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# Presheared asbestos muds help cut costs, rotating time

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Drilling Editor

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# Presheared asbestos muds help cut costs, rotating time

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RESULTS of drilling in widely separated areas indicate that the use of presheared asbestos in drilling fluids can help reduce mud costs and rotating time. These drilling fluids are designed as low-solids muds and appear to be finding increased application.

In one of these instances, presheared asbestos was used with bentonite and results were compared to drilling results using a straight bentonite system on an adjacent well. In this Okfuskee County, Okla., comparison, mud costs for the presheared asbestos-bentonite system were 47.3¢/ft while the straight bentonite system cost 58.2¢/ft.

These two wells, located 660 ft apart, were drilled by the same operator using the same contractor and the same rig, the same mud company and the same mud engineer. Total depth of the two wells was slightly over 4,000 ft and mud-up depth was around 2,700 ft. Casing string in both wells was 8⅝-in.

A significant savings in drilling time resulted from using the presheared asbestos-bentonite mud over the straight bentonite system. The well using the combination fluid was drilled in 99 rig hr, compared to 140 hr to drill the well on which the straight bentonite system was used.

The bentonite-drilled well required six bits compared to five for the well drilled with the presheared asbestos-bentonite mud.

In Libya, a similar system proved to be competitive with straight bentonite fluids that had been used previously. And this particular well was drilled without any lost-circulation problems, something that had given operators considerable trouble in the past in this area.

The Libya well was drilled to a total depth of 10,068 ft with mud weights varying from 8.7 to 8.9 lb/gal. After an 18⅝-in. surface string was set, 13⅜-in. was run to 3,272 ft and a 12¼-in. production string set at TD.

The presheared asbestos-bentonite low-solids mud system was built in a ratio of 1 lb of presheared asbestos to 2 lb of bentonite. But plans for the next well included using a drilling fluid built in a 1/1 ratio of these materials. In this instance, a fluid-loss control agent was used and the properties of the mud system included a plastic viscosity of 8; yield value of 4; funnel viscosity of 40 sec; and 4-7% solids.

For North Slope drilling, a presheared asbestos-bentonite extended system has been recommended from surface to total depth. In this case, this procedure applies:

1. Initial surface volume is prepared using freshwater treated with presheared asbestos and bentonite in a 50-50 ratio.

2. Surface volume is then treated with salt to lower the freezing point to the necessary level.

3. The system is then used to drill through the permafrost to the surface casing point. During this interval, presheared asbestos can be added directly to the system for viscosity and hole cleaning when needed. Bentonite can be prehydrated and added to the system when required, and filtration control can be obtained with salt-water fluid-loss agents.

4. Do not discard this fluid after drilling permafrost and setting surface casing—simply discontinue the addition of salt to the mud system and use freshwater for makeup.

5. This same system is used out from under surface to approximately 3,000 ft where casing is again set. Since no salt was added during this second interval and freshwater makeup was used, the system will be fresh enough to allow mixing of bentonite directly. For maximum yield, 50-50

Fig. 1

Apparent viscosity comparison

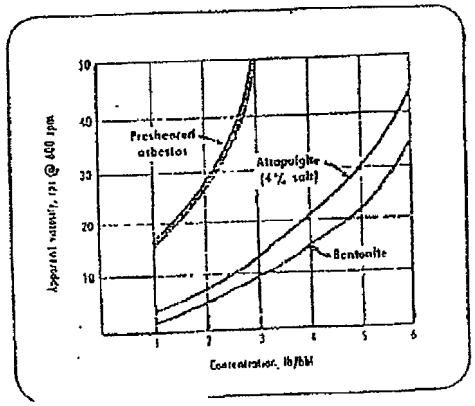



Fig. 2

Synergistic effect of Super Visbestos

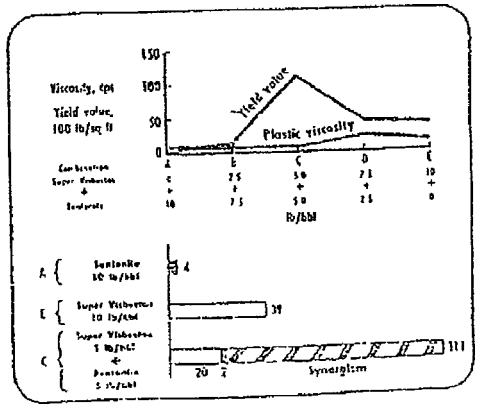


Fig. 3

## Comparative gel strengths

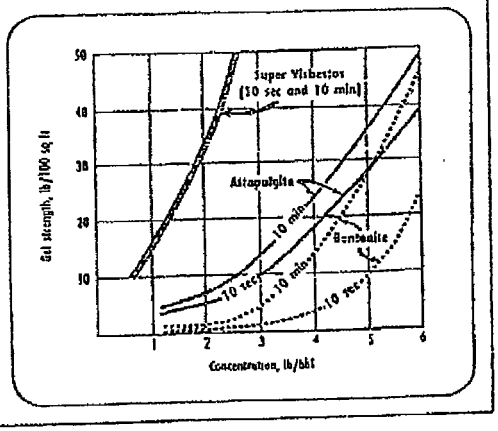



Fig. 4

## Shear thinning characteristics

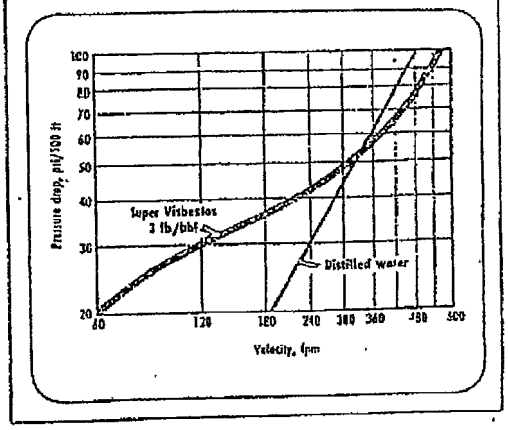
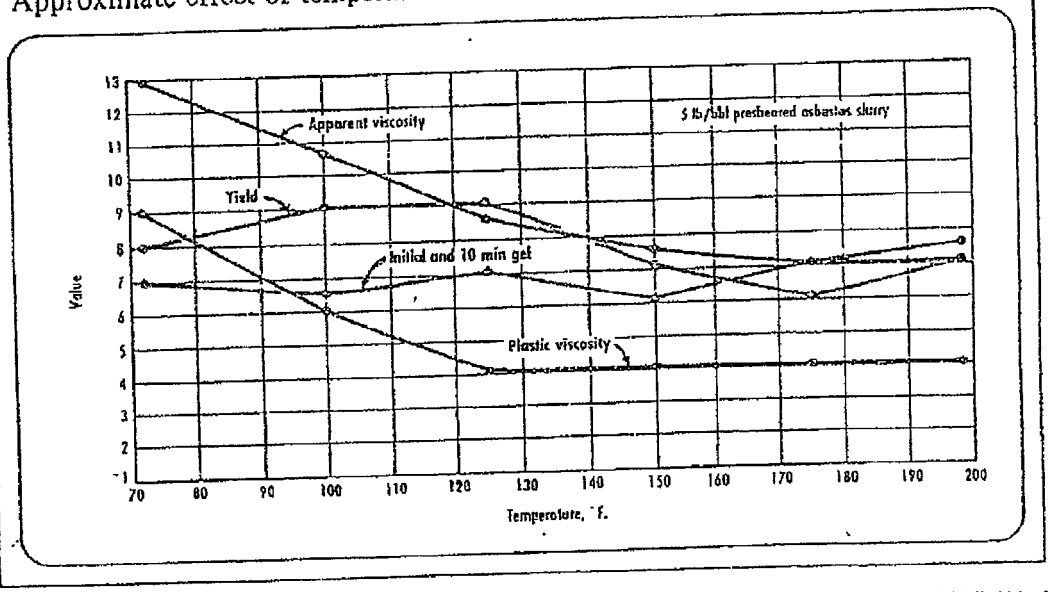



Fig. 5

## Approximate effect of temperature




concentrations of preshreaded asbestos and bentonite are used.

6. From second casing point to TD, the drilling fluid system is essentially a freshwater, low-solids, presheared asbestos-bentonite type. Filtration is controlled with a freshwater fluid-loss additive, and shale can be controlled using this same system but with the addition of powdered asphalt materials.

A typical system. A mud system like the one used in Libya is usually built around 2-3 lb/bbl of presheared A 50-50 mix usually gives the best hole-cleaning results, but a higher proportion of bentonite is usually recommended when hole stability is a problem.

Using Super Visbestos, a presheared asbestos distributed by Montello, Inc., Sand Springs, Okla., a cost comparison indicates that such a fluid would run in the neighborhood of 52.5¢/bbl compared to a straight bentonite system at about 62.5¢/bbl.

These costs were based on the use of 2½ lb/bbl of presheared asbestos combination system, and 25 lb/bbl of bentonite for the other fluid.

In addition to a lower initial cost, manufacturers of the presheared asbestos additives cite other possible savings including lower mixing costs; lower hauling costs; less water requirements; reduced chemical treatment cost; and higher penetration rates.

Presheared asbestos-bentonite systems will usually give some hole stabilization and a small amount of fluid-loss control. Then if necessary,

to lower loss to required levels. Such a system is applicable in any area.

To get proper cleaning, a drilling fluid's yield point and plastic viscosity are important properties. Table I indicates the effect of these variables on the settling time of solids in a flocculated solids settling test. Another important consideration in cuttings transport is annulus flow profile. If this profile is turbulent, cuttings slippage is increased and cuttings can fall faster than the average annular rate causing a hole-cleaning problem.

If hole cleaning is critical and an adjustment of annulus flow does not help, yield value can be raised with asbestos. Montello recommends, however, when using their product that before raising the yield value too high the hole should be flushed clean with a 25-50-bbl slurry containing 3 lb/bbl of presheared asbestos. Or it can be done by adding 75-100 lb of the material directly into the mud system through the mud hopper. This flushing operation can be repeated as needed with frequency ranging from once a day to twice a tour. And it should be done just before making a trip, according to Montello.

Table I

Settling tests

| Weight | Density of floc lb/gal | Pv | Yp | Settling time for 50% solids settling (min/ft) |
|---|---|---|---|---|
| 8.3 | 10.4 | 1.0 | 0 | ½ |
| 8.3 | 10.4 | 2.0 | 0.5 | 1 |
| 8.3 | 10.4 | 2.0 | 1.0 | 2 |
| 8.3 | 10.4 | 2.0 | 2.0 | 8 |
| 8.3 | 10.4 | 4.0 | 4.0 | 27 |
| 8.3 | 10.4 | 8.0 | 8.0 | 88 |
| 9.0 | 11.0 | 4.0 | 4.0 | 30 |
| 9.0 | 11.0 | 8.0 | 8.0 | 97 |
| 10.0 | 11.8 | 4.0 | 4.0 | 34 |
| 10.0 | 11.8 | 8.0 | 8.0 | 112 |

Of course, good solids removal techniques are essential to the performance of low-solids systems. Both chemical and mechanical means can be used to accomplish this.

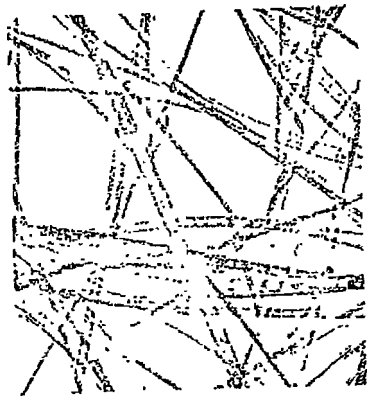
Some properties. Presheared asbestos has grown in use recently, its advantages stemming from the fact that the carefully controlled shearing process at the point of manufacture provides a high degree of fiber separation quickly at the well (OGJ, Oct. 28, 1968). Properties of presheared asbestos compared with those of other mud-system additives are shown in Fig. 1-5. END


# SUPER VISBESTOS PROVIDES HIGH YIELDS ALMOST INSTANTLY

A message of special interest to drilling superintendents and those responsible for writing drilling mud programs, distributed courtesy of Montello, Inc. For more information and extra copies of the reprint, write Montello at P.O. Drawer 130, Sand Springs, Okla. 74063.



REGULAR ASBESTOS
(Dry Processed)
Only 50% Separation



SUPER VISBESTOS
(Wet Processed-Presheared Asbestos)
Over 98% Separation

Super Visbestos is produced, exclusively for Montello, Inc., by chemically and hydraulically shearing a top-grade chrysotile asbestos, through a unique, proprietary, wet-process. This process produces a high degree of asbestos fiber separation.

The high degree of fiber separation (i.e. yield) provided almost instantly with Super Visbestos is impossible to achieve using regular dry processed asbestos in the field even after days of circulation and mixing.

A study of data below reveals the advantages of Super Visbestos.

(Tests Were Run By A Major University) ABS-02879

SUPER VISBESTOS VS. REGULAR ASBESTOS

| Fann VG Meter | Super Visbestos 5 LBS./BBL | Regular Asbestos 5 LBS./BBL |
|---|---|---|
| Apparent Viscosity | 14.5 | 7 |
| Plastic Viscosity | 11 | 6 |
| Yield Point | 7 | 2 |
| | | 3 |

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