PROCOR CHEMICALS, INC.

WOODFORD SCOOP
STACK
MIDCONTINENT PACKAGE

Customer List
Case Histories

P.O. Box 81356 • Lafayette, LA 70598 • Phone 866.960.1326 • www.procorchemicals.com

PROCOR CHEMICALS, INC.

DATE: 07/22/24	PROCOR CUSTOMER LIST WOODFORD SCOOP STACK MIDCONTINENT	

COMPANY NAME

Amor Lonestar
Calcuta Petroleum
Camino Natural Resources
Expand Energy/ Chesapeake
Devon Energy
Gulfport Energy
Longfellow Energy
Conocophillips/ Marathon Oil
Ovintiv/ Newfield Exploration
PetroQuest Energy
Territory Resources
Trinity Operating
Perdure Petroleum

- *Dewey County, OK*

Date: 2/14/24
Operator: Calcuta Petroleum
Well / Area: SCU 43-1
Field: Unknown
Parish/County: Dewey County, OK
Rig: Atlas 2

Challenges:
Operator drilling a 8,600' vertical well in the Cottage Grove formation , running WBM, lost full returns 200' off bottom, tried multiple different pills and nothing worked, tried mixing up a 50ppb pill of generic LCM products because nothing they had could be pumped @ higher concentrations so this is when we were called in.

Solutions/ Product Recommendation:
They spotted the 50ppb pill 1000' off bottom and began tripping out of hole and finally got returns inside surface casing. They tripped back in basically with full returns until they washed through the pill they left in hole and had 100ppb pill of our products mixed, we spotted 50bbls or our pill and as soon as it turned the corner full returns were established and dropped off to 50% returns on next trip in, stopped and pumped another 20bbl pill and established full returns to continue tripping in hole.

Products used –
PRO V+, PRO X, PRO HG, PRO Sweep Aid, SB SuperCeal

Results:
Plan continued to be successful drilled to TD, then spotted a couple of PROCOR pills near bottom to POOH to run casing. Spotted 80bbls @ 65ppb to run casing, had full returns running casing and full returns on cement job using PRO V+ Pre-Cement Spacer.

- *Blaine County, OK*

Date: 01/04/24
Operator: Longfellow Energy
Well / Area: Nova 3031 #1MHX
Field: Okeene
Parish/County: Blaine County, OK
Rig: Atlas 5

Challenges:
Having losses, unable to keep hole open, ratty formation top of curve needed to increase mud weight to keep hole open to POOH to run casing. Using conventional mud product treatments with no success unable to keep hole open.

When arrived on location rig was circulating with no losses and mud weight at 9.8ppg but could not raise mud weight needed to get out of hole. Rig crew had 69 bbls of rig fluid in pre-mix tank , which holds 80bbls. Recommended pumping an 80 bbl @ 50ppb pill at top of curve. Operator followed the proposed recommendation.

Solutions/Recommendations:
Ratty formation LCM squeeze - 80bbls @ 50ppb: -Pull 70bbls system mud; Add 70sx Pro V+ (20ppb); Add 70sx Pro X (20ppb); Add 20sx Sweep Aid (5ppb); Add 20sx SB Superceal (5ppb); Top off to full 80bbls and agitate. Spot pill just above or across "ratty formation " at top of curve. POOH to above slurry, circulate 5bbls to ensure tools are clean then let slurry set for 1 hour for solids to settle. After 1 hour make sure annulus is full, if required to fill, fill in 20bbl increments to keep hydrostatic minimal. Once annulus held full, close annulus and started pumping slow as possible in 2-3bbl increments, building pressure in 100psi increments to desired

pressure of 200psi. Refer to squeeze graph. Once desired pressure was achieved, opened annulus and started circulating and dusting up system to desired weight to keep hole open. Once desired weight was achieved, 10ppg, circulate a bottoms up. At this point slowly washing to bottom to clean up hole prior to POOH to run pipe.

Results:
Job was successful. After finishing the last squeeze started weighting up mud to 10ppg, returns were at 100 percent. After weighting up, tripped/washed back to bottom with minimal issues, encountered a few tight spots on way out but no losses and company man stated "this was the best shape the hole has been in since the issues started". Ran casing to bottom with no issues and cemented with full returns.

- Pittsburg County, OK

Date: 06/30/23
Operator: Trinity Operating
Well / Area: Sandmann 2-16/9H
Field: Unknown
Parish/County: Pittsburg County, OK
Rig: Latshaw 42

Challenges:
Drilling Concerns: 8 3/4" Curve and Lateral Hole: 4,200'MD to 19,382'MD, running 8.8-9.5ppg OBM

- Shale/Clay Stabilization • Unconsolidated formations • Sticking
- Anticipated formations: Potential lost circulation
  - ➢ Wapanucka @ 7,353'TVD
  - ➢ Union Valley Ls @ 7,868'TVD
  - ➢ Cromwell Ss @ 7,889'TVD
  - ➢ KOP @ 8,442'MD
  - ➢ False Caney Fm @ 8,443TVD
  - ➢ Caney Fm @ 8,566'TVD
  - ➢ Mayes Fm @ 8,795'TVD
  - ➢ Woodford @ 8,915'TVD (Target)
  - ➢ EOC @ 9,334'TVD.

Solutions/Recommendations:

Products recommended PRO V+, PRO X, PRO Sweep Aid, SB SuperCeal, PRO-H Gel.

1. Preventative and maintenance sweeps for drilling with OBM:
   - We recommended treating the active system with **10**ppb SB Superceal and **10**ppb Sweep Aid. Once system is treated, we can maintain treatment with 5sx each per hour.
     - ➢ Assuming 1500 bbls active volume - add 180sx Sweep Aid(3ppb) and 180 sacks SB Superceal (3ppb).
     - ➢ Maintain adding 5sx each per hour.
   - Sweep can be pumped as needed, consisting of 10-15bbls every 200-300' @ 30ppb (10ppb PRO V+, 10ppb PRO X and 10ppb Cedar Fiber).

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 @ 20ppb
- ➢ Pull 70bbls system mud to slugging pit
- ➢ Add 32sx PRO V+ (10ppb)
- ➢ Add 32sx PRO X (10ppb)
- ➢ Add 16sx Cedar Fiber (10ppb) 50lb sacks
- ➢ Top off to full 80bbls and agitate, pump sweeps as needed.

2. Seepage: 10-15bbls per hour
   - 20bbl sweeps every connection or as needed – 45ppb - 15ppb Sweep Aid, 20ppb PRO V+ and 10ppb SB Superceal.
3. Moderate Losses: 15 – 40bbls pr hour
   - 20-30bbl sweeps every connection or as needed / spot 80bbl pill containing: 60ppb – (25ppb PRO V+, 25ppb PRO X, 5ppb SB Superceal and 5ppb PRO Sweep Aid)

4. Total Losses:
    - Spot 50-100 pill containing: 65ppb: 25ppb PRO V+, 30ppb PRO X, 5 ppb Sweep Aid and 5ppb SB Superceal OR 80ppb – 35ppb PRO V+, 35ppb PRO X, 5ppb SB Superceal and 5ppb PRO Sweep Aid).
    - At TD if losses have occurred while drilling, we recommend spotting 50bbls @ 50ppb (25ppb PRO V+/25ppb PRO X) 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.

Results:
Operator experienced fluid losses and minimized losses by following recommendation.

- *Pittsburg County, OK*

Date: 05/30/23
Operator: Trinity Operating
Well / Area: Godwin 1-9/16H
Field: Unknown
Parish/County: Pittsburg County, OK
Rig: Latshaw 42

Challenges:
Operator anticipating loss circulation.

Solutions/Recommendations:

PRO X, SB SuperCeal, PRO HG

Results:
Minimal fluid losses, minimal product usage successfully drill to TD.

- *Coal County, OK*

Date: 03/24/23
Operator: Trinity Operating
Well / Area: Clay 4-15 22H
Field: North East Colgate
Parish/County: Coal County, OK
Rig: Latshaw 42

Challenges:
Operator anticipating fluid losses had products on location and did experience significant fluid losses prior to product applications.

Solutions/Recommendations:
PROCOR recommended 50-100bbls containing 65ppb/ 25ppb PRO V+, 25ppb PRO X , 5ppb SB SuperCeal, 5ppb PRO Sweep Aid)

Results:
Operator experienced significant fluid losses and where able to minimized losses by following product recommendation.

- *Hughes County, OK*

Date: 11/30/22
Operator: Trinity Operating
Well / Area: Woodruff 1-24 25H
Field: Woodford
Parish/County: Hughes County, OK
Rig: Latshaw 42

Challenges:
Operator drilled through an unexpected fault and plugged drill pipe pumping conventional LCM products before PROCOR arrived. After 3 days of fighting losses Geology confirmed they drilled through a large fault causing total losses and gas influx, not a normal loss zone and not the fractured shale gas bearing formation they assumed.

Solutions/Recommendations:
Spot 50-100 pill containing: 80ppb – 35ppb PRO V+, 35ppb PRO X, 5ppb SB Superceal and 5ppb PRO Sweep Aid. Regained full returns and engineer released. As engineer left location, attempted to begin pulling plugged DP and well started losing again. Engineer was turned around to go back to the rig. A second 80bbl @ 80ppb pill was pumped with no success. We then held a conference call to discuss go forward plan. Plan was to utilize the most aggressive LCM pill we had available. It was decided to go with ½ the OH volume (240bbls @ 100ppb – 33.3ppb Pro V+, 33.3ppb PRO X and 33.3ppb PRO HG(hydrogel))

Results:
Once the 240bbls @ 100ppb was spotted, we finally began to get pressures to come down by 4-500psi each pump in and after pumping about 100bbls well stabilized to zero psi killing well, annulus held full and minimal gas. They were able to pull the plugged DP, saving the BHA and run casing. They thought for sure Drill Pipe would be stuck but we explained how the product works, can't stick you if the BHA and bit or not near the loss zone where it is dewatering.

Notes on Preventative plan of action after the well was dead:

- Treated active system with 10ppb SB SuperCeal and 10ppb PRO Sweep Aid. Once system was treated, we recommended maintaining treatment with addtions of 5sx each per hour.
- Recommended Sweeps of 20 bbls every 200-200' Sweep can be pumped as needed, consisting of 10-15bbls every 200-300' @ 20ppb (10ppb PRO Sweep Aid and 10ppb SB SuperCeal). This sweep regimen enhanced hole cleaning, resins coated and kept shales in good shape preventing reactivity, prevents seepage to moderate losses, enhance filtration control of the mud and help keep the well bore in gauge mixing up 80bbls at a time of sweep slurry @ 20ppb.

Also ran PRO V+ Pre-Cement Spacer ahead of cement 80bbls @ 80ppb

Grady County, TX

Date: 7/5/17
Operator: Gulfport Energy
Well: Gulfport North Cheyenne 5-10X #3H
Field: Boatright
County: Grady County, OK
Rig: Patterson 283
Mud Wt/Type: Newpark OptiDrill OBM/10.8ppg

Challenges:
Preventing Loss Circulation, Stuck Pipe, Twisting off BHA.

Solutions:
Treated entire system while drilling out cement plug 5ppb each SB SuperCeal and PROTightCeal Fine, hourly treatments to maintain 10ppb concentration throughout the system. Once operator drilled into the formation of concern, began hourly treatments of 2 sacks per hour of each PRO TightCeal/ M and PTC/F, 5 sacks per hour of SB Superceal and 3 sacks per hour of PRO V+. Operator continued pumping 20bbl PROCOR's Aggressive LCM consisting of 35ppb. 25 PRO V+, 5 SBSC, 5 PTC/M every 50' drilled or 2-3hrs. No treatments while sliding. Operator successfully drilled to within 7ft of prior loss zone without any losses. Began torqing up at this point and made a trip to discover mud motor had cracked. Changed out BHA & tripped in the hole when new BHA would not drill. POOH to discover mud motor was broken in half. Ran 9 5/8" casing at 11,030 ft MD & set whiptock to sidetrack hole & began drilling again. At 11,500 ft MD (122-182 ft above known complete loss zone, we began aggressive hourly active treatments again (2 sx/hr ea PRO TightCeal/ F and PRO TightCeal, 5 sx/hr SB SuperCeal, and 3 sx/hr PRO V+) as well as maintaining sweep regimen.

Results:
We were able to get past previous loss zone with this recommendation without any losses observed.

Dewey County, OK

Date: 1/14/17
Operator: Newfield Exploration
Well: Charles 1H - 19
Field: Section 19-19N-14W
County: Dewey County, OK
Rig: Patterson 293
Mud Wt/Type: 8.9ppg OBM

Challenges
On prior well, same pad, over 4,000bbls of mud were lost in this exact hole section. PROCOR was called to do some plugging test using geo-logical info on pore sizes and differential pressures to make a recommendation for a system treatment, system maintenance and sweep regimen to prevent severe losses while drilling this hole section.

Solutions/ Recommendations
On this first well we went very aggressive knowing how bad the issues were previously. We recommended a background concentration of 16ppb (8ppb SB SuperCeal and 8ppb PRO TightCeal Fine). This treatment was maintained by hourly additions of 3sx Pro V+, 6sx SB SuperCeal and 6sx PRO TightCeal Medium every hour. On top of the hourly maintenance we also pumped 30ppb sweeps (20ppb Pro V+ and 10ppb SB SuperCeal) while drilling through the 2 areas assumed to be most prolific for the losses.

Results

There were no losses to speak of until almost 6,000'. At 5,980' complete returns were lost. Plan was to start next sweep regimen @ 6,200' so losses occurred a little earlier than expected. We mixed up 100bbls @ 30ppb due to the amount of LCM that had previously been pumped through the tools and in the system. 1st 40bbls spotted achieved 10% returns. 2nd 50bbl pill achieved 95% returns but once entire pill exited the bit it was recommended to let pill set for 1 hour prior to attempting to circulate again. A 2nd batch of slurry was mixed up @ 30ppb and prior to the 3rd pill exiting the bit the 2nd 50bbl pill established full returns. The remainder of this hole section was drilled with increased hourly treatment of 5sx Pro V+, 5sx SB SuperCeal, 5sx PRO TightCeal Fine and 5sx PRO TightCeal Medium every hour along with 30ppb sweeps (25ppb Pro V+, 5ppb SB SuperCeal and 5ppb PRO TightCeal Medium) every 100-200' with no further issues, casing was run and cemented with full returns.

Pittsburgh County, OK

Date: 11/3/15
Operator: Newfield Mid Continent
Well: Ellis 1H-34X
Field: Woodford
County: Pittsburgh County, OK
Rig: Cactus 154
Mud Wt/Type: WBM/92.ppg

Challenges

Drilling faults with expected fluid losses throughout section. Total losses at 2,525 +/- ft MD. Losses were continuous, but regained 75-85% returns with treatments around 2,800 +/- ft MD. Decision was by customer made around 2,900 +/- ft MD to discontinue usage of PROCOR products until further notice in favor of gel, cedar fiber, & cotton seed hulls. Complete returns were lost again around 3,025 +/- ft MD & were never seen again to TD of section. **Hopper on Mathena unit was bad & would barely mix gel. Slow mixing times at Mathena unit.

Solutions/ Recommendations

PROCOR's aggressive LCM products were mixed in active system at 20 ppb concentration (15 ppb PRO V+ and 5 ppb SB SuperCeal). Products were also mixed in sweeps at 20 ppb (10 ppb PRO V+, 5 ppb SBSC, & 5 ppb PRO TightCeal/M) to begin. When complete losses occurred, concentrations of LCM were brought up to 60 ppb (45 ppb PROV+, 10 ppb SBSC, & 5 ppb PTCM). When losses were back under control, maintenance sweeps were changed to 15 ppb PRO V+, 5 ppb SBSC, & 5 ppb PTCM.

Results

PROCOR products did show improvement in returns in comparison with the alternative products. However, the customer on location opted in favor of cedar fiber, cotton seed hulls, & gel. The customer claimed he would rather have no returns than partial returns because it was going to get him stuck. He also said that cedar fiber, cotton seed hulls, & gel were more cost effective.

Gonzales County, TX

Date: 9/25/15
Operator: Newfield Mid Continent
Well: Payden 1H-12XX
Field: Wildcat
County: Pittsburgh County, OK
Rig: Cactus 154
Mud Wt/Type: WBM/9.2ppg

Challenges

Drilling faults with expected fluid losses throughout section.

Solutions/ Recommendations

PROCOR's aggressive LCM products were mixed in active system at 20 ppb concentration (15 ppb PRO V+ and 5 ppb SB SuperCeal). Products were also mixed in sweeps at 20 ppb (10 ppb PRO V+, 5 ppb SBSC, & 5 ppb PRO TightCeal/M) to begin. When complete losses occurred, concentrations of LCM were brought up to 60 ppb (45 ppb PROV+, 10 ppb SBSC, & 5 ppb PTCM). When losses were back under control, maintenance sweeps were changed to 15 ppb PRO V+, 5 ppb SBSC, & 5 ppb PTCM.

Results

Fluid returns stayed between 85%-100% throughout the remainder of the section.

Pittsburgh County, OK

Date: 11/3/15
Operator: Newfield Mid Continent
Well: Ellis 1H-34X
Field: Woodford
County: Pittsburgh County, OK
Rig: Cactus 154
Mud Wt/Type: WBM/92.ppg

Challenges

Drilling faults with expected fluid losses throughout section. Total losses at 2,525 +/- ft MD. Losses were continuous, but regained 75-85% returns with treatments around 2,800 +/- ft MD. Decision was by customer made around 2,900 +/- ft MD to discontinue usage of PROCOR products until further notice in favor of gel, cedar fiber, & cotton seed hulls. Complete returns were lost again around 3,025 +/- ft MD & were never seen again to TD of section. **Hopper on Mathena unit was bad & would barely mix gel. Slow mixing times at Mathena unit.

Solutions/ Recommendations

PROCOR's aggressive LCM products were mixed in active system at 20 ppb concentration (15 ppb PRO V+ and 5 ppb SB SuperCeal). Products were also mixed in sweeps at 20 ppb (10 ppb PRO V+, 5 ppb SBSC, & 5 ppb PRO TightCeal/M) to begin. When complete losses occurred, concentrations of LCM were brought up to 60 ppb (45 ppb PROV+, 10 ppb SBSC, & 5 ppb PTCM). When losses were back under control, maintenance sweeps were changed to 15 ppb PRO V+, 5 ppb SBSC, & 5 ppb PTCM.

Results

PROCOR products did show improvement in returns in comparison with the alternative products. However, the customer on location opted in favor of cedar fiber, cotton seed hulls, & gel. The customer claimed he would rather have no returns than partial returns because it was going to get him stuck. He also said that cedar fiber, cotton seed hulls, & gel were more cost effective.

Gonzales County, TX

Date: 9/25/15
Operator: Newfield Mid Continent
Well: Payden 1H-12XX
Field: Wildcat
County: Pittsburgh County, OK
Rig: Cactus 154
Mud Wt/Type: WBM/9.2ppg

Challenges

Drilling faults with expected fluid losses throughout section.

Solutions/ Recommendations

PROCOR's aggressive LCM products were mixed in active system at 20 ppb concentration (15 ppb PRO V+ and 5 ppb SB SuperCeal). Products were also mixed in sweeps at 20 ppb (10 ppb PRO V+, 5 ppb SBSC, & 5 ppb PRO TightCeal/M) to begin. When complete losses occurred, concentrations of LCM were brought up to 60 ppb (45 ppb PROV+, 10 ppb SBSC, & 5 ppb PTCM). When losses were back under control, maintenance sweeps were changed to 15 ppb PRO V+, 5 ppb SBSC, & 5 ppb PTCM.

Results

Fluid returns stayed between 85%-100% throughout the remainder of the section.