PROCOR CHEMICALS, INC.

PERMIAN BASIN / WOLFCAMP, BONE SPRINGS, SPRABERRY INFO PACKAGE

as of October 15, 2024

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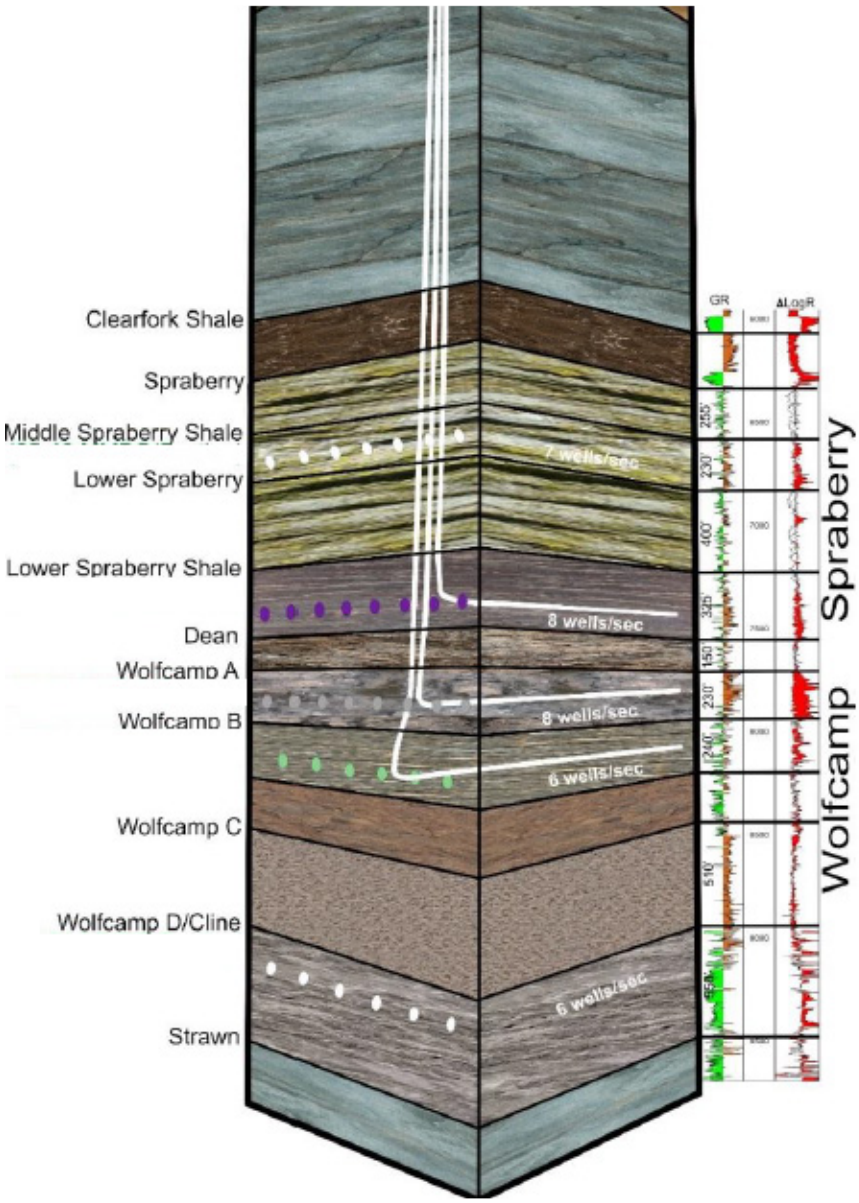
PROCOR CHEMICALS, INC.

DATE: 10/15/2024	PERMIANBASIN / WOLFCAMP, BONE SPRINGS, SPRABERRY OPERATORS	

Company

ConocoPhillips
Permian Resources/ Earthstone Energy
EOG Resources
Energen Resources
ExxonMobil / PNR
Firebird Energy
Fleur De Lis Energy
Gordy Oil Company
Guidon Energy
Henry Resources
Hunt Oil
Lario Oil & Gas
Matador Resources
Moontower Resources
Riley Permian
SM Energy
Civitas Resources/ Tap Rock



Permian Basin Case Histories

Reeves County, TX

Date:	10/11/24
Operator:	BPX Operating Company
Well / Area:	Escarpa 57-T1 39X34 K W111H
Field:	Phantom
County:	Reeves County, TX
Rig:	Savanna Rig 650

Challenges:
Operator experiencing water flow during cement job channeled through cement to surface. First set of perferations and new cement did not stop the water flow.

Solutions:
PROCOR recommended 40 bbls @ 80ppb: Pulled 38 bbls water. Add 1-2 sacks fresh water gel and allow to yield for product suspension, Added 48 sxs PRO V+ (30ppb), Added 48 sxs PRO X (30ppb), Added 40 sxs PRO HG (40ppb). Should yield 40 bbls @ fluid weight. When the squeeze packer was set, began pumping the slurry down the casing as the lead cement Aggressive LCM pill as recommended by the cement company. Once the cement was in place allowed recommended wait time by cement company no less than 4 hours for the PROCOR lead slurry. During the wait time, the hydrogels continued to absorb the water flow, preventing contamination or thinning of the cement by the water allowing it to set up and provide full compressive strength for the test.

Results

Pressures were constant during pumping procedure and flow was not an issue. This application was basically pumped to stop a slight water flow, absorb water and act as a median allowing the cement to set up.

Notes

Plan was to use the 50 bbl premix and transfer to the cement truck, 20 bbls in front and 20 bbls behind.

- Lea County, NM

Date:	9/27/24
Operator:	Lario Oil & Gas
Well / Area:	Sky Dweller Com 101H
Field:	Bone Springs
Parish/County:	Lea County, NM
Rig:	Nabors 895

Challenges:
While drilling ahead in 7.875" lateral section at 13,342' MD, we experienced a noticeable drilling break and nearly immediate full losses which are suspected to be related to a fault zone. We continued dry drilling while pumping 30 ppb LCM sweeps until partial returns were established resulting in ~150 bph losses. As we continued drilling ahead, we traversed another suspected fault zone at 13,777' MD resulting in similar drilling break & full losses. LCM treatments continued and partial returns were re-established with losses now at ~280 bph. As we continued drilling ahead to 14,929' MD, we experienced a reduction in the loss rate to approximately 65 bph prior to a bit trip. During the trip out, we experienced sporadic overpull through the losses intervals which in turn resulted in losing fluid on the trip out – likely having ripped the LCM scab off. Currently, we are tripping back in hole and experiencing some minor wellbore instability likely resulting from the hole's inability to hold a column of fluid. We have approx. 1,300' to TD on this well prior to running our 5.5" production casing.

Solutions/ Product Recommendation:
If still drilling to TD upon product arrival, we recommend a strict sweep regimen through TD of the sections. Begin pumping sweeps every connection or as the prior sweep exits the bit. Sweeps should be 10-20bbls @ 65ppb (25ppb PRO V+, 25ppb Sweep Aid, 5ppb SB Superceal and 5ppb Sweep Aid). This sweep regimen will enhance hole cleaning, resins will coat and keep shales in good shape preventing reactivity, prevent minor seepage to moderate losses, enhance filtration control of the mud and help keep the well bore in gauge.

80bbl sweep slurry @ 65ppb

- Pull 70bbls system mud to slugging pit
- Add 80sx PRO V+ (25ppb)
- Add 80sx PRO X (25ppb)
- Add 16sx PRO Sweep Aid (5ppb)
- Add 16sx SB Superceal (5ppb)
- Top off to full 80bbls and agitate, pump sweeps as needed.

At TD if losses have occurred while drilling, we recommend spotting 50bbls @ 80ppb (35ppb PRO V+/35ppb PRO X/5ppb SB Superceal/5ppb Sweep Aid) across the area where suspected losses occurred prior to POOH to run casing. Mix and pump same pill ahead of cement to ensure returns on cement job.

Lessons Learned:
Would recommend going back up to the lost zone and squeezing the product into the formation to get a better seal in the zone.

- Midland County, TX

Date: 3/11/24
Operator: Pioneer Natural Resources
Well / Area: Crawford-Welchest 27J 10H
Field: Spraberry (Trend Area)
Parish/County: Midland County, TX
Rig: H&P 487

Challenges:
Drilling the intermediate section on the 9H at 6,845' with WBM and previously running a competitors lube which was blinding off the shakers causing mud losses and having to slow down.

Solutions/Recommendations:
Recommended PRO Slide Synthetic Based Drilling Lubricant. Plan was to run PRO Slide in the production lateral with 2% in the active system and spotted 600 bbls in the lateral at TD to POOH and run casing.

Results:
Lubricant worked well by not blinding over the shakers. Decreased torque enough to help drill faster, allowing the use of WBM through out the well until total depth and the decrease of torque was between 12-20%. Spotting PRO Slide lubricant pills before running casing allowed for casing run to be smooth.

- Midland County, TX

Date: 3/11/24
Operator: Pioneer Natural Resources
Well / Area: Elkin 21L 12H
Field: Spraberry (Trend Area)
Parish/County: Midland County, TX
Rig: H&P 467

Challenges:
Operator experiencing fluid losses while drilling.

Solutions/ Product Recommendation:
They were pumping 30ppb sweeps to help with losses while drilling. Decision was made to mix up an 80ppb pill and spot with a light squeeze. Started with 40ppb (10ppb PRO Sweep Aid, 10ppb SB SuperCeal, 10ppb PRO V+, 10ppb PRO X) and increased to 80ppb. Decision was made to sweep the hole with the 80ppb pill and run liner.

Results:
The 80ppb sweeps fixed the losses and products were pumped through tools with no problems.

- *Andrews County, TX*

Date: 5/1/23
Operator: Birch Resources
Well / Area: Pepe Paisano 32 #3WA
Field: Spraberry
Parish/County: Andrews County, TX
Rig: HP 248

Challenges:
Operator did not get a good FIT and decided to apply PROCOR's squeeze product to increase formation integrity to correct pressure.

Solutions/Recommendations:
Recommended preforming squeeze by closing well in and Bull heading fluid into the wellbore.

- We recommend starting off with 10-15bbl sweeps @ 50ppb sweeps every 100' or as needed (15ppb Sweep Aid, 5ppb SB Superceal, 15ppb PRO V+ and 15ppb PRO X). Utilize these sweeps from KOP to landing curve.
- Build 80bbl 80ppb pill and spot just above lost zone. Pill will consist of (PV+ 30 ppb, PX 30 ppb, PRO Sweep Aid 10 ppb, SB SuperCeal 10 ppb)
- We recommend spotting a pill across the loss zone and squeezing fluid into the formation till pressure required is achieved.

Results:
Improved FIT results to 9.8 ppg ECD (Equivalent Circulating Density) but needed to get 11.0 ppg ECD. Decision was made to go back in and continue drilling and bring weight of fluid up as need slowly. Will continue to sweep hole with sweep recommendation.

- *Midland County, TX*

Date: 3/10/23
Operator: Pioneer Natural Resources
Well / Area: Stimson-Nail W17K 11H
Field: Spraberry Trend Area
Parish/County: Midland County, TX
Rig: HP 472

Challenges:
Having torque issues while drilling with Water-Based mud in the lateral section of the well.

Solutions/Recommendations:
To run 3-5% by volume of PRO Slide into the active system to decrease torque and allow for smooth drilling.

Results:
Torque decrease with 4% by volume an average of 4-7K and drilling was completed.

- *Lea County, NM*

Date: 2/7/23
Operator: Matador Resources
Well / Area: Uncle Richard State Com 214H
Field: West Jal
Parish/County: Lea County, NM
Rig: Patterson 256

Challenges:
Operator lost returns at approximately 4,456' and continued drilling for another 4,000' before calling out. Once we arrived on location operations were drilling ahead with no returns. Plan was to pump sweep down to regain returns and finish drilling to casing point. Talked with representatives on location and it was decided that the highest concentration would be 40 ppb, set up 30 bbl sweeps of the 40 ppb consisting of PRO V, PRO X, and SB SuperCeal. Once sweep was pumped there was a noticeable rise in pump pressure, but no returns. The gain in pump pressure stayed until they decided to TOH to change out bit and motor due to low ROP. Before TOH they spotted a 40 ppb 80 bbl pill down around 4,400' to let soak while changing BHA. Pill did not regain returns.

Solutions/Recommendations:
Spotted a pill consisting of 40 pounds per barrel (PRO X 15 ppb, PRO V+ 10 ppb, SB SuperCeal 5 ppb). Products used , PRO V +, PRO X, SB SuperCeal.

Results:
Operator finished drilling interval without returns, but maintain sweeps.

- *Lea County, NM*

Date: 11/5/22
Operator: Apache Corp.
Well / Area: North Bonsai State Unit 1020AH
Field: Alpine High (Cons)
Parish/County: Reeves County, TX
Rig: H&P 656

Challenges:
Operator lost returns and continued drilling another 1,000' before calling PROCOR out. When we arrived to location operations were circulating gas out and keeping pressure on the well. Prior applications included 3 Poly Plug applications of 150 bbls were pumped down the drill pipe, through the perforations to seal off the losses which were not successful. Operator also tried using common generic LCM products from Newpark at 100 ppb with no success.

We used a premix pit for Procor products at 110 ppb and pumped down the annulus, we kept pressure on the pill for 4-5 hours. This allowed Apache to kill the well and get approval to P&A.

We also were called back out to location a few days later to pump another pill just ahead of cement. Pumped another 110 ppb pill ahead of cement allowing Apache to P&A well.

Solutions/Recommendations:

Spotted a pill consisting of 110 pounds per barrel (PRO X 40 ppb, PRO V+ 50 ppb, PRO Sweep Aid 10 ppb, SB SuperCeal 10 ppb). Products used , PRO V +, PRO X, PRO Sweep Aid, SB SuperCeal.

Results:
Product application allowed Apache to successfully P&A the well and move off of location.

Lee County, TX

Date: 7/23/22
Operator: Riley Permian
Well / Area: Bamsch-Teinert 1H
Field: Giddings
Parish/County: Lee County, TX
Rig: T120

Challenges:
The operator lost partial returns while drilling at 12751' and regained full returns after pumping a 20 ppb PROCOR sweep and resumed drilling. The operator lost complete returns at 12839' after it was discovered they drilled out of formation into the Austin Chalk formation. After losing returns the operator spotted a 45 bbl 45 ppb PROCOR but were unable to circulate above, so an 80 bbl 80 ppb PROCOR sweep was spotted on bottom and the operator pulled out of the hole to go back in open-ended to bullhead a 100 ppb PRO HG/PRO V/PRO X pill.

Solutions/ Product Recommendation:
It was recommended spotting a 60 bbl100ppb PRO HG/PRO X/PRO V pill above the loss zone and bullhead into the formation. 50# PRO HG / 25# PRO X / 25# PRO V. A 60 bbl 100# pill was pumped to the end of drillpipe at 12551' the well was shut in and 20 bbls was bullheaded into the formation. The remainder of the pill was spotted in the open hole and the drillpipe was pulled above to allow to heal for four hours.

Results:
We encountered problems with the rig hopper losing prime while trying to mix the pill so an auxilary tank was cleaned and the pill was transferred to the mixing tank for mixing, which delayed us two hours of mixing time.

We began circulating after six hours while staging up the pump rate to get up to 300 gpm; we began experiencing erratic mud losses and pump pressures, and when the pumps were shut down, the well began to balloon; as we washed to bottom we began experiencing more losses and ballooning, so the operator decided to spot a cement plug to sidetrack the well

Reeves County, TX

Date: 6/21/22
Operator: Apache Corp.
Well / Area: Bragg 502H
Field: Delaware (Trend Area)
Parish/County: Reeves County, TX
Rig: HP533

Challenges:
Operator tripped back in the hole with new motor and bit, once outside the window they lost returns. Spotted cement 5' outside the window and let sit for 12 hours. Drilled back through the cement and lost returns again.

Solutions/ Product Recommendation:
Started pumping 15-20 barrel sweeps every connection consisting of 30 ppb LCM (PRO X 10 ppb, PRO V+ 10 ppb, PRO Sweep Aid 5 ppb, SB SuperCeal 5 ppb). Products used - PRO V +, PRO X, PRO Sweep Aid, SB SuperCeal

Results:
Well was having a little fluid seepage after 2-3 sweeps and were losing 4-5 barrels an hour prior. Well started to balloon and give fluid back.

Midland County, TX

Date:	5/20/22
Operator:	SM Energy
Well / Area:	Holzgraf Geronimo A 3481WD
Field:	Spraberry (Trend Area)
Parish/County:	Midland County, TX
Rig:	Ensign 57

Challenges:
Rig lost returns and continued drilling for another 1,000' before calling us out. Once at the rig operations were drilling ahead with no returns. Company man and Drilling Supt decided to try two 40 barrel sweeps at 40 pound per barrel pill consisting of Competitor products. No returns were achieved during the sweeps.

Solutions/Recommendations:
Decision was made to come out of the hole and change the bit and motor. Spotted a pill consisting of 70 pounds per barrel (PRO X 30 ppb, PRO V+ 20 ppb, PRO Sweep Aid 20 ppb). Products used , PRO V +, PRO X, PRO Sweep Aid.

Results:
Once back in the hole with new bit and motor, rig had full returns till TD.

Lea County, NM

Date:	2/27/22
Operator:	EOG Resources
Well / Area:	Ruthless 11 Fed Com #708H
Field:	Red Hills
Parish/County:	Lea County, NM
Rig:	Patterson 883

Challenges:
Experiencing fluid losses while drilling. They were using a 8.8ppg invert fluid rather than a direct emulsion fluid.

Solutions/Recommendations:
A total of four (4) 35 bbl and two (2) 20 bbl sweeps. Each of the sweeps contained 10ppb TightCeal (M), 10ppb SB SuperCeal, 8ppb Coconut Shell AC, 8 ppb Walnut Shell (F) and the last 2 sweeps we incorporated 8ppb ECM2.

Results:
The losses stopped after the 3rd sweep. ECM2 was added for filter cake. Operator was able to TD and increase mud density from 8.8 to 9 prior to TOH.

Notes:
Product sweep formulation concentrations were increased for losses which worked great.

Midland County, TX

Date:	11/29/21
Operator:	Pioneer Natural Resources
Well;	Sally W26M 13H
Field:	Spraberry
County:	Midland County, TX
Rig:	Patterson 802

Challenges:
Operator drilling in the Permian running preventative fluid loss sweeps.

Solutions/ Product Recommendation:
PROCOR recommended PRO Sweep Aid as a fluid loss preventive and PRO V+, PRO X, for a contingency squeeze product if needed.

Results:
Successfully TD'd well without fluid loss issues

Irion County, TX

Date:	11/10/21
Operator:	Pioneer Natural Resources
Well:	Rocker B 170H
Field:	Spraberry
County:	Irion County, TX
Rig:	H&P 643

Challenges:
Operator drilling in the Permian running preventative fluid loss sweeps.

Solutions/ Product Recommendation:
PROCOR recommended PRO Sweep Aid and SB SuperCeal as a fluid loss preventive product and PRO V+, PRO X, PRO HG for a contingency squeeze product if needed.

Results:
Well was drilled on time and on budget minimizing wellbore issues successfully

Reeves County, TX

Date:	11/9/21
Operator:	EOG Resources, Inc.
Well:	State Loonie Unit 751H
Field:	Phantom (Wolfcamp)
County:	Reeves County, TX
Rig:	Nabors 1208

Challenges:
Operator expecting fluid losses.

Solutions/ Product Recommendation:
Operator tested products inhouse prior to incorporating 3ppb SB SuperCeal in background fluid treatment to prevent fluid losses.

Results:
Well drilled successfully without any major issues.

Reeves County, TX

Date:	10/16/21
Operator:	EOG Resources, Inc.
Well:	State Einhorn Unit 751H
Field:	Phantom (Wolfcamp)
County:	Reeves County, TX
Rig:	H&P 249

Challenges:
Operator expecting fluid losses.

Solutions/ Product Recommendation:
Operator tested products inhouse prior to incorporating 3ppb SB SuperCeal and 3ppb PRO TightCeal in background fluid treatment to prevent fluid losses.

Results:
Well drilled successfully without any major issues.

Glasscock County, TX

Date:	10/17/21
Operator:	Pioneer Natural Resources
Well / Area:	Driver-Lane E36A 101H
Field:	Spraberry Trend Area
Parish/County:	Glasscock County, TX
Rig:	Ensign T136

Challenges:
Operator drilling in the Permian running preventative fluid loss sweeps.

Solutions/ Product Recommendation:
PROCOR recommended PRO Sweep Aid as a fluid loss preventive and PRO V+, PRO X, for a contingency squeeze product if needed.

Results:
Successfully TD'd well without fluid loss issues

Martin County, TX

Date:	10/7/2021
Operator:	Pioneer Natural Resources
Well / Area:	Foreman-Jones 40D 307H
Field:	Spraberry (Trend Area)
Parish/County:	Martin County, TX
Rig:	Ensign T136

Challenges:
Operator drilling in the Permian running preventative fluid loss sweeps.

Solutions/ Product Recommendation:
PROCOR recommended PRO Sweep Aid as a fluid loss preventive and PRO V+, PRO X, for a contingency squeeze product if needed.

Results:
Successfully TD'd well without fluid loss issues

Midland County, TX

Date: 12/8/20
Operator: Pioneer Natural Resources
Well / Area: Elkin-Crawford 34CC 103H
Field: Spraberry (Trend Area)
Parish/County: Midland County, TX
Rig: Ensign T142

Challenges:
Operator preparing for fluid losses.

Solutions/Recommendations:
Additions of PRO Sweep Aid to preventative sweeps aided in minimizing the losses.

Results:
The use of PRO Sweep Aid added to the sweeps helped minimize fluid losses allowing operator to finish drilling and set casing.

Martin County, TX

Date: 9/12/20
Operator: Guidon Energy
Well / Area: Soto 43-7 (Alloc-3SH) 3LB
Field: Spraberry
Parish/County: Martin County, TX
Rig: Precision 626

Challenges:
Drilling ahead at 5918', seeing some fluid losses around 10-15 bbl per hour.

Solutions/Recommendations:
Recommended mixing 40 bbls of 10 ppb PRO Sweep Aid at 5600' and saw increase of 25% of cuttings when it came back. Pumped 40 bbls of 25 ppb consisting of 5 ppb SB SuperCeal, 10 ppb PRO V+, 10 ppb PRO Sweep Aid at 5855'.

Results:
Increase in flow and maintained losses of 10-15 bbls per hour. Pumping at 500 gpm increased pumps to 600 gpm maintained pressure with no losses.

Martin County, TX

Date: 6/22/20
Operator: SM Energy
Well / Area: Smails C 2318JM
Field: Spraberry
Parish/County: Martin County, TX
Rig: Ensign 765
Mud Wt/Type: 9.1ppg/6655

Challenges:
Total losses starting around 5790'. Conventional LCM products did not elimate losing complete returns once theif zone was drilled.

Solutions/Recommendations:
Sweep procedures from depth of thief zone till total depth of interval. PRO X, SB SuperCeal, Pro Sweep Aid. Products were mixed through the hopper into a 130 bbl isolated pit and pumped at depths needed to keep returns. No problems encountered during this mixing procedure.

Results:
Losses were as expected and ranged from 30 - 40 bbls per hour. Objective is to make sure that we do not lose complete returns. Procedure went as planned.

Martin County, TX

Date:	5/15/20
Operator:	SM Energy
Well / Area:	Smails D 2350WA
Field:	Spraberry
Parish/County:	Martin County, TX
Rig:	Ensign 765
Mud Wt/Type:	8.85ppg / Hailburton WBM

Challenges:
Operator experiencing fluid losses in the Spraberry formation, 12 ¼" section of the well and continually having to build new mud, replacing fluid to keep the weight down and once total losses occurred brine was used to supplement for losses.

Solutions/Recommendations:
Recommendation was to build 40 bbls of 10 ppb PRO Sweep Aid and begin pumping at a depth of 5600'. When losses increased, product concentrations were changed to 80 bbls @ 45 ppb with PRO V+, PRO X, SB SuperCeal and ProTightceal Medium. Began pumping 20bbl sweeps @ 45ppb as needed and no more than every 300'. During the well all recommendations were followed and supervised by onsight PROCOR engineer utilizing 2 different product mixtures. 1st – 10ppb PRO Sweep Aid; 2nd - 5 ppb SB SuperCeal, 10 ppb PRO Sweep Aid, 15 ppb PRO X, 15 ppb PRO V+.

- 80bbls PRO V+ @ 50ppb was pumped ahead of cement due to the success while drilling and attempting to achieve good cement returns on 1st stage.

Results:
During the product applications operator experienced moderate losses from 15-50 bbls per hour but did see overall improvement with consistent returns of 20-25bph average compared to the last well where the operator drilled blind. Operator determined applications were successful due to preventing complete losses during the interval.

Howard County, TX

Date:	5/13/20
Operator:	SM Energy
Well / Area:	Smails D 2306MS
Field:	Spraberry
Parish/County:	Howard County, TX
Rig:	Ensign 765

Challenges:
Total losses starting around 6800'. Conventional LCM products did not elimate losing complete returns once theif zone was drilled.

Solutions/Recommendations:
PRO X, SB SuperCeal, PRO Sweep Aid . Products were mixed through the hopper into a 130 bbl isolated pit and pumped at depths needed to keep returns. No problems encountered during this mixing procedure.

Results:
Losses were kept at a minimum of seepage during the procedure. Procedure went as planned.

Howard County, TX

Date: 5/20/20
Operator: Pioneer Natural Resources
Well / Area: Aldwell W48 D 4H
Field: Spraberry
Parish/County: Reagan County, TX
Rig: HP 604

Challenges:
Total losses starting around 6800'. Conventional LCM products did not eliminate losing complete returns once their zone was drilled.

Solutions/Recommendations:
PRO X, SB SuperCeal, PRO Sweep Aid. Products were mixed through the hopper into a 130 bbl isolated pit and pumped at depths needed to keep returns. No problems encountered during this mixing procedure.

Results:
Losses were kept at a minimum of seepage during the procedure. Procedure went as planned.

Reagan County, TX

Date: 4/12/20
Operator: Pioneer Natural Resources
Well / Area: Aldwell W48 D 4H
Field: Spraberry
Parish/County: Reagan County, TX
Rig: HP 604

Challenges:
Operator lost total returns while drilling the curve portion of the well.

Solutions/Recommendations:
Conventional LCM used and did not see any decrease in the losses. PROCOR recommended spotting a pill in the thief zone and squeeze into the formation. PRO V + - 40 ppb, PRO X - 40 ppb. Products were mixed through the hopper without any issues. No problems encountered during the mixture with material or equipment.

Results:
Results of the job were successful and gained full returns back currently drilling the lateral section with no losses. Discontinued pumping recommended sweeps at 40ppb and encountered losses while weighting up To keep hole open. Operator requested a 2nd squeeze be pumped due to having to increase mw above planned pressures and needed pressures to be higher to hold increasing mud weight.

Lea County, NM

Date: 2/6/20
Operator: TAP Rock Operating
Well / Area: Zeus State 144H
Field: Sec 9 T24S R33E (Wildcat)
Parish/County: Lea County, NM
Rig: H&P 376

Challenges:
Operator experiencing fluid losses as they were just about to TD the well. Once on location operator stated that the losses were minimal and they were getting an influx of fluid back. Plan was to pump an 80 bbl 65 ppb pill and spot on bottom consisting of 35 ppb PRO V+, 25 ppb PRO X, 5 ppb SB SuperCeal, and 5 ppb PRO TightCeal M.

Solutions/Recommendations:
PROCOR recommended mixing, 35 ppb PRO V+, 25 ppb PRO X, 5 ppb SB SuperCeal and 5 ppb PRO TightCeal M.

Results:
The pill spotted went textbook, stopped fluid losses, POOH to run pipe.

Midland County, TX

Date:	11/20/19
Operator:	Pioneer Natural Resources
Well / Area:	Texas Ten Miles 37C 6H
Field:	Stack
Parish/County:	Midland County, TX
Rig:	Patterson 263
Mud Wt./Type:	8.6ppg

Challenges:
Complete losses in the Spraeberry formation, squeeze pill into formation to heal losses.

Solutions/Recommendations:
Recommended pumping 80bbl/ 80ppb pill consisting of 40ppb PRO V+, 30ppb PRO X, 10ppb SB SuperCeal, 10ppb PRO TightCeal M, pumped right above the loss zone and preform hesitation squeeze into formation to achieve desired pressure. Operator followed PROCOR's recommendation. PROCOR Products Used / Quantitity: PRO V+ 128 sacks,

PRO X 96 sacks; SB SuperCeal 32 sacks; PRO TightCeal M 32 sacks.

Results:
No problems encountered during procedure. After finishing the last squeeze rig crew tripped one stand into the hole and returns were at 100 percent, no losses were noticed during the circulation. Job was successful.***Midland County, TX***

Midland County, TX

Date:	10/11/19
Operator:	Pioneer Natural Resources
Well / Area:	Arick Hooper Unit 106H
Field:	Spraberry (Trend Area)
Parish/County:	Midland County, TX
Rig:	Patterson 261

Challenges:
Operator wanted to drill anticipated loss zone minimizing fluid losses without having to run a liner and needing additional mud weight to keep the hole open. Prior well lost thousands of barrels of 7.1ppg

Solutions/Recommendations:
Operator pre-planned having a preventative PROCOR recommendation in place prior to drilling the intermediate hole section on the 106H well. The revised plans were to drill out 8.75" hole from 6089' to the anticipated kick off point with 8.4-8.6ppg freshwater and sweeps. The first potential loss zone (Upper Spraberry) would be encountered at approximately 7,764' TVD and needed a sweep plan to be able to get to as close as possible to 8,600'. Operator was also prepared to perform a hesitation squeeze across the Upper Spraberry if necessary to determine if they could displace to OBM and continue drilling the lateral or run a liner. Once displaced to OBM a treatment and sweep plan was in place to continue drilling the lateral formation with having to increase the MW to TD at 18,220'.

Results:
80bbls @ 80ppb squeeze was successful in obtaining the desired pressure/EMW needed to continue drilling the lateral and being able to increase mud weight as needed. After the squeeze was performed and drilling resumed to drill curve a loss event occurred. One 30bbl sweep @ 45ppb(20ppb PRO X, ppb PRO V+, 5ppb PRO Tightceal Medium and 5ppb SB Superceal was pumped and stopped losses immediately, curve was drilled and landed with no further losses. Once the curve was landed, displaced to OBM and drilling resumed with strict sweep regimen, lost pump pressure due to losing part of BHA/bit in hole. Tripped in and out of hole multiple times across the remediated loss zone, ended up sticking the fishing tools, had to jar free and never lost a drop of mud. Tripped back in hole with lateral assembly and currently drilling ahead pumping PROCOR sweep regimen with no further losses and gradually increasing mud weight.

Lea County, NM

Date:	24/7/19
Operator:	Conoco Phillips
Well / Area:	Zia Hills 20 106H
Field:	Red Hills West
Parish/Conty:	Lea County, NM
Rig:	Nabors 894

Challenges:
Improve shoe test to continue drilling. Remedial shoe squeeze and conventional LCM were tried with no success.

Solutions/Recommendations:
Upon engineer and product arrival we recommended spotting a 30bbl @ 80ppb Aggressive LCM squeeze pill using a blend of 2 products for ultimate particle size distribution (PRO V+(Variseal) and PRO X(extreme). The 2 recommended products can be used as Aggressive LCM pills mixed in mud or can be used as high solids/high water loss squeeze pill giving compressive strength and well bore integrity. While mixing the 30bbls, it was found there was a leaking valve and ended up with 60bbls so product concentrations were adjusted accordingly to achieve the recommended 80ppb. The pill was spotted just above the casing shoe through a bit with no jets. Once the pill was spotted, the bit was pulled to above the slurry and let set for 1 hour for solids to settle. After one hour began hesitation squeeze. Hesitation procedure were to pump 1-3bbls per pump in or discontinue pumping at 150psi increase in pressure.

Results:
1) Pressured up to 150 psi and waited 45 minutes, pressure leaked off to 93 psi.
2) Pressured up to 350 psi and waited 45 minutes, pressure leaked off to 184 psi.
3) Pressured up to 450 psi and waited 45 minutes, pressure leaked off to 234 psi.
4) Pressured up to 429 psi and waited 45 minutes, pressure leaked off to 338 psi.
5) Pressured up to 542 psi and waited 45 minutes, pressure leaked off to 447 psi.
6) Pressured up to 658 psi and waited 45 minutes, pressure leaked off to 531 psi.
7) Pressured up to 736 psi and waited 45 minutes, pressure leaked off to 630 psi.
8) Pressured up to 832 psi and waited 45 minutes, pressure leaked off to 720 psi.
9) Pressured up to 923 psi and waited 2 hours, pressure leaked off to 735 psi. Pressured back up to 924 psi and began FIT, pressure leaked off to 893. This gave the company a 12.48 EMW and was sufficient to begin the drilling operation. Total barrels used on the squeeze was 5.6 bbls.

Reeves County, TX

Date:	10/7/18
Operator:	ConocoPhillips
Well / Area:	Lonestar State #1H
Field:	Ford West
Rig:	Patterson 256
Mud Wt/Type:	9.6ppg / AES Brine

Challenges:
Operator experiencing fluid losses at the casing shoe of the surface section. Goal was to stop / prevent further fluid losses so drilling could resume.

Solutions:
PROCOR recommended spotting a 50ppb pill at the shoe to stop losses. If spotting the pill did not work, the next step would be to spot and squeeze 80ppb pill. Mixed up 2 /50bbl pills.

Results:
These product pills recommended improved shoe test from 11.1 to 11.8ppg after a cement squeeze was unsuccessful and stopped all fluid losses. Rig resumed drilling with no fluid loss using 50ppb sweeps consisting of 30ppb PRO V+, 10 ppb SB SuperCeal, an PRO TightCealM. Drilling ahead at report time with no fluid loss concerns. Next casing point @ 10,000'.

Reeves County, TX

Date: 7/18/18
Operator: Concho Resources
Well / Area: The Sphinx #752H
Field: Wolfbone
Rig: Ensign 778

Challenges:
Operator experience fluid losses while drilling.

Solutions:
PROCOR recommended mixing 150bbl / 50 ppb pill (40ppb PRO V+, 10ppb SB SuperCeal). As soon as it was spotted, well became static.

Results:
Operator was able to trip out of the hole, change out BHA, trip back in hole, finish drilling to bottom of curve with no losses. Operator was complimentary on products and service.

Howard County, TX

Date: 7/26/17
Operator: Breitburn Management Company
Well / Area: Cassity 20-2
Field: Spraeberry Trend

Challenges:
Lost Circulation - Seal wellbore to establish good cement plugs to abandon well. Prior abandoned applications attempted on this well failed.

Solutions:
1st plug - Pump 50 bbls +/- PRO V+ spacer at 50ppb ahead of cement to seal loss zones and follow with cement w/ additions of 5ppb PRO V+ added to mixing water. 2nd plug - Pump 25 bbls +/- PRO V+ spacer at 50ppb ahead of cement to seal loss zones and follow with cement w/ additions of 5ppb PRO V+ added to mix water.

Results:
Product was mixed in a Basic 60 bbl blender and were mixed over the top of the latch opening. The spacer & cement were pumped from a Basic cementing pump down the drill pipe and spotted at pre-determined depths, as per the Texas Railroad Commission.

Howard County, TX

Date: 4/29/17
Operator: Breitburn Management Company
Well / Area: Lohan 9 #2
Field: Spraeberry Trend
Rig: Vaquero #5

Challenges:
Corroded / parted casing ; Possible leaking packer.

Solutions:
Spot 50 bbls of 50 ppb (45 ppb PRO V Plus ; 5 ppb SBSC) pill in casing above area of concern. Pump 80 ppb PRO V Plus spacer (20 bbls total) ahead of cement & add 1.5 ppb PRO V Plus to cement mix water

Results:
Spotted 50 bbls LCM pill (45ppb PRO V plus & 5 ppb SBSC) at 7,839 ft MD. POOH to 5,450 ft MD & circulate (68% returns by calc). Spotted 50 bbls LCM pill (45 ppb PRO V Plus & 5 ppb SBSC) at 5,450 ft MD. Displaced out of tubing & shut in well w/ product on backside for 15-18 hrs. Opened well and POOH w/ tubing to run 4" casing. Mixed & pumped 20 bbls LCM spacer (80 ppb PRO V Plus) ahead of cement job on 4" casing. Mixed 1.5 ppb PRO V Plus in cement mix water for 4" casing job.

**Pills were mixed in Macada 60 bbl mixing tank. Spacer & mix water were mixed in Basic blenders.Product was mixed in a Basic 60 bbl blender and were mixed over the top of the latch opening. The spacer & cement were pumped from a Basic cementing pump down the drill pipe and spotted at pre-determined depths, as per the Texas Railroad Commission.

Martin County, TX

Date: 3/17/17
Operator: Hunt Oil
Well Name: McMurry-Crim #203HL
Field: Spraeberry
Rig: H&P 619
Hole Section: Surface hole
Mud: Spud Mud
Formation: "Red Bed"

Challenges
While drilling surface hole, clay/shale/red bed formation continually gave problems while drilling and running surface casing. At certain points due to using spudder rigs, the operator was having to wait on cement pump trucks and the hole would swell up and preventing a good cement job.

Recommendations
PROCOR recommended prior to product arrival while drilling to begin treating the active mud system with 1-275gl Tote of PRO GG. Once the system was treated, we then built a sweep batch of 5% Gumbo Gone and 7ppb SB SuperCeal to begin pumping sweeps. At TD a pill was spotted for running of casing. Once casing was run it was know there would be about a 6-8hour wait for cement pump trucks so while circulating with casing on bottom a 25bbl sweep was pumped every hour while waiting on cement trucks.

Solutions
Using the recommended PROCOR Products operator had no gumbo issues or with clays/shale/red bed falling in and the hole remained in great condition compared to prior wells where the formations would swell and fall in, sticking drill pipe almost to the point of being unable to pump or a good cement job.

Reeves County, TX

Date: 12/01/16
Operator: Anadarko
Well / Area: Windego State 45-23 Unit 1-H
Rig: Precision 613
County: Reeves County, TX
Mud Wt/Type: 9.2ppg/ Q Max
MD/TVD: 12,705'/9,553'

Challenges:
The operator contacted PROCOR about issues with fluid losses during the past 48hrs and products being used were not preventing fluid losses. Operator mixed and pumped PROCOR products as recommended and attempted to POOH to 11,175', then attempting to circulate at 40 bpm with partial returns, then full returns and well began flowing. Cut mud weight from 9.2 to 9.0ppg and started staging back in hole, circulating at intervals to remove heavy mud. Staged back to bottom and resumed drilling ahead with minimal losses and flow back on connections. Cut MW from 9.0 to 8.8ppg and continued drilling.

Solutions:
PROCOR recommended spotting its 45ppb Aggressive LCM, 35ppb PV+, 5ppb SB SuperCeal, 5ppb PROTightCeal.

Results:
At the time of report we are currently drilling ahead at 13,644' and TD will be 14,250', ROP is running between 75-125 ft/hr with losses under 10 bbls/hr. MW is at 8.8ppg with no gas.

Martin County, TX

Date: 3/17/16
Operator: Prime Operating
Well / Area: Schenecker 1813B #3H
Field: Spraeberry
Rig: Trinidad 52
Mud Wt / Type: 9-10ppg/Brine WBM

Challenges:
This Permian Basin operator was drilling the Spraeberry started experiencing losses, and noted drilling in this area of Martin County, TX to be really ratty and porous.

Solutions/Recommendations:
PROCOR recommended aggressive LCM products, 15ppb PRO V+, 10ppb SB SuperCeal, 10ppb PRO TightCeal/M for a total mixture of 35ppb.

Results:
Improved losses and increased ROP and maintaining returns.

Howard County, TX

Date: 2/12/16
Operator: Rock Oil
Well Name/Area: El Gualp 2-47 5WA
Field: Spraeberry
Rig: Precision 593
Mud Wt/Type: 9-10ppg/Brine WBM

Challenges:
Permian Basin Operator was drilling in the Spraeberry Field and began losing fluid at +/- 48 barrels per hour in the Intermediate hole section.

Solutions/ Recommendations
PROCOR consulted with the company man on a plan of action, the plan was to start with 25 ppb (20 PRO V+, 2.5 SB SuperCeal, & 2.5 PRO TightCeal/M) and work our way up as needed. After mixing up the 25 ppb sweeps, we started pumping 10 barrels every 20-30 foot. After pumping 40 barrels, we increased the sweeps to 20 bbls at a time, these sweeps reduced loses +/- 12 bbls an hour. After pumping all 80 barrels of the 25 ppb sweeps, we increased the LCM to 40 ppb (30 PRO V, 5 PTCM & 5 SBSC) to see how the well would respond. After mixing 80 bbls of 40 ppb , we pumped the first 20 bbl sweep with good results, reducing losses to +/- 1-2 bbls an hour. After pumping the second 20 bbl sweep, 100% returns for the rest of the night until well was TD'd.

Results
Operator was pleased with the successful application and continued to pump 10 bbl sweeps just for maintenance and to maintain wellbore integrity.

Loving County, TX

Date: 12/15/15
Operator: Matador Resources
Well Name: Dick Jay 92-TTT-B01 WF # 212H
Field: Phantom
Rig: Patterson 295
Mud Wt/Type: 9-10ppg/ Brine WBM

Challenges:
This Permian operator was drilling through potential loss zones and preparing to be proactive in preventing fluid losses. PROCOR engineer arrived on location 7-8 hrs prior to reaching the lose zone. They were drilling with a 10 pound brine and sending all returns to the reserve pit and recirculating back into the system.

Solutions/Recommendations:
While drilling @ 4,294' started losing partial returns, slowed down pumps and slowed down losses. Started mixing up 40ppb sweeps (25 PRO V+, 10 SB SuperCeal, 5 PRO TightCeal/M) and pumping every 30' at 20 bbls each. Pumped 20 bbl sweep at 4,302', a second 20 bbl sweep at 4,319'. The well started losing 100% returns again and continued pumping sweeps and gaining full returns. The Operator decided to reduce the ppb of the sweeps and cut back on the barrels pumped to 15 barrels and we would be in this loss zone until TD. Pumped sweep of 15bbls at 40 ppb 4,349' Pumped 15 bbl sweep at 4,390'. And at TD we pumped two bottoms up to clean the hole, then placed 70 barrels at 40 ppb across the loss zone and POOH.

Results:
While tripping out Operator maintained 100% full returns and considered this application successful. Tripped in hole to bottom with casing with full returns and established full cement returns to surface.

Loving County, TX

Date: 12/4/15
Operator: Matador Resources
Well Name: Dick Jay 92-TTT-B012 WF #204H
Field: Phantom
Rig: Patterson 295
Mud Wt/Type: 9-10ppg / Brine WBM

Challenges:
Operator drilling in the Permian Basin was experiencing fluid losses.

Solutions:
PROCOR recommended running sweeps. Pumped 2 sweeps of 30 bbls @ 35 ppb (30ppb PRO V+, 2.5ppb PRO TightCeal/M, and 2.5ppb SB SuperCeal). These preventative LCM sweeps were pumped at depths identified by the operator as possible lost zones on two previous wells. The first zone 4,292', and the second zone 4,310' , where a sweep was pumped as soon as they saw loss circulation. The pills spotted consisted of 45 ppb, (40 ppb PRO V+, 2.5ppb PRO TightCeal/M, and 2.5ppb SB SuperCeal) on bottom prior to POOH.

Results:
These product applications allowed complete returns on the cement job where on previous wells they had to pump double the cement volume with no returns. These sweeps concentrations and pills were pumped through directional tools with no problems, resulting in 100% full returns.

Andrews County, TX

Date:	6/13/13
Operator:	Apache Corp.
Well / Field:	Shafter Lake 72 / Shafter Lake
Rig:	Key 36
County:	Andrews County, TX
Hole section:	Surface hole
Mud:	Spud mud
Formation:	"Red Bed"

Challenges:
Drilled shallow brittle "Red Bed" formation and once through the formation the "Red Bed" fell in and stuck the DP. A back off was performed and due to the "red bed" formation falling into the hole on top of the fish, the operator was unable to go back in the hole and get to the fish using conventional washing methods, increased viscosity and using other hole cleaning techniques.

Solutions/Recommendations:
PROCOR Recommendation included mixing 50 bbl sweep slurry @ 25ppb:

1. Have a pre-built 50ppb pill containing: Fill Pre-mix tank with 35bbls system mud and 15ppb SuperCeal, 5ppb PRO TightCeal Medium 5ppb PRO V+ and add 3% by volume PRO GG (Gumbo Gone Shale inhibitor). Top off slugging pit to 50bbls ensuring mix until consistent.
2. Once the sweep slurry is built, begin washing back to fish pumping:10bbls sweeps every 30' if washing is good or if washing was slow we recommend pumping a 10bbl sweep every time sweep exits the wash pipe.
3. When the top of the fish is reach and it is decided to POOH. We recommend pumping a 30bbl sweep all the way around prior to pulling out of the hole. Once the sweep gets back to surface, POOH to pick up fishing assembly.

Results:
Using PROCOR products as recommended enabled the operator to wash back in the hole effectively sealing and enhancing the "red bed" in-tegrity preventing anymore of the formation from falling in the hole allowing the fishing an P&A operation to be completed with no further is-sues from the "red bed" formation. Operations Engineer commented "PROCOR Products worked great, no red bed has come back across the shakers and were able to get back to the fish!"