

Case History

Baroid Industrial Drilling Products



FUSE-IT™ Liquid LCM Seals Fractures to Improve Core Recovery

Location: Mid West, Western Australia

Project Scope

Mt Magnet Drilling had been exploring the banded iron formation (Hematite ore bodies) of Mid West for approximately 18 months using a D 800 rig, coring with HQ triple tube. The ironstone formation varies from well-indurated to friable and soft and friable with cavities, so the battle to maintain circulation and core recovery persisted down hole. The contractor and client were frustrated that the normal range of drilling fluid additives was not able to achieve the desired results and

Baroid IDP Solution

FUSE-IT liquid lost circulation material (LCM) was demonstrated to the drilling supervisor, Jamie Hamilton, who immediately began thinking of how to apply the product to HQ3 drilling at the Mid West site.



At 153 meters depth, the core loss became unacceptable and the amount of circulating fluid returning to surface was less than desirable so the following steps were taken:

With the inner tube removed and the diamond drill bit one or two meters off bottom,

1. Pour 3 liters of hammer oil or vegetable oil into the open rods.
2. Reconnect the string and rotate for a couple of minutes. Disconnect the rods.
3. Pour 3 liters of FUSE-IT liquid LCM into the open rods.
4. Pour 10 liters of premixed bentonite and N-SEAL™ fiber LCM into the open rods.
5. Push a wiper (newspaper was used in this application) into the rods to clean off FUSE-IT liquid LCM.
6. Pour 2 liters of hammer oil or vegetable oil behind the paper wiper.
7. Reconnect the drill string and pump drilling fluid until the wiper passes through bit face (water pressure will spike).
8. Shut off the drilling fluid/pump and rotate rods for a few minutes to allow the FUSE-IT LCM to hydrate and bond to the formation down hole.
9. Seat inner tube and commence coring



FUSE-IT™ LCM application



Addition of QUIK-GEL® GOLD bentonite and N-SEAL™ LCM



Paper wiper added



Fluid return with FUSE-IT™ LCM

Once evidence of FUSE-IT liquid LCM was seen in the returning circulation (see photo above) the pumps were turned off and the rods rotated to assist the bonding of FUSE-IT liquid LCM with the formation at varying depths.

Coring began again after only 20 minutes to apply FUSE-IT liquid LCM. Water return was near 100%, enough to fill the lined earthen sumps and recirculate the drilling fluid through the mix tanks.



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FUSE-IT™ liquid LCM bonding loose friable formation together

Economic Value Created for Customer

The use of this process reduced the amount of core loss and improved water return. The drill hole was also stabilized, allowing tripping in and out without concern of collapse.

"In regards to savings, the amount of time spent conditioning our holes have been dramatically reduced since the introduction of FUSE-IT LCM. A quick calculation of savings created by FUSE-IT LCM: On a daily average it saved from 7% to 11% of total cost but this also carries on to the saving of wear and tear on our rod string. So I guess the reduction was across the board as we saved on work time and wear. We were able to increase meters as well. We are spending more time drilling and less time conditioning, so the production is higher and more consistent, our client has enjoyed a reduction in the overall price per meter, and most importantly is the experience gained by our drillers."

*-Jamie Hamilton, Supervisor
Mt Magnet Drilling*

FUSE-IT™ lost circulation material can be purchased through any Baroid Industrial Drilling Products Retailer. To locate the Baroid IDP retailer nearest you contact the Customer Service Department in Houston or your area IDP Sales Representative.

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