ft-lbs		Total ft = 0
O.D.	Weight	Grade	Threads	opt.	min.	mx.
inches	#/ft					
Collapse Resistance	Internal Yield	Joint Strength		Body Yield		Drift
psi	psi	,000 #		,000 #		

Select 1st segment bottom 300

300 ft	to	0 ft	
13.375	36	J-55	ST&C

S.F.	Actual		Desire
collapse	4.941239	>=	1.125
burst-b	4.681574	>=	1.25
burst-t	4.74		

Top of segment 1 (ft) 0

Select 2nd segment from bottom

0 ft	to	0 ft	
0	0	0	0

S.F.	Actual		Desire
collapse	#DIV/0!	>=	1.125
burst-b	0	>=	1.25
burst-t	0		
jnt strngth	35.24644	>=	1.8

Casing Design Well: Choate Davis 13 State SWD #3

String Size & Function: 9 5/8 in surface intermediate X

Total Depth: 2800 ft TVD: 2800 ft

Pressure Gradient for Calculations (While drilling)

Mud weight, collapse: 10 #/gal Safety Factor Collapse: 1.125

Mud weight, burst: 10 #/gal Safety Factor Burst: 1.25

Mud weight for joint strength: 10 #/gal Safety Factor Joint Strength 1.8

BHP @ TD for: collapse: 1456 psi Burst: 1456 psi, joint strength: 1456 psi

Partially evacuated hole? Pressure gradient remaining: 10 #/gal

Max. Shut in surface pressure: 500 psi

1st segment	1230 ft to 0 ft			Make up Torque ft-lbs			Total ft = 1230
O.D.	Weight	Grade	Threads	opt.	min.	mx.	
9.625 inches	36 #/ft	J-55	ST&C	3,940	2,960	4,930	
Collapse Resistance	Internal Yield	Joint Strength		Body Yield		Drift	
2,020 psi	3,520 psi	394 ,000 #		564 ,000 #		8.765	

2nd segment	ft to ft			Make up Torque ft-lbs			Total ft = 0
O.D.	Weight	Grade	Threads	opt.	min.	mx.	
inches	#/ft						
Collapse Resistance	Internal Yield	Joint Strength		Body Yield		Drift	
psi	psi	,000 #		,000 #			

3rd segment	0 ft to 0 ft			Make up Torque ft-lbs			Total ft = 0
O.D.	Weight	Grade	Threads	opt.	min.	mx.	
inches	#/ft						
Collapse Resistance	Internal Yield	Joint Strength		Body Yield		Drift	
psi	psi	,000 #		,000 #			

4th segment	0 ft to 0 ft			Make up Torque ft-lbs			Total ft = 0
O.D.	Weight	Grade	Threads	opt.	min.	mx.	
inches	#/ft						
Collapse Resistance	Internal Yield	Joint Strength		Body Yield		Drift	
psi	psi	,000 #		,000 #			

5th segment	0 ft to 0 ft			Make up Torque ft-lbs			Total ft = 0
O.D.	Weight	Grade	Threads	opt.	min.	mx.	
inches	#/ft						
Collapse Resistance	Internal Yield	Joint Strength		Body Yield		Drift	
psi	psi	,000 #		,000 #			

6th segment	0 ft to 0 ft			Make up Torque ft-lbs			Total ft = 0
O.D.	Weight	Grade	Threads	opt.	min.	mx.	
inches	#/ft						
Collapse Resistance	Internal Yield	Joint Strength		Body Yield		Drift	
psi	psi	,000 #		,000 #			

Select 1st segment bottom 1230

2800 ft to 0 ft

9.625 0 J-55 ST&C

Top of segment 1 (ft) 0

Select 2nd segment from bottom

0 ft to 0 ft

0 0 0 0

S.F.	Actual		Desire
collapse	1.387383	>=	1.125
burst-b	7.04	>=	1.25
burst-t	7.04		
S.F.	**Actual**		**Desire**
collapse	#DIV/0!	>=	1.125
burst-b	0	>=	1.25
burst-t	0		
jnt strngth	4.614794	>=	1.8

Casing Design Well: Choate Davis 13 State SWD #3

String Size & Function: 7 in surface intermediate x

Total Depth: 7650 ft

Pressure Gradient for Calculations (While drilling)

Mud weight, collapse: 10.3 #/gal Safety Factor Collapse: 1.125

Mud weight, burst: 10.3 #/gal Safety Factor Burst: 1.25

Mud weight for joint strength: 10.3 #/gal Safety Factor Joint Strength 1.8

BHP @ TD for: collapse: 4097.34 psi Burst: 4097.34 psi, joint strength: 4097.34 psi

Partially evacuated hole? Pressure gradient remaining: 10 #/gal

Max. Shut In surface pressure: 500 psi

1st segment	7650 ft to 0 ft			Make up Torque ft-lbs		Total ft = 7650
O.D.	Weight	Grade	Threads	opt.	min.	mx.
7 inches	26 #/ft	L-80	LT&C	5110	3830	6390
Collapse Resistance	Internal Yield	Joint Strength		Body Yield		Drift
5,410 psi	7,240 psi	511 ,000 #		604 ,000 #		6.151

2nd segment	0 ft to 0 ft			Make up Torque ft-lbs		Total ft = 0
O.D.	Weight	Grade	Threads	opt.	min.	mx.
inches	#/ft					
Collapse Resistance	Internal Yield	Joint Strength		Body Yield		Drift
psi	psi	,000 #		,000 #		

3rd segment	0 ft to 0 ft			Make up Torque ft-lbs		Total ft = 0
O.D.	Weight	Grade	Threads	opt.	min.	mx.
inches	#/ft					
Collapse Resistance	Internal Yield	Joint Strength		Body Yield		Drift
psi	psi	,000 #		,000 #		

4th segment	0 ft to 0 ft			Make up Torque ft-lbs		Total ft = 0
O.D.	Weight	Grade	Threads	opt.	min.	mx.
inches	#/ft					
Collapse Resistance	Internal Yield	Joint Strength		Body Yield		Drift
psi	psi	,000 #		,000 #		

5th segment	0 ft to 0 ft			Make up Torque ft-lbs		Total ft = 0
O.D.	Weight	Grade	Threads	opt.	min.	mx.
inches	#/ft					
Collapse Resistance	Internal Yield	Joint Strength		Body Yield		Drift
psi	psi	,000 #		,000 #		

6th segment	0 ft to 0 ft			Make up Torque ft-lbs		Total ft = 0
O.D.	Weight	Grade	Threads	opt.	min.	mx.
inches	#/ft					
Collapse Resistance	Internal Yield	Joint Strength		Body Yield		Drift
psi	psi	,000 #		,000 #		

Select 1st segment bottom 7650

7650 ft to 0 ft
7 0 L-80 LT&C

Top of segment 1 (ft) 0

Select 2nd segment from bottom

0 ft to 0 ft
0 0 0 0

S.F.	Actual		Desire
collapse	1.320369	>=	1.125
burst-b	19.0196	>=	1.25
burst-t	14.48		
S.F.	**Actual**		**Desire**
collapse	#DIV/0!	>=	1.125
burst-b	0	>=	1.25
burst-t	0		
jnt strngth	3.049739	>=	1.8

Casing Design **Well:** Choate Davis 13 State SWD #3

String Size & Function: 4 1/2 in Production x

Total Depth: 8800 ft **TVD:** 8800 ft

Pressure Gradient for Calculations **(While drilling)**

Mud weight, collapse: 11.4 #/gal Safety Factor Collapse: 1.125

Mud weight, burst: 11.4 #/gal Safety Factor Burst: 1.25

Mud weight for joint strength: 11.4 #/gal Safety Factor Joint Strength 1.8

BHP @ TD for: collapse: 5216.64 psi Burst: 5216.64 psi, joint strength: 5216.64 psi

Partially evacuated hole? Pressure gradient remaining: 10 #/gal

Max. Shut in surface pressure: 3000 psi

1st segment	8800 ft to 7450 ft			Make up Torque ft-lbs		Total ft = 1350
O.D.	Weight	Grade	Threads	opt.	min.	mx.
4.5 inches	11.6 #/ft	L-80	LT&C	2230	1670	2790
Collapse Resistance	Internal Yield	Joint Strength		Body Yield		Drift
6,350	7,780 psi	212 ,000 #		267 ,000 #		3.875

2nd segment	ft to ft			Make up Torque ft-lbs		Total ft =
O.D.	Weight	Grade	Threads	opt.	min.	mx.
inches	#/ft					
Collapse Resistance	Internal Yield	Joint Strength		Body Yield		Drift
psi	psi	,000 #		,000 #		

3rd segment	ft to ft			Make up Torque ft-lbs		Total ft =
O.D.	Weight	Grade	Threads	opt.	min.	mx.
inches	#/ft					
Collapse Resistance	Internal Yield	Joint Strength		Body Yield		Drift
psi	psi	,000 #		,000 #		

4th segment	0 ft to 0 ft			Make up Torque ft-lbs		Total ft = 0
O.D.	Weight	Grade	Threads	opt.	min.	mx.
inches	#/ft					
Collapse Resistance	Internal Yield	Joint Strength		Body Yield		Drift
psi	psi	,000 #		,000 #		

5th segment	0 ft to 0 ft			Make up Torque ft-lbs		Total ft = 0
O.D.	Weight	Grade	Threads	opt.	min.	mx.
inches	#/ft					
Collapse Resistance	Internal Yield	Joint Strength		Body Yield		Drift
psi	psi	,000 #		,000 #		

6th segment	0 ft to 0 ft			Make up Torque ft-lbs		Total ft = 0
O.D.	Weight	Grade	Threads	opt.	min.	mx.
inches	#/ft					
Collapse Resistance	Internal Yield	Joint Strength		Body Yield		Drift
psi	psi	,000 #		,000 #		

Select 1st segment bottom 8800

8800 ft	to	7450 ft	
4.5	26	L-80	LT&C

S.F.	Actual		Desire
collapse	1.217259	>=	1.125
burst-b	3.297504	>=	1.25
burst-t	3.165639		

Top of segment 1 (ft) 7450

Select 2nd segment from bottom

7450 ft	to	0 ft	
0	0	0	0

S.F.	Actual		Desire
collapse	#DIV/0!	>=	1.125
burst-b	0	>=	1.25
burst-t	0		
jnt strngth	16.39778	>=	1.8