

Research & Development Department
P.O. Box 579, Niagara Falls, N.Y.
July 12, 1968

M E M O R A N D U M

SUBJECT: Drilling Fluids - SG-200 and Bentonite as Affected by Ligno-Sulfonate, CMC, and Kerosene

FROM: E. J. Markiewicz

Another aspect of drilling fluid application concerns the use of oil in water-mud emulsions. Kerosene was used at a 5% by volume level as suggested by Montello. Other laboratory investigations along this line will depend on customer requests and how valuable the information may be to our over-all technical services program.

Some of this work has been reported previously by Dr. Park, but this is an over-all synopsis of the effects of Ligno-sulfonate, CMC (baroid carboxymethylcellulose), and kerosene on the composite S-G200-bentonite drilling fluid system (10 lb./bbl or 10 g./350 ml.).

In brief, CMC alone provides good flow properties for a low viscosity mud at all composites. The best filtration property is at the 25% SG-200 - 75% bentonite composition. Kerosene alone is not as good concerning filtration as CMC but is comparable to Ligno-sulfonate. The flow properties are good at all compositions for kerosene, but there is detrimental fluid loss as the S-G200 level is increased. The best flow properties and filtration loss are gained by using all three additives at all composite levels.

If Montello, Inc. requests more laboratory evaluation of oil in water-mud emulsions, we should be able to supply the data. An interesting study might include EMA-11 treated asbestos, which is to be produced soon in our pilot plant in Building 158, in this type of drilling fluid.

E. J. Markiewicz

EJM:dag
Attach.

A17078

Drilling Fluids - Ligno-Sulfonate, Kerosene and CMC Data
S-G200 - Bentonite Composites

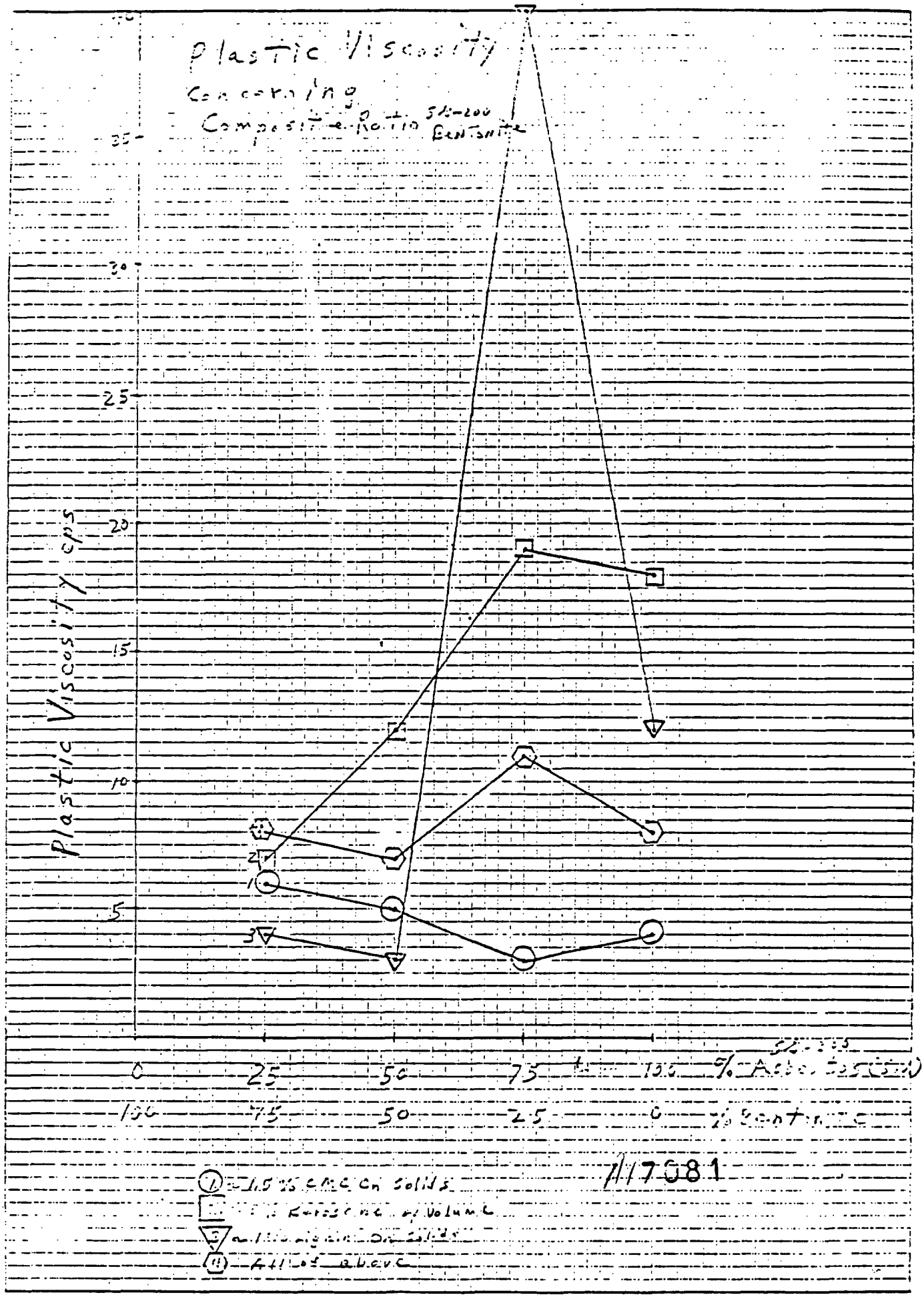
Grams/350 ml. Asb.-Bentonite	% Lignin on Solids	% Kerosene by Volume	% CMC on Solids	Fann 35 θ at 600 rpm	Fann 35 θ at 300 rpm	Plastic Viscosity cps	Yield Point lb./100 ft.²	Apparent Viscosity cps	Filtrate ml./ 30 min.
2.5-7.5	-	-	1.5	17	11	6.0	5.0	8.5	17.3
5.0-5.0	-	-	1.5	21	16	5.0	11.0	10.5	23.7
7.5-2.5	-	-	1.5	31	28	3.0	25.0	15.5	44.7
10.0-0.0	-	-	1.5	32	28	4.0	24.0	16.0	325.7
2.5-7.5	-	5	-	24	17	7.0	10.0	12.0	21.6
5.0-5.0	-	5	-	118	106	12.0	94.0	59.0	35.2
7.5-2.5	-	5	-	83	64	19.0	45.0	41.5	108.0
10.0-0.0	-	5	-	63	45	18.0	27.0	31.5	255.5
2.5-7.5	1.0	-	-	10	6	4.0	2.0	5.0	26.7
5.0-5.0	1.0	-	-	23	20	3	17	11.5	50.4
7.5-2.5	1.0	-	-	115	75	40	35	57.5	148.7
10.0-0.0	1.0	-	-	40	32	8.0	24.0	20.0	287.5
2.5-7.5	1.0	5	1.5	23	15	8.0	7.0	11.5	11.5
5.0-5.0	1.0	5	1.5	34	27	7.0	20.0	17.0	14.4
7.5-2.5	1.0	5	1.5	45	34	11.0	23.0	22.5	21.0
10.0-0.0	1.0	5	1.5	36	28	8.0	20.0	18.0	151.5

A17079

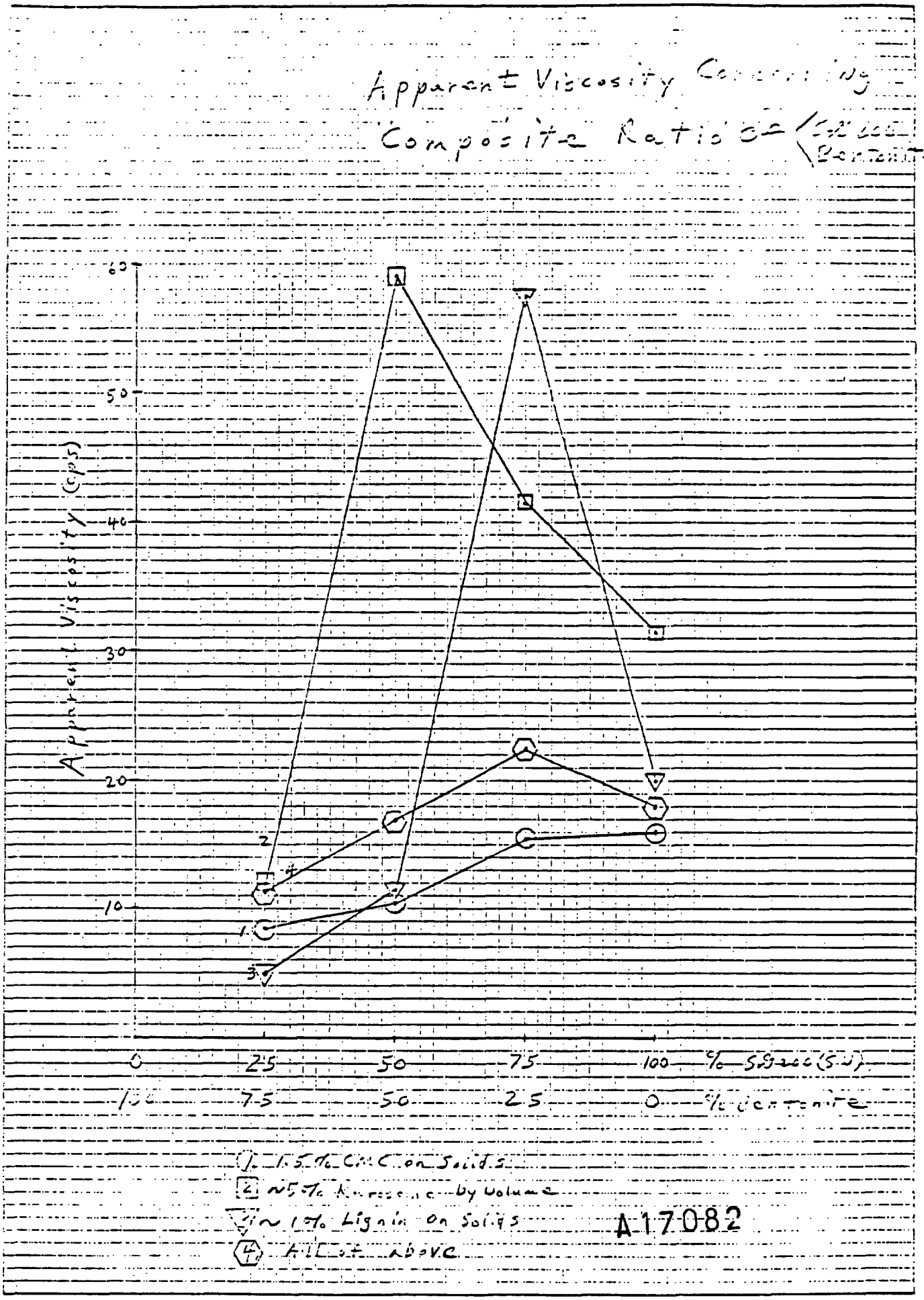
Yield Stress Concerning Composite Ratio of Sand to Bentonite

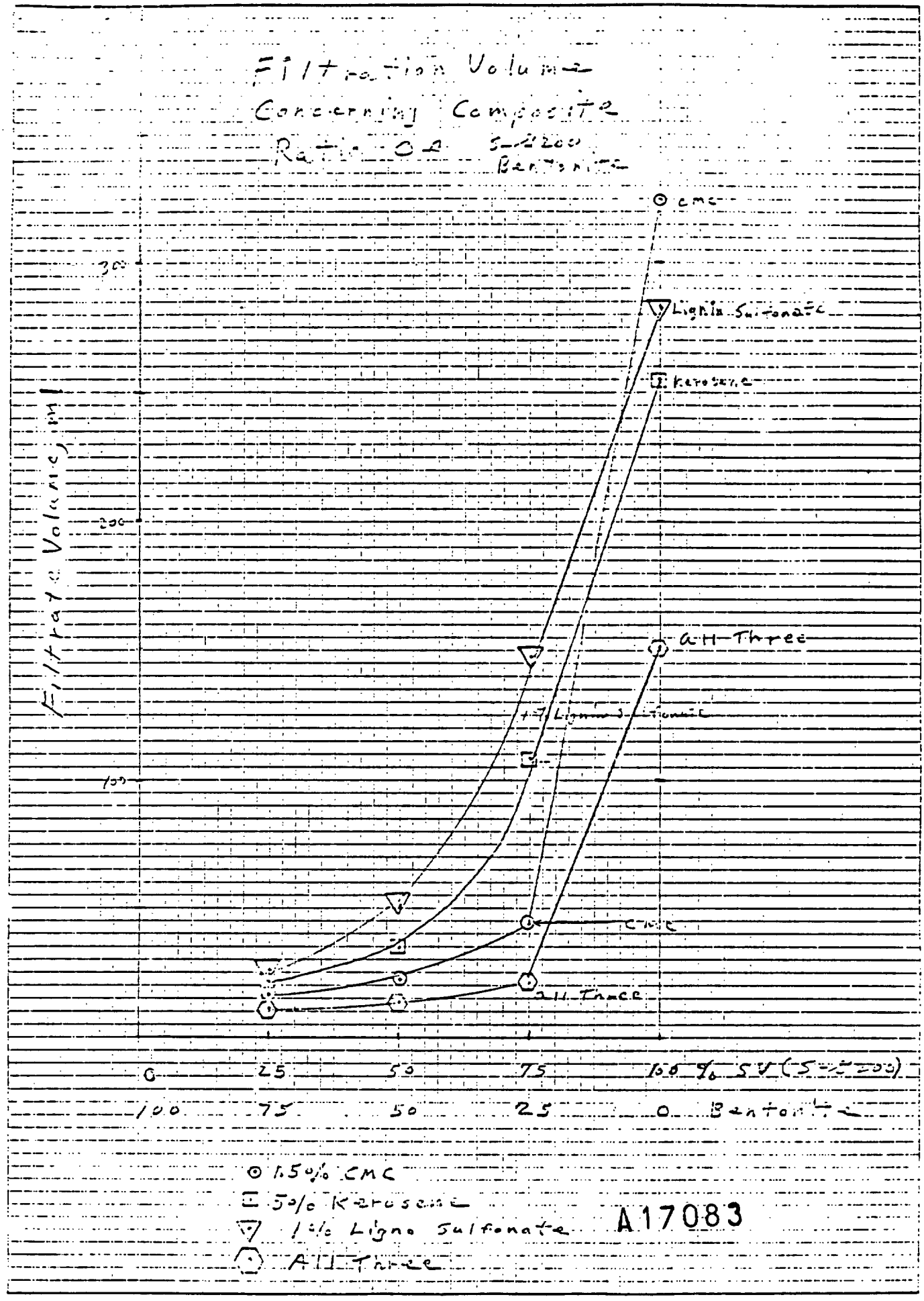


A1708C


Plastic Viscosity
Concerning
Composite Ratio 5/8-200 Bentonite
Plastic Viscosity cps
35
30
25
20
15
10
5
0
25
50
75
100
% Asbestos
100
75
50
25
0
% Bentonite
1
2
3
1.5 % CMC On Solids
Kerosene by Volume
All of above

A17081


Apparent Viscosity Containing
Composite Ratios of
Bentonite
60
50
40
30
20
10
Apparent Viscosity (cps)
0
25
50
75
100
% SS200 (S.J.)
100
75
50
25
0
% Bentonite
1
2
3
4
1. 1.5 lb/bbl CMC on Solids
2. 15% Kaolinite by Volume
3. ~ 1% Lignin on Solids
4. All of above
A-17082


Filtration Volume
Concerning Composite
Ratio Of S-2200
Bentonite
CMC
Lignin Sulfonate
Kerosene
All Three
+ Lignin Sulfonate
CMC
All Three
Filtrate Volume, ml
30
20
10
0
25
50
75
100 % SV (S-2200)
100
75
50
25
0
Bentonite
1.5% CMC
5% Kerosene
1% Lignosulfonate
All Three
A17083

RECEIVED
U.C.C. CHEMICALS PLASTICS

DISTRIBUTION

King City

J. L. Myers
J. A. Riddle ✓

Niagara Falls

R. E. Byrne
W. L. Carrick (2)
S. Chwastiak
H. B. Rhodes
J. E. Skvarla
K. Park

New York

W. S. Young

South Charleston

L. Pierce

DISTRIBUTION

- J. A. Riddle ☐
- L. F. Crow ☐
- R. O. Marsten ☐
- W.E.Holsapple ☐
- A. A. Andrade ☐
- G. C. Brice ☐
- Shifters ☐
- J. L. Myers ☐
- K. A. Wood ☐
- D. S. Kamens ☐
- G. Vessels ☐
- K. West ☐
- File ☐

A17077