

FILED
August 2, 2007
Data Center
Missouri Public
Service Commission

Exhibit No.:
Issue: Traffic Studies
Witness: Joye B. Anderson
Sponsoring Party: CenturyTel of Missouri, LLC &
Spectra Communications
Group, LLC d/b/a CenturyTel
Type of Exhibit: Rebuttal Testimony
Case No.: TC-2007-0341
Date Testimony Prepared: May 22, 2007

CENTURYTEL OF MISSOURI, LLC
and
SPECTRA COMMUNICATIONS GROUP, LLC
d/b/a CENTURYTEL

REBUTTAL TESTIMONY

OF

JOYE B. ANDERSON

CASE NO. TC-2007-0341

Centurytel Exhibit No. 10
Case No(s). TC-2007-0341
Date 7-11-07 Rpt'r JA



Gary Maxwell Cox
Louisiana Bar Roll No. 27419
Notary Public, Ouachita Parish, Louisiana
My Commission is for Life

1 Since joining the Network Service Center ("NSC") I have attended various training
2 courses, including: (1) Network Traffic Concepts, (2) Internetworking Routers and
3 Switches, (3) VoIP Fundamentals, (4) TCP/IP Networking, (5) Voice Over IP
4 Foundations, and (6) Networking Fundamentals.

5 **Q. What are your responsibilities as Manager of Network Support Centers for**
6 **CenturyTel Support Group, LLC?**

7 **A.** In July 2000, I joined the Network Support Center ("NSC") as a Manager, and I am
8 responsible for the team that performs traffic studies for CenturyTel affiliates. This
9 involves traffic studies for the switched voice and data networks, coordinating efforts
10 with Engineering and various vendors to determine what network elements should be
11 studied, etc. Other responsibilities have included Manager over the Surveillance team,
12 which is responsible for monitoring alarms for all networks; and I also have managed the
13 team that is responsible for the NSC systems – systems that aggregate alarms into the fault
14 management system. Other responsibilities include managing the development and upkeep
15 of various applications that are utilized by the NSC as well as other CenturyTel departments.

16 **PURPOSE OF TESTIMONY**

17 **Q. What is the purpose of your testimony?**

18 **A.** The purpose of my testimony is to provide an understanding of how traffic studies are
19 performed for the CenturyTel Switched Voice Network; to demonstrate the grade of
20 service used for all switched voice studies; and to explain how CenturyTel's traffic
21 studies are calculated. Finally, I will verify that the traffic study for Willow Springs,
22 Missouri is accurate.

23 **Q. How does CenturyTel perform its traffic studies?**

1 A. CenturyTel performs engineering studies for the switched voice network by polling
2 switches at periodic intervals. This traffic data is polled daily, and files are then
3 transferred to our reporting system. Daily data is compiled into seven days of data,
4 Monday through Sunday, and scheduled reports ran. These reports demonstrate the
5 number of trunks required to handle the load of traffic encountered during this study time
6 frame. The procedures I describe are how CenturyTel performs all of its engineering
7 traffic studies to determine our network engineering needs.

8 Q. How do you use this data in your traffic study calculations?

9 A. Of this seven days worth of data, the reports are calculated based upon an average of the
10 five highest Busy Hour CCS (Centum Call Seconds) for that week, omitting the lowest
11 two hours, and comparing these to the Erlang B Trunk Capacity Grade of Service of .001.
12 For more specifics on how the reports are calculated, see Schedule JBA #1 (Summary
13 Busy Hour Trunk and Link Performance Report Description.), and Schedule JBA #2
14 (Table F – Erlang B).

15 Q. Can you explain what the "Erlang B Trunk Capacity Grade of Service of .001"
16 means?

17 A. The Erlang B Trunk Capacity Grade of Service of .001 refers to the probability of 1 in
18 every 1000 calls on a specific trunk group being blocked. CenturyTel maintains a
19 conservative blocking percentage in an effort to ensure that adequate network facilities
20 are available to handle calls with minimal blockage. The Erlang B table is hard-coded in
21 the system we are now using.

22 Q. Has CenturyTel used other calculation tables in the past?

1 A. The system CenturyTel used prior to the Erlang B tables utilized the Poisson tables. The
2 Poisson tables used a Capacity Grade of Service tables used of .01; or the probability that
3 1 in 100 calls would be blocked. During the conversion to the new system, with Erlang
4 B, the .001 call blocking probability tracked most closely to the .01 call blocking
5 probability that was previously utilized in the Poisson table. Therefore, the .001 call
6 blocking probability has been utilized exclusively for CenturyTel's engineering (trunk
7 capacity) studies.

8 **Q. How does the Willow Springs Traffic Study relate to the process outlined above?**

9 A. The Willow Springs traffic study in question was generated from data that was polled for
10 Monday 1/29/07 through Sunday 2/4/07, using the method outlined above for report
11 generation. The traffic data for this time period has been validated to confirm accurate
12 data was polled and reported.

13 **Q. How did you confirm the accuracy of the traffic data pulled?**

14 A. Traffic data is polled periodically and stored in a traffic collection device in the field. To
15 validate that the data is accurate, data was secured from this device for the applicable
16 timeframe. The PEG (Calls) and the USE (Usage in CCS) were totaled for OGP#
17 (Outgoing) and IGP# (Incoming). These numbers tied to what was processed on the
18 report, thus validating the data that is reported.

19 **Q. What were the findings of the Willow Springs Traffic Study?**

20 A. The two trunk groups that were being reviewed were Trunk Group 107, the Internet
21 Service Provider ("ISP") trunk group, and Trunk Group 104, which is the common trunk
22 group. Trunk Group 104 currently has 96 trunks. This is not enough trunks to carry all of
23 the traffic that it would have to carry if the traffic associated with Trunk Group 107 is

1 moved onto Trunk Group 104. Based upon this study, Trunk Group 104 would require

2 178 trunks to carry the traffic from both trunk groups.

3 **Q. Does that conclude your testimony?**

4 **A. Yes, it does.**

**Summary Busy Hour
Trunk and Link Performance
Report Description**

Busy Hour Values for Each Day of the Week				
Trunk Id. or Link Id.	Trunk Name	Peg Count	CCS	Ovfl
Trunk Group or Link # from Raw Switch Data	Trunk Group Name (Available if Identified by Central Office) (not available for Links)	# of Calls (occurrences) related to the same hour of the Busy Hour CCS Value for the Day →	CCS Value for the Busiest Hour of the Day (usage in 100 Second Scans)	# of Busy Hour Overflows Related to the Same Hour of the Busy Hour CCS Value ← for the Day

Busy Day	Hour (BH)	High CCS	Avg. BH CCS	Avg. 5 BH CCS	Trunks Equipped (not used for Links)	Trunks Working (not used for Links)	Trunks or Links Required	Trks Over/ -Under (not used for Links)
Day Related to Highest Busy Hour CCS Value of the Week →	Busiest Hour Related to Highest CCS Value of the Week →	Highest Busy Hour CCS Value for the Week	Average of Busy Hour CCS Values of all Days in the Week	Average of the 5 Day Highest Busy Hour CCS Values for the Week (Determines Trunks or Links Required)	# of Equipped Members	# of Working Members	# of Circuits Required to Handle the Load of Traffic Encountered During this Study Based on the Avg. 5 BH CCS Column, Using Erlang B Trunk Capacity Table at a .001 GOS (grade of service of 1/1000 is the probability of 1 in 1000 calls being blocked)	Number of Trunks Over or -Under -Under Represents the # of Additional Circuits Needed

One CCS (Centum Call Seconds) is equivalent to 100 seconds.
Take the CCS usage and multiply by 100 to get the usage in seconds.

To calculate MOU (minutes of use):
CCS Multiplied by 100, divided by 60 = MOU
Or
CCS divided by .6 = MOU

To calculate the Avg. Holding Time:
MOU divided by Pegs = Avg HT

ERLANG TABLES

TABLE F - ERLANG B

11-2-74 33

11/81

	0.001	0.002	0.003	0.005	0.007	0.010	0.015	0.020	0.030	0.050	0.070	0.100	0.150	0.200	0.300	0.500	1.000	2.000	3.000	4.000	5.000	6.000	7.000	8.000	9.000	10.000	15.000	20.000	25.000	30.000	40.000	50.000	60.000	70.000	80.000	90.000	100.000			
2	0.015	0.021	0.025	0.033	0.046	0.066	0.081	0.105	0.153	0.224	0.282	0.382	2																											
3	0.087	0.111	0.127	0.152	0.194	0.249	0.289	0.349	0.456	0.603	0.716	0.900	3																											
4	0.235	0.283	0.316	0.363	0.440	0.536	0.602	0.702	0.870	1.093	1.259	1.525	4																											
5	0.452	0.527	0.578	0.635	0.732	0.860	0.960	1.132	1.361	1.658	1.876	2.195	5																											
6	0.729	0.832	0.900	0.996	1.146	1.326	1.447	1.622	1.909	2.276	2.543	2.961	6																											
7	1.055	1.185	1.273	1.393	1.579	1.799	1.947	2.158	2.501	2.936	3.250	3.738	7																											
8	1.422	1.582	1.686	1.830	2.052	2.311	2.484	2.730	3.128	3.627	3.987	4.543	8																											
9	1.828	2.014	2.135	2.302	2.558	2.855	3.053	3.333	3.783	4.345	4.748	5.371	9																											
10	2.272	2.563	2.711	2.930	3.272	3.655	3.922	4.272	4.816	5.484	5.936	6.618	10																											
11	2.722	2.963	3.118	3.330	3.652	4.022	4.267	4.611	5.160	5.842	6.328	7.077	11																											
12	3.207	3.475	3.646	3.879	4.232	4.637	4.904	5.279	5.878	6.615	7.141	7.950	12																											
13	3.714	4.006	4.193	4.447	4.831	5.271	5.559	5.964	6.608	7.402	7.967	8.835	13																											
14	4.239	4.556	4.758	5.033	5.447	5.920	6.229	6.664	7.352	8.201	8.804	9.730	14																											
15	4.782	5.123	5.346	5.643	6.095	6.598	6.933	7.394	8.128	9.010	9.650	10.600	15																											
16	5.339	5.704	5.936	6.250	6.772	7.259	7.610	8.100	8.875	9.829	10.510	11.540	16																											
17	5.911	6.300	6.546	6.879	7.379	7.946	8.317	8.834	9.652	10.660	11.370	12.460	17																											
18	6.496	6.907	7.167	7.519	8.046	8.644	9.034	9.578	10.440	11.490	12.240	13.390	18																											
19	7.093	7.526	7.800	8.170	8.724	9.352	9.761	10.330	11.230	12.330	13.120	14.320	19																											
20	7.702	8.159	8.446	8.826	9.415	10.077	10.500	11.080	12.030	13.180	14.000	15.200	20																											
21	8.319	8.795	9.096	9.502	10.110	10.790	11.240	11.860	12.840	14.040	14.890	16.190	21																											
22	8.947	9.444	9.758	10.180	10.810	11.530	11.990	12.640	13.650	14.900	15.780	17.130	22																											
23	9.583	10.100	10.430	10.860	11.530	12.270	12.750	13.420	14.470	15.760	16.680	18.080	23																											
24	10.230	10.770	11.110	11.560	12.240	13.010	13.510	14.200	15.300	16.630	17.580	19.030	24																											
25	10.900	11.450	11.800	12.260	13.040	13.840	14.340	15.040	16.160	17.520	18.490	20.000	25																											
26	11.540	12.100	12.460	12.930	13.720	14.540	15.040	15.800	16.960	18.360	19.350	20.900	26																											
27	12.210	12.780	13.150	13.630	14.440	15.280	15.780	16.600	17.800	19.240	20.250	21.800	27																											
28	12.880	13.500	13.880	14.410	15.240	16.090	16.600	17.440	18.640	20.100	21.120	22.670	28																											
29	13.560	14.200	14.600	15.130	15.980	16.830	17.410	18.220	19.490	21.000	22.030	23.580	29																											
30	14.250	14.900	15.320	15.860	16.720	17.580	18.160	19.000	20.300	21.840	22.870	24.420	30																											
31	14.940	15.610	16.030	16.600	17.440	18.300	18.890	19.750	21.080	22.640	23.670	25.220	31																											
32	15.630	16.330	16.760	17.340	18.210	19.080	19.680	20.600	22.000	23.580	24.610	26.160	32																											
33	16.340	17.040	17.490	18.090	18.970	19.870	20.480	21.510	22.910	24.500	25.530	27.080	33																											
34	17.040	17.770	18.220	18.840	19.740	20.660	21.280	22.340	23.770	25.360	26.390	27.940	34																											
35	17.750	18.500	18.960	19.590	20.500	21.440	22.070	23.140	24.590	26.180	27.210	28.760	35																											
36	18.470	19.230	19.710	20.350	21.300	22.260	22.890	24.000	25.510	27.100	28.130	29.680	36																											
37	19.190	19.970	20.450	21.110	22.080	23.070	23.700	24.850	26.380	28.000	29.030	30.580	37																											
38	19.910	20.710	21.210	21.870	22.860	23.870	24.500	25.690	27.250	28.880	29.910	31.460	38																											
39	20.640	21.450	21.960	22.640	23.650	24.700	25.320	26.530	28.130	29.760	30.790	32.340	39																											
40	21.370	22.190	22.710	23.400	24.430	25.500	26.120	27.350	28.980	30.620	31.650	33.200	40																											
41	22.110	22.950	23.480	24.190	25.240	26.320	26.940	28.190	29.840	31.480	32.510	34.060	41																											
42	22.850	23.710	24.250	24.970	26.040	27.140	27.760	29.030	30.700	32.340	33.370	34.920	42																											
43	23.590	24.460	25.010	25.750	26.840	27.960	28.580	29.870	31.560	33.200	34.230	35.780	43																											
44	24.330	25.230	25.780	26.530	27.640	28.780	29.400	30.700	32.400	34.040	35.070	36.620	44																											
45	25.080	26.000	26.560	27.320	28.440	29.580	30.200	31.520	33.220	34.860	35.890	37.440	45																											
46	25.830	26.760	27.330	28.110	29.250	30.400	31.020	32.340	34.040	35.680	36.710	38.260	46																											
47	26.590	27.530	28.110	28.900	30.060	31.220	31.840	33.160	34.860	36.500	37.530	39.080	47																											
48	27.340	28.300	28.900	29.690	30.860																																			

	P-0001	P-0002	P-0003	P-0004	P-0005	P-0006	P-0007	P-0008	P-0009	P-0010	P-0011	P-0012	P-0013	P-0014	P-0015	P-0016	P-0017	P-0018	P-0019	P-0020
52	30.400	31.410	32.050	32.900	34.150	35.560	36.460	37.720	39.700	42.120	43.850	46.530	52							
53	31.170	32.200	32.840	33.700	34.980	36.400	37.320	38.600	40.600	43.060	44.810	47.530	53							
54	31.940	32.990	33.640	34.510	35.800	37.250	38.180	39.470	41.500	44.000	45.770	48.540	54							
55	32.710	33.770	34.440	35.320	36.630	38.080	39.040	40.330	42.410	44.930	46.740	49.540	55							
56	33.490	34.570	35.240	36.130	37.460	38.940	39.900	41.230	43.310	45.870	47.700	50.540	56							
57	34.270	35.360	36.040	36.950	38.290	39.790	40.760	42.110	44.220	46.820	48.670	51.550	57							
58	35.050	36.150	36.840	37.760	39.120	40.640	41.630	42.990	45.130	47.760	49.630	52.550	58							
59	35.840	36.950	37.650	38.580	39.960	41.500	42.480	43.870	46.040	48.700	50.600	53.560	59							
60	36.630	37.750	38.460	39.400	40.790	42.350	43.360	44.760	46.950	49.640	51.570	54.560	60							
61	37.410	38.550	39.270	40.220	41.630	43.210	44.230	45.640	47.860	50.590	52.540	55.570	61							
62	38.200	39.360	40.080	41.040	42.470	44.070	45.100	46.530	48.770	51.530	53.510	56.580	62							
63	38.990	40.160	40.890	41.870	43.310	44.930	45.970	47.410	49.690	52.480	54.480	57.590	63							
64	39.780	40.970	41.710	42.690	44.150	45.790	46.840	48.300	50.600	53.430	55.450	58.600	64							
65	40.570	41.780	42.540	43.520	44.980	46.630	47.700	49.160	51.500	54.380	56.420	59.600	65							
66	41.370	42.590	43.340	44.350	45.840	47.510	48.590	50.060	52.430	55.320	57.390	60.620	66							
67	42.170	43.400	44.160	45.180	46.690	48.380	49.470	50.980	53.350	56.270	58.370	61.630	67							
68	42.970	44.210	44.980	46.010	47.540	49.240	50.340	51.870	54.270	57.220	59.340	62.640	68							
69	43.770	45.020	45.800	46.850	48.390	50.110	51.220	52.770	55.190	58.180	60.320	63.650	69							
70	44.570	45.830	46.620	47.680	49.240	50.980	52.100	53.660	56.100	59.120	61.280	64.640	70							
71	45.380	46.660	47.450	48.520	50.090	51.850	52.980	54.560	57.030	60.080	62.270	65.680	71							
72	46.190	47.480	48.280	49.360	50.940	52.720	53.860	55.450	57.950	61.030	63.240	66.690	72							
73	46.990	48.300	49.110	50.190	51.800	53.590	54.750	56.350	58.880	61.990	64.220	67.710	73							
74	47.800	49.120	49.940	51.030	52.650	54.460	55.630	57.250	59.800	62.940	65.200	68.720	74							
75	48.610	49.940	50.770	51.870	53.500	55.330	56.510	58.140	60.710	63.880	66.170	69.720	75							
76	49.430	50.770	51.600	52.720	54.370	56.210	57.400	59.050	61.650	64.860	67.180	70.750	76							
77	50.240	51.590	52.430	53.560	55.230	57.090	58.290	59.960	62.580	65.810	68.130	71.770	77							
78	51.050	52.420	53.270	54.410	56.090	57.960	59.180	60.860	63.510	66.770	69.110	72.780	78							
79	51.870	53.250	54.110	55.250	56.950	58.840	60.060	61.760	64.430	67.730	70.100	73.800	79							
80	52.690	54.080	54.940	56.090	57.800	59.710	60.940	62.660	65.350	68.680	71.080	74.820	80							
81	53.500	54.910	55.780	56.950	58.670	60.600	61.840	63.570	66.290	69.650	72.060	75.840	81							
82	54.320	55.750	56.620	57.800	59.540	61.480	62.740	64.480	67.220	70.610	73.040	76.850	82							
83	55.140	56.570	57.460	58.650	60.400	62.360	63.630	65.390	68.190	71.570	74.020	77.870	83							
84	55.970	57.400	58.300	59.500	61.270	63.240	64.520	66.290	69.080	72.530	75.010	78.890	84							
85	56.790	58.230	59.140	60.350	62.140	64.120	65.410	67.190	70.000	73.490	75.990	79.910	85							
86	57.610	59.060	59.990	61.200	63.000	65.010	66.310	68.110	70.950	74.450	76.970	80.930	86							
87	58.440	59.910	60.830	62.060	63.870	65.900	67.200	69.020	71.880	75.410	77.960	81.950	87							
88	59.270	60.750	61.680	62.910	64.740	66.780	68.100	69.930	72.810	76.380	78.940	82.970	88							
89	60.090	61.590	62.520	63.770	65.610	67.670	69.000	70.840	73.750	77.340	79.930	83.990	89							
90	60.920	62.430	63.360	64.610	66.460	68.530	69.870	71.730	74.670	78.290	80.900	84.980	90							
91	61.750	63.270	64.220	65.490	67.350	69.440	70.790	72.670	75.620	79.270	81.900	86.030	91							
92	62.580	64.110	65.070	66.340	68.230	70.330	71.690	73.580	76.550	80.230	82.890	87.060	92							
93	63.410	64.960	65.920	67.200	69.100	71.220	72.590	74.490	77.490	81.200	83.870	88.080	93							
94	64.250	65.800	66.770	68.070	69.980	72.110	73.490	75.410	78.430	82.170	84.860	89.100	94							
95	65.090	66.640	67.620	68.930	70.850	72.990	74.380	76.320	79.370	83.140	85.850	90.090	95							
96	65.920	67.490	68.480	69.790	71.730	73.890	75.300	77.240	80.300	84.100	86.840	91.150	96							
97	66.750	68.340	69.330	70.650	72.610	74.790	76.200	78.160	81.240	85.070	87.830	92.170	97							
98	67.590	69.190	70.190	71.520	73.480	75.680	77.100	79.070	82.180	86.030	88.810	93.190	98							
99	68.430	70.040	71.040	72.380	74.360	76.570	78.000	79.990	83.120	87.000	89.800	94.220	99							

	P.0001	P.0002	P.0003	P.0004	P.0005	P.0006	P.0007	P.0008	P.0009	P.001	P.002	P.003	P.004	P.005	P.006	P.007	P.008	P.009	P.01	P.02	P.03	P.04	P.05	P.06	P.07	P.08	P.09	P.1	P.2	P.3	P.4	P.5	P.6	P.7	P.8	P.9	
101	70.000	71.740	72.790	74.110	75.810	77.800	79.980	82.350	84.910	87.660	90.600	93.740	97.080	100																							
102	70.840	72.590	73.610	74.980	77.000	79.260	80.720	82.780	85.950	89.910	92.970	97.290	102																								
103	71.780	73.440	74.470	75.850	77.880	80.160	81.630	83.670	86.890	90.880	93.760	98.310	103																								
104	72.630	74.290	75.330	76.720	78.770	81.050	82.530	84.590	87.830	91.850	94.750	99.340	104																								
105	73.470	75.130	76.170	77.560	79.610	81.890	83.370	85.430	88.670	92.690	95.590	100.180	105																								
106	74.310	76.000	77.050	78.460	80.530	82.850	84.350	86.430	89.720	93.790	96.740	101.400	106																								
107	75.160	76.860	77.910	79.330	81.420	83.750	85.260	87.350	90.660	94.760	97.730	102.400	107																								
108	76.000	77.710	78.780	80.200	82.300	84.650	86.170	88.270	91.600	95.730	98.720	103.400	108																								
109	76.850	78.570	79.640	81.070	83.190	85.550	87.070	89.200	92.550	96.710	99.710	104.500	109																								
110	77.690	79.410	80.480	81.910	84.030	86.390	87.910	89.980	93.330	97.490	100.490	105.280	110																								
111	78.540	80.280	81.370	82.820	84.960	87.350	88.900	91.040	94.440	98.650	101.700	106.500	111																								
112	79.390	81.140	82.230	83.690	85.850	88.250	89.810	91.970	95.380	99.620	102.700	107.500	112																								
113	80.240	82.000	83.100	84.570	86.730	89.150	90.720	92.890	96.330	100.600	103.700	108.600	113																								
114	81.090	82.860	83.970	85.440	87.620	90.060	91.630	93.820	97.280	101.600	104.700	109.600	114																								
115	81.940	83.720	84.830	86.300	88.480	90.920	92.490	94.680	98.140	102.360	105.460	110.300	115																								
116	82.790	84.590	85.700	87.220	89.400	91.860	93.460	95.670	99.170	103.500	106.700	111.700	116																								
117	83.640	85.450	86.570	88.070	90.290	92.770	94.370	96.600	100.100	104.500	107.700	112.700	117																								
118	84.500	86.310	87.440	88.950	91.180	93.670	95.280	97.530	101.100	105.500	108.700	113.700	118																								
119	85.350	87.170	88.310	89.830	92.070	94.580	96.200	98.450	102.000	106.400	109.700	114.700	119																								
120	86.200	88.030	89.170	90.690	92.930	95.440	97.060	99.310	103.000	107.400	110.600	115.600	120																								
121	87.060	88.900	90.050	91.580	93.860	96.390	98.030	100.300	103.900	108.400	111.600	116.800	121																								
122	87.910	89.770	90.930	92.470	94.750	97.300	98.950	101.200	104.900	109.400	112.600	117.800	122																								
123	88.770	90.640	91.800	93.350	95.640	98.200	99.860	102.200	105.800	110.300	113.600	118.900	123																								
124	89.630	91.500	92.670	94.230	96.540	99.110	100.800	103.100	106.800	111.300	114.600	119.900	124																								
125	90.480	92.360	93.530	95.090	97.400	100.000	101.700	104.000	107.700	112.100	115.400	120.700	125																								
126	91.340	93.240	94.420	96.000	98.310	100.900	102.600	104.900	108.700	113.300	116.600	121.900	126																								
127	92.200	94.110	95.290	96.880	99.220	101.800	103.500	105.900	109.600	114.300	117.600	123.000	127																								
128	93.060	94.970	96.170	97.760	100.100	102.700	104.500	106.800	110.600	115.200	118.600	124.000	128																								
129	93.920	95.840	97.040	98.630	101.000	103.700	105.400	107.800	111.500	116.200	119.600	125.000	129																								
130	94.780	96.720	97.920	99.510	101.880	104.600	106.300	108.700	112.500	117.200	120.600	126.000	130																								
131	95.640	97.590	98.800	100.400	102.800	105.500	107.200	109.600	113.400	118.200	121.600	127.100	131																								
132	96.500	98.460	99.680	101.300	103.700	106.400	108.100	110.500	114.400	119.100	122.500	128.100	132																								
133	97.360	99.330	100.560	102.200	104.600	107.300	109.000	111.500	115.300	120.100	123.600	129.200	133																								
134	98.230	100.200	101.400	103.100	105.500	108.200	110.000	112.400	116.300	121.100	124.600	130.200	134																								
135	99.090	101.070	102.280	104.000	106.400	109.100	110.900	113.300	117.200	122.000	125.500	131.100	135																								
136	99.950	101.940	103.200	104.900	107.300	110.000	111.800	114.300	118.200	123.100	126.600	132.300	136																								
137	100.800	102.800	104.100	105.700	108.200	111.000	112.700	115.200	119.100	124.000	127.600	133.300	137																								
138	101.660	103.700	105.000	106.600	109.100	111.900	113.700	116.200	120.100	125.000	128.600	134.300	138																								
139	102.520	104.600	105.800	107.500	110.000	112.800	114.600	117.100	121.000	126.000	129.600	135.300	139																								
140	103.380	105.460	106.600	108.300	110.800	113.600	115.400	117.900	121.800	126.800	130.400	136.100	140																								
141	104.240	106.300	107.500	109.300	111.800	114.600	116.400	118.900	122.800	127.800	131.400	137.100	141																								
142	105.100	107.200	108.500	110.200	112.700	115.500	117.400	119.900	123.900	128.900	132.600	138.400	142																								
143	106.000	108.100	109.400	111.100	113.600	116.400	118.300	120.800	124.900	129.900	133.600	139.500	143																								
144	106.900	109.000	110.200	112.000	114.500	117.400	119.200	121.800	125.800	130.900	134.600	140.500	144																								
145	107.800	109.900	111.000	112.800	115.300	118.200	120.000	122.600	126.600	131.700	135.400	141.300	145																								
146	108.600	110.700	111.900	113.800	116.300	119.200	121.100	123.600	127.700	132.800	136.600	142.600	146																								
147	109.500	111.600	112.900	114.800	117.300	120.200	122.100	124.600	128.700	133.800	137.600	143.600	147																								
148	110.400	112.500	113.800	115.700	118.100	121.000	122.900	125.500	129.700	134.800	138.600	144.600	148																								

	P.001	P.002	P.003	P.004	P.005	P.006	P.007	P.008	P.009	P.010	P.011	P.012	P.013	P.014	P.015
151	113.000	114.100	115.200	116.300	117.400	118.500	119.600	120.700	121.800	122.900	124.000	125.100	126.200	127.300	128.400
152	113.800	114.900	116.000	117.100	118.200	119.300	120.400	121.500	122.600	123.700	124.800	125.900	127.000	128.100	129.200
153	114.700	115.800	116.900	118.000	119.100	120.200	121.300	122.400	123.500	124.600	125.700	126.800	127.900	129.000	130.100
154	115.600	116.700	117.800	118.900	120.000	121.100	122.200	123.300	124.400	125.500	126.600	127.700	128.800	129.900	131.000
155	116.500	117.600	118.700	119.800	120.900	122.000	123.100	124.200	125.300	126.400	127.500	128.600	129.700	130.800	131.900
156	117.300	118.400	119.500	120.600	121.700	122.800	123.900	125.000	126.100	127.200	128.300	129.400	130.500	131.600	132.700
157	118.200	119.300	120.400	121.500	122.600	123.700	124.800	125.900	127.000	128.100	129.200	130.300	131.400	132.500	133.600
158	119.100	120.200	121.300	122.400	123.500	124.600	125.700	126.800	127.900	129.000	130.100	131.200	132.300	133.400	134.500
159	120.000	121.100	122.200	123.300	124.400	125.500	126.600	127.700	128.800	129.900	131.000	132.100	133.200	134.300	135.400
160	120.800	121.900	123.000	124.100	125.200	126.300	127.400	128.500	129.600	130.700	131.800	132.900	134.000	135.100	136.200
161	121.700	122.800	123.900	125.000	126.100	127.200	128.300	129.400	130.500	131.600	132.700	133.800	134.900	136.000	137.100
162	122.600	123.700	124.800	125.900	127.000	128.100	129.200	130.300	131.400	132.500	133.600	134.700	135.800	136.900	138.000
163	123.500	124.600	125.700	126.800	127.900	129.000	130.100	131.200	132.300	133.400	134.500	135.600	136.700	137.800	138.900
164	124.300	125.400	126.500	127.600	128.700	129.800	130.900	132.000	133.100	134.200	135.300	136.400	137.500	138.600	139.700
165	125.200	126.300	127.400	128.500	129.600	130.700	131.800	132.900	134.000	135.100	136.200	137.300	138.400	139.500	140.600
166	126.100	127.200	128.300	129.400	130.500	131.600	132.700	133.800	134.900	136.000	137.100	138.200	139.300	140.400	141.500
167	127.000	128.100	129.200	130.300	131.400	132.500	133.600	134.700	135.800	136.900	138.000	139.100	140.200	141.300	142.400
168	127.900	129.000	130.100	131.200	132.300	133.400	134.500	135.600	136.700	137.800	138.900	140.000	141.100	142.200	143.300
169	128.700	129.800	130.900	132.000	133.100	134.200	135.300	136.400	137.500	138.600	139.700	140.800	141.900	143.000	144.100
170	129.600	130.700	131.800	132.900	134.000	135.100	136.200	137.300	138.400	139.500	140.600	141.700	142.800	143.900	145.000
171	130.500	131.600	132.700	133.800	134.900	136.000	137.100	138.200	139.300	140.400	141.500	142.600	143.700	144.800	145.900
172	131.400	132.500	133.600	134.700	135.800	136.900	138.000	139.100	140.200	141.300	142.400	143.500	144.600	145.700	146.800
173	132.300	133.400	134.500	135.600	136.700	137.800	138.900	140.000	141.100	142.200	143.300	144.400	145.500	146.600	147.700
174	133.100	134.200	135.300	136.400	137.500	138.600	139.700	140.800	141.900	143.000	144.100	145.200	146.300	147.400	148.500
175	134.000	135.100	136.200	137.300	138.400	139.500	140.600	141.700	142.800	143.900	145.000	146.100	147.200	148.300	149.400