

Electrical Measurements.—Heat 9.

Date : 26th August, 1921.

Time.	Volts.	Amps.	Watts.	Units.		Remarks.
				No. 1.	No. 2.	
11:33	140	2,650	375	493,405	503,544	Commence.
11:45	150	2,200	375	..	..	
12:00	160	2,350	375	..	..	
12:15	148	2,400	375	..	..	
12:30	164	2,300	375	..	..	
12:45	162	2,450	390	..	..	
12:50	..	..	..	493,598	503,747	Off for 10 minutes.
1:00	160	2,500	370	..	..	
1:15	150	2,650	405	..	..	
1:30	156	2,550	370	..	..	
1:45	155	2,500	360	..	..	
2:00	174	2,200	350	..	..	
2:15	150	2,500	360	493,819	503,976	
2:30	156	2,500	364	..	..	
2:45	160	2,300	358	493,914	504,070	
2:55	102	2,000	210	..	..	
3:05	104	2,000	210	..	..	
3:15	Off	..	..	493,944	504,104	Off 20 minutes for slagging.
3:33	105	2,000	180	493,948	504,119	
3:46	100	2,100	205	..	..	Off for 19 minutes.
4:06	96	2,100	200	..	..	
4:22	98	2,200	200	..	..	Off for 7 minutes.
4:46	90	2,500	210	..	..	Off for 10 minutes.
5:00	115	2,000	190	..	..	Off for 4 minutes.
5:30	98	1,800	180	..	..	
5:40	..	..	..	494,053	504,227	Off for 15 minutes.
5:47	..	..	..	..	..	Run terminated.

Total length of run ..	..	..	..	..	..	6 hr. 14 min.
Effective length of run	..	..	..	..	..	4 hr. 49 min.
Mean volts on furnace	..	..	..	..	..	136
Mean amperes	..	..	..	..	..	2,316
Mean watts	..	..	..	..	..	309
Watts (= volts × amps)	..	..	..	..	..	315
K.V.A. (= watts × time)	..	..	..	..	..	1,496
Total units (K.W.H.) consumed × 1.25	..	..	..	..	..	1,664
Pig iron produced ..	..	..	..	..	..	(lb.) 651
Units (K.W.H.) per ton of pig	..	..	..	..	..	5,715
Slag made ..	..	..	..	..	..	(lb.) 541

$$\text{Ratio } \frac{\text{Slag}}{\text{Iron}} = \frac{541}{651} = 0.831.$$

Metallic iron charged in form of sands	..	..	..	..	..	(lb.) 743
Metallic iron as ferro-silicon, &c.	..	..	..	..	..	(lb.) 61
Lime charged	..	..	..	..	..	(lb.) 126
Coke-breeze charged	..	..	..	..	..	(lb.) 260
Lime per ton of iron produced	..	..	..	..	..	(lb.) 433
Coke per ton of iron produced	..	..	..	..	..	(lb.) 894
Yield of pig iron per cent. of iron charged	..	..	..	..	..	80.97

The analyses of the products obtained were as follows :—

<i>Pig Iron (before addition of Ferro-silicon).</i>					Per Cent.
Total carbon	..	..	..	..	4.137
Silicon	..	..	..	..	0.255
Sulphur	..	..	..	..	0.011

<i>Pig Iron (as Cast).</i>					
Graphitic carbon	..	..	..	..	2.937
Combined carbon	..	..	..	..	0.404
Silicon	..	..	..	..	2.763
Sulphur	..	..	..	..	0.010
Phosphorus	..	..	..	..	0.313
Manganese	..	..	..	..	0.345
Titanium	..	..	..	..	0.078

Total carbon, 3.341.