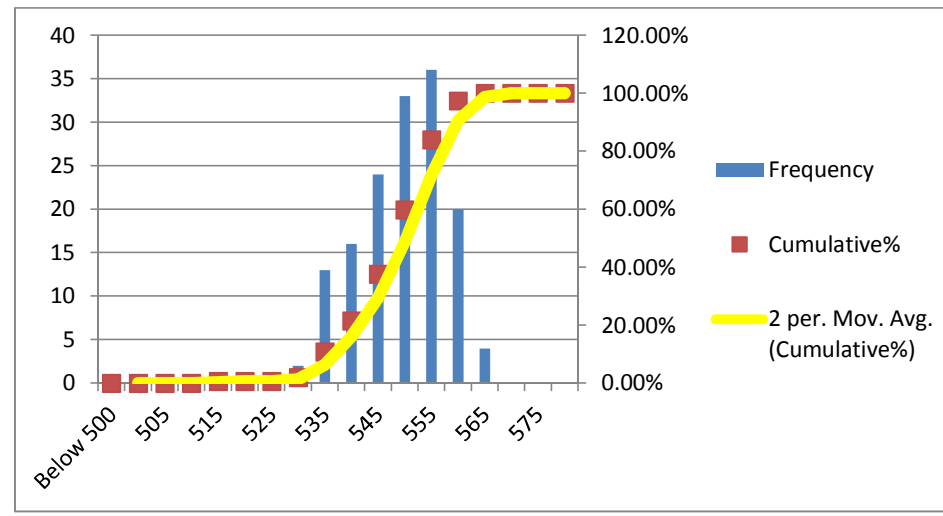


Campaign Length: 20.08.16 to 21.08.16  
 Total Production: 3068.931 MT  
 Billet Rolled: SAL-251, ISP-252 & RIN-256  
 Product: Xtreme 500W (25 mm)

YIELD STRENGTH	
Mean	549.262
Median	550
Mode	555
Std. Dev.	8.570
Min	515
Max	565
Count	149

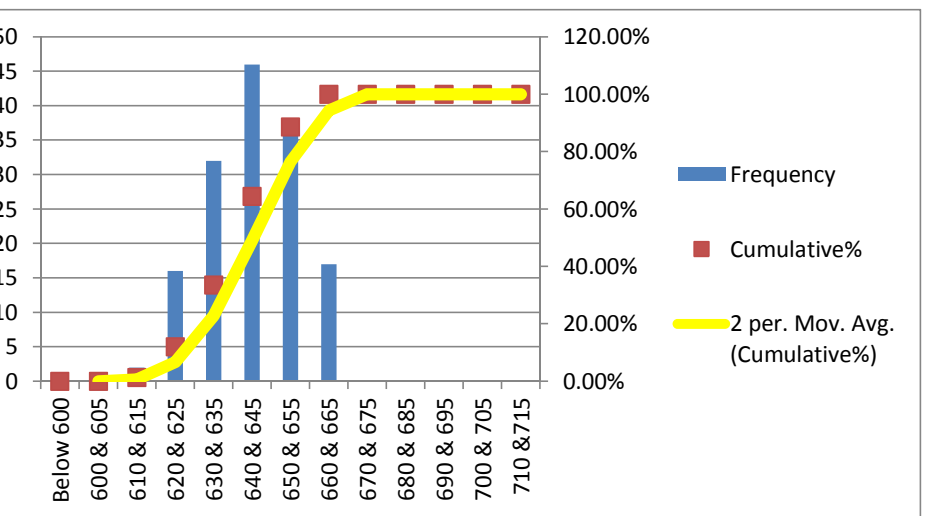
Bin	Frequency	%	Cumulative%
Below 500	0	0.00%	0.00%
500	0	0.00%	0.00%
505	0	0.00%	0.00%
510	0	0.00%	0.00%
515	1	0.67%	0.67%
520	0	0.00%	0.67%
525	0	0.00%	0.67%
530	2	1.34%	2.01%
535	13	8.72%	10.74%
540	16	10.74%	21.48%
545	24	16.11%	37.58%
550	33	22.15%	59.73%
555	36	24.16%	83.89%
560	20	13.42%	97.32%
565	4	2.68%	100.00%
570	0	0.00%	100.00%
575	0	0.00%	100.00%
Above 575	0	0.00%	100.00%
Total	149		



**MINIMUM REQUIREMENTS**  
 As per ISO 6935-2: 500 Mpa  
 As per ASTM A-615: 420 Mpa

ULTIMATE STRENGTH	
Mean	642.819
Median	645
Mode	635
Std. Dev.	11.66
Min	610
Max	665
Count	149

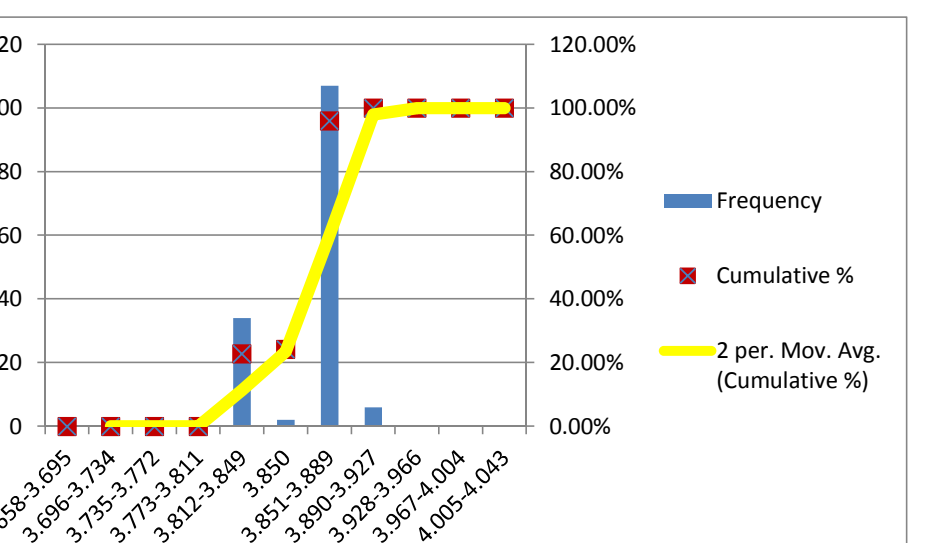
Bin	Frequency	%	Cumulative%
Below 600	0	0.00%	0.00%
600 & 605	0	0.00%	0.00%
610 & 615	2	1.34%	1.34%
620 & 625	16	10.74%	12.08%
630 & 635	32	21.48%	33.56%
640 & 645	46	30.87%	64.43%
650 & 655	36	24.16%	88.59%
660 & 665	17	11.41%	100.00%
670 & 675	0	0.00%	100.00%
680 & 685	0	0.00%	100.00%
690 & 695	0	0.00%	100.00%
700 & 705	0	0.00%	100.00%
710 & 715	0	0.00%	100.00%
720 & 725	0	0.00%	100.00%
730 & 735	0	0.00%	100.00%
Above 735	0	0.00%	100.00%
Total	149		



**MINIMUM REQUIREMENTS**  
 As per ISO 6935-2: 575 Mpa  
 As per ASTM A-615: 620 Mpa

UNIT WEIGHT	
Mean	3.861
Median	3.86
Mode	3.847
Std. Dev.	0.017
Min	3.821
Max	3.904
Count	149

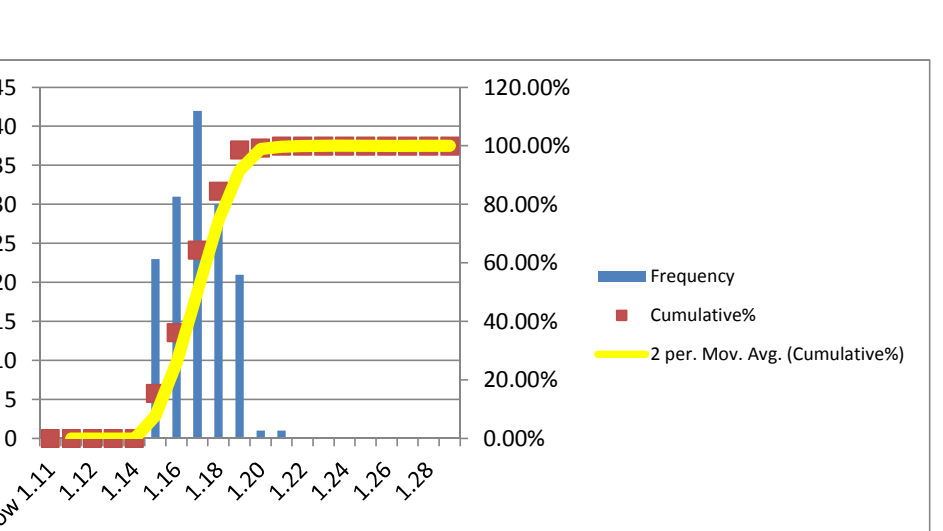
Bin	Frequency	%	Cumulative %
Less Than 3.658	0	0.00%	0.00%
3.658-3.695	0	0.00%	0.00%
-4%	3.696-3.734	0	0.00%
-3%	3.735-3.772	0	0.00%
-2%	3.773-3.811	0	0.00%
-1%	3.812-3.849	34	22.82%
0%	3.850	2	1.34%
1%	3.851-3.889	107	71.81%
2%	3.890-3.927	6	4.03%
3%	3.928-3.966	0	0.00%
4%	3.967-4.004	0	0.00%
5%	4.005-4.043	0	0.00%
Total	149		



**MINIMUM REQUIREMENTS**  
 As per ISO 6935-2: ± 4%  
 As per ASTM A-615: -6%

T/Y RATIO	
Mean	1.170
Median	1.17
Mode	1.16
Std. Dev.	0.013
Min	1.15
Max	1.21
Count	149

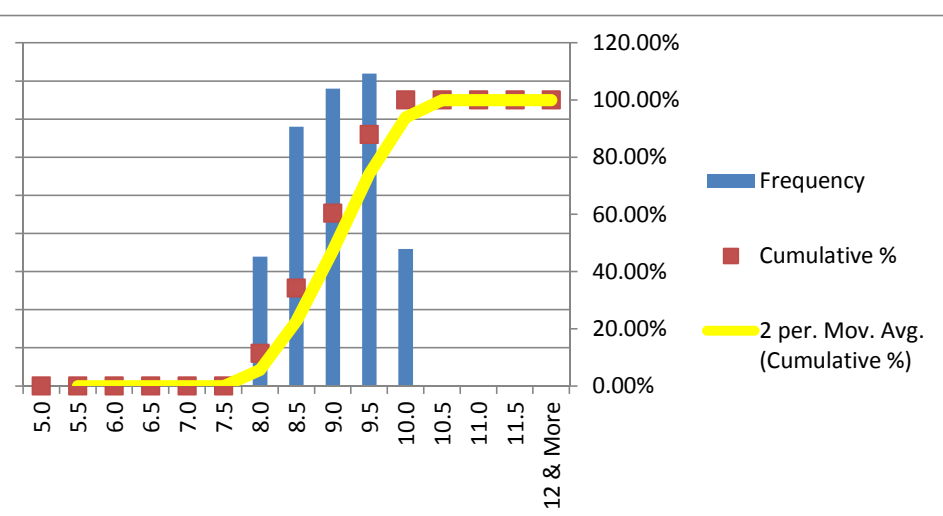
Bin	Frequency	%	Cumulative%
Below 1.11	0	0.00%	0.00%
1.11	0	0.00%	0.00%
1.12	0	0.00%	0.00%
1.13	0	0.00%	0.00%
1.14	0	0.00%	0.00%
1.15	23	15.44%	15.44%
1.16	31	20.81%	36.24%
1.17	42	28.19%	64.43%
1.18	30	20.13%	84.56%
1.19	21	14.09%	98.66%
1.20	1	0.67%	99.33%
1.21	1	0.67%	100.00%
1.22	0	0.00%	100.00%
1.23	0	0.00%	100.00%
1.24	0	0.00%	100.00%
1.25	0	0.00%	100.00%
1.26	0	0.00%	100.00%
1.27	0	0.00%	100.00%
1.28	0	0.00%	100.00%
1.29 & More	0	0.00%	100.00%
Total	149		



**MINIMUM REQUIREMENTS**  
 As per ISO 6935-2: T/Y: 1.15  
 As per ASTM A-615: Not Required

ELN. AT MAX. FORCE (Agt)(GL-200 mm)	
Mean	9.030
Median	9.0
Mode	9.5
Std. Dev.	0.602
Min	8.0
Max	10.0
Count	149

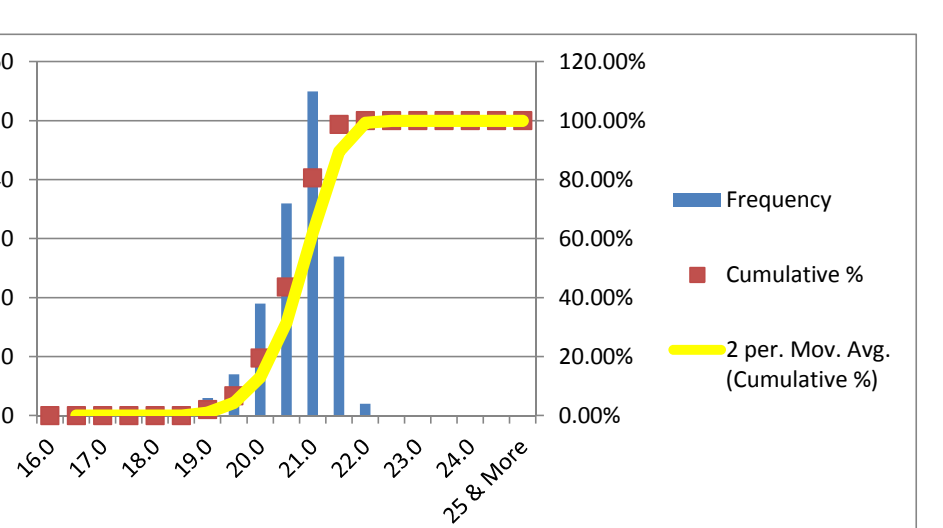
Bin	Frequency	%	Cumulative %
5.0	0	0.00%	0.00%
5.5	0	0.00%	0.00%
6.0	0	0.00%	0.00%
6.5	0	0.00%	0.00%
7.0	0	0.00%	0.00%
7.5	0	0.00%	0.00%
8.0	17	11.41%	11.41%
8.5	34	22.82%	34.23%
9.0	39	26.17%	60.40%
9.5	41	27.52%	87.92%
10.0	18	12.08%	100.00%
10.5	0	0.00%	100.00%
11.0	0	0.00%	100.00%
11.5	0	0.00%	100.00%
12 & More	0	0.00%	100.00%
Total	149		



**MINIMUM REQUIREMENTS**  
 As per ISO 6935-2: 7%  
 As per ASTM A-615: Not Required

ELN. AFTER FRACTURE (A)(GL-SD)	
Mean	20.745
Median	21.0
Mode	21.0
Std. Dev.	0.609
Min	19.0
Max	22.0
Count	149

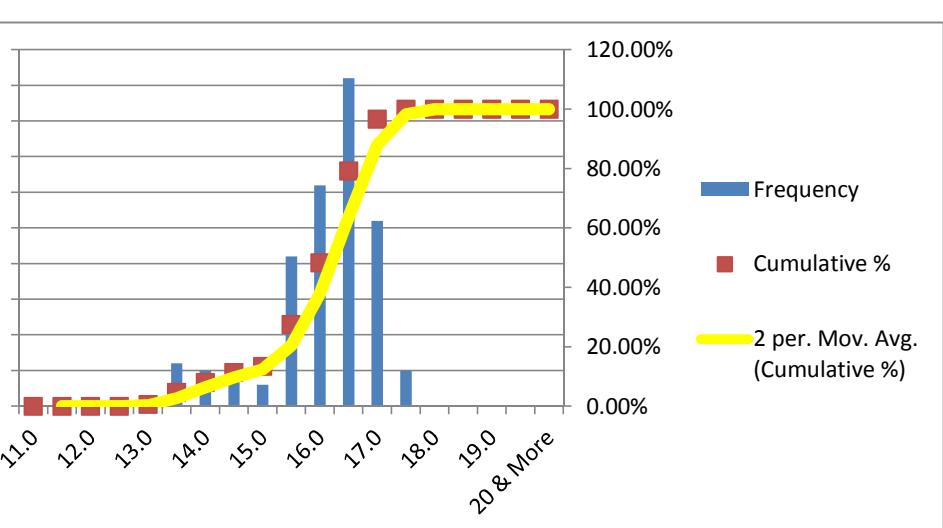
Bin	Frequency	%	Cumulative %
16.0	0	0.00%	0.00%
16.5	0	0.00%	0.00%
17.0	0	0.00%	0.00%
17.5	0	0.00%	0.00%
18.0	0	0.00%	0.00%
18.5	0	0.00%	0.00%
19.0	3	2.01%	2.01%
19.5	7	4.70%	6.71%
20.0	19	12.75%	19.46%
20.5	36	24.16%	43.62%
21.0	55	36.91%	80.54%
21.5	27	18.12%	98.66%
22.0	2	1.34%	100.00%
22.5	0	0.00%	100.00%
23.0	0	0.00%	100.00%
23.5	0	0.00%	100.00%
24.0	0	0.00%	100.00%
24.5	0	0.00%	100.00%
25 & More	0	0.00%	100.00%
Total	149		



**MINIMUM REQUIREMENTS**  
 As per ISO 6935-2: 14%

ELN. AFTER FRACTURE (A)(GL-203.2 mm)	
Mean	16.050
Median	16.5
Mode	16.5
Std. Dev.	0.953
Min	13.0
Max	17.5
Count	149

Bin	Frequency	%	Cumulative %
11.0	0	0.00%	0.00%
11.5	0	0.00%	0.00%
12.0	0	0.00%	0.00%
12.5	0	0.00%	0.00%
13.0	1	0.67%	0.67%
13.5	6	4.03%	4.70%
14.0	5	3.36%	8.05%
14.5	5	3.36%	11.41%
15.0	3	2.01%	13.42%
15.5	21	14.09%	27.52%
16.0	31	20.81%	48.32%
16.5	46	30.87%	79.19%
17.0	26	17.45%	96.64%
17.5	5	3.36%	100.00%
18.0	0	0.00%	100.00%
18.5	0	0.00%	100.00%
19.0	0	0.00%	100.00%
19.5	0	0.00%	100.00%
20 & More	0	0.00%	100.00%
Total	149		



**MINIMUM REQUIREMENTS**  
 As per ASTM A-615: 8%

**BEND TEST:**  
 ALL THE SAMPLES IN THIS CAMPAIGN PASSED THE BEND TEST MAINTAINING MANDREL DIA 5D

**MINIMUM REQUIREMENTS**  
 As per ISO 6935-2: 6D  
 As per ASTM A-615: 5D

**REBEND TEST:**  
 ALL THE SAMPLES IN THIS CAMPAIGN PASSED THE REBEND TEST MAINTAINING MANDREL DIA 7D

**MINIMUM REQUIREMENTS**  
 As per ISO 6935-2: 8D  
 As per ASTM A-615: Not Required

Nominal Diameter D	Unit Weight	Yield or Proof Strength R <sub>eh</sub>	Ultimate Tensile Strength R <sub>m</sub>	T/Y Ratio	% Total Elongation at Maximum Force A <sub>gt</sub>	% Elongation after Fracture A	% Elongation after Fracture A	Height of Transverse Rib	Height of Longitudinal Rib
(mm)	(Kg/m)	(MPa)	(MPa)		GL:200mm	GL: 203.2 mm	GL: 5D	mm	mm
25	3.857	560	665	1.19	9.0	16.5	21.0	2.10	1.00
25	3.889	560	660	1.18	8.5	17.0	20.5		
25	3.865	555	665	1.20	9.5	17.5	21.5		
25	3.821	545	645	1.18	9.0	16.0	19.5		
25	3.835	560	655	1.17	8.5	15.5	21.0		
25	3.842	555	640	1.15	9.0	17.5	21.5		
25	3.847	555	645	1.16	8.5	16.5	20.5		
25	3.855	545	635	1.17	9.0	17.0	21.0		
25	3.863	535	635	1.19	9.5	16.5	20.0		
25	3.866	550	650	1.18	9.5	16.5	20.0		
25	3.870	545	645	1.18	9.0	16.0	19.0		
25	3.821	545	640	1.17	9.5	17.0	20.5		
25	3.847	530	625	1.18	8.5	15.5	19.0		
25	3.836	535	635	1.19	9.0	16.0	19.5		
25	3.849	540	635	1.18	8.5	16.5	21.5		
25	3.858	545	640	1.17	8.5	16.5	21.5		
25	3.896	560	655	1.17	9.5	17.0	20.5		
25	3.859	535	625	1.17	8.0	16.0	22.0		
25	3.838	540	645	1.19	8.5	16.0	21.5		
25	3.852	560	660	1.18	10.0	17.0	20.5		
25	3.828	540	635	1.18	8.5	16.0	21.5		
25	3.852	540	635	1.18	8.5	16.0	21.5		
25	3.900	555	660	1.19	10.0	17.0	20.5		
25	3.828	555	655	1.18	10.0	17.0	20.5		
25	3.823	535	625	1.17	8.0	16.0	21.5		
25	3.887	540	645	1.19	9.0	16.5	21.5		
25	3.836	540	635	1.18	8.5	16.0	21.5		
25	3.840	540	640	1.19	9.0	16.5	22.0		
25	3.845	540	640	1.19	9.0	16.5	21.5		
25	3.849	535	630	1.18	8.5	16.0	21.5		
25	3.855	555	660	1.19	10.0	17.0	20.5		
25	3.859	550	650	1.18	9.5	16.5	21.0		
25	3.862	545	645	1.18	9.5	16.5	21.0		
25	3.868	555	655	1.18	10.0	17.0	21.0		
25	3.855	555	660	1.19	10.0	17.0	21.0		
25	3.849	555	660	1.19	10.0	17.0	21.0		
25	3.847	555	655	1.18	10.0	17.0	21.0		
25	3.852	555	650	1.17	9.5	16.5	20.5		
25	3.859	550	655	1.19	9.5	16.5	21.0		
25	3.868	555	655	1.18	10.0	17.0	20.5		
25	3.835	555	650	1.17	8.5	16.5	21.0		
25	3.851	560	665	1.19	8.0	16.0	20.5		
25	3.870	550	640	1.16	8.5	16.5	21.0		
25	3.866	565	660	1.17	9.0	15.5	20.0		
25	3.853	560	660	1.18	9.5	17.0	21.0		
25	3.875	545	640	1.17	9.0	15.5	20.5		
25	3.879	545	630	1.16	9.0	16.0	20.5		
25	3.853	560	655	1.17	9.5	15.5	20.0		
25	3.865	555	655	1.18	9.0	15.5	20.0		
25	3.878	545	635	1.17	9.0	16.5	21.0		
25	3.859	545	640	1.17	8.5	15.5	20.5		
25	3.877	555	650	1.17	9.0	16.5	21.0		
25	3.853	560	660	1.18	8.0	15.0	20.0		
25	3.889	555	655	1.18	8.5	15.5	20.5		
25	3.879	550	645	1.17	9.0	16.0	21.0		
25	3.894	555	650	1.17	9.5	16.5	21.5		
25	3.875	555	650	1.17	9.5	17.0	21.5		
25	3.881	560	655	1.17	9.0	16.5	21.0		
25	3.877	550	640	1.16	9.5	16.0	21.0		
25	3.883	555	645	1.16	9.0	16.5	21.5		
25	3.893	550	640	1.16	9.5	17.0	21.5		
25	3.853	550	640	1.16	9.0	16.5	21.0		
25	3.847	515	615	1.19	8.0	13.5	20.0		
25	3.851	560	650	1.16	8.5	14.5	21.0		
25	3.859	545	630	1.16	8.0	14.0	20.5		
25	3.865	550	635	1.15	8.0	13.5	20.0		
25	3.872	550	635	1.15	8.5	14.0	20.5		
25	3.869	550	645	1.17	8.0	13.5	20.0		
25	3.866	545	645	1.18	8.5	14.5	21.0		
25	3.879	540	630	1.17	8.5	13.5	20.0		
25	3.847	555	645	1.16	8.0	14.0	20.5		
25	3.862	540	625	1.16	8.0	13.0	20.0		

25	3.871	550	630	1.15	8.5	14.5	21.0	2.10	1.00
25	3.879	545	625	1.15	8.0	13.5	20.0		
25	3.847	545	625	1.15	8.5	14.0	20.5		
25	3.852	555	640	1.15	9.0	14.5	21.0		
25	3.822	555	640	1.15	9.0	14.5	21.0		
25	3.837	540	620	1.15	8.0	13.5	20.0		
25	3.843	560	645	1.15	8.5	14.0	21.0		
25	3.863	545	635	1.17	9.5	16.5	21.0		
25	3.851	550	635	1.15	9.0	16.0	20.5		
25	3.862	550	640	1.16	10.0	17.0	21.5		
25	3.867	560	645	1.15	8.5	16.5	20.0		
25	3.873	560	650	1.16	9.0	17.5	21.5		
25	3.870	555	645	1.16	9.5	15.5	20.0		
25	3.888	550	635	1.15	8.5	16.0	20.5		
25	3.839	545	635	1.17	9.0	16.5	21.0		
25	3.887	545	635	1.17	9.0	15.0	19.5		
25	3.840	550	635	1.15	10.0	17.5	21.5		
25	3.858	565	665	1.18	9.5	17.0	21.0		
25	3.847	555	655	1.18	8.5	16.5	20.5		
25	3.833	550	635	1.15	9.0	16.0	19.0		
25	3.854	565	655	1.16	9.0	15.5	19.5		
25	3.852	560	655	1.17	9.5	16.0	20.5		
25	3.866	535	625	1.17	8.5	16.5	20.0		
25	3.868	540	625	1.16	9.5	17.0	21.0		
25	3.871	560	655	1.17	9.0	15.0	19.5		
25	3.873	560	655	1.17	8.5	16.0	20.0		
25	3.875	550	635	1.15	10.0	16.5	21.0		
25	3.845	555	640	1.15	9.5	16.0	20.5		
25	3.852	555	640	1.15	10.0	17.0	21.5		
25	3.861	530	610	1.15	8.5	15.5	20.0		
25	3.858	535	630	1.18	9.5	16.5	21.0		
25	3.847	545	635	1.17	9.0	16.0	21.0		
25	3.850	565	655	1.16	8.5	15.5	20.5		
25	3.852	550	640	1.16	9.5	17.0	21.5		
25	3.871	535	625	1.17	8.5	16.0	19.5		
25	3.862	535	620	1.16	9.0	16.5	20.0		
25	3.856	560	650	1.16	9.0	15.5	19.5		
25	3.865	550	635	1.15	9.5	17.0	21.0		
25	3.876	545	650	1.19	10.0	17.5	21.5		
25	3.860	555	640	1.15	9.5	16.5	21.0		
25	3.881	555	655	1.18	9.5	16.5	20.5		
25	3.879	550	645	1.17	9.0	16.0	21.0		
25	3.885	550	655	1.19	9.5	16.5	20.5		
25	3.857	535	625	1.17	8.0	15.5	21.5		
25	3.889	540	625	1.16	8.0	15.5	21.5		
25	3.855	550	630	1.15	8.5	16.0	21.0		
25	3.860	540	625	1.16	8.0	15.5	21.0		
25	3.850	540	635	1.18	8.5	15.5	21.0		
25	3.856	540	625	1.16	8.0	15.5	21.0		
25	3.858	560	650	1.16	9.5	16.5	20.5		
25	3.847	550	650	1.18	9.5	16.5	21.0		
25	3.875	555	660	1.19	10.0	17.0	20.5		
25	3.873	535	620	1.16	8.0	15.5	21.0		
25	3.879	535	645	1.21	9.0	16.0	21.5		
25	3.881	550	650	1.18	9.5	16.5	21.0		
25	3.884	550	645	1.17	9.5	16.5	21.0		
25	3.861	555	660	1.19	10.0	17.0	20.5		
25	3.874	545	630	1.16	8.5	15.5	21.0		
25	3.849	545	635	1.17	8.5	15.5	21.0		
25	3.865	560	645	1.15	9.0	16.0	20.5		
25	3.872	555	645	1.16	9.5	16.5	20.5		
25	3.859	545	635	1.17	9.0	16.0	21.0		
25	3.873	550	640	1.16	9.5	16.5	21.0		
25	3.859	550	645	1.17	9.5	16.5	21.0		
25	3.904	555	660	1.19	10.0	17.0	20.5		
25	3.890	555	650	1.17	9.5	16.5	20.5		
25	3.876	550	640	1.16	9.5	16.5	21.0		
25	3.841	545	645	1.18	9.5	16.5	21.0		
25	3.854	535	635	1.19	9.0	16.0	21.5		
25	3.861	550	645	1.17	9.5	16.5	21.0		
25	3.853	555	660	1.19	10.0	17.0	20.5		
25	3.860	555	650	1.17	9.5	16.5	20.5		
25	3.866	550	640	1.16	9.0	16.0	21.0		
25	3.861	550	640	1.16	9.0	16.0	21.0		
25	3.870	545	640	1.17	9.0	16.0	21.5		
25	3.859	550	645	1.17	9.5	16.5	21.0		

25	3.869	555	650	1.17	9.5	16.5	21.0		
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