

BAROID



BaraBlend[®]-665 LCM Standard Field Application Procedure

Prepared for: All Customers

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1. Overview

BaraBlend®-665 is a high fluid loss lost circulation material (LCM) uniquely and efficiently enhanced by the “one size fits many” BaraLock®-666 LCMs for sealing small and large unknown fracture widths, etc. BaraBlend-665 contains BaraLock-666.F LCM and is designed to seal fractures up to 3mm wide. Inside a fracture, BaraLock-666 LCM can fit efficiently and form a filtration bed on which a long and strong filter-cake plug can quickly form by dewatering the BaraBlend-665 high fluid loss slurry. Such a filter plug can easily hold a pressure differential of several thousand psi. When larger BaraLock-666 LCM are incorporated into the BaraBlend-665 slurry according to its mixing table, BaraBlend-665 LCM sealing capacity then is extended to the maximum size of the BaraLock-666 LCM added.

When a lost circulation material treatment does not stop the mud loss, consideration should be given to the following:

- Were the type and sizes of particulate material appropriate for the loss conditions?
- Did the treatment have sufficient volume/concentration of material?
- Was the lost circulation material applied to the proper location?

When drilling in lost circulation prone areas, it is recommended to run a BHA bypass tool (e.g., PBL Sub) in the drillstring. This equipment can be opened/closed multiple times and allows the pumping of large lost circulation material without plugging bit nozzles or small clearances in the BHA. This also insures that restrictions from the tool supplier on the size and amount of LCM that can be pumped through their downhole tools can be overcome.

2. Recommended BaraBlend-665 LCM Applications

Application Prerequisite: The weak zone location is basically known, unless it is a very short openhole, so that the volume of the slurry can reasonably cover the zone and still is enough for squeeze operations. (Note: BaraShield-664 LCM sweep pills can be used to help to identify a loss zone location.)

BaraBlend-665 LCM is good for sealing fractures (natural or induced) or small vugs up to the size of the BaraLock-666 selected. It is suitable for the following.

- 1) Squeeze pills to cure severe or total losses.
 - a. Sealing fractures up to the size of the selected BaraLock-666
- 2) Squeeze pills to strengthen a wellbore for higher wellbore pressure containment.
 - a. In either permeable or impermeable formations
 - b. Squeeze to the pressure to be contained
- 3) Squeeze pills to repair a leaky shoe.

3. BaraBlend-665 LCM Treatment Volume, Mixing Fluid, Density and Concentration

The treatment volume must be enough for the following:

- 1) Filling up the loss zone wellbore volume
- 2) Initializing the seal, typically 35 bbl
- 3) Squeezed away to grow the seal for higher strength, at least 10 bbl
- 4) “Sacrificed volume” for contamination of the BaraBlend-665 slurry and mud interface during pumping, typically 10 bbl

For example, if a loss zone has a wellbore volume of 20 bbl, a recommended treatment volume can be 75 bbl.

For deepwater treatments, due to larger ID drillpipe, contamination would be larger. Therefore 25~50% more volume is recommended.

BaraBlend-665 LCM can be mixed only in a clear base fluid such as diesel, synthetic oil or water for its required high fluid loss. WATER IS PREFERRED, for best performance. BaraBlend-665 should not be mixed in any drilling fluid. Furthermore, due to the lime contained in its formulation for soapification reactions, BaraBlend-665 LCM must not be mixed with any ester based oil such as vegetable oil. **When a base oil is to be used for the mixing, a pilot test should be done to check on the compatibility due to the lime contained.** BaraBlend-665 LCM may not be used for a well drilled with water based mud not compatible with lime. Specifically, if a well is drilled with water based mud that has an abnormal level of the low gravity solid content, BaraBlend-665 may not be used. The lime can flocculate the mud with the abnormal levels (high) of low gravity solid content. BaraBlend-665 LCM can be easily mixed in water or diesel. **Freshwater is preferred as the mixing fluid if there is no other concerns.** However, salt water or seawater can also be used. If foaming is observed during mixing with water, a quart of antifoam for WBM normally can help.

BaraBlend-665 LCM is typically weighted to the same density as the mud in the hole. BaraBlend-665 LCM formulation contains suspending agents. Its suspending capability can be activated by the shearing energy from the mixing. However, excessive shear can shred BaraLock-666 added and destroy this suspending capability. Please further refer to section 4 point (9) below for this concern. After being mixed through a hopper according to the following mixing instructions (including **Table 1**), BaraBlend-665 slurry can be weighted with barite. Dry BaraBlend-665 LCM has an average true density close to 2.5 g/cm³ if calculation is needed. It contains BaraLock-666.F LCM and designed to be able to seal up to a 3 mm wide slot.

At a higher slurry weight, a proper quantity of thinners have to be added maintain appropriate rheology for taking barite. In order to maintain or improve the sealing capability, additional BaraLock-666 may have to be added for the slurry. Refer to **Table 1** for the recommended quantity.

BaraBlend-665 Base Slurry for Fresh Water Formula/Sea Water

- For any density, recommended base slurry concentration is 100 ppb BaraBlend-665
- For weighted pills, add water base thinner/dispesant as needed (examlle THERMATHIN). DO NOT OVERTHIN.
- Add additional BaraLock-666 LCM (**Table 1**) as needed.

BaraBlend-665 Base Slurry for Base oil

- For any density, recommended base slurry concentration is 100 ppb BaraBlend-665 + 0.5 ppb BaraLock-666.M.
- For weighted pills, add oil wetting agents (examlle DRILL TREAT). DO NOT OVERTHIN.
- Add additional BaraLock-666 LCM (**Table 1**) as needed.

When a fracture or vug is perceived to be of a larger size, BaraLock-666.M LCM and BaraLock-666.C LCM may also be selected at the following concentrations as in **Table 1** below. Use DFG to estimate the amounts accurately for different pill densities and different base fluids.

Table 1. BaraLock-666 LCM Selection for Sealing Wider Fractures

Fracture width or Vug Diameter	Recommended concentration
≤ 8mm	BaraBlend-665 Base Slurry + 0.25 ppb BaraLock-666.M
≤ 1 inch	BaraBlend-665 Base Slurry + 0.5 ppb BaraLock-666.M + 0.5 ppb BaraLock-666.C

Alternatively, these larger BaraLock-666 LCM can be added in mud to be pumped ahead of a BaraBlend-665 base pill. A BaraLock-666 mud pill can be 30~50 bbl at the same concentrations of BaraLock-666.M or BaraLock-666.C LCM as recommended in **Table 1**.

4. BaraBlend-665 LCM General Mixing Procedure

Mix BaraBlend-665 according to the BaraBlend-665 Base Slurry formulations.

- 1) Prior start mixing, the mixing tank or slug pit should be clean to a level where it is ready to accept a clean brine (i.e., completion fluid). This requires the removal of ALL drilling fluid and drilling fluid residue, especially any solids accumulation from the bottom of the pit or tank. Additionally, the flow path for pumping the BaraBlend 665 pill should be identified, isolated and flushed with a sufficient quantity of base fluid that the discharge from the flushing process indicates that NO drilling fluid or drilling fluid residue is present in any included element. The entire flowpath should remain isolated and offline until the pill is pumped at which point it can be returned to general service.
- 2) It is recommended to first start with 75% of base fluid first, turn on all agitators, then begin adding BaraBlend-665 LCM through the hopper. When the pill is getting too thick during mixing, add additional base fluid from the remainder.
- 3) After completing the addition of BaraBlend-665 LCM, add remainder of base fluid (if any).
- 4) If weighting with barite is needed, start adding barite now. If the pill is getting too thick during mixing, add thinner/dispersant/oil wetting agent as needed. But, avoid over thinning. Measure the density frequently.
- 5) Add additional BaraLock-666 LCM if needed based on the mixing tables.
- 6) Then shut down the hopper to avoid excessive shearing but maintain continuous agitation of the prepared slurry during storage.
- 7) Quality control on BaraBlend-665 slurry
 - a. API fluid loss: Take a sample of the mixed BaraBlend-665 slurry to test on an API fluid loss cell. An entire cell of 225 ml unweighted BaraBlend-665 slurry should lose its mixing fluid within ~60 seconds. The filter cake should be firm.
 - b. Viscosity: Visual - Like regular mud, not too thin like water or too thick to hardly flow.

- 8) If plugging hopper jet is concerned, when BaraLock-666.M LCM or BaraLock-666.C LCM are needed, shut down the mixing pump and add BaraLock-666.M LCM or BaraLock-666.C LCM directly by dumping the foam wedges into the mixing tank to prevent plugging hopper jets.
- 9) Avoid excessive shearing to shred the BaraLock-666 LCM. Avoid using a shearing unit to mix BaraBlend-665 LCM. Shut down the hopper immediately after mixing but keep the agitators on to prevent settling of barite.
- 10) Clean the dead volume of the slurry in the mixing tank immediately after use.

5. BaraBlend-665 LCM Special Risk Assessment

ID	Risk/Opportunity Name	Event Description/Impact	Elimination, Substitution, Mitigants
1	Plugging the Bottomhole Assembly(BHA) including bit nozzles	Foam wedges may not pass through BHA at a low pump rate. Plugged BHA that must be pulled for cleaning out.	<p>When only BaraLock-666.F LCM is added, ensure that the nozzle sizes are at least 10/32 in. and the pump rate is higher than 2.5 BPM to pump through the BHA.</p> <p>When BaraLock-666.M LCM is also added, ensure that the nozzle sizes are at least 13/32 in. and the pump rate is higher than 5 bpm to pump through the BHA.</p> <p>When both BaraLock-666.M LCM and BaraLock-666.C LCM are added, a drillpipe by-pass tool such as a PBL-Sub or Well Commander with ports of at least 1 in. should be used to avoid plugging the BHA. The pump rate is at least 5 bpm. Otherwise, the pill may have to be pumped open-ended.</p>
2	Plugging mud pump suction and discharge filter screens	There may be a coarse filter screen installed at the suction and discharge lines, resulting in an inability to deliver treatment slurry to mud pumps.	If BaraLock-666.M LC or BaraLock-666.C LCM is used, the filter screens may have to be temporarily removed.
3	Plugging drillpipe screens	There may be a filter screen installed on drillpipe.	If BaraLock-666.M LCM or BaraLock-666.C LCM is used, the filter screens may have to be temporarily removed.

ID	Risk/Opportunity Name	Event Description/Impact	Elimination, Substitution, Mitigants
4	Contaminating mud by leftovers	BaraBlend-665 LCM is not a drilling fluid. Too much BaraBlend-665 LCM mixed with mud may affect mud properties and/or mud performance. It may increase the fluid loss of a water based mud due to its diatomaceous earth component. It may also affect the rheology of a water based mud with a high LGS content due to its lime component. BaraBlend-665 LCM affects OBM very little.	Dispose of the leftover returned to surface during clean-up. Perform contamination test at the rig site before pumping BaraBlend-665 LCM if concerned.

6. A Typical BaraBlend-665 Squeeze Pill Pumping Procedure

BaraBlend-665 LCM cannot work if contaminated by mud, unlike BaraShield-664 squeeze pills. Avoiding contamination from mud at any time is essential to its success. Furthermore, BaraBlend-665 LCM has its unique and powerful sealing capacity. So an appropriate procedure needs to be followed to avoid plugging the drill string BHA.

There are several important aspects to be considered for an appropriate pumping procedure:

- i. The potential BaraBlend-665 LCM lost into formations during its placement. In other words, whether it is a severe loss or minor loss. In a wellbore strengthening scenario, a wellbore may not lose any fluid when BaraBlend-665 LCM is placed in the relatively weak zone.
- ii. The drill string restrictions such as BHA or a by-pass tool such as a PBL-Sub or Well Commander. Pumping all the slurry out of drillpipe continuously at a high rate and leaving no slurry across a potential flow restriction after the pump is stopped is necessary to clear the drillpipe.
- iii. Whether the annulus fluid is full or not. When it is not full, whether the fluid level is known.

Review Section 5 “BaraBlend-665 Special Risk Assessment” first. Prepare for pumping BaraBlend-665.

Define Pumping Limitations – Highest Pressure and Rate

- Pressure

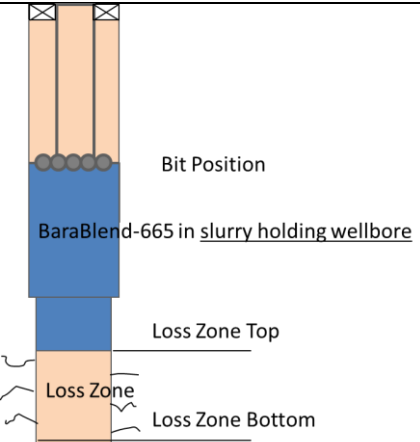
- Define the pump pressure equivalent to the target wellbore strength, P_{target} for the final squeeze pressure.
 - Define the pump pressure limit, P_{limit} , based on a weak zone second to the loss zone. A typical such zone is the previous casing shoe.
 - Compare P_{target} and P_{limit} and choose the smaller one as the final P_{target} .
- Rate
- If the highest pump rate permitted, R_{limit} , is uncertain, close the annulus to perform an injectivity test to define the correlation of injection pressure and rates from small to large (such as 1, 3, 5, 7 bpm) but make sure the injection pressure is below P_{limit} . Define the highest pump rate R_{limit} as the pump rate corresponding to P_{limit} .
 - Define a preferred high pump rate from between 2 and R_{limit} for pumping the pill, typically 5 bpm.
 - If total losses, then you may pump at highest pump rate at which the mud was lost.

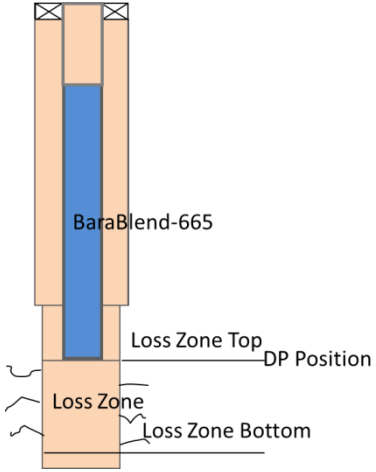
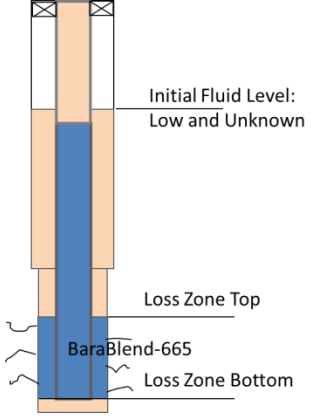
A. Squeeze Method 1 – Pump Some BaraBlend-665 LCM into Formations Directly - then Squeeze

I. Position the Drill String as Defined and Select an Appropriate Squeeze Method

Typical applications include curing severe to total mud losses or strengthening a weak wellbore.

Choose the one from the following so that all conditions are met. Please also consider Method 2 before making your decision.

No.	Squeeze Method	Conditions	Drill String Configurations	Drill String Configuration Illustration
1	Inject in then Squeeze	1) Loss Rate Low or High 2) DP Restrictions 3) Full Annulus to BOP	Place the exit (such as bit nozzles or PBL-Sub) of DP high enough to ensure the available <u>wellbore volume</u> (the hole below the exit but above the top of the loss zone) can contain all the BaraBlend-665 slurry	

No.	Squeeze Method	Conditions	Drill String Configurations	Drill String Configuration Illustration
2	Inject in then Squeeze	<ol style="list-style-type: none"> 1) Loss Rate Low or High 2) Open Ended Drillpipe 3) Drillpipe can contain all BaraBlend-665 4) Full Annulus to BOP 	Place the end of DP at the top of the loss zone	 <p>The diagram shows a vertical drill pipe assembly. At the top, there are two 'X' marks representing connections. The drill pipe is filled with a blue fluid labeled 'BaraBlend-665'. The drill pipe is open at the top. Below the drill pipe, there is a section labeled 'Loss Zone' with wavy lines indicating fluid loss. The top of this zone is labeled 'Loss Zone Top' and the bottom is 'Loss Zone Bottom'. A horizontal line indicates the 'DP Position' at the top of the loss zone.</p>
3	Incremental Pumping-in & Squeeze	<ol style="list-style-type: none"> 1) Loss Rate is High 2) Open ended Drillpipe 3) Annulus is not full to BOP and the fluid level is unknown 	Place the end of DP at the bottom of the loss zone	 <p>The diagram shows a vertical drill pipe assembly. At the top, there are two 'X' marks representing connections. The drill pipe is filled with a blue fluid labeled 'BaraBlend-665'. The drill pipe is open at the top. Below the drill pipe, there is a section labeled 'Loss Zone' with wavy lines indicating fluid loss. The top of this zone is labeled 'Loss Zone Top' and the bottom is 'Loss Zone Bottom'. A horizontal line indicates the 'Initial Fluid Level: Low and Unknown' at a level above the loss zone. The 'BaraBlend-665' is shown filling the drill pipe down to the bottom of the loss zone.</p>

No.	Squeeze Method	Conditions	Drill String Configurations	Drill String Configuration Illustration
4	Incremental Pumping-in & Squeeze	<ol style="list-style-type: none"> 1) Loss Rate is High 2) DP Restrictions 3) Annulus is not full to BOP and the fluid level is unknown 	Place the exit (such as bit nozzles or PBL-Sub) of DP high enough to ensure the <u>wellbore</u> volume (the hole below the exit but above the top of the loss zone) can contain the DP mud and all the BaraBlend-665 slurry	<p>The illustration shows a vertical cross-section of a wellbore. At the top, a drill pipe (DP) is shown with a bit at the bottom. The bit is positioned above a 'Loss Zone'. The wellbore is filled with 'DP mud in slurry holding wellbore' (orange) and 'BaraBlend-665 in slurry holding wellbore' (blue). The 'Loss Zone' is a region where fluid is lost, bounded by 'Loss Zone Top' and 'Loss Zone Bottom'. The bit position is indicated by a horizontal line with a diamond symbol.</p>

II. Pumping Procedure

a. Initialize the Seal (Set the BaraLock-666 LCMs in fractures and initialize a seal)*

- 1) Pump BaraBlend-665 LCM into drillpipe at 5 BPM.
- 2) Close the annulus before the pill is displaced in to the BHA/Treating Sub.
- 3) At as high a pump rate permitted, such as 5 bpm, inject 20 bbl BaraBlend-665 LCM into the fractures. If the pressure approaches the pressure limit, P_{limit} , during this period, reduce the pump rate slightly to drop the pressure below the pressure limit, P_{limit} .
- 4) Shut down the pump and wait for 20 min. Monitor the pressure fall-off.
- 5) At as high a pump rate permitted, such as 5 bpm, inject 10 bbl BaraBlend-665 into the fractures. If the pressure approaches the pressure limit, P_{limit} , during this period, reduce the pump slightly to maintain the pressure below the pressure limit, P_{limit} .
- 6) Shut down the pump and wait for 20 min. Monitor the pressure fall-off.
- 7) At as high a pump rate permitted, such as 5 bpm, inject 5 bbl BaraBlend-665 into the fractures. If the pressure approaches the pressure limit, P_{limit} , during this period, reduce the pump slightly to maintain the pressure below the pressure limit, P_{limit} .
- 8) Shut down the pump and wait for 20 min. Monitor the pressure fall-off.
- 9) If Drillpipe is in the loss zone, pull up out of the BaraBlend-665.
- 10) If annulus is still not full, pump enough mud to fill it

*Note: Alternatively, if larger BaraLock-666 LCMs are pumped as a mud pill ahead of the BaraBlend-665 pill, make sure all the BaraLock-666 mud pill has been pumped into formations in this **Step a** in such as 20, 10 and 5 bbl followed by 10 min waiting each time. Then skip **Step a 9)** and **10)** and continue to follow **Step b**.

b. Grow the Seal by Hesitation Squeeze

- 1) When the annulus is closed, pump at 0.5~1.0 bpm for 2 bbl or 50~100 psi whichever comes first, shut down the pump and wait for 10~15 min or till the pressure fall-off is basically flat or unchanging.
- 2) Repeat the above (**Step b. 1**) as many times as needed to increase the pressure toward the P_{target} .
- 3) Once P_{target} is reached, **shut down the pump and wait for 2 hours**. (Optional: During the 2-hour waiting, pumping in small volumes to maintain the pressure at the P_{target} level.)
- 4) Bleed off pressure and open the annulus.

c. Clean up

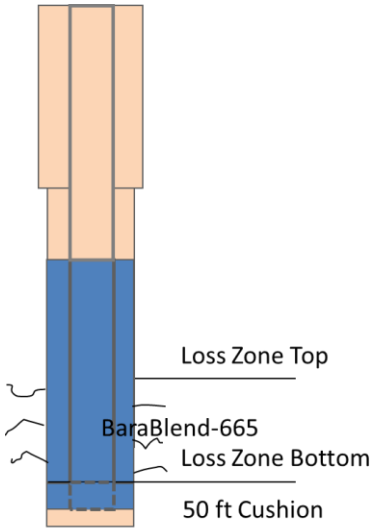
- 1) Ream through the loss zone with drill bit at 100~200 ft/hr with mud circulation. Monitor WOB to detect the plug location inside the wellbore.
- 2) Pressure-test the hole if needed.

B. Squeeze Method 2 – Circulate to Place then Squeeze

I. Position the Drill String as Defined and Apply the Squeeze Method

This method is NOT suitable for adding the larger BaraLock-666 LCMs in mud to be pumped ahead of the BaraBlend-665 pill. Typical applications include squeezing an induced fracture for a higher wellbore strength at the shoe or a weak zone.

Make sure the following conditions are met before you choose this method.

No.	Squeeze Method	Conditions	Drill String Configurations	Drill String Configuration Illustration
1	Circulate as a Balanced Plug then Squeeze	<ol style="list-style-type: none"> 1) Open-ended Drillpipe 2) Annulus is full to BOP 3) Mud loss is small during placing BaraBlend-665 4) Injection pressure 	Place the end of DP 50 ft below the bottom of the loss zone if there is further openhole below the loss zone bottom otherwise at bottom.	

		would be too high even at low rates of 0~2 bpm (hence circulate)		
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II. Pumping Procedure

a. Initialize the Seal (Set the BaraLock-666 LCMs in fractures and initialize a seal)

- 1) Pump BaraBlend-665 LCM into drillpipe at ~5 BPM or higher.
- 2) Displace BaraBlend-665 LCM at ~5 bpm or higher into openhole annulus across the loss zone for a balanced plug.
- 3) Pull out of the plug and position the DP above the pill.
- 4) Close the annulus.
- 5) At as high a pump rate permitted, such as 5 bpm, inject 20 bbl BaraBlend-665 LCM into the fractures. If the pressure approaches the pressure limit, P_{limit} , during this period, reduce the pump slightly to maintain the pressure below the pressure limit, P_{limit} .
- 6) Shut down the pump and wait for 20 min. Monitor the pressure fall-off.
- 7) At as high a pump rate permitted, such as 5 bpm, inject 10 bbl BaraBlend-665 into the fractures. If the pressure approaches the pressure limit, P_{limit} , during this period, reduce the pump slightly to maintain the pressure below the pressure limit, P_{limit} .
- 8) Shut down the pump and wait for 20 min. Monitor the pressure fall-off.
- 9) At as high a pump rate permitted, such as 5 bpm, inject 5 bbl BaraBlend-665 into the fractures. If the pressure approaches the pressure limit, P_{limit} , during this period, reduce the pump slightly to maintain the pressure below the pressure limit, P_{limit} .
- 10) Shut down the pump and wait for 20 min. Monitor the pressure fall-off.
- 11) If Drillpipe is in the loss zone, pull up out of the BaraBlend-665 LCM.
- 12) If annulus is still not full, pump enough mud to fill it up.

b. Grow the Seal by Hesitation Squeeze

- 1) When the annulus is close, pump at 0.5~1.0 bpm for 2 bbl or 50~100 psi whichever comes first, shut down the pump and wait for 10~15 min or till the pressure fall-off is basically flat or unchanging.
- 2) Repeat the above (**Step b. 1**) as many times as needed to increase the pressure toward the P_{target} .
- 3) Once P_{target} is reached, **shut down the pump and wait for 2 hours**. (Optional: During the 2-hour waiting, pumping in small volumes to maintain the pressure at the P_{target} level.)
- 4) Bleed off pressure and open the annulus.

c. Clean up

- 3) Ream through the loss zone with drill bit at 100~200 ft/hr with mud circulation. Monitor WOB to detect the plug location inside the wellbore.
- 4) Pressure-test the hole if needed.

7. Possible Failure Causes for BaraBlend-665 Squeeze Pills

- 1) *High pump rates to displace the entire BaraBlend-665 pill into the formation at once.* After some BaraLock-666s are pumped into fractures at a high rate, stopping the pumping is necessary to let the BaraLock-666s to restore the shape and size to initialize the seal.
- 2) *BaraBlend-665 slurry is contaminated by mud.* BaraBlend-665 LCM has a high fluid loss property to enable the rapid formation of plugs. This is necessary for the product to work effectively. However, when the slurry is contaminated by mud, the high fluid loss property will be compromised and firm plugs may not form.

8. Limitations for BaraBlend-665 Squeeze Pills

- 1) BaraBlend-665 LCM requires maintaining its high fluid loss to be functional and mud is generally of a low fluid loss. Controlling the contamination from mud to BaraBlend-665 LCM is essential during mixing and placement the pill. When a loss zone location is unknown and a BaraBlend-665 pill may have to be pushed for a long distance in the annulus in order to reach a zone it may not work, due to potential contamination from mud during this displacement. In such a case, it is recommended that a BaraShield-664 sweep pill or squeeze pill be pumped to attempt to seal the loss zone to feed back the location of the loss zone. This loss location identification method has been successfully applied in the field. After the location has been identified, then a BaraBlend-665 pill should be applied.
- 2) When fractures or vugs are larger than the foam wedges added, BaraBlend-665 LCM may not form a seal in such fractures or vugs. In this case, larger BaraLock-666 LCM may have to be added.
- 3) Base fluid spacer is NOT recommended between BaraBlend-665 LCM and mud, especially when drillpipe restrictions exist and larger BaraLock-666 LCM are selected. During displacement, the base fluid may dilute BaraBlend-665 LCM causing a plug of low viscosity base fluid containing some BaraLock-666 LCM at the interface. The BaraLock-666 in the low viscosity fluid may be separated due to the density difference and accumulate at one location and plug the drillpipe restrictions they should not normally plug.
- 4) BaraLock-666 LCM is not strong enough to withstand the shearing from the mud shearing unit. The jets may not only shred the BaraLock-666 but also may shred the particulates in the formulation. Using a mud shearing unit or similar to mix a pill should be avoided.

9. Additional Notes

- Do not hurry to build squeeze pressure; patience and time are necessary to obtain a successful squeeze.

- Do not mix weighted slurry too far in advance of using it; all weighted fluids are subject to barite settling over time.
- Use a low pressure gauge to accurately measure squeeze pressure; if possible, rig-up equipment so that drill pipe and casing pressures can be monitored easily and precisely.
- No special equipment is needed to pump the slurries. The slurry can be mixed in a mud pit and pumped with rig pumps. However, the pit has to be free of mud to ensure the high fluid loss property of BaraBlend-665 LCM is not compromised.
- Knowing the loss zone location is important. Attempt to accurately determine the location of the loss zone, to increase the chances for obtaining a successful squeeze (temperature log and/or MWD). Sweep pill applications of BaraShield-664 LCM can help to locate the loss zone location.
- Always have a sufficient quantity of material on location for additional squeeze procedures.