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VAN SUID-AFRIKA

FUEL RESEARCH INSTITUTE

OF SOUTH AFRICA

TEGNIESE MEMORANDUM
TECHNICAL MEMORANDUM NO. 14 OF 1972

SIZE DISTRIBUTION OF COAL FROM VRYHEID CORONATION, VREDE SECTION.

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FUEL RESEARCH INSTITUTE OF SOUTH AFRICA

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SIZE DISTRIBUTION OF COAL FROM VRYHEID CORONATION, VREDE SECTION.

1. GENERAL

Coal is hand-loaded underground into tubs and arrives at the tippler via the East and West shafts. From the tippler the coal is conveyed onto a belt and from there via a cascade chute into the circular stock-pile. The coal drawn from underneath is transported by 3 conveyer belts (No's. 14, 13 and 10) to a vibrating screen (2" square).

The oversize, after passing a picking belt, is crushed in a hammer-mill set at 3½" and joins the under-size from the vibrating screen on its way to the washery. There is also an arrangement to transport the unwashed coal via conveyers No's. 11 and 12 into railway waggons for further beneficiation at Vryheid Coronation.

The hand-picked refuse also passes through a crusher before being dumped.

The following table gives an indication of the various Sections mined as well as the number of tubs derived from them per shift.

/2. .....

East Shaft		West Shaft	
Sections	No's. of tubs/shift	Sections	No's. of tubs/shift
21	150	18	350
17	350	20	300
23	350	22	350
25	250	24	250
Total	1100	total	1250

The tub factor was given as 0,77.

The washing plant starts at 5.00 and stops at 15.00.

During the period of sample-taking the stockpile was almost empty at the beginning of the shift and was gradually filled up by the end of the shift. After shutting down the washing plant, the remaining coal in the stockpile was transferred unwashed to Coronation.

2. SAMPLING PROCEDURE

On the 8th, 9th and 10th of February, 1972, conveyer No. 13 (see Fig. 1) was stopped at intervals varying from 15 to 30 minutes and a belt length of approximately 3 to 5 feet was completely cleared into 2 drums. Only in the case of samples No's. 1 and 2 a greater sample, consisting of 4 drums, was taken. The 51 increments obtained in this manner weighed 7635,7 kg, giving an average weight of 150 kg per sample.

The wet coal was screened on site at 6", 4", 50 mm, $\frac{3}{8}$", $\frac{1}{4}$" and 3/16". The minus 3/16" was air dried and the resultant free moisture content averaged 4,8% - see Table 1. Most of the free moisture was

/found .....

found in the minus 3/16" portion; a few samples of the -¼" +⅜" and -3/16" +¼" portions were also tested and gave much lower moisture values.

Admittedly, there will be a very slight but negligible error arising from wet screening, caused by adherence of the very fine coal particles to the bigger lumps. In screening air-dried coal, however, there would be a considerable loss of dust and the error caused therefrom would definitely be higher than the one arising from wet screening. In addition the fine particles adhering to the +6" and +4" fractions were brushed off before weighing.

In order to establish the change in size distribution after crushing the +2" coal, a few samples were taken from the chute underneath the crusher. Although no claim is made that these samples are 100% representative, in any case they give an indication of the increase of the minus ¼" fraction by crushing the plus 2" coal. At irregular intervals a shovel was inserted in the chute underneath the crusher and emptied into a drum. Consequently, each individual sample was composed of a number of increments.

A composite sample of the minus 3/16" material from the 51 samples as well as the total of the minus 3/16" coal from the crushed coal was screened at 3,2 mm and 0,5 mm at the Instiute - the results are reported in Table No. 6. 200 g Samples of the minus 0,5 mm fraction were further subjected to screening at 0,25, 0,15, 0,10 and 0,076 mm - see Table No. 7.

/Table .....

Table No. 1 gives the time at which the samples were taken, the weight of individual size fractions, and the free moisture content of the minus 3/16" material.

The fractional and cumulative size distributions are shown in Tables No's. 2 and 3, respectively.

The fractional yield value of each size fraction in the sample was divided by the mean obtained from the 51 samples for corresponding size fractions. The resulting values, termed "Relative Deviation", are shown in Table No. 4 and in a graphical manner in Figure 2.

The weights and the size distribution of fractions, percentagewise, of the material arising from the crusher are summarized in Tables No's. 5 and 5A, respectively.

In Tables No's. 8 and 9 the complete screen analyses of run-of-mine coal and crushed oversize are rendered. After splitting the total of 51 samples into 6 groups, the mean of each size fraction and group was computed and the results are shown in Table No. 10.

3. EVALUATION OF RESULTS

As could be expected, there was a wide fluctuation in the percentage of the coarser size fractions. Only in the size ranges below 50 mm is more steadiness recognizable, as can be seen from Fig. 2. Samples with greater deviation from the mean in the size range 9,5 x 50 mm were either taken when the stockpile was fairly empty (samples No's. 1, 2, 36, 37, 38, 39) or after the supply from underground to the stockpile ceased

/for some .....

for some time (samples No's. 7, 8, 14, 15, 21, 22, 35). A circular stockpile fed and emptied at centrepoints will always give rise to segregation, especially with varying stock levels.

The cumulative mean values of the combined 51 samples of run-of-mine coal, as well as the combined 6 samples of the crushed oversize, were plotted into the Rosin-Rammler diagram, Fig. 3. For the run-of-mine coal a straight line could be obtained, covering nearly all fractions from +6" down to 3,2 mm, with the exception of the 9,5 x 50 mm fraction which is approximately 6% lower than indicated by the straight line. The values of the size fractions between 0,076 and 3,2 mm are also lying on a straight line, but with a somewhat steeper inclination. This phenomenon is just the reverse of that noticed in the case of Landau and T.N.C. run-of-mine coal.

For the crushed oversize, only the values of the fractions between 0,15 and 6,4 mm can be connected by a straight line.

The standard deviation of the various size fractions is given in the last row of Table No. 2. The portion of +50 mm coal amounts to 22,2%. In crushing this +50 mm coal, approximately 8% of -4,8 mm coal is created. Without taking into consideration the removal of refuse from the +50 mm material on the picking belt, the increase in -4,8 mm coal going to the washery due to the crushing would be approximately 1,5%.

(SIGNED) G.A. Raab

PRETORIA. RESEARCH OFFICER.

6th March, 1972.

GAR/KW

TABLE 1.

PARTICULARS OF INDIVIDUAL SAMPLES, RUN-OF-MINE.

Sample No.	Time	+6"	+4"	+50 mm	+⅜"	+¼"	+3/16	-3/16 wet	-3/16 dry	% H_2O
		lb/oz	lb/oz	lb/oz	lb/oz	lb/oz	lb/oz	lb/oz	lb/oz	
	8.2.72									
1	6.30	71-9	48-3	28-10	238-7	36-3	12-7	82-13	77-0	7,0
2	7.00	36-12	21-5	44-13	186-7	117-5	27-3	198-11	186-11	6,0
3	7.20	13-14	22-1	28-7	104-7	48-0	12-15	77-11	72-11	6,4
4	8.00	12-5	18-13	30-3	116-7	43-3	13-1	96-11	93-0	3,8
5	9.00	26-12	4-0	39-11	107-0	36-1	12-13	79-11	76-2	4,5
6	9.20	-	25-12	27-4	106-7	41-5	12-11	89-5	86-0	3,7
7	9.45	62-12	7-2	24-3	102-7	37-3	17-1	110-0	105-0	4,5
8	10.05	51-4	25-0	19-7	102-0	41-3	15-0	95-0	91-0	4,3
9	10.25	10-0	26-8	40-7	125-1	39-12	11-11	71-3	69-11	2,1
10	10.50	30-0	8-6	25-0	100-0	42-10	13-3	100-0	97-0	3,0
11	11.05	15-0	15-7	47-0	116-10	44-5	13-5	92-0	87-0	5,4
12	11.30	-	32-12	44-11	110-0	39-11	12-1	84-4	80-0	5,0
13	11.50	47-2	14-0	30-0	112-7	43-3	13-4	90-11	86-0	5,2
14	12.10	52-3	28-12	23-3	84-11	35-0	13-3	90-0	87-3	3,1
15	12.30	42-0	53-10	29-0	91-0	38-0	13-11	88-5	86-0	2,6
16	13.00	15-10	25-0	49-3	105-0	36-2	14-0	90-0	86-5	4,1
17	13.25	11-8	27-0	35-0	112-3	44-0	12-0	93-0	89-3	4,1
	9.2.72									
18	6.40	7-0	14-8	27-11	105-0	38-12	14-11	104-0	100-0	3,8
19	7.00	-	8-0	16-7	104-3	44-3	14-11	104-0	99-0	4,8
20	7.20	-	10-0	34-11	109-0	39-11	13-4	97-11	92-11	5,1
21	7.35	45-0	20-10	24-11	76-0	37-11	13-1	105-0	101-0	3,8
22	8.00	55-0	25-0	34-7	80-0	31-11	12-3	90-7	85-1	6,0
23	8.15	-	22-12	33-3	97-3	41-0	14-0	95-2	91-0	4,3
24	8.30	14-0	29-8	30-13	100-0	33-3	12-3	90-3	86-2	4,5
25	8.55	46-4	12-12	21-3	104-0	40-0	10-7	90-11	86-0	5,1
26	9.20	22-4	15-12	33-0	107-7	37-7	11-13	80-0	75-0	6,2
27	9.35	-	17-12	38-7	96-0	38-0	10-0	84-0	79-0	6,0
28	10.00	58-4	5-9	13-1	98-3	42-3	13-0	92-0	87-0	5,4
29	10.25	-	-	23-0	95-3	44-7	15-11	116-0	110-13	4,5
30	11.10	-	40-8	44-0	100-0	35-11	12-0	81-7	77-11	4,6
31	11.30	-	14-6	32-0	115-3	36-1	12-11	81-0	76-3	5,9
32	11.50	9-0	9-5	43-3	119-0	43-0	10-5	85-0	80-7	5,4
33	12.10	-	22-0	36-11	121-2	41-2	12-11	92-0	87-11	4,7
34	12.35	28-7	18-3	43-2	98-0	35-0	11-2	93-0	89-3	4,1
35	13.00	100-4	41-0	21-14	106-0	37-11	11-10	81-8	78-0	4,5

/TABLE 1. (Contd.) .....

TABLE 1. (Continued)

Sample No.	Time	+6"	+4"	+50 mm	+3/8"	+1/4"	+3/16	-3/16 wet	-3/16 dry	% H_2O
		lb/oz	lb/oz	lb/oz	lb/oz	lb/oz	lb/oz	lb/oz	lb/oz	
	10.2.72									
36	6.05	-	25-4	42-3	146-13	33-11	10-0	61-11	59-5	4,2
37	6.25	-	-	46-7	157-1	33-2	7-13	44-10	42-5	5,2
38	6.45	34-8	7-7	28-0	83-8	39-0	13-1	98-5	95-0	3,4
39	7.05	27-0	20-4	26-3	90-7	37-11	12-0	104-11	102-0	2,6
40	7.25	-	28-0	34-7	106-7	41-11	14-7	101-0	95-0	5,9
41	7.50	45-9	23-0	35-0	95-3	36-0	11-14	98-0	94-7	3,8
42	8.10	27-0	38-2	40-3	113-1	39-7	12-11	72-7	68-7	5,5
43	8.30	7-0	21-3	23-7	116-1	47-11	12-3	77-3	73-0	5,4
44	9.00	-	19-10	33-3	110-0	43-3	11-11	98-0	92-5	5,8
45	9.25	-	4-0	28-0	133-8	41-11	12-3	95-0	89-5	6,0
46	9.45	10-0	2-3	29-0	123-3	41-11	13-7	88-11	83-5	6,0
47	10.10	30-6	16-0	29-11	112-0	37-7	10-0	74-1	70-0	5,5
48	10.30	-	16-12	42-4	120-0	40-14	12-3	92-1	88-11	3,7
49	10.50	15-8	12-9	23-0	93-6	41-1	13-7	104-0	99-11	4,2
50	11.10	-	8-12	24-11	106-0	41-1	12-11	92-0	87-0	5,5
51	11.30	13-5	26-0	24-0	96-11	39-11	14-11	100-15	96-0	4,9
Total, lb		1094	1001	1638	5655	2093	657	4695	4472	-
Total, kg		496,2	454,1	743,0	2565,1	948,6	299,0	2129,7	2030,0	-
%		6,5	5,9	9,8	33,6	12,4	3,9	27,9	-	4,8

/TABLE 2. .....

TABLE 2.

FRACTIONAL SCREEN ANALYSIS, %

Sample No.	Oversize, mm						Minus
	152,4	101,6	50	9,5	6,4	4,8	4,8
1	13,8	9,6	5,5	45,8	7,0	2,4	15,9
2	5,9	3,4	7,1	29,7	18,1	4,3	31,5
3	4,5	7,3	9,2	33,8	15,6	4,2	25,3
4	3,9	5,7	9,1	35,2	13,0	3,9	29,2
5	8,7	1,3	13,0	35,0	11,8	4,2	26,0
6	-	8,5	9,0	35,2	13,6	4,2	29,5
7	17,3	2,3	6,6	28,4	10,3	4,7	30,3
8	14,7	7,1	5,6	29,3	11,8	4,3	27,2
9	3,7	8,1	12,4	38,2	12,1	3,6	21,8
10	9,4	2,6	7,8	31,3	13,3	4,1	31,3
11	4,4	4,5	13,7	33,8	12,8	3,9	26,8
12	-	10,2	13,8	34,8	12,3	3,7	26,0
13	13,4	4,0	8,5	32,1	12,3	3,8	25,8
14	16,0	8,8	7,1	25,8	10,7	4,1	27,5
15	11,8	15,1	8,2	25,7	10,7	3,8	24,8
16	4,6	7,5	14,6	31,2	10,8	4,2	26,9
17	3,5	8,1	10,4	34,0	13,0	3,6	27,6
18	2,3	4,6	8,9	33,6	12,5	4,7	33,4
19	-	2,7	5,7	35,7	15,1	5,1	35,7
20	-	3,3	11,4	35,9	13,0	4,4	32,1
21	14,0	6,4	7,7	23,6	11,7	4,1	32,6
22	16,7	7,6	10,5	24,3	9,6	3,7	27,5
23	-	7,5	11,0	32,0	13,5	4,6	31,4
24	4,5	9,5	10,0	32,2	10,7	3,9	29,1
25	14,2	3,9	6,5	32,0	12,3	3,2	27,9
26	7,2	5,1	10,7	34,7	12,2	3,8	26,2
27	-	6,2	13,5	33,8	13,4	3,5	29,5
28	18,1	1,7	4,1	30,5	13,1	4,1	28,4
29	-	-	7,8	32,4	15,1	5,2	39,5
30	-	12,9	14,0	31,9	11,4	3,8	26,0
31	-	4,9	11,0	39,5	12,4	4,3	27,8
32	2,8	2,9	13,7	37,3	13,4	3,2	26,6
33	-	6,8	11,3	37,2	12,7	3,9	28,2
34	8,7	5,6	13,2	29,9	10,7	3,4	28,5
35	25,0	10,2	5,5	26,6	9,4	2,9	20,4
36	-	7,9	13,2	45,8	10,5	3,1	19,5
37	-	-	16,0	54,3	11,4	2,7	15,5
38	11,3	2,5	9,2	27,5	12,9	4,3	32,3
39	8,5	6,2	8,2	28,5	11,8	3,8	32,9
40	-	8,6	10,6	32,7	12,7	4,4	31,0
41	13,2	6,6	10,2	27,6	10,4	3,4	28,5
42	7,9	11,1	11,7	33,0	11,5	3,7	21,1
43	2,3	7,0	7,6	38,1	15,6	4,0	25,4
44	-	6,2	10,5	34,9	13,7	3,7	31,1

/TABLE 2. (Contd.) ...

TABLE 2. (Continued)

Sample No.	Oversize, mm						Minus 4,8
	152,4	101,6	50	9,5	6,4	4,8	
45	-	1,3	9,0	42,5	13,2	3,9	30,1
46	3,2	0,7	9,4	39,9	13,5	4,4	28,8
47	9,8	5,2	9,6	36,2	12,1	3,2	24,0
48	-	5,2	13,0	37,0	12,6	3,8	28,3
49	5,1	4,1	7,6	30,9	13,5	4,4	34,4
50	-	3,1	8,6	37,1	14,3	4,5	32,3
51	4,2	8,2	7,6	30,6	12,6	4,7	32,0
Mean	6,5	5,9	9,8	33,6	12,4	3,9	27,9
Standard Deviation	6,35	3,21	2,75	5,56	1,78	0,56	4,65

/TABLE 3 .....

TABLE 3.

CUMULATIVE SCREEN ANALYSIS, %

Sample No.	Oversize, mm						Minus
	152,4	101,6	50	9,5	6,4	4,8	4,8
1	13,8	23,4	28,9	74,7	81,7	84,1	15,9
2	5,9	9,3	16,4	46,1	64,2	68,5	31,5
3	4,5	11,8	21,0	54,8	70,4	74,6	25,3
4	3,9	9,6	18,7	53,9	66,9	70,8	29,8
5	8,7	10,0	23,0	58,0	69,8	74,0	26,0
6	-	8,5	17,5	52,7	66,3	70,5	29,5
7	17,3	19,6	26,2	54,6	64,9	69,6	30,3
8	14,7	21,8	27,4	56,7	68,5	72,8	27,2
9	3,7	11,8	24,2	62,4	74,5	78,1	21,8
10	9,4	12,0	19,8	51,1	64,4	68,5	31,3
11	4,4	8,9	22,6	56,4	69,4	73,1	26,8
12	-	10,2	24,0	58,0	70,3	74,0	26,0
13	13,4	17,4	25,9	58,0	70,3	74,1	25,8
14	16,0	24,8	31,9	57,7	68,4	72,5	27,5
15	11,8	26,9	35,1	60,8	71,5	75,3	24,8
16	4,6	12,1	26,7	57,9	68,7	72,9	26,9
17	3,5	11,6	22,0	56,0	69,0	72,5	27,6
18	2,3	6,9	15,8	49,4	61,9	66,6	33,4
19	-	2,7	8,4	44,1	59,2	64,3	35,7
20	-	3,3	14,7	50,6	63,6	68,0	32,1
21	14,0	20,4	28,1	51,7	63,4	67,5	32,6
22	16,7	24,3	34,8	59,1	68,7	72,4	27,5
23	-	7,5	18,5	50,5	64,0	68,6	31,4
24	4,5	14,0	24,0	56,2	66,9	70,8	29,1
25	14,2	18,1	24,6	56,6	68,9	72,1	27,9
26	7,2	12,3	23,0	57,7	69,9	73,7	26,2
27	-	6,2	19,7	53,5	66,9	70,4	29,5
28	18,1	19,8	23,9	54,4	67,5	71,6	28,4
29	-	-	7,8	40,2	55,3	60,5	39,5
30	-	12,9	26,9	58,8	70,2	74,0	26,0
31	-	4,9	15,9	55,4	67,8	72,1	27,8
32	2,8	5,7	19,4	56,7	70,1	73,3	26,6
33	-	6,8	18,1	55,3	68,0	71,9	28,2
34	8,7	14,3	27,5	57,4	68,1	71,5	28,5
35	25,0	35,2	40,7	67,3	76,7	79,6	20,4
36	-	7,9	21,1	66,9	77,4	80,5	19,5
37	-	-	16,0	70,3	81,7	84,4	15,5
38	11,3	13,8	23,0	50,5	63,4	67,7	32,3
39	8,5	14,7	22,9	51,4	63,2	67,0	32,9
40	-	8,6	19,2	51,9	64,6	69,0	31,0
41	13,2	19,8	30,0	57,6	68,0	71,4	28,5
42	7,9	19,0	30,7	63,7	75,2	78,9	21,1
43	2,3	9,3	16,9	55,0	70,6	74,6	25,4

/TABLE 3. (Contd.) .....

TABLE 3. (Continued)

Sample No.	Oversize, mm						Minus
	152,4	101,6	50	9,5	6,4	4,8	4,8
44	-	6,2	17,1	52,0	65,7	69,4	31,1
45	-	1,3	10,3	52,8	66,0	69,9	30,1
46	3,2	3,9	13,3	53,2	66,7	71,1	28,8
47	9,8	15,0	24,6	60,8	72,9	76,1	24,0
48	-	5,2	18,2	55,2	67,8	71,6	28,3
49	5,1	9,2	16,8	47,7	61,2	65,6	34,4
50	-	3,1	11,7	48,8	63,1	67,6	32,3
51	4,2	12,4	20,0	50,6	63,2	67,9	32,0
Mean	6,5	12,4	22,2	55,8	68,2	72,1	27,9

/TABLE 4. .....

TABLE 4.

$$\text{RELATIVE DEVIATION} = \frac{\text{Value of individual sample}}{\text{mean value}}$$

Sample No.	152,4	101,6	50	9,5	6,4	4,8	-4,8
1	2,12	1,62	0,56	1,36	0,56	0,6	0,57
2	0,91	0,57	0,72	0,88	1,46	1,10	1,13
3	0,69	1,23	0,94	1,01	1,26	1,08	0,91
4	0,60	0,96	0,93	1,05	1,05	1,00	1,05
5	1,34	0,22	1,33	1,04	0,95	1,08	0,93
6	0	1,44	0,92	1,05	1,10	1,05	1,06
7	2,56	0,39	0,67	0,85	0,83	1,20	1,09
8	2,26	1,20	0,57	0,87	0,95	1,10	0,97
9	0,57	1,37	1,27	1,14	0,98	0,92	0,79
10	1,45	0,44	0,80	0,93	1,07	1,05	1,13
11	0,68	0,76	1,40	1,01	1,03	1,00	0,96
12	0	1,73	1,41	1,03	0,99	0,95	0,93
13	2,06	0,68	0,87	0,95	0,99	0,97	0,92
14	2,46	1,49	0,72	0,77	0,87	1,05	0,99
15	1,66	2,55	0,84	0,77	0,87	0,97	0,89
16	0,71	1,27	1,49	0,93	0,87	1,07	0,96
17	0,51	1,37	1,06	1,01	1,05	0,92	0,99
18	0,35	0,78	0,91	1,00	1,01	1,20	1,20
19	0	0,46	0,58	1,06	1,22	1,30	1,28
20	0	0,56	1,17	1,07	1,05	1,13	1,15
21	2,15	1,08	0,79	0,67	0,94	1,05	1,17
22	2,57	1,29	1,07	0,72	0,78	0,95	0,98
23	0	1,27	1,13	0,95	1,09	1,18	1,13
24	0,69	1,61	1,02	0,95	0,87	1,00	1,04
25	2,19	0,66	0,66	0,95	0,99	0,80	1,00
26	1,11	0,86	1,09	1,03	0,99	0,97	0,94
27	0	1,05	1,38	1,00	1,08	0,90	1,06
28	2,76	0,29	0,42	0,91	1,06	1,05	1,02
29	0	0	0,80	0,96	1,21	1,33	1,42
30	0	2,19	1,43	0,95	0,92	0,97	0,93
31	0	0,83	1,12	1,18	1,00	1,10	0,99
32	0,43	0,49	1,40	1,11	1,08	0,82	0,95
33	0	1,15	1,16	1,11	1,02	1,00	1,01
34	1,34	0,95	1,35	0,89	0,86	0,87	1,02
35	3,84	1,73	0,56	0,79	0,76	0,74	0,72
36	0	1,34	1,35	1,36	0,85	0,80	0,70
37	0	0	1,63	1,62	0,92	0,69	0,56
38	1,73	0,43	0,94	0,82	1,04	1,10	1,16
39	1,30	1,05	0,84	0,85	0,95	0,97	1,18
40	0	1,46	1,08	0,97	1,02	1,13	1,11

/TABLE 4. (Contd.) .....

TABLE 4. (Continued)

Sample No.	152,4	101,6	50	9,5	6,4	4,8	-4,8
41	2,03	1,12	1,04	0,82	0,84	0,87	1,02
42	1,21	1,88	1,20	0,98	0,92	0,95	0,76
43	0,35	1,18	0,78	1,13	1,26	1,02	0,91
44	0	1,05	1,07	1,04	1,10	0,95	1,11
45	0	0,22	0,92	1,27	1,06	1,00	1,08
46	0,49	0,12	0,96	1,19	1,09	1,13	1,03
47	1,49	0,89	0,98	1,08	0,97	0,82	0,86
48	0	0,89	1,33	1,10	1,02	0,97	1,01
49	0,78	0,70	0,78	0,90	1,09	1,13	1,23
50	0	0,52	0,88	1,11	1,15	1,15	1,16
51	0,65	1,39	0,78	0,91	1,02	1,20	1,14

/TABLE 5. .....

TABLE 5.

SCREEN ANALYSIS OF CRUSHED OVERSIZE, kg

Sample No.	Oversize, mm						Minus	Total Weight
	50	35	20	9,5	6,4	4,8	4,8	kg
1	20,89	15,73	13,61	7,57	4,08	1,05	5,08	68,01
2	23,13	16,92	13,39	9,98	4,54	1,51	5,31	74,78
3	26,31	17,52	14,52	8,47	3,18	1,51	4,99	76,50
4	17,90	16,78	14,70	9,07	3,96	1,54	5,90	69,86
5	22,86	15,97	13,05	9,07	4,54	1,54	6,80	73,83
6	37,65	33,57	25,86	18,14	8,16	2,07	12,70	138,15
Total	148,74	116,49	95,13	62,30	28,46	9,22	40,78	501,12

TABLE 5A.

SCREEN ANALYSIS OF CRUSHED OVERSIZE, %

Sample No.	Oversize, mm						Minus	%
	50	35	20	9,5	6,4	4,8	4,8	
1	30,7	23,3	20,0	11,1	6,0	1,5	7,5	100,1
2	30,9	22,6	17,9	13,4	6,0	2,0	7,1	99,9
3	34,4	22,9	19,0	11,1	4,2	2,0	6,5	100,1
4	25,8	24,0	21,0	12,8	5,7	2,2	8,4	99,9
5	31,0	21,6	17,7	12,3	6,1	2,1	9,2	100,0
6	27,3	24,3	18,7	13,1	5,9	1,5	9,2	100,0
Mean	29,7	23,3	19,0	12,4	5,7	1,9	8,1	100,1

/TABLE 6. .....

TABLE 6.

SCREENING OF -3/16" MATERIAL AT 3,2 AND 0,5 mm

Sample	Total Weight kg	+3,2 mm		+0,5 mm		-0,5 mm	
		kg	%	kg	%	kg	%
51 Samples compounded	69,0	13,5	19,5	40,0	58,0	15,5	22,5
Coal from crusher	38,0	10,3	27,1	21,0	55,4	6,6	17,5

TABLE 7.

SIZE DISTRIBUTION OF MINUS 0,5 mm COAL, %

Sample	+0,25	+0,152	+0,104	+0,076	-0,076 mm
51 Samples combined	42,0	19,8	9,7	5,5	23,0
Crushed oversize	48,5	22,5	10,3	5,3	13,3

/TABLE 8. .....

TABLE 8.

COMPLETE SCREEN ANALYSIS, RUN-OF-MINE COAL (in mm)

	+ 152,4	+ 101,6	+ 50,0	+ 9,5	+ 6,4	+ 4,8	+ 3,2	+ 0,5	+ 0,25	+ 0,15	+ 0,10	+ 0,076	- 0,076 mm
Fract.	6,5	5,9	9,8	33,6	12,4	3,9	5,4	16,2	2,6	1,2	0,6	0,4	1,5
Cumul.		12,4	22,2	55,8	68,2	72,1	77,5	93,7	96,3	97,5	98,1	98,5	-

TABLE 9.

COMPLETE SCREEN ANALYSIS OF CRUSHED OVERSIZE (in mm)

	+ 50	+ 35	+ 20	+ 915	+ 6,4	+ 4,8	+ 3,2	+ 0,5	+ 0,25	+ 0,15	+ 0,10	+ 0,076	- 0,076 mm
Fract.	29,7	23,3	19,0	12,4	5,7	1,9	2,2	4,5	0,6	0,3	0,14	0,08	0,2
Cumul.		53,0	72,0	84,4	90,1	92,0	94,2	98,7	99,3	99,6	99,7	99,8	-

/TABLE 10 .....

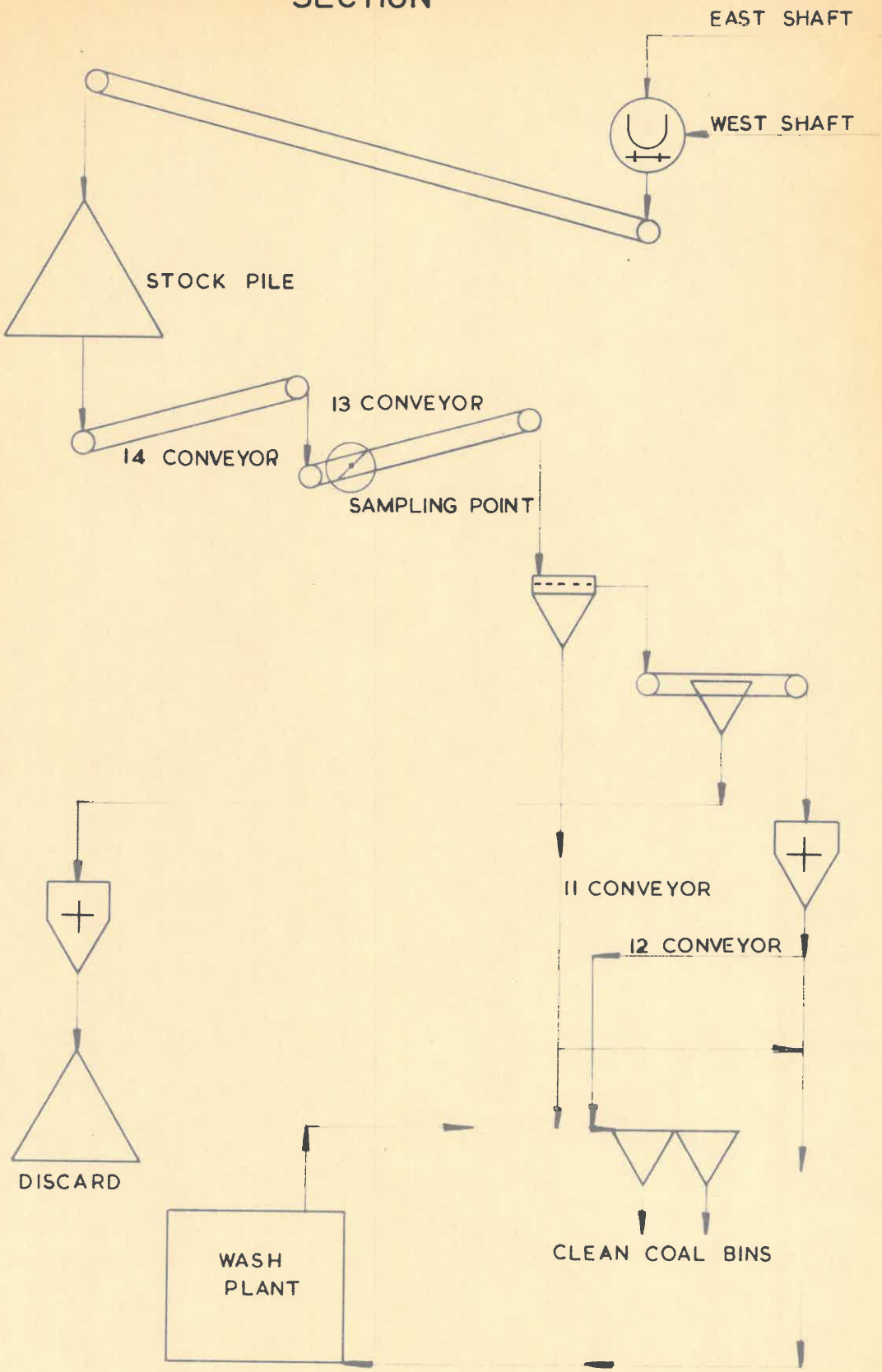
TABLE 10.

SIZE DISTRIBUTIONS OF SAMPLE GROUPS, %

Sample No.	Oversize, mm						Minus 4,8 mm
	152,4	101,6	50,0	9,5	6,4	4,8	
1 incl. 9	8,4	5,9	8,2	34,4	12,8	4,0	26,3
10 " 17	7,9	7,6	10,5	31,0	12,0	3,7	27,1
18 " 26	6,7	5,6	9,1	31,5	12,2	4,1	30,6
27 " 35	6,8	5,8	10,3	33,0	12,3	3,8	28,1
36 " 44	4,9	6,4	11,5	35,2	12,2	3,7	26,2
45 " 51	3,5	4,0	9,2	36,3	13,1	4,1	29,8

FIG 1

VRYHEID CORONATION VREDE SECTION



NOTE:
CONVEYORS 11 AND 12 ARE ONLY FOR RAW COAL USE

FIG. 2

RELATIVE DEVIATION VRYHEID CORON., VREDE SECTION

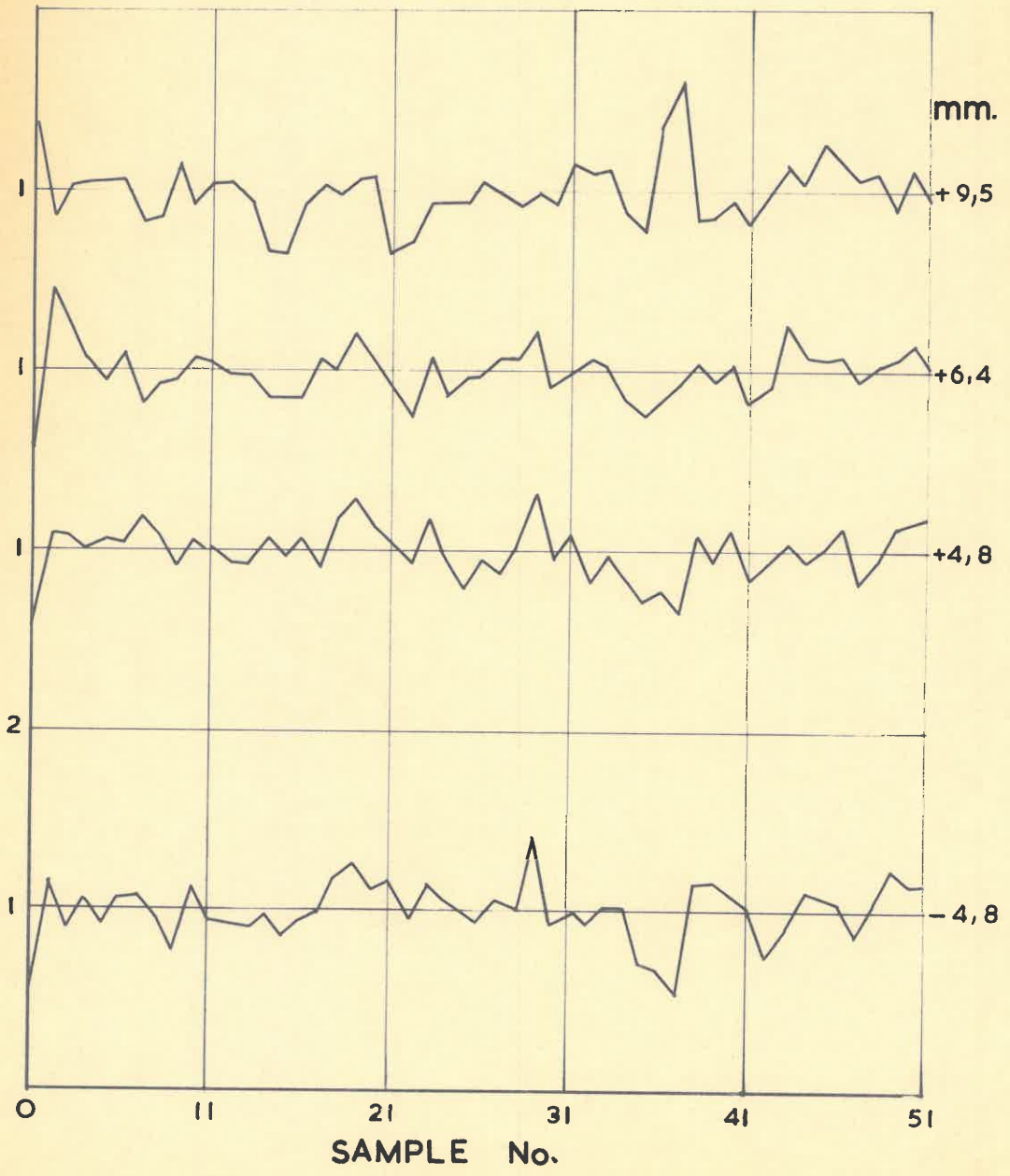


FIG. 2

RELATIVE DEVIATION VRYHEID CORON., VREDE SECTION

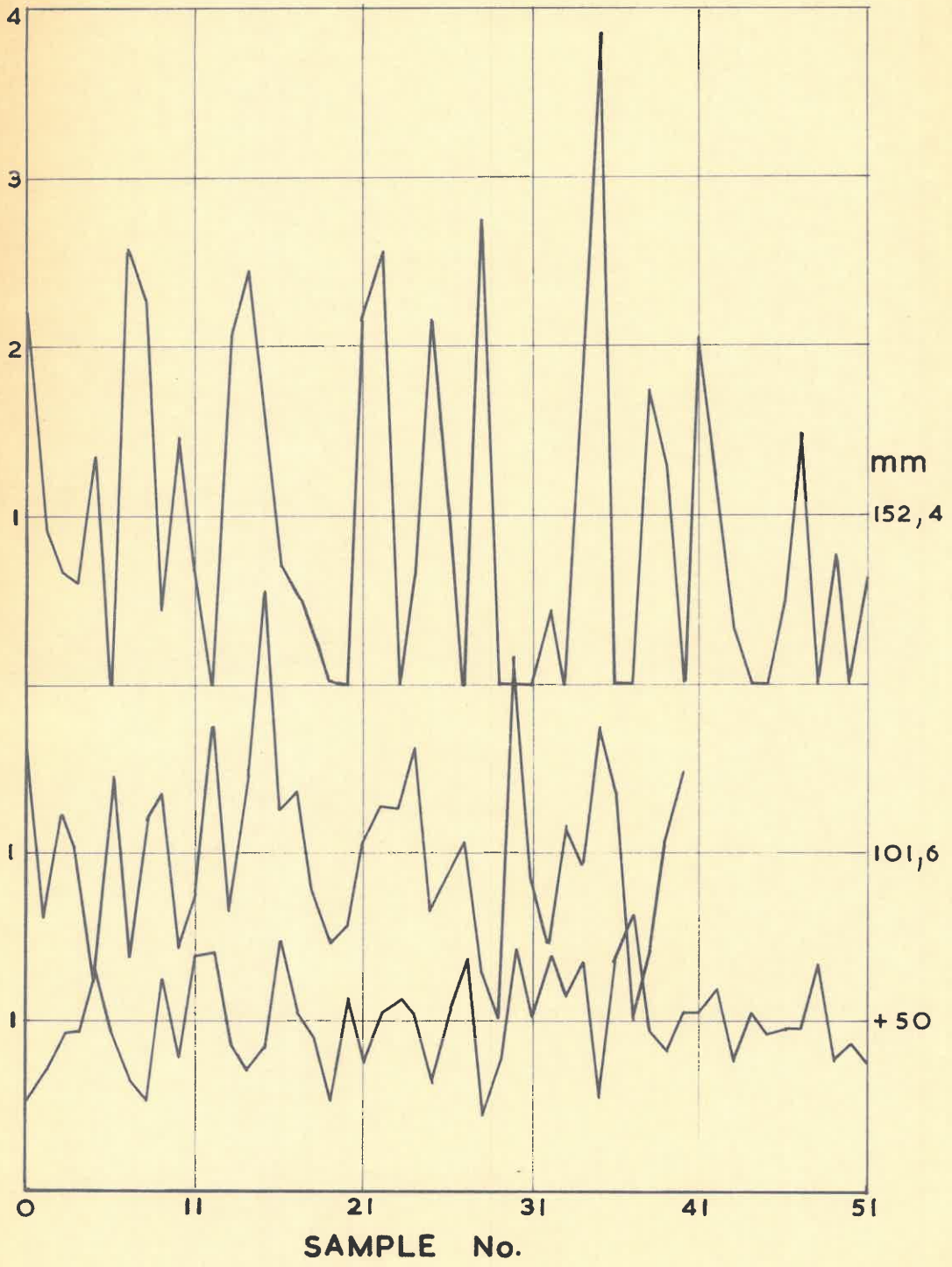


FIG. 3

VRYHEID CORONATION, VREDE SECTION