



### Rig Mass Flow Rate Calculations

Please Enter Parameters in highlighted boxes below

Engine Data File		
<b>Ambient Conditions</b>		
Air Temperature	5	[C]
Atmospheric Pressure	975	[mBar]
Air Humidity	95	[%]
<b>Viper Engine Parameters</b>		
Engine Air Intake Mass Flow	18.7	[Kg/s]
Butane Flow Rate	1732	[Ltr/h]
Engine Speed	12150	[RPM]
ETC	650	[C]
<b>Gas Delivery System Data File</b>		
<b>Gas Delivery System</b>		
Mixed Gas (Fuel) Mass Flow rate	0.147	[Kg/s]
Oxygen Mass Flow rate	0.148	[Kg/s]

Please do not change anything in this box

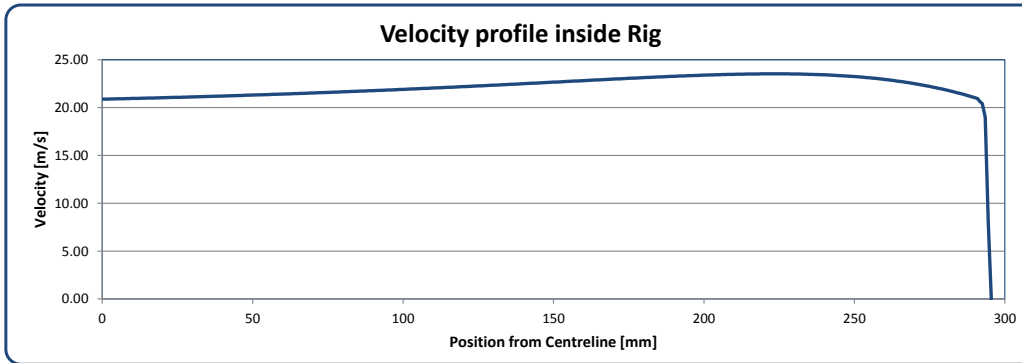
Test Date and Time = 13.05.2015 15:31:57.8

Calculated Parameters		
Air density	1.217898	[Kg/m3]
Liquid Butane density	584	[Kg/m3]
Butane mass Flow rate	0.280969	[Kg/s]
Air Fuel Ratio	79.23263	[ ]
<b>Calculated Exhaust gas properties (Reaction Engines)</b>		
Exhaust products density	0.389	[Kg/m3]
<b>Pitot Traverse Results</b>		
Rig Gas flow rate - Integrated	2.387331	[Kg/s]
Total Rig Mass flow	2.682331	[Kg/s]
<b>Rig Gas Temperature as read from TC 11</b>		
Gas Temperature	515	[C]

Bruce Ewan to fill in

Note

Manual for viper 201 gives figures for fuel flow rate to be as follows at maximum power					
Fuel Flow	2035	lb/hr	to	2920	lb/hr
	925	Kg/hr		1327.273	Kg/hr
	1156.25	ltr/hr		1659.091	ltr/hr



**Data Acquisition Parameters**

Sampling Rate	1000	[Hz]
No of samples recorded	100	Samples
Averaged samples sampling	10	[Hz]
Pitot Traverse speed	7	[mm/s]
Distance Travelled every 0.1	0.7	[mm]

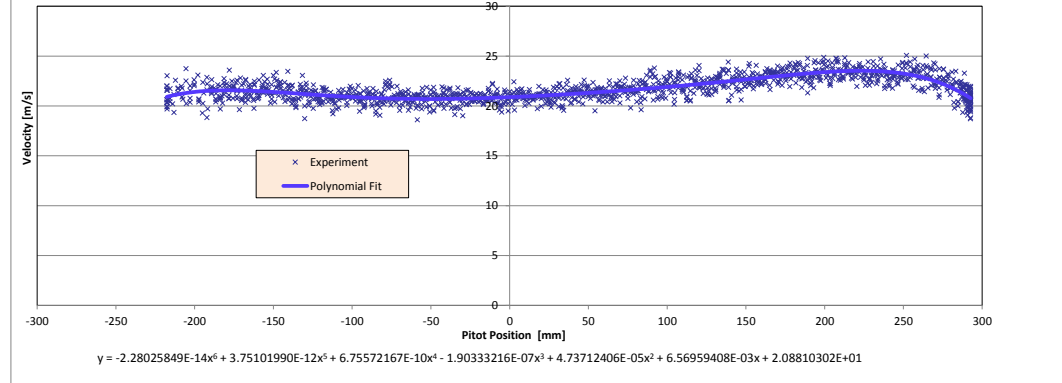
Averaged Pitot dp 0.918916049 Average Vel 21.7294549 [m/s]

**Raw Data from CSV File**

Date and time [dd:mm:yyyy hh:mm:ss.ms]	Pitot Position from rig centre [mm]	TC11 - Pitot [deg C]	Pitot dP [mBar]	O2 %
13.05.2015 15:31:57.8	-217.6	513.2	0.9413	15.98
13.05.2015 15:31:57.9	-217.54	513.3	0.9052	15.71
13.05.2015 15:31:58.0	-217.54	513.3	1.0317	15.87
13.05.2015 15:31:58.1	-217.56	513.2	0.9403	15.78
13.05.2015 15:31:58.2	-217.53	513.2	0.9159	15.66
13.05.2015 15:31:58.3	-217.51	513.3	0.9051	15.65
13.05.2015 15:31:58.4	-217.56	513.4	0.8281	15.78
13.05.2015 15:31:58.5	-217.55	513.3	0.7742	15.79
13.05.2015 15:31:58.6	-217.55	513.3	0.8003	15.56
13.05.2015 15:31:58.7	-217.55	513.4	0.8258	15.56
13.05.2015 15:31:58.8	-217.51	513.2	0.7709	15.68
13.05.2015 15:31:58.9	-217.57	513.1	0.8089	15.55
13.05.2015 15:31:59.0	-217.52	513.1	0.7544	15.65
13.05.2015 15:31:59.1	-217.53	513.2	0.806	15.74
13.05.2015 15:31:59.2	-217.15	512.9	0.8369	15.91
13.05.2015 15:31:59.3	-215.6	512.8	0.9182	15.62
13.05.2015 15:31:59.4	-215.74	512.9	0.838	15.52
13.05.2015 15:31:59.5	-215.71	512.8	0.8106	15.76
13.05.2015 15:31:59.6	-213.96	512.7	0.7947	15.66
13.05.2015 15:31:59.7	-213.07	512.7	0.7286	15.71
13.05.2015 15:31:59.8	-213.15	512.9	0.8701	15.61
13.05.2015 15:31:59.9	-212.16	512.8	0.9918	15.69
13.05.2015 15:32:00.0	-210.41	512.6	0.9257	16.03
13.05.2015 15:32:00.1	-210.62	512.7	0.9184	15.72
13.05.2015 15:32:00.2	-210.54	512.8	0.8869	15.77
13.05.2015 15:32:00.3	-208.41	512.8	0.9393	15.82
13.05.2015 15:32:00.4	-208	512.8	0.85	15.77
13.05.2015 15:32:00.5	-207.98	512.8	0.9225	15.69
13.05.2015 15:32:00.6	-207.49	512.9	0.8322	15.52
13.05.2015 15:32:00.7	-205.25	512.8	0.797	15.98
13.05.2015 15:32:00.8	-205.46	512.7	0.9851	15.77
13.05.2015 15:32:00.9	-205.44	512.7	1.0966	15.57
13.05.2015 15:32:01.0	-202.88	512.8	0.904	15.72
13.05.2015 15:32:01.1	-202.85	512.7	0.8389	15.7
13.05.2015 15:32:01.2	-202.85	512.6	0.8071	15.62
13.05.2015 15:32:01.3	-202.77	512.8	0.9432	15.55
13.05.2015 15:32:01.4	-200.16	512.8	0.9573	15.76
13.05.2015 15:32:01.5	-200.33	512.7	0.945	15.7
13.05.2015 15:32:01.6	-200.33	512.7	0.9957	15.56
13.05.2015 15:32:01.7	-197.91	512.9	1.0378	15.49
13.05.2015 15:32:01.8	-197.27	512.9	0.8345	15.57
13.05.2015 15:32:01.9	-197.38	512.6	0.8095	15.94
13.05.2015 15:32:02.0	-197.33	512.7	0.8262	15.69
13.05.2015 15:32:02.1	-195.07	512.8	0.7238	15.56
13.05.2015 15:32:02.2	-194.78	512.9	0.9732	15.68
13.05.2015 15:32:02.3	-194.79	512.8	0.7975	15.78
13.05.2015 15:32:02.4	-194.2	512.8	0.882	15.54
13.05.2015 15:32:02.5	-191.97	512.8	0.9598	15.7
13.05.2015 15:32:02.6	-192.21	512.7	1.0165	15.55
13.05.2015 15:32:02.7	-192.24	512.8	0.9081	15.61
13.05.2015 15:32:02.8	-189.11	512.8	0.9964	15.69
13.05.2015 15:32:02.9	-189.3	512.9	0.9034	15.71
13.05.2015 15:32:03.0	-189.3	512.8	0.8901	15.74
13.05.2015 15:32:03.1	-189.06	512.8	0.9368	15.58
13.05.2015 15:32:03.2	-186.56	512.9	0.8102	15.69
13.05.2015 15:32:03.3	-186.71	513	0.9151	15.79
13.05.2015 15:32:03.4	-186.67	512.7	0.8339	15.71
13.05.2015 15:32:03.5	-185.28	512.7	0.9522	15.75
13.05.2015 15:32:03.6	-183.63	512.9	0.8448	15.74

Calculated Velocity [m/s]
21.9990652
21.5730957
23.0312183
21.9873766
21.7002245
21.571904
20.6339127
19.951097
20.2846074
20.6052381
19.9085312
20.393305
19.6943221
20.356716
20.7432586
21.7274541
20.7568863
20.4147233
20.2135133
19.3546259
21.1507018
22.581472
21.8160103
21.7298203
21.3539157
21.9756818
20.9049754
21.7782703
20.6849299
20.2427428
22.5050694
23.7445705
21.5587915
20.7680296
20.3706023
22.0212564
22.1852449
22.042259
22.6258264
23.0992049
20.7134942
20.400867
20.6102278
19.2907666
22.3687259
20.2490915
21.2948453
22.2141945
22.8609297
21.607625
22.6337782
21.5516358
21.3924043
21.9464176
20.4096857
21.6907453
20.7060465
22.1260702
20.8409326

**Raw Data Plot with Polynomial fit on Calculated Velocity**



13.05.2015 15:32:03.7	-183.75	512.8	0.9422	15.83	22.0095796
13.05.2015 15:32:03.8	-183.78	512.6	0.8416	15.81	20.8014237
13.05.2015 15:32:03.9	-182.3	512.6	0.8007	15.64	20.289676
13.05.2015 15:32:04.0	-181.07	512.7	0.9485	15.71	22.0830403
13.05.2015 15:32:04.1	-181.2	512.6	0.9718	15.79	22.3526308
13.05.2015 15:32:04.2	-180.39	512.5	0.92	15.77	21.7487405
13.05.2015 15:32:04.3	-178.01	512.5	1.0828	15.71	23.5946924
13.05.2015 15:32:04.4	-178.31	512.6	0.9129	15.48	21.6646562
13.05.2015 15:32:04.5	-178.25	512.6	0.8403	15.69	20.7853518
13.05.2015 15:32:04.6	-176.37	512.6	0.9832	15.78	22.4833557
13.05.2015 15:32:04.7	-175.67	512.7	0.8394	15.79	20.7742178
13.05.2015 15:32:04.8	-175.64	512.8	0.9209	15.72	21.7593758
13.05.2015 15:32:04.9	-175.68	512.8	0.9391	15.83	21.9733421
13.05.2015 15:32:05.0	-173.55	512.8	0.971	15.53	22.3434284
13.05.2015 15:32:05.1	-173.09	513	0.8973	15.56	21.4787514
13.05.2015 15:32:05.2	-173.09	513	0.8355	15.55	20.7259012
13.05.2015 15:32:05.3	-171.55	513.1	0.7496	15.55	19.6315679
13.05.2015 15:32:05.4	-170.04	513	0.8248	15.6	20.5927584
13.05.2015 15:32:05.5	-170.18	513.1	0.8404	15.55	20.7865885
13.05.2015 15:32:05.6	-170.15	513	0.8226	15.62	20.5652763
13.05.2015 15:32:05.7	-167.59	512.9	0.8783	15.66	21.2501323
13.05.2015 15:32:05.8	-167.66	512.8	0.8397	15.58	20.7779298
13.05.2015 15:32:05.9	-167.63	512.8	0.8634	15.5	21.0691114
13.05.2015 15:32:06.0	-165.75	512.9	0.9432	15.65	22.0212564
13.05.2015 15:32:06.1	-165	512.6	0.9259	15.63	21.8183668
13.05.2015 15:32:06.2	-165.03	512.6	0.8746	15.68	21.205325
13.05.2015 15:32:06.3	-164.77	512.8	0.9015	15.42	21.5289606
13.05.2015 15:32:06.4	-162.33	512.7	0.7598	15.54	19.7646825
13.05.2015 15:32:06.5	-162.51	512.7	0.8217	15.61	20.5540231
13.05.2015 15:32:06.6	-162.47	512.7	0.8362	15.69	20.7345817
13.05.2015 15:32:06.7	-160.24	512.7	0.8848	15.71	21.3286199
13.05.2015 15:32:06.8	-159.85	512.7	0.8972	15.92	21.4775545
13.05.2015 15:32:06.9	-159.89	512.6	0.8354	15.72	20.7246609
13.05.2015 15:32:07.0	-159.32	512.6	0.8422	15.55	20.8088374
13.05.2015 15:32:07.1	-157.1	512.6	0.9363	15.76	21.94056
13.05.2015 15:32:07.2	-157.37	512.5	0.9205	15.81	21.7546497
13.05.2015 15:32:07.3	-157.36	512.4	0.8915	15.64	21.4092213
13.05.2015 15:32:07.4	-155.6	512.6	0.9783	15.41	22.4272603
13.05.2015 15:32:07.5	-154.69	512.6	0.9139	15.67	21.6765188
13.05.2015 15:32:07.6	-154.7	512.5	0.925	15.77	21.8077602
13.05.2015 15:32:07.7	-154.54	512.5	0.9099	15.63	21.6290293
13.05.2015 15:32:07.8	-151.67	512.6	0.8784	15.62	21.251342
13.05.2015 15:32:07.9	-151.81	512.6	0.8833	15.61	21.310533
13.05.2015 15:32:08.0	-151.81	512.6	0.8007	15.67	20.289676
13.05.2015 15:32:08.1	-150.66	512.6	0.8889	15.81	21.3779792
13.05.2015 15:32:08.2	-149.11	512.8	0.8103	15.55	20.4109452
13.05.2015 15:32:08.3	-149.21	512.8	0.8803	15.66	21.2743132
13.05.2015 15:32:08.4	-149.26	512.7	1.0023	15.59	22.7006902
13.05.2015 15:32:08.5	-147.8	512.8	0.9903	15.55	22.5643894
13.05.2015 15:32:08.6	-146.56	512.7	0.9435	15.88	22.0247582
13.05.2015 15:32:08.7	-146.68	512.8	0.9628	15.97	22.2488843
13.05.2015 15:32:08.8	-146.69	512.7	0.8596	15.65	21.0226955
13.05.2015 15:32:08.9	-143.7	512.8	0.9042	15.51	21.5611762
13.05.2015 15:32:09.0	-143.73	512.9	0.8885	15.66	21.3731687
13.05.2015 15:32:09.1	-143.7	512.7	0.8436	15.71	20.8261256
13.05.2015 15:32:09.2	-142.73	512.6	0.8766	15.71	21.2295569
13.05.2015 15:32:09.3	-140.6	512.8	0.8245	15.71	20.589013
13.05.2015 15:32:09.4	-140.81	512.8	0.9471	15.77	22.0667368
13.05.2015 15:32:09.5	-140.8	512.7	1.0709	15.71	23.4646811
13.05.2015 15:32:09.6	-138.72	512.5	0.9079	15.8	21.6052455
13.05.2015 15:32:09.7	-138.21	512.8	0.9433	15.52	22.0224237
13.05.2015 15:32:09.8	-138.22	512.8	0.8278	15.69	20.6301748
13.05.2015 15:32:09.9	-138.21	512.5	0.796	16.01	20.2300395
13.05.2015 15:32:10.0	-135.91	512.6	0.7898	15.87	20.1511002
13.05.2015 15:32:10.1	-135.69	512.8	0.7732	15.66	19.9382079
13.05.2015 15:32:10.2	-135.62	512.8	0.7654	15.63	19.8373852
13.05.2015 15:32:10.3	-133.85	512.7	0.8347	15.7	20.7159762
13.05.2015 15:32:10.4	-132.67	512.7	0.9275	15.61	21.8372103
13.05.2015 15:32:10.5	-132.66	512.8	0.8487	15.57	20.8889831
13.05.2015 15:32:10.6	-132.68	512.7	0.9071	15.72	21.5957246
13.05.2015 15:32:10.7	-130.03	512.6	0.8887	15.74	21.3755741

13.05.2015 15:32:10.8	-130.17	512.7	0.7776	15.65	19.994858
13.05.2015 15:32:10.9	-130.11	512.7	0.682	15.89	18.7254552
13.05.2015 15:32:11.0	-129.97	512.7	0.8633	15.88	21.0678912
13.05.2015 15:32:11.1	-127.42	512.6	0.8631	15.7	21.0654507
13.05.2015 15:32:11.2	-127.62	512.7	0.7827	15.64	20.0603203
13.05.2015 15:32:11.3	-127.55	512.7	0.8066	15.73	20.3642915
13.05.2015 15:32:11.4	-127.08	512.6	0.8146	15.86	20.4650307
13.05.2015 15:32:11.5	-124.46	512.5	0.8309	15.73	20.6687673
13.05.2015 15:32:11.6	-124.66	512.7	0.7595	15.52	19.7607801
13.05.2015 15:32:11.7	-124.61	512.7	0.9514	15.7	22.1167735
13.05.2015 15:32:11.8	-121.8	512.5	0.8367	15.7	20.7407798
13.05.2015 15:32:11.9	-121.74	512.5	0.8744	15.66	21.2029003
13.05.2015 15:32:12.0	-121.68	512.7	0.8396	15.49	20.7766925
13.05.2015 15:32:12.1	-121.66	512.8	0.8117	15.6	20.4285701
13.05.2015 15:32:12.2	-119	512.7	0.9287	15.57	21.8513322
13.05.2015 15:32:12.3	-119.2	512.7	0.7986	15.55	20.2630516
13.05.2015 15:32:12.4	-119.12	512.9	0.8073	15.53	20.3731261
13.05.2015 15:32:12.5	-118.13	513	0.8138	15.74	20.4549791
13.05.2015 15:32:12.6	-116.4	512.9	0.9142	15.61	21.6800763
13.05.2015 15:32:12.7	-116.58	512.9	0.9126	15.46	21.6610961
13.05.2015 15:32:12.8	-116.14	513	0.8511	15.56	20.9184977
13.05.2015 15:32:12.9	-113.44	512.9	0.8596	15.78	21.0226955
13.05.2015 15:32:13.0	-113.65	512.8	0.8401	15.56	20.7828781
13.05.2015 15:32:13.1	-113.64	513	0.8879	15.48	21.3659509
13.05.2015 15:32:13.2	-112.19	513	0.7179	15.64	19.2119821
13.05.2015 15:32:13.3	-110.93	512.9	0.7953	15.88	20.2211424
13.05.2015 15:32:13.4	-111.04	512.9	0.8035	15.86	20.3251209
13.05.2015 15:32:13.5	-110.38	513	0.8555	15.54	20.9725001
13.05.2015 15:32:13.6	-108.26	513.1	0.8248	15.82	20.5927584
13.05.2015 15:32:13.7	-108.5	513	0.7623	15.94	19.797172
13.05.2015 15:32:13.8	-108.54	512.9	0.9035	15.77	21.5528286
13.05.2015 15:32:13.9	-106.62	513.2	0.8401	15.57	20.7828781
13.05.2015 15:32:14.0	-105.85	513.3	0.9122	15.72	21.6563485
13.05.2015 15:32:14.1	-105.89	513.2	0.8479	15.74	20.8791356
13.05.2015 15:32:14.2	-105.63	513.3	0.8437	15.7	20.8273599
13.05.2015 15:32:14.3	-103.21	513.4	0.8057	15.58	20.3529272
13.05.2015 15:32:14.4	-103.33	513.5	0.8856	15.86	21.3382599
13.05.2015 15:32:14.5	-103.36	513.3	0.7816	15.59	20.0462191
13.05.2015 15:32:14.6	-101.84	513.3	0.9147	15.44	21.6860042
13.05.2015 15:32:14.7	-100.27	513.4	0.9189	15.58	21.7357346
13.05.2015 15:32:14.8	-100.4	513.4	0.8787	15.71	21.2549707
13.05.2015 15:32:14.9	-100.41	513.3	0.8495	15.63	20.8988259
13.05.2015 15:32:15.0	-97.87	513.4	0.8507	15.36	20.9135815
13.05.2015 15:32:15.1	-97.82	513.4	0.9081	15.82	21.607625
13.05.2015 15:32:15.2	-97.85	513.3	0.8171	15.83	20.4964101
13.05.2015 15:32:15.3	-96.08	513.2	0.9455	15.91	22.0480895
13.05.2015 15:32:15.4	-95.21	513.4	0.8753	15.65	21.2138093
13.05.2015 15:32:15.5	-95.29	513.4	0.7377	15.69	19.4751176
13.05.2015 15:32:15.6	-95.03	513.2	0.806	15.72	20.356716
13.05.2015 15:32:15.7	-92.54	513.2	0.7656	15.59	19.8399768
13.05.2015 15:32:15.8	-92.75	513.2	0.8994	15.44	21.5038706
13.05.2015 15:32:15.9	-92.67	513.3	0.8294	15.51	20.6501025
13.05.2015 15:32:16.0	-90.49	513.1	0.9198	15.71	21.7463763
13.05.2015 15:32:16.1	-90.14	513	0.8447	15.78	20.8396991
13.05.2015 15:32:16.2	-90.11	513.2	0.8621	15.88	21.0532438
13.05.2015 15:32:16.3	-89.57	513.1	0.8403	15.96	20.7853518
13.05.2015 15:32:16.4	-87.35	513	0.7782	15.74	20.0025705
13.05.2015 15:32:16.5	-87.58	513	0.7971	15.82	20.2440127
13.05.2015 15:32:16.6	-87.57	513.2	0.8371	15.76	20.745737
13.05.2015 15:32:16.7	-84.96	513.1	0.7157	16.02	19.182522
13.05.2015 15:32:16.8	-85.02	513	0.8646	15.88	21.0837478
13.05.2015 15:32:16.9	-84.99	513.1	0.7387	15.83	19.488313
13.05.2015 15:32:17.0	-84.09	513.2	0.7877	15.95	20.1242924
13.05.2015 15:32:17.1	-82.17	513.2	0.8153	15.96	20.4738218
13.05.2015 15:32:17.2	-82.44	513.1	0.7671	15.9	19.859403
13.05.2015 15:32:17.3	-82.42	513.2	0.7067	15.79	19.0615294
13.05.2015 15:32:17.4	-80.33	513.2	0.8577	15.88	20.9994491
13.05.2015 15:32:17.5	-79.82	513.1	0.7933	15.91	20.1957006
13.05.2015 15:32:17.6	-79.85	513	0.829	15.73	20.6451224
13.05.2015 15:32:17.7	-79.36	513.1	0.8158	15.7	20.4800988
13.05.2015 15:32:17.8	-76.7	513.2	0.9207	15.86	21.7570129

13.05.2015 15:32:17.9	-76.89	513	0.8404	15.91	20.7865885
13.05.2015 15:32:18.0	-76.93	513	0.8166	15.87	20.4901381
13.05.2015 15:32:18.1	-75.39	513.4	0.7845	15.68	20.0833738
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13.05.2015 15:32:18.3	-74.35	513.3	0.8274	15.95	20.6251899
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13.05.2015 15:32:18.7	-71.76	513.7	0.8037	16	20.3276503
13.05.2015 15:32:18.8	-69.78	513.8	0.7445	15.73	19.564671
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13.05.2015 15:32:19.0	-69.2	514.1	0.8951	15.77	21.4524044
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13.05.2015 15:32:19.3	-66.62	514.5	0.8186	15.61	20.5152147
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13.05.2015 15:32:20.4	-58.57	514.9	0.6736	15.51	18.6097799
13.05.2015 15:32:20.5	-58.27	515	0.775	15.65	19.9614023
13.05.2015 15:32:20.6	-55.81	514.9	0.7557	15.78	19.7112837
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13.05.2015 15:32:20.8	-55.95	515	0.788	15.85	20.1281243
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13.05.2015 15:32:21.0	-53.41	515.1	0.8483	15.98	20.8840599
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13.05.2015 15:32:21.4	-50.87	515.3	0.7784	15.64	20.0051407
13.05.2015 15:32:21.5	-50.8	515.4	0.7311	15.55	19.3878026
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13.05.2015 15:32:22.2	-45.38	515.4	0.8506	15.53	20.9123523
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13.05.2015 15:32:22.4	-43.18	515.6	0.7949	15.69	20.2160566
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13.05.2015 15:32:22.9	-40.51	515.4	0.7908	15.85	20.1638532
13.05.2015 15:32:23.0	-37.92	515.4	0.9117	15.66	21.6504125
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13.05.2015 15:32:23.3	-37	515.3	0.7613	15.57	19.7841826
13.05.2015 15:32:23.4	-34.82	515.4	0.7127	15.54	19.1422761
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13.05.2015 15:32:23.6	-35.04	515.4	0.8714	15.69	21.1664963
13.05.2015 15:32:23.7	-33.24	515.3	0.7731	15.52	19.9369185
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13.05.2015 15:32:24.0	-31.32	515.5	0.7574	15.56	19.7334422
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13.05.2015 15:32:25.6	-19.64	515.8	0.8646	15.5	21.0837478
13.05.2015 15:32:25.7	-19.65	515.8	0.8096	15.48	20.402127
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13.05.2015 15:32:38.2	75.12	514.2	0.8373	15.7	20.7482151
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13.05.2015 15:32:38.4	76.85	514.3	0.7631	15.69	19.8075574
13.05.2015 15:32:38.5	78.21	514.1	0.9108	15.87	21.6397235
13.05.2015 15:32:38.6	78.04	514.1	0.9016	15.72	21.5301546
13.05.2015 15:32:38.7	78.05	514.3	0.8886	15.76	21.3743714
13.05.2015 15:32:38.8	80.74	514.3	0.8106	15.94	20.4147233
13.05.2015 15:32:38.9	80.58	514.1	0.9003	15.8	21.5146271
13.05.2015 15:32:39.0	80.57	514	0.8818	15.73	21.2924308
13.05.2015 15:32:39.1	82.57	514.1	0.9372	15.82	21.9511025

13.05.2015 15:32:39.2	83.2	514	0.804	15.76	20.3314439
13.05.2015 15:32:39.3	83.2	513.9	0.8374	15.71	20.7494541
13.05.2015 15:32:39.4	83.55	513.9	0.7484	15.62	19.615848
13.05.2015 15:32:39.5	85.9	513.9	0.8337	15.57	20.7035633
13.05.2015 15:32:39.6	85.72	513.7	0.9673	15.72	22.3008179
13.05.2015 15:32:39.7	85.77	513.6	0.9456	15.61	22.0492554
13.05.2015 15:32:39.8	87.17	513.6	0.9162	15.47	21.7037781
13.05.2015 15:32:39.9	88.44	513.6	0.9295	15.66	21.8607418
13.05.2015 15:32:40.0	88.33	513.4	0.8923	15.8	21.4188251
13.05.2015 15:32:40.1	88.32	513.3	0.9006	15.56	21.5182113
13.05.2015 15:32:40.2	91.3	513.4	0.9543	15.41	22.1504554
13.05.2015 15:32:40.3	91.2	513.4	0.9019	15.81	21.5337363
13.05.2015 15:32:40.4	91.24	513.2	0.8247	15.67	20.59151
13.05.2015 15:32:40.5	92.15	513	0.8984	15.73	21.4919127
13.05.2015 15:32:40.6	94.03	513.1	0.8317	15.49	20.678715
13.05.2015 15:32:40.7	93.82	513.2	0.9223	15.62	21.7759094
13.05.2015 15:32:40.8	94.13	512.9	0.8522	15.86	20.9320114
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13.05.2015 15:32:41.0	96.37	513.1	0.9431	15.77	22.020089
13.05.2015 15:32:41.1	96.4	513	0.8539	15.99	20.9528789
13.05.2015 15:32:41.2	97.68	513	0.885	15.95	21.3310303
13.05.2015 15:32:41.3	99.1	512.9	0.8396	15.58	20.7766925
13.05.2015 15:32:41.4	98.98	513	0.9354	15.7	21.9300125
13.05.2015 15:32:41.5	98.98	513	0.9631	15.7	22.2523503
13.05.2015 15:32:41.6	101.46	513	1.0603	15.5	23.3482631
13.05.2015 15:32:41.7	101.56	513.1	0.959	15.39	22.2049347
13.05.2015 15:32:41.8	101.51	513.2	0.9172	15.74	21.7156193
13.05.2015 15:32:41.9	102.41	513.1	0.8853	15.83	21.3346454
13.05.2015 15:32:42.0	104.74	513.1	0.8286	15.77	20.6401411
13.05.2015 15:32:42.1	104.46	513.2	0.7918	15.57	20.1765982
13.05.2015 15:32:42.2	104.49	513.2	0.9658	15.68	22.2835201
13.05.2015 15:32:42.3	106.49	513.1	0.9551	15.73	22.1597379
13.05.2015 15:32:42.4	107.07	513	0.9243	15.55	21.7995071
13.05.2015 15:32:42.5	107.06	513.2	1.0219	15.66	22.9215719
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13.05.2015 15:32:42.8	109.61	513.1	0.9109	15.91	21.6409115
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13.05.2015 15:32:43.1	112.55	513.1	0.8469	15.92	20.8668197
13.05.2015 15:32:43.2	112.55	513.2	0.8538	15.94	20.951652
13.05.2015 15:32:43.3	112.55	513.3	0.8208	15.9	20.5427637
13.05.2015 15:32:43.4	114.81	513.3	0.8242	16.06	20.5852669
13.05.2015 15:32:43.5	114.69	513.2	0.8171	15.94	20.4964101
13.05.2015 15:32:43.6	114.79	513.3	0.8991	15.76	21.500284
13.05.2015 15:32:43.7	116.95	513.3	0.8798	15.98	21.2682705
13.05.2015 15:32:43.8	117.7	513.3	0.9286	16.04	21.8501557
13.05.2015 15:32:43.9	117.69	513.2	0.995	15.99	22.6178718
13.05.2015 15:32:44.0	117.98	513.3	0.9773	15.76	22.415795
13.05.2015 15:32:44.1	120.4	513.4	0.9303	15.89	21.8701473
13.05.2015 15:32:44.2	120.24	513.3	1.0782	16.02	23.5445211
13.05.2015 15:32:44.3	120.28	513.3	1.126	15.92	24.0607628
13.05.2015 15:32:44.4	121.62	513.4	1.0065	15.86	22.7482026
13.05.2015 15:32:44.5	122.96	513.4	0.9874	15.94	22.5313264
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13.05.2015 15:32:44.7	122.8	513.1	0.9185	16.07	21.7310033
13.05.2015 15:32:44.8	125.73	513.3	0.8759	15.96	21.2210789
13.05.2015 15:32:44.9	125.74	513.3	0.9262	15.91	21.8219012
13.05.2015 15:32:45.0	125.75	513.2	0.8761	15.97	21.2235015
13.05.2015 15:32:45.1	126.62	513.1	0.8657	16.07	21.0971556
13.05.2015 15:32:45.2	128.59	513.2	1	15.87	22.6746294
13.05.2015 15:32:45.3	128.3	513.2	0.9583	15.87	22.1968293
13.05.2015 15:32:45.4	128.35	513.1	0.9198	15.8	21.7463763
13.05.2015 15:32:45.5	130.38	513.2	0.9212	15.79	21.7629198
13.05.2015 15:32:45.6	130.94	513.3	0.9085	15.74	21.6123834
13.05.2015 15:32:45.7	130.9	513.2	1.0015	15.87	22.691629
13.05.2015 15:32:45.8	132.17	513.2	1.0062	15.63	22.7448121
13.05.2015 15:32:45.9	133.64	513.3	0.9773	15.99	22.415795
13.05.2015 15:32:46.0	133.48	513.5	1.0536	15.87	23.2743777
13.05.2015 15:32:46.1	133.47	513.2	1.0284	16.21	22.994355
13.05.2015 15:32:46.2	134.96	513.1	1.091	16.08	23.6838648



13.05.2015 15:32:46.3	136.17	513.3	0.9439	15.59	22.0294265
13.05.2015 15:32:46.4	136.02	513.4	0.9297	15.77	21.8630935
13.05.2015 15:32:46.5	136.88	513.1	0.9764	15.97	22.4054712
13.05.2015 15:32:46.6	139.29	513	0.8216	15.85	20.5527724
13.05.2015 15:32:46.7	138.97	513.3	0.9303	16.1	21.8701473
13.05.2015 15:32:46.8	138.99	513.4	0.8178	15.83	20.5051878
13.05.2015 15:32:46.9	140.92	513.3	0.8648	15.78	21.0861862
13.05.2015 15:32:47.0	141.57	513.3	1.0017	15.77	22.6938946
13.05.2015 15:32:47.1	141.55	513.4	0.9836	15.63	22.4879288
13.05.2015 15:32:47.2	141.86	513.4	0.9897	15.64	22.5575528
13.05.2015 15:32:47.3	144.28	513.4	0.9976	15.76	22.6474035
13.05.2015 15:32:47.4	144.11	513.4	0.935	15.78	21.9253231
13.05.2015 15:32:47.5	144.15	513.4	0.909	15.67	21.6183298
13.05.2015 15:32:47.6	145.67	513.4	0.8988	15.75	21.4966967
13.05.2015 15:32:47.7	147.21	513.3	1.0069	15.85	22.7527224
13.05.2015 15:32:47.8	147.06	513.4	0.8254	15.59	20.6002471
13.05.2015 15:32:47.9	147.06	513.4	0.9124	15.77	21.6587224
13.05.2015 15:32:48.0	149.65	513.2	0.9379	15.92	21.9592986
13.05.2015 15:32:48.1	149.63	513.2	0.9981	15.73	22.6530782
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13.05.2015 15:32:48.3	151.47	513.3	0.966	15.6	22.2858273
13.05.2015 15:32:48.4	152.26	513.1	0.9467	15.73	22.0620765
13.05.2015 15:32:48.5	152.17	513	1.0197	15.71	22.8968852
13.05.2015 15:32:48.6	153.29	513.1	0.9617	15.48	22.236171
13.05.2015 15:32:48.7	154.94	513.1	0.9418	15.69	22.0049071
13.05.2015 15:32:48.8	154.77	512.9	1.0502	15.7	23.2367938
13.05.2015 15:32:48.9	154.79	512.8	0.9172	15.84	21.7156193
13.05.2015 15:32:49.0	157.04	513	0.9886	15.91	22.5450135
13.05.2015 15:32:49.1	157.34	512.9	0.9511	15.67	22.1132863
13.05.2015 15:32:49.2	157.34	512.8	0.9722	15.81	22.3572306
13.05.2015 15:32:49.3	158.81	512.8	0.9854	15.55	22.508496
13.05.2015 15:32:49.4	160.01	513	0.9572	16	22.1840861
13.05.2015 15:32:49.5	159.91	513	1.0171	15.88	22.8676757
13.05.2015 15:32:49.6	159.9	512.9	0.9714	15.91	22.3480301
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13.05.2015 15:32:49.8	162.47	513.1	1.0644	15.79	23.3933614
13.05.2015 15:32:49.9	162.46	513	1.0586	15.83	23.3295382
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13.05.2015 15:32:50.1	165.27	513.1	1.0625	15.66	23.372473
13.05.2015 15:32:50.2	165.02	513.2	1.0747	15.83	23.5062755
13.05.2015 15:32:50.3	165.36	512.9	1.0459	15.92	23.189174
13.05.2015 15:32:50.4	167.81	512.8	1.0394	15.69	23.1170043
13.05.2015 15:32:50.5	167.58	513	1.0615	15.64	23.3614716
13.05.2015 15:32:50.6	167.61	513	0.9915	15.79	22.5780565
13.05.2015 15:32:50.7	169.95	512.8	1.0413	15.89	23.1381233
13.05.2015 15:32:50.8	170.18	512.7	1.1207	15.78	24.0040699
13.05.2015 15:32:50.9	170.2	512.9	1.0693	15.62	23.4471456
13.05.2015 15:32:51.0	170.83	512.9	0.9747	15.81	22.3859578
13.05.2015 15:32:51.1	172.97	512.6	0.9472	15.82	22.0679018
13.05.2015 15:32:51.2	172.74	512.7	1.0941	15.6	23.7174889
13.05.2015 15:32:51.3	172.83	512.8	1.0721	15.72	23.4778241
13.05.2015 15:32:51.4	175.42	512.7	0.988	16.04	22.538171
13.05.2015 15:32:51.5	175.29	512.7	1.0102	16.11	22.7899766
13.05.2015 15:32:51.6	175.35	512.8	1.0383	15.63	23.1047686
13.05.2015 15:32:51.7	176.37	512.9	1.1166	15.72	23.9601211
13.05.2015 15:32:51.8	178.08	512.8	1.1489	15.77	24.304199
13.05.2015 15:32:51.9	177.91	512.7	1.1192	15.62	23.9880004
13.05.2015 15:32:52.0	177.91	512.9	0.9369	15.67	21.9475889
13.05.2015 15:32:52.1	180.12	512.9	1.0465	15.89	23.1958245
13.05.2015 15:32:52.2	180.47	512.8	1.0338	15.99	23.0546462
13.05.2015 15:32:52.3	180.45	512.8	1.1057	15.81	23.8428876
13.05.2015 15:32:52.4	181.95	513	1.0762	15.53	23.5226741
13.05.2015 15:32:52.5	183.2	513.1	1.1547	15.97	24.3654693
13.05.2015 15:32:52.6	183.01	513	1.0809	15.85	23.5739824
13.05.2015 15:32:52.7	183.75	513	1.0107	15.68	22.7956159
13.05.2015 15:32:52.8	185.87	513.2	1.0117	15.55	22.8068902
13.05.2015 15:32:52.9	185.52	513.2	0.9288	15.73	21.8525086
13.05.2015 15:32:53.0	185.63	513	1.0037	15.63	22.7165387
13.05.2015 15:32:53.1	187.48	512.9	1.0259	15.74	22.9663888
13.05.2015 15:32:53.2	188.23	513.2	0.9785	15.75	22.4295527
13.05.2015 15:32:53.3	188.21	513.2	1.0614	15.81	23.3603712

13.05.2015 15:32:53.4	189.28	513	0.8828	15.85	21.3045007
13.05.2015 15:32:53.5	190.91	513.1	0.9688	15.8	22.3181022
13.05.2015 15:32:53.6	190.75	513.1	1.0282	15.94	22.9921189
13.05.2015 15:32:53.7	190.72	513	1.0095	15.72	22.7820793
13.05.2015 15:32:53.8	193.05	512.9	0.9265	15.63	21.825435
13.05.2015 15:32:53.9	193.35	513	1.1506	15.53	24.3221735
13.05.2015 15:32:54.0	193.35	513	1.0211	15.5	22.912598
13.05.2015 15:32:54.1	193.92	512.9	1.1707	15.66	24.5336975
13.05.2015 15:32:54.2	196.13	512.8	1.1518	15.52	24.3348534
13.05.2015 15:32:54.3	195.87	512.8	1.0184	15.54	22.8822851
13.05.2015 15:32:54.4	195.86	512.8	1.075	15.71	23.5095561
13.05.2015 15:32:54.5	198.6	512.7	1.0911	15.87	23.6849502
13.05.2015 15:32:54.6	198.43	512.6	1.1599	15.77	24.4202706
13.05.2015 15:32:54.7	198.48	512.8	1.0802	15.46	23.5663478
13.05.2015 15:32:54.8	199.47	512.9	1.2026	15.51	24.8657061
13.05.2015 15:32:54.9	201.23	512.7	1.0508	15.97	23.2434307
13.05.2015 15:32:55.0	200.96	512.8	1.0119	15.84	22.8091444
13.05.2015 15:32:55.1	201.39	513.1	1.1102	15.95	23.8913565
13.05.2015 15:32:55.2	203.76	513	0.9599	15.94	22.2153517
13.05.2015 15:32:55.3	203.57	513	1.0081	15.96	22.7662764
13.05.2015 15:32:55.4	203.59	512.9	0.9462	15.99	22.0562497
13.05.2015 15:32:55.5	205.08	513	1.0071	16.11	22.7549819
13.05.2015 15:32:55.6	206.24	513	1.0625	16	23.372473
13.05.2015 15:32:55.7	206.16	512.9	1.0505	15.79	23.2401125
13.05.2015 15:32:55.8	206.16	512.9	1.04	15.73	23.1236755
13.05.2015 15:32:55.9	208.78	513	0.9973	15.7	22.6439979
13.05.2015 15:32:56.0	208.69	513	1.0905	15.83	23.678437
13.05.2015 15:32:56.1	208.74	513	1.1605	15.73	24.4265859
13.05.2015 15:32:56.2	209.78	513.1	1.0149	15.62	22.8429308
13.05.2015 15:32:56.3	211.94	513.1	1.0018	15.63	22.6950274
13.05.2015 15:32:56.4	211.64	512.9	1.0141	16.15	22.833926
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13.05.2015 15:32:56.6	213.8	513	1.1017	15.65	23.7997213
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13.05.2015 15:32:56.8	214.24	512.8	1.1226	15.71	24.0244092
13.05.2015 15:32:56.9	214.71	512.8	1.0661	15.78	23.4120352
13.05.2015 15:32:57.0	217.02	512.9	1.0098	15.57	22.7854642
13.05.2015 15:32:57.1	216.77	512.9	1.0575	15.86	23.3174141
13.05.2015 15:32:57.2	216.84	512.9	1.0736	15.73	23.4942426
13.05.2015 15:32:57.3	219.68	512.9	1.0174	15.7	22.8710479
13.05.2015 15:32:57.4	219.72	513	1.0499	15.87	23.2334747
13.05.2015 15:32:57.5	219.75	512.9	1.0794	15.93	23.5576196
13.05.2015 15:32:57.6	220.4	512.8	1.0909	15.98	23.6827793
13.05.2015 15:32:57.7	222.17	512.8	1.1442	15.94	24.2544354
13.05.2015 15:32:57.8	221.97	512.8	1.0631	16.07	23.3790713
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13.05.2015 15:32:58.0	224.22	512.5	1.1097	15.67	23.8859759
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13.05.2015 15:32:58.2	224.85	512.6	1.009	15.64	22.7764367
13.05.2015 15:32:58.3	225.25	512.5	1.0541	15.86	23.2798996
13.05.2015 15:32:58.4	227.66	512.5	1.1603	15.81	24.424481
13.05.2015 15:32:58.5	227.43	512.7	1.0994	15.79	23.7748652
13.05.2015 15:32:58.6	227.47	512.8	0.9647	15.82	22.2708266
13.05.2015 15:32:58.7	228.96	512.6	1.0044	15.86	22.7244588
13.05.2015 15:32:58.8	230.09	512.5	1.0585	15.9	23.3284363
13.05.2015 15:32:58.9	230.02	512.8	1.0359	15.86	23.0780502
13.05.2015 15:32:59.0	230.01	512.7	0.973	15.86	22.3664273
13.05.2015 15:32:59.1	233.06	512.3	0.9607	16.03	22.2246071
13.05.2015 15:32:59.2	232.95	512.4	1.0515	15.91	23.2511713
13.05.2015 15:32:59.3	233	512.4	1.0452	15.75	23.1814126
13.05.2015 15:32:59.4	233.88	512.5	1.0024	15.83	22.7018226
13.05.2015 15:32:59.5	235.72	512.3	1.0436	15.93	23.1636627
13.05.2015 15:32:59.6	235.52	512.4	1.0861	15.95	23.6306193
13.05.2015 15:32:59.7	235.53	512.5	1.1867	15.64	24.70078
13.05.2015 15:32:59.8	237.68	512.4	1.1372	15.86	24.1801295
13.05.2015 15:32:59.9	238.13	512.3	0.9203	15.76	21.7522862
13.05.2015 15:33:00.0	238.12	512.4	0.9425	15.68	22.0130833
13.05.2015 15:33:00.1	239.71	512.4	0.9957	15.89	22.6258264
13.05.2015 15:33:00.2	241.16	512.2	1.0071	15.78	22.7549819
13.05.2015 15:33:00.3	240.99	512.1	0.9579	15.86	22.1921962
13.05.2015 15:33:00.4	241.04	512.2	0.938	15.65	21.9604693

13.05.2015 15:33:00.5	243.25	512.3	1.0027	15.92	22.7052195
13.05.2015 15:33:00.6	243.25	512.1	1.0776	15.91	23.5379691
13.05.2015 15:33:00.7	243.25	512	1.086	15.48	23.6295314
13.05.2015 15:33:00.8	244.22	512.4	1.0401	15.66	23.1247872
13.05.2015 15:33:00.9	246.44	512.3	0.9633	15.69	22.2546607
13.05.2015 15:33:01.0	246.17	512.3	1.0502	15.77	23.2367938
13.05.2015 15:33:01.1	246.15	512.3	0.9765	15.79	22.4066186
13.05.2015 15:33:01.2	248.25	512.5	1.0452	15.72	23.1814126
13.05.2015 15:33:01.3	248.8	512.6	1.0067	16.01	22.7504626
13.05.2015 15:33:01.4	248.75	512.5	1.0163	16.01	22.8586806
13.05.2015 15:33:01.5	249.19	512.6	1.0986	15.92	23.7662135
13.05.2015 15:33:01.6	251.54	512.7	0.9977	15.85	22.6485385
13.05.2015 15:33:01.7	251.27	512.7	1.0336	16.04	23.052416
13.05.2015 15:33:01.8	251.32	512.6	1.1033	15.95	23.8169972
13.05.2015 15:33:01.9	253.07	512.7	0.9972	15.77	22.6428626
13.05.2015 15:33:02.0	254.37	512.8	1.1596	15.94	24.4171123
13.05.2015 15:33:02.1	254.24	512.7	1.0174	15.99	22.8710479
13.05.2015 15:33:02.2	254.33	512.7	1.0359	15.82	23.0780502
13.05.2015 15:33:02.3	256.94	512.8	0.9302	15.73	21.8689718
13.05.2015 15:33:02.4	256.8	512.8	1.0742	15.79	23.5008067
13.05.2015 15:33:02.5	256.82	512.6	1.0819	15.79	23.5848847
13.05.2015 15:33:02.6	258.74	512.5	1.1058	15.84	23.8439658
13.05.2015 15:33:02.7	259.44	512.7	1.0145	15.84	22.8384288
13.05.2015 15:33:02.8	259.38	512.6	1.0079	15.84	22.764018
13.05.2015 15:33:02.9	259.72	512.5	0.9052	15.87	21.5730957
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13.05.2015 15:33:03.2	261.95	512.6	0.9219	15.93	21.7711868
13.05.2015 15:33:03.3	263.39	512.6	0.8932	15.97	21.4296242
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13.05.2015 15:33:03.5	264.53	512.8	1.2169	16.03	25.0131071
13.05.2015 15:33:03.6	264.56	512.8	1.1228	16.08	24.0265492
13.05.2015 15:33:03.7	267.52	512.8	1.1019	15.93	23.8018815
13.05.2015 15:33:03.8	267.48	512.9	1.1027	15.99	23.8105202
13.05.2015 15:33:03.9	267.49	513	1.0225	15.88	22.9283
13.05.2015 15:33:04.0	269.29	513.1	1.1501	16.04	24.3168882
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13.05.2015 15:33:04.2	270.07	513.3	0.9546	15.84	22.1539368
13.05.2015 15:33:04.3	271.11	513.3	0.9484	15.96	22.0818762
13.05.2015 15:33:04.4	272.81	513.1	0.8667	16	21.1093371
13.05.2015 15:33:04.5	272.61	513	0.8467	15.86	20.8643557
13.05.2015 15:33:04.6	272.61	513.1	0.9263	15.71	21.8230792
13.05.2015 15:33:04.7	273.9	513.1	0.98	15.66	22.4467379
13.05.2015 15:33:04.8	275.36	512.9	0.9603	15.72	22.2199799
13.05.2015 15:33:04.9	275.12	512.9	0.9706	15.63	22.3388258
13.05.2015 15:33:05.0	275.79	513.1	1.0078	15.63	22.7628887
13.05.2015 15:33:05.1	278	513	0.9326	15.71	21.8971656
13.05.2015 15:33:05.2	277.72	512.8	0.9811	15.89	22.459332
13.05.2015 15:33:05.3	277.77	512.8	0.9076	15.84	21.6016756
13.05.2015 15:33:05.4	279.9	512.9	0.9241	15.86	21.7971485
13.05.2015 15:33:05.5	279.74	513	0.9281	15.69	21.8442724
13.05.2015 15:33:05.6	279.79	512.9	0.8699	15.8	21.1482708
13.05.2015 15:33:05.7	280.66	512.9	0.939	15.69	21.9721722
13.05.2015 15:33:05.8	282.26	513	0.9104	15.73	21.6349712
13.05.2015 15:33:05.9	282.08	513	0.8056	15.8	20.3516641
13.05.2015 15:33:06.0	282.4	512.9	0.7617	15.57	19.7893794
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13.05.2015 15:33:06.2	284.61	513.1	0.7795	15.62	20.0192709
13.05.2015 15:33:06.3	284.62	512.9	0.8101	15.8	20.4084261
13.05.2015 15:33:06.4	286.06	512.9	0.8837	15.74	21.3153577
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13.05.2015 15:33:06.6	287.2	513.1	0.9129	15.57	21.6646562
13.05.2015 15:33:06.7	287.24	512.9	0.8527	15.67	20.9381511
13.05.2015 15:33:06.8	289.26	512.8	0.8593	15.73	21.0190268
13.05.2015 15:33:06.9	289.2	512.9	0.8237	15.74	20.5790219
13.05.2015 15:33:07.0	289.23	512.9	0.8389	15.76	20.7680296
13.05.2015 15:33:07.1	289.35	512.7	0.9542	15.84	22.1492948
13.05.2015 15:33:07.2	289.58	512.7	0.9064	15.73	21.5873904
13.05.2015 15:33:07.3	289.61	512.8	0.8196	15.68	20.5277416
13.05.2015 15:33:07.4	289.63	512.8	0.8099	15.76	20.4059067
13.05.2015 15:33:07.5	290.21	512.7	0.7713	15.71	19.9136955

13.05.2015 15:33:07.6	290.18	512.7	0.8462	15.49	20.8581942
13.05.2015 15:33:07.7	290.19	512.8	0.8651	15.63	21.0898433
13.05.2015 15:33:07.8	290.49	512.7	0.7385	15.86	19.4856747
13.05.2015 15:33:07.9	290.92	512.6	0.7349	15.64	19.4381228
13.05.2015 15:33:08.0	290.88	512.7	0.708	15.51	19.0790535
13.05.2015 15:33:08.1	290.88	512.6	0.8031	15.74	20.3200611
13.05.2015 15:33:08.2	292.41	512.5	0.8018	15.91	20.3036081
13.05.2015 15:33:08.3	292.45	512.4	0.7557	15.74	19.7112837
13.05.2015 15:33:08.4	292.46	512.5	0.8761	15.68	21.2235015
13.05.2015 15:33:08.5	292.49	512.4	0.8851	15.82	21.3322354
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13.05.2015 15:33:09.0	292.64	512.1	0.7792	15.65	20.0154182
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13.05.2015 15:33:09.2	292.61	512.4	0.8337	15.56	20.7035633
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13.05.2015 15:33:10.7	291.6	512.9	0.766	15.75	19.845159
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13.05.2015 15:33:17.4	262.43	513.4	1.126	15.93	24.0607628
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13.05.2015 15:33:17.7	261.01	513.3	1.0226	15.94	22.9294212
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13.05.2015 15:33:18.0	259.16	513.3	1.13	15.7	24.1034617
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13.05.2015 15:33:18.6	254.94	512.7	1.0598	15.74	23.3427573
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13.05.2015 15:33:19.4	248.71	512.8	1.0396	15.75	23.1192282
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13.05.2015 15:33:20.0	244.28	512.9	1.027	16	22.9786981
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13.05.2015 15:33:20.2	241.58	513	0.999	15.69	22.6632892
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13.05.2015 15:33:20.8	238.49	513.2	1.0968	15.96	23.7467357
13.05.2015 15:33:20.9	236.31	513.3	1.0321	15.74	23.0356826
13.05.2015 15:33:21.0	236.61	513.6	1.0853	15.88	23.6219148
13.05.2015 15:33:21.1	236.52	513.7	1.0842	15.89	23.6099408
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13.05.2015 15:33:21.3	233.66	513.6	1.1211	15.72	24.0083533
13.05.2015 15:33:21.4	233.66	513.8	0.9869	15.79	22.5256209
13.05.2015 15:33:21.5	233.34	513.9	1.0776	15.97	23.5379691
13.05.2015 15:33:21.6	230.87	513.9	1.1623	16	24.445522
13.05.2015 15:33:21.7	231.13	514	1.1203	15.85	23.9997858

13.05.2015 15:33:21.8	231.09	514.1	1.0802	15.98	23.5663478
13.05.2015 15:33:21.9	229.73	514	1.0307	16.03	23.0200538
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13.05.2015 15:33:22.3	225.97	514.2	1.0352	15.98	23.0702515
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13.05.2015 15:33:22.5	225.95	514.5	0.9467	15.66	22.0620765
13.05.2015 15:33:22.6	225.1	514.6	1.0646	15.8	23.3955591
13.05.2015 15:33:22.7	222.71	514.5	1.1047	15.95	23.8321034
13.05.2015 15:33:22.8	223.02	514.5	1.0932	15.84	23.707732
13.05.2015 15:33:22.9	222.83	514.8	1.0187	15.7	22.8856552
13.05.2015 15:33:23.0	220.26	515	1.1009	15.87	23.7910787
13.05.2015 15:33:23.1	220.46	514.8	1.0982	15.97	23.7618865
13.05.2015 15:33:23.2	220.43	514.9	0.938	15.89	21.9604693
13.05.2015 15:33:23.3	219.21	515.2	1.0629	15.61	23.3768721
13.05.2015 15:33:23.4	217.71	515.3	1.0026	15.73	22.7040873
13.05.2015 15:33:23.5	217.87	515.3	1.1148	15.84	23.940801
13.05.2015 15:33:23.6	217.32	515.3	1.0461	15.75	23.191391
13.05.2015 15:33:23.7	215.08	515.6	1.0537	15.96	23.2754822
13.05.2015 15:33:23.8	215.31	515.6	1.1521	15.95	24.3380223
13.05.2015 15:33:23.9	215.25	515.7	1.0632	15.87	23.3801709
13.05.2015 15:33:24.0	212.74	515.8	1.1448	15.71	24.2607939
13.05.2015 15:33:24.1	212.78	515.9	1.1987	15.84	24.825354
13.05.2015 15:33:24.2	212.7	515.9	1.1272	15.92	24.0735804
13.05.2015 15:33:24.3	211.86	515.9	1.0787	15.61	23.5499797
13.05.2015 15:33:24.4	209.94	516	0.9909	15.54	22.571224
13.05.2015 15:33:24.5	210.12	516	1.0499	15.68	23.2334747
13.05.2015 15:33:24.6	210.14	515.8	1.0851	15.81	23.6197382
13.05.2015 15:33:24.7	208.09	515.8	1.1757	15.89	24.5860328
13.05.2015 15:33:24.8	207.53	515.9	1.192	15.5	24.7558775
13.05.2015 15:33:24.9	207.6	516	1.1574	16.02	24.3939392
13.05.2015 15:33:25.0	207.19	515.8	1.1944	16.07	24.780787
13.05.2015 15:33:25.1	204.77	515.7	1.1509	16.14	24.3253441
13.05.2015 15:33:25.2	205.05	516.1	1.0896	15.78	23.668664
13.05.2015 15:33:25.3	205.01	516.1	1.1076	15.8	23.8633643
13.05.2015 15:33:25.4	203.2	515.9	0.9649	15.77	22.2731351
13.05.2015 15:33:25.5	202	515.9	1.0397	15.99	23.1203401
13.05.2015 15:33:25.6	202.1	516	1.1691	15.83	24.5169266
13.05.2015 15:33:25.7	202.02	516	1.1213	15.84	24.0104947
13.05.2015 15:33:25.8	199.37	515.9	1.0685	15.88	23.4383729
13.05.2015 15:33:25.9	199.55	516	1.1346	15.86	24.152472
13.05.2015 15:33:26.0	199.46	516	1.1637	15.85	24.46024
13.05.2015 15:33:26.1	197.53	515.9	0.9874	15.94	22.5313264
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13.05.2015 15:33:26.3	196.95	516	1.0174	15.62	22.8710479
13.05.2015 15:33:26.4	196.61	516	1.0476	15.74	23.2080121
13.05.2015 15:33:26.5	194.18	515.9	1.0817	15.96	23.5827047
13.05.2015 15:33:26.6	194.38	515.8	1.0843	15.66	23.6110296
13.05.2015 15:33:26.7	194.38	516	1.0517	15.75	23.2533824
13.05.2015 15:33:26.8	191.95	516	0.9807	15.75	22.4547531
13.05.2015 15:33:26.9	191.8	515.8	1.0226	15.8	22.9294212
13.05.2015 15:33:27.0	191.81	515.7	1.0585	15.62	23.3284363
13.05.2015 15:33:27.1	191.17	516	0.9448	15.77	22.0399264
13.05.2015 15:33:27.2	188.95	515.9	0.9898	15.71	22.5586924
13.05.2015 15:33:27.3	189.24	515.8	1.1937	15.81	24.7735243
13.05.2015 15:33:27.4	189.08	515.8	1.1263	15.79	24.0639679
13.05.2015 15:33:27.5	186.53	515.9	1.0362	15.7	23.0813917
13.05.2015 15:33:27.6	186.68	515.8	1.0744	15.64	23.5029944
13.05.2015 15:33:27.7	186.65	515.8	1.1049	15.86	23.8342606
13.05.2015 15:33:27.8	185.59	515.6	1.0326	15.83	23.0412617
13.05.2015 15:33:27.9	183.94	515.7	1.0376	15.81	23.096979
13.05.2015 15:33:28.0	184.07	515.6	1.1427	15.86	24.2385319
13.05.2015 15:33:28.1	184.07	515.6	1.1272	15.87	24.0735804
13.05.2015 15:33:28.2	181.81	515.6	0.9674	15.64	22.3019706
13.05.2015 15:33:28.3	181.49	515.6	1.1416	15.93	24.2268627
13.05.2015 15:33:28.4	181.51	515.5	1.1325	15.84	24.13011
13.05.2015 15:33:28.5	180.87	515.4	1.0996	15.7	23.7770276
13.05.2015 15:33:28.6	178.36	515.6	1.0322	15.49	23.0367985
13.05.2015 15:33:28.7	178.6	515.6	1.0634	15.7	23.3823698
13.05.2015 15:33:28.8	178.6	515.3	1.0037	15.76	22.7165387

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13.05.2015 15:33:29.0	175.94	515.3	1.0585	15.71	23.3284363
13.05.2015 15:33:29.1	176.03	515.3	1.095	15.51	23.7272418
13.05.2015 15:33:29.2	175.8	515	1.026	15.72	22.9675081
13.05.2015 15:33:29.3	173.3	515.1	1.1049	15.65	23.8342606
13.05.2015 15:33:29.4	173.49	515.3	1.0247	15.5	22.9529529
13.05.2015 15:33:29.5	173.42	515.4	1.0451	15.66	23.1803037
13.05.2015 15:33:29.6	172.01	515.4	0.9951	15.53	22.6190083
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13.05.2015 15:33:29.8	170.51	515.6	0.9842	15.56	22.4947866
13.05.2015 15:33:29.9	170.5	515.6	1.0613	15.68	23.3592707
13.05.2015 15:33:30.0	168.08	515.6	1.0785	15.63	23.5477964
13.05.2015 15:33:30.1	167.95	515.7	1.0501	15.37	23.2356875
13.05.2015 15:33:30.2	167.95	515.8	1.0598	15.55	23.3427573
13.05.2015 15:33:30.3	167.2	515.7	1.0572	15.8	23.3141064
13.05.2015 15:33:30.4	165.09	515.6	0.9471	15.71	22.0667368
13.05.2015 15:33:30.5	165.4	515.8	0.9106	15.72	21.6373475
13.05.2015 15:33:30.6	165.22	515.8	1.0854	15.62	23.623003
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13.05.2015 15:33:31.2	159.87	515.6	1.0294	15.62	23.0055319
13.05.2015 15:33:31.3	159.85	515.8	1.0055	15.46	22.7368991
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13.05.2015 15:33:32.7	149.17	515.8	1.0241	15.5	22.946232
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13.05.2015 15:33:33.4	144.06	516.2	1.0567	15.72	23.3085926
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13.05.2015 15:33:35.3	128.12	515.8	1.0034	15.83	22.7131435
13.05.2015 15:33:35.4	128.31	515.9	0.9725	15.75	22.3606798
13.05.2015 15:33:35.5	128.3	516	0.8715	15.57	21.1677108
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13.05.2015 15:33:36.1	123.18	516	0.9267	15.75	21.8277906
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13.05.2015 15:33:36.4	120.57	516.1	0.9425	15.92	22.0130833
13.05.2015 15:33:36.5	120.57	516.2	0.9632	15.85	22.2535055
13.05.2015 15:33:36.6	118.91	516.3	1.0341	15.53	23.057991
13.05.2015 15:33:36.7	117.97	516.4	1.0844	15.72	23.6121184
13.05.2015 15:33:36.8	118.02	516.3	0.9636	15.93	22.2581258
13.05.2015 15:33:36.9	117.88	516.4	0.984	15.79	22.4925009
13.05.2015 15:33:37.0	115.28	516.5	1.0066	15.85	22.7493326
13.05.2015 15:33:37.1	115.43	516.7	1.0503	15.81	23.2379001
13.05.2015 15:33:37.2	115.45	516.4	1.0132	15.9	22.8237913
13.05.2015 15:33:37.3	114.27	516.6	1.0301	15.65	23.0133526
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13.05.2015 15:33:37.7	110.52	516.7	0.8908	15.55	21.4008144
13.05.2015 15:33:37.8	110.33	516.8	1.0372	15.72	23.0925265
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13.05.2015 15:33:38.0	109.57	516.7	0.9951	15.5	22.6190083
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13.05.2015 15:33:38.4	105.52	516.4	1.012	15.64	22.8102714
13.05.2015 15:33:38.5	104.72	516.6	0.9741	15.71	22.3790666
13.05.2015 15:33:38.6	104.77	516.5	0.8849	15.69	21.3298251
13.05.2015 15:33:38.7	103.74	516.1	0.9343	15.74	21.9171143
13.05.2015 15:33:38.8	102.06	516	1.0215	15.74	22.9170854
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13.05.2015 15:33:39.3	99.63	516	0.9849	15.62	22.5027847
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13.05.2015 15:33:41.2	84.01	515.9	0.8519	15.52	20.9283267
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13.05.2015 15:33:41.4	84.21	515.9	0.987	15.85	22.5267621
13.05.2015 15:33:41.5	82.37	515.9	0.9895	15.75	22.5552734
13.05.2015 15:33:41.6	81.64	516.1	0.9604	15.7	22.2211368
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13.05.2015 15:33:43.1	71.02	515.9	0.9373	15.73	21.9522735
13.05.2015 15:33:43.2	70.11	515.9	0.9325	15.76	21.8959916
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13.05.2015 15:33:44.3	60.72	515.6	0.8982	15.78	21.4895204
13.05.2015 15:33:44.4	60.75	515.4	0.9204	15.66	21.7534679
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13.05.2015 15:34:06.5	-104.82	518.4	0.8526	15.68	20.9369233
13.05.2015 15:34:06.6	-104.86	518.3	0.8567	15.47	20.9872038
13.05.2015 15:34:06.7	-106.76	518.4	0.8764	15.36	21.227135
13.05.2015 15:34:06.8	-107.41	518.5	0.8776	15.62	21.2416625
13.05.2015 15:34:06.9	-107.34	518.3	0.8453	15.63	20.8470991
13.05.2015 15:34:07.0	-108.58	518.3	0.8599	15.62	21.0263637
13.05.2015 15:34:07.1	-110.14	518.4	0.8442	15.46	20.8335304
13.05.2015 15:34:07.2	-109.92	518.5	0.859	15.46	21.0153573
13.05.2015 15:34:07.3	-109.95	518.5	0.7549	15.7	19.7008475
13.05.2015 15:34:07.4	-112.34	518.6	0.8373	15.63	20.7482151
13.05.2015 15:34:07.5	-112.49	518.8	0.81	15.83	20.4071664
13.05.2015 15:34:07.6	-112.5	518.8	0.8321	15.92	20.6836871
13.05.2015 15:34:07.7	-112.54	518.8	0.7417	15.54	19.5278458
13.05.2015 15:34:07.8	-115.12	518.8	0.8106	15.62	20.4147233
13.05.2015 15:34:07.9	-115.07	518.9	0.8427	15.58	20.8150134
13.05.2015 15:34:08.0	-115.14	518.9	0.8487	15.9	20.8889831
13.05.2015 15:34:08.1	-117.21	518.8	0.9027	15.79	21.5432846
13.05.2015 15:34:08.2	-118.09	519.1	0.9084	15.66	21.6111939
13.05.2015 15:34:08.3	-118.03	519.2	0.8959	15.87	21.4619889
13.05.2015 15:34:08.4	-117.99	519.1	0.9246	15.62	21.8030445
13.05.2015 15:34:08.5	-120.11	519.1	0.8408	15.48	20.7915348
13.05.2015 15:34:08.6	-120.66	519.3	0.807	15.52	20.3693403
13.05.2015 15:34:08.7	-120.59	519.5	0.7888	15.51	20.138339
13.05.2015 15:34:08.8	-121.03	519.4	0.8465	15.72	20.8618913
13.05.2015 15:34:08.9	-123.38	519.4	0.9032	15.67	21.5492501
13.05.2015 15:34:09.0	-123.12	519.5	0.8997	15.52	21.5074567
13.05.2015 15:34:09.1	-123.14	519.6	0.8363	15.67	20.7358215
13.05.2015 15:34:09.2	-124.94	519.5	0.8977	15.63	21.4835383
13.05.2015 15:34:09.3	-126.19	519.4	0.8549	15.51	20.9651443
13.05.2015 15:34:09.4	-126.16	519.6	0.9053	15.45	21.5742873
13.05.2015 15:34:09.5	-126.15	519.6	0.8781	15.66	21.2477127
13.05.2015 15:34:09.6	-129.21	519.5	0.9058	15.66	21.5802442
13.05.2015 15:34:09.7	-129.05	519.5	0.9413	15.77	21.9990652
13.05.2015 15:34:09.8	-129.03	519.7	0.8941	15.7	21.4404178
13.05.2015 15:34:09.9	-129.21	519.7	0.967	15.82	22.2973594
13.05.2015 15:34:10.0	-131.76	519.7	0.8986	15.85	21.4943049
13.05.2015 15:34:10.1	-131.61	519.9	0.9308	15.76	21.8760237
13.05.2015 15:34:10.2	-131.6	520.1	1.0339	15.83	23.0557612
13.05.2015 15:34:10.3	-132.88	520	0.9564	15.86	22.1748138
13.05.2015 15:34:10.4	-134.31	520.1	0.8866	15.67	21.3503039
13.05.2015 15:34:10.5	-134.17	520.2	0.8917	15.47	21.4116226
13.05.2015 15:34:10.6	-134.16	520.3	0.8345	15.77	20.7134942
13.05.2015 15:34:10.7	-135.89	520	0.8273	15.83	20.6239435
13.05.2015 15:34:10.8	-137.22	520	0.8363	15.96	20.7358215
13.05.2015 15:34:10.9	-137.15	520.1	0.8235	15.44	20.5765234
13.05.2015 15:34:11.0	-137.95	520.2	0.9483	15.58	22.080712
13.05.2015 15:34:11.1	-140.29	520	0.8455	15.79	20.8495652
13.05.2015 15:34:11.2	-140.07	520.1	0.9204	15.57	21.7534679
13.05.2015 15:34:11.3	-140.05	520.2	0.9465	15.71	22.0597459
13.05.2015 15:34:11.4	-140.96	520.3	0.908	15.65	21.6064353

13.05.2015 15:34:11.5	-142.81	520.3	0.9723	15.84	22.3583804
13.05.2015 15:34:11.6	-142.62	520.4	0.8694	15.7	21.1421921
13.05.2015 15:34:11.7	-142.6	520.6	0.8138	15.83	20.4549791
13.05.2015 15:34:11.8	-145.11	520.6	0.9465	15.9	22.0597459
13.05.2015 15:34:11.9	-145.6	520.7	0.9755	15.65	22.3951427
13.05.2015 15:34:12.0	-145.54	520.8	0.9764	15.65	22.4054712
13.05.2015 15:34:12.1	-145.55	521.1	0.9191	16.04	21.7380999
13.05.2015 15:34:12.2	-147.95	521	0.9299	16.2	21.865445
13.05.2015 15:34:12.3	-148.13	521	0.9294	15.78	21.8595658
13.05.2015 15:34:12.4	-148.16	521.3	1.0618	15.8	23.3647726
13.05.2015 15:34:12.5	-150.03	521.5	1.0338	15.95	23.0546462
13.05.2015 15:34:12.6	-151.15	521.4	0.9534	15.85	22.1400079
13.05.2015 15:34:12.7	-151.09	521.4	0.8326	15.7	20.6899004
13.05.2015 15:34:12.8	-151.07	521.6	0.865	15.59	21.0886244
13.05.2015 15:34:12.9	-152.9	521.8	0.9117	15.84	21.6504125
13.05.2015 15:34:13.0	-153.69	521.6	0.8724	15.97	21.1786379
13.05.2015 15:34:13.1	-153.66	521.7	0.9573	16.1	22.1852449
13.05.2015 15:34:13.2	-153.93	521.9	1.001	15.93	22.6859639
13.05.2015 15:34:13.3	-156.36	521.9	1.0349	15.88	23.0669084
13.05.2015 15:34:13.4	-156.17	521.9	0.8911	15.66	21.4044178
13.05.2015 15:34:13.5	-156.25	521.9	0.8834	15.46	21.3117393
13.05.2015 15:34:13.6	-156.74	522	0.9537	15.38	22.1434909
13.05.2015 15:34:13.7	-159.33	522.1	0.86	15.62	21.0275862
13.05.2015 15:34:13.8	-159.12	522.1	0.8634	15.64	21.0691114
13.05.2015 15:34:13.9	-159.2	522.2	0.994	15.33	22.6065031
13.05.2015 15:34:14.0	-162.04	522.3	0.9819	15.73	22.4684869
13.05.2015 15:34:14.1	-162.08	522.2	0.9571	15.6	22.1829273
13.05.2015 15:34:14.2	-162.11	522.1	0.8902	15.52	21.3936059
13.05.2015 15:34:14.3	-162.13	522.3	0.9477	15.47	22.0737255
13.05.2015 15:34:14.4	-164.75	522.4	0.9037	15.82	21.555214
13.05.2015 15:34:14.5	-164.61	522.3	0.8547	15.84	20.9626918
13.05.2015 15:34:14.6	-164.71	522.2	0.9535	15.63	22.1411689
13.05.2015 15:34:14.7	-165.9	522.5	0.827	15.53	20.6202037
13.05.2015 15:34:14.8	-167.78	522.6	0.8059	15.52	20.3554532
13.05.2015 15:34:14.9	-167.56	522.5	0.9979	15.64	22.6508085
13.05.2015 15:34:15.0	-167.61	522.4	0.9918	15.61	22.581472
13.05.2015 15:34:15.1	-168.91	522.6	0.9598	15.33	22.2141945
13.05.2015 15:34:15.2	-170.23	522.6	0.9024	15.67	21.5397045
13.05.2015 15:34:15.3	-170.17	522.5	0.9496	15.59	22.0958417
13.05.2015 15:34:15.4	-170.88	522.6	1.0118	15.59	22.8080174
13.05.2015 15:34:15.5	-173.29	522.7	0.8567	15.57	20.9872038
13.05.2015 15:34:15.6	-173.08	522.8	0.9083	15.7	21.6100043
13.05.2015 15:34:15.7	-173.12	522.8	0.9917	15.75	22.5803336
13.05.2015 15:34:15.8	-174.85	522.9	0.9401	15.48	21.9850381
13.05.2015 15:34:15.9	-175.69	523	0.9137	15.34	21.6741468
13.05.2015 15:34:16.0	-175.65	523	0.9059	15.58	21.5814354
13.05.2015 15:34:16.1	-175.72	522.9	0.9111	15.91	21.6432871
13.05.2015 15:34:16.2	-177.7	523.1	0.9417	15.57	22.0037389
13.05.2015 15:34:16.3	-178.27	523.2	0.8643	15.46	21.0800897
13.05.2015 15:34:16.4	-178.22	523.1	0.8356	15.53	20.7271415
13.05.2015 15:34:16.5	-179.67	523.1	0.9603	15.59	22.2199799
13.05.2015 15:34:16.6	-181.31	523.3	1.0067	15.49	22.7504626
13.05.2015 15:34:16.7	-181.13	523.3	0.8931	15.57	21.4284245
13.05.2015 15:34:16.8	-181.19	523.3	0.8698	15.56	21.1470552
13.05.2015 15:34:16.9	-182.69	523.3	0.8582	15.57	21.0055691
13.05.2015 15:34:17.0	-183.83	523.5	0.8286	15.4	20.6401411
13.05.2015 15:34:17.1	-183.73	523.5	0.7545	15.5	19.6956274
13.05.2015 15:34:17.2	-183.73	523.4	0.8529	15.62	20.9406064
13.05.2015 15:34:17.3	-186.36	523.5	0.8779	15.54	21.2452928
13.05.2015 15:34:17.4	-186.28	523.6	0.91	15.94	21.6302178
13.05.2015 15:34:17.5	-186.3	523.5	0.8292	15.9	20.6476126
13.05.2015 15:34:17.6	-186.51	523.5	0.9125	15.82	21.6599093
13.05.2015 15:34:17.7	-189.41	523.5	0.9223	15.52	21.7759094
13.05.2015 15:34:17.8	-189.2	523.5	0.8765	15.64	21.228346
13.05.2015 15:34:17.9	-189.26	523.5	0.9078	15.82	21.6040556
13.05.2015 15:34:18.0	-191.68	523.4	0.7562	15.8	19.7178035
13.05.2015 15:34:18.1	-192.18	523.5	0.6903	15.52	18.8390559
13.05.2015 15:34:18.2	-192.18	523.6	0.7781	15.65	
13.05.2015 15:34:18.3	-192.2	523.5	0.8138	15.66	
13.05.2015 15:34:18.4	-194.54	523.4	0.9399	15.57	
13.05.2015 15:34:18.5	-194.76	523.7	0.8787	15.47	

13.05.2015 15:34:18.6	-194.74	523.7	0.8783	15.59
13.05.2015 15:34:18.7	-195.47	523.6	0.7618	15.69
13.05.2015 15:34:18.8	-197.92	523.6	0.8147	15.63
13.05.2015 15:34:18.9	-197.67	523.6	0.7464	15.62
13.05.2015 15:34:19.0	-197.65	523.7	0.7626	15.83
13.05.2015 15:34:19.1	-198.6	523.6	0.7532	15.72
13.05.2015 15:34:19.2	-200.52	523.5	0.6649	15.44
13.05.2015 15:34:19.3	-200.22	523.6	0.8535	15.85
13.05.2015 15:34:19.4	-200.27	523.6	0.8036	15.8
13.05.2015 15:34:19.5	-202.68	523.6	0.8531	15.79
13.05.2015 15:34:19.6	-203.19	523.6	0.8784	15.75
13.05.2015 15:34:19.7	-203.21	523.8	0.9497	15.83
13.05.2015 15:34:19.8	-204.53	523.7	0.9739	15.92
13.05.2015 15:34:19.9	-205.92	523.8	0.8134	15.79
13.05.2015 15:34:20.0	-205.77	523.9	0.7182	15.57
13.05.2015 15:34:20.1	-205.77	524.1	0.8421	16.11
13.05.2015 15:34:20.2	-207.32	523.9	0.9356	16
13.05.2015 15:34:20.3	-208.43	523.9	0.9579	16.12
13.05.2015 15:34:20.4	-208.32	524.2	1.0499	15.69
13.05.2015 15:34:20.5	-209.22	524.3	0.907	15.63
13.05.2015 15:34:20.6	-211.55	524.1	0.8769	15.97
13.05.2015 15:34:20.7	-211.28	524.2	0.8156	15.69
13.05.2015 15:34:20.8	-211.28	524.4	0.8696	15.61
13.05.2015 15:34:20.9	-212.3	524.5	0.9629	15.83
13.05.2015 15:34:21.0	-213.99	524.4	0.9624	15.59
13.05.2015 15:34:21.1	-213.82	524.5	0.88	15.51
13.05.2015 15:34:21.2	-213.84	524.7	0.888	15.71
13.05.2015 15:34:21.3	-215.31	524.8	0.8281	15.72
13.05.2015 15:34:21.4	-216.95	524.7	0.9741	15.89
13.05.2015 15:34:21.5	-216.79	524.8	0.963	15.65
13.05.2015 15:34:21.6	-216.77	525	1.0387	15.44
13.05.2015 15:34:21.7	-217.49	525	0.9087	15.65
13.05.2015 15:34:21.8	-217.56	525	0.7514	15.62
13.05.2015 15:34:21.9	-217.52	525.2	0.9044	15.66
13.05.2015 15:34:22.0	-217.53	525.3	0.7276	15.68
13.05.2015 15:34:22.1	-217.59	525.3	0.8255	15.87
13.05.2015 15:34:22.2	-217.56	525.4	0.8101	15.64
13.05.2015 15:34:22.3	-217.53	525.6	0.8543	15.54
13.05.2015 15:34:22.4	-217.53	525.7	0.9932	15.63
13.05.2015 15:34:22.5	-217.51	525.7	0.8625	15.71
13.05.2015 15:34:22.6	-217.53	525.7	0.8706	15.61
13.05.2015 15:34:22.7	-217.56	525.9	0.7859	15.6
13.05.2015 15:34:22.8	-217.53	526	0.7464	15.78
13.05.2015 15:34:22.9	-217.55	525.8	0.8444	15.86
13.05.2015 15:34:23.0	-217.58	525.8	0.8558	15.73
13.05.2015 15:34:23.1	-217.49	526	0.8265	15.78
13.05.2015 15:34:23.2	-217.54	526	0.8063	15.68
13.05.2015 15:34:23.3	-217.55	525.8	0.8252	15.51
13.05.2015 15:34:23.4	-217.54	525.8	0.9835	15.62
13.05.2015 15:34:23.5	-217.53	525.9	0.9192	15.44

Calculation of mass flow rate based on polynomial equation fitted to the experimental data

$$y = -2.28025849E-14x^6 + 3.75101990E-12x^5 + 6.75572167E-10x^4 - 1.90333216E-07x^3 + 4.73712406E-05x^2 + 6.56959408E-03x + 2.08810302E+01$$

Please enter below Polynomial Coefficients

Order no	Coeff
6	-2.28025849E-14
5	3.75101990E-12
4	6.75572167E-10
3	-1.90333216E-07
2	4.73712406E-05
1	6.56959408E-03
0	2.08810302E+01

Actual Area	0.274324656	[m2]
Integrated area	0.274324656	[m2]
Area Error	0	[%]
Integrated Mass flow	2.387330667	[Kg/s]

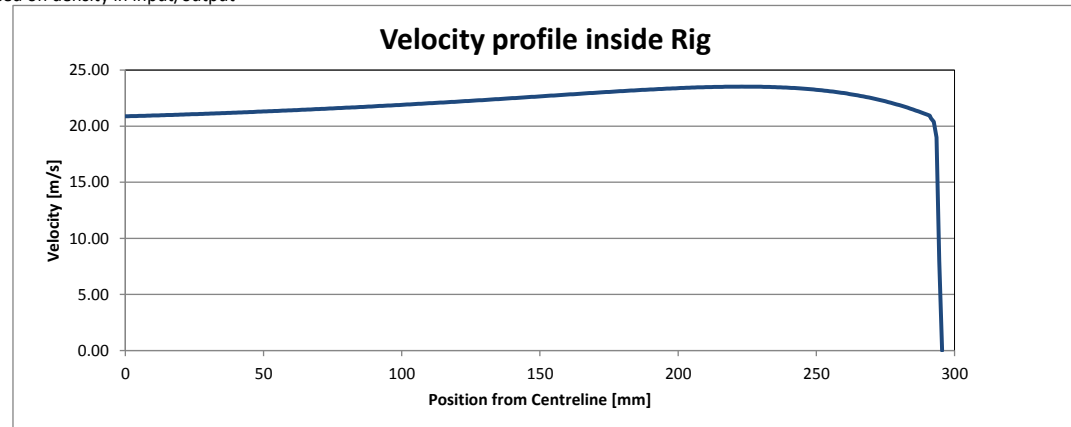
Polynomial curve (dP vs position)

Please do NOT alter any of the figures below

position [mm]	Velocity [m/s]
0	20.881030
1	20.887647
2	20.894357
3	20.901160
4	20.908055
5	20.915039
6	20.922113
7	20.929275
8	20.936524
9	20.943860
10	20.951280
11	20.958785
12	20.966373
13	20.974043
14	20.981795
15	20.989627
16	20.997539
17	21.005530
18	21.013598
19	21.021744
20	21.029967
21	21.038264
22	21.046637
23	21.055084
24	21.063605
25	21.072198
26	21.080864
27	21.089601
28	21.098409
29	21.107287
30	21.116235
31	21.125252
32	21.134338
33	21.143493

Delta Area [m2]	Delta Mass flow [Kg/s]
0	0
3.14159E-06	2.55264E-05
9.42478E-06	7.66037E-05
1.5708E-05	0.000127714
2.19911E-05	0.000178859
2.82743E-05	0.000230039
3.45575E-05	0.000281253
4.08407E-05	0.000332504
4.71239E-05	0.000383791
5.34071E-05	0.000435116
5.96903E-05	0.000486478
6.59734E-05	0.000537879
7.22566E-05	0.000589319
7.85398E-05	0.000640799
8.4823E-05	0.000692318
9.11062E-05	0.000743879
9.73894E-05	0.000795481
0.000103673	0.000847124
0.000109956	0.00089881
0.000116239	0.000950539
0.000122522	0.001002311
0.000128805	0.001054128
0.000135088	0.001105989
0.000141372	0.001157894
0.000147655	0.001209846
0.000153938	0.001261843
0.000160221	0.001313887
0.000166504	0.001365978
0.000172788	0.001418116
0.000179071	0.001470303
0.000185354	0.001522537
0.000191637	0.001574821
0.00019792	0.001627154
0.000204204	0.001679537

Based on density in input/output



34	21.152715
35	21.162004
36	21.171360
37	21.180783
38	21.190272
39	21.199827
40	21.209447
41	21.219132
42	21.228882
43	21.238696
44	21.248575
45	21.258518
46	21.268524
47	21.278594
48	21.288728
49	21.298925
50	21.309185
51	21.319508
52	21.329893
53	21.340342
54	21.350854
55	21.361428
56	21.372065
57	21.382764
58	21.393526
59	21.404351
60	21.415239
61	21.426189
62	21.437202
63	21.448278
64	21.459417
65	21.470619
66	21.481884
67	21.493213
68	21.504604
69	21.516060
70	21.527579
71	21.539162
72	21.550808
73	21.562519
74	21.574295
75	21.586135
76	21.598039
77	21.610009
78	21.622043
79	21.634143
80	21.646308
81	21.658539
82	21.670836
83	21.683199

0.000210487	0.00173197
0.00021677	0.001784454
0.000223053	0.001836989
0.000229336	0.001889576
0.000235619	0.001942215
0.000241903	0.001994906
0.000248186	0.002047651
0.000254469	0.002100449
0.000260752	0.002153301
0.000267035	0.002206207
0.000273319	0.002259168
0.000279602	0.002312184
0.000285885	0.002365256
0.000292168	0.002418385
0.000298451	0.002471569
0.000304734	0.002524811
0.000311018	0.00257811
0.000317301	0.002631468
0.000323584	0.002684883
0.000329867	0.002738358
0.00033615	0.002791891
0.000342434	0.002845485
0.000348717	0.002899138
0.000355	0.002952853
0.000361283	0.003006628
0.000367566	0.003060465
0.00037385	0.003114364
0.000380133	0.003168325
0.000386416	0.00322235
0.000392699	0.003276438
0.000398982	0.00333059
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0.001840973	0.013606634
0.001847256	0.005748662
0.00185354	0

Please do not change any of the values in this sheet

Patm	Atmospheric air pressure - (As recorded from engine data)	975 [mBar]
Patm		97500 [Pa]
Tatm		5 [C]
Tatm		278 [K]
Relative Humidity		95 [%]

$$\rho_{\text{humid air}}^{[1]} = \frac{p_d}{R_d T} + \frac{p_v}{R_v T} = \frac{p_d M_d + p_v M_v}{RT}$$

where:

$\rho_{\text{humid air}}$	Density of the humid air (kg/m <sup>3</sup> )
$p_d$	Partial pressure of dry air (Pa)
$R_d$	Specific gas constant for dry air, 287.058 J/(kg·K)
$T$	Temperature (K)
$p_v$	Pressure of water vapor (Pa)
$R_v$	Specific gas constant for water vapor, 461.495 J/(kg·K)
$M_d$	Molar mass of dry air, 0.028964 (kg/mol)
$M_v$	Molar mass of water vapor, 0.018016 (kg/mol)
$R$	<a href="#">Universal gas constant, 8.314 J/(K·mol)</a>

$$\rho_{\text{humid air}} = 1.217898 \text{ Kg/m}^3$$

$$0.318090154$$

The vapor pressure of water may be calculated from the [saturation vapor pressure](#) and [relative humidity](#). It is found by:

$$p_v = \phi p_{\text{sat}}$$

$$p_u = 828.6578 \text{ [Pa]}$$

Where:

$p_v$	Vapor pressure of water
$\phi$	Relative humidity
$p_{\text{sat}}$	Saturation vapor pressure

The [saturation vapor pressure of water](#) at any given temperature is the vapor pressure when relative humidity is 100%. One formula <sup>[1]</sup> used to find the saturation vapor pressure is:

$$p_{\text{sat}} = 6.1078 \times 10^{\frac{7.5T}{T+237.3}}$$

$$p_{\text{sat}} = 8.722714 \text{ hPa}$$

$$p_{\text{sat}} = 872.2714 \text{ [Pa]}$$

where T is in degrees C. Note:

$$\rho = \frac{p}{R_{\text{specific}} T} \quad 1.22177 \text{ [kg/m}^3]$$

$$R = 287.058 \text{ J/Kg K}$$

$$T = \text{Temperature in degrees Kelvin}$$

$$P = \text{Absolute Pressure in Pa}$$