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HOURLY AVERAGE VALUES OF SOLAR WIND PARAMETERS
(FLOW RATE AND ION TEMPERATURE)
ACCORDING TO DATA OF MEASUREMENTS OF THE RIEP-V PLASMA SPECTROMETER
ON BOARD THE VENERA-9 AND VENERA-10 AUTOMATIC INTERPLANETARY STATIONS
ON AN EARTH/VENUS FLIGHT TRAJECTORY AND IN ORBIT AROUND VENUS
DURING THE PERIOD JUNE 1975-APRIL 1976

O. L. Vaysberg, A. V. D'yachkov, V. N. Smirnov, K. B. Tsyarkin,
and R. A. Isaeva

Translation of "Srednechasovye znacheniya parametrov solnechnogo
vetra (skorost' potoka i temperatura ionov) po dannym izmereniy
spektrometra plazmy RIEP-V na bortu avtomaticheskikh mezhpla-
netnykh stantsiy "Venera-9" i "Venera-10" na trasse pereleta
Zemlya/Venera i na orbite sputnika Venery za period iyun'
1975g. - aprel' 1976g.", Academy of Sciences USSR, Institute of
Space Research, Moscow, Report Pr-494, 1979, pp. 1-50

(NASA-TM-76213) HOURLY AVERAGE VALUES OF
SOLAR WIND PARAMETERS (FLOW RATE AND ION
TEMPERATURES) ACCORDING TO DATA OF
MEASUREMENTS OF THE VENERA-9 AND VENERA-10
AUTOMATIC (National Aeronautics and Space

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16. Abstract Measurements of solar wind parameters were carried out using data gathered by the "Venera-9" and "Venera-10" space stations, using an RIEP-V plasma spectrometer. The measurements were carried out during the earth to Venus trajectory and in orbit around Venus.			
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HOURLY AVERAGE VALUES OF SOLAR WIND PARAMETERS
(FLOW RATE AND ION TEMPERATURE)
ACCORDING TO DATA OF MEASUREMENTS OF THE RIEP-V PLASMA SPECTROMETER
ON BOARD THE VENERA-9 AND VENERA-10 AUTOMATIC INTERPLANETARY STATIONS
ON AN EARTH/VENUS FLIGHT TRAJECTORY AND IN ORBIT AROUND VENUS
DURING THE PERIOD JUNE 1975-APRIL 1976

O. L. Vaysberg, A. V. D'yachkov, V. N. Smirnov, K. B. Tsyarkin,
and R. A. Isaeva

Explanations for Data on Solar Wind Parameters

/6*

The measurements of the spectral characteristics of the ionic component of plasma were carried out on board the "Venera-9" and "Venera-10" automatic interplanetary stations, using the RIEP-V plasma spectrometer. In order to obtain the parameters of the solar wind ionic flow, the readings of 4 cylindrical electrostatic analyzers with channel electron multipliers, in the capacity of detectors, were utilized. The axes of the fields of vision of two of these electrostatic analyzers were directed along the axis of the automatic interplanetary station, oriented towards the sun, while the other two were turned in one plane at angles of $+15^{\circ}$ and -15° . The full hemisphere of the angular diagram of each analyzer was $\sim 5^{\circ}$, the energetic resolution was $\sim 6\%$, and the geometric energy factor was $2 \cdot 10^{-3} \text{ cm}^2 \text{ ave. kev}$. Each analyzer covered an energetic range of ~ 10 in eight energetic intervals.

On the flight trajectory towards Venus, the instrument usually operated in a mode for obtaining the energetic and angular distribution of the ions within 1 minute, with an interval between the measurement frames of 10 minutes, i.e., 6 spectra were recorded in 1 hour. The information was recorded on an on-board recorder. The measurements were carried out in lengthy recording sequences, but the measurements were not continuous. The obtained spectral distributions were processed, in order to obtain the velocity and temperature of the protons. Since the

*Numbers in the margin indicate pagination in the foreign text.

spectral distributions were recorded in one plane, the concentration of the solar wind was not determined. The obtained parameters were averaged for an interval of 1 hour. The greater portion of the measurements was obtained on the "Venera-10" automatic interplanetary station. The measurements on the "Venera-9" were also utilized during the preparation of the tables and graphs, in order to fill the gaps in the information obtained from the "Venera-10" station. The given data are a result of the first stage of processing, and subsequent processing may introduce slight corrections into them. /2

The processing data are presented in the figures, as well as in tabular form. Indicated in the table for each date, in the course of which observations were carried out, are: the hour interval (universal time), and the hourly average solar wind velocity in kilometers per second. The asterisk marks the magnitudes obtained from measurements on "Venera-9", and the remaining data are from "Venera-10".

75. 6.10. 7		75. 6.10. 7		75. 6.10. 7		75. 6.11. 7		75. 6.11. 7	
T	V	T	V	T	V	T	V	T	V
11	373	11	354	10	654	10	654	12	659
10	389	10	357	11	650	11	650	13	658
15	351	15	341	15	651	15	651	12	651
17	358	17	347	16	654	16	654	13	652
		15	347	10	652	10	652	19	671
		16	347	16	653	16	653	11	652
				17	655	17	655	23	638
				16	654	16	654	15	650
				17	654	17	654	16	656
				13	654	13	654	10	644
				11	645	11	645	13	645
				16	646	16	646	11	644
				13	644	13	644	13	651
				20	659	20	659	12	654
				10	638	10	638	11	657
				11	657	11	657	15	650
				10	652	10	652	10	611
				18	668	18	668	9	693
				23	668	23	668	9	602
				10	649	10	649	9	602
								6	581

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75. 6.19. v		75. 6.20		75. 6.21. v		75. 6.22. v		75. 6.23. v	
T	V	T	V	T	V	T	V	T	V
12	620	13	565	9	509	15	454	10	406
13	633	20	616	13	494	12	449	7	404
17	647	13	570	14	473	16	438	7	393
13	641	11	560	15	461	17	424	7	393
10	621	11	563	8	469	14	434	8	392
13	639	10	551	7	490	8	418	5	359*
		10	558	9	475	21	431	12	362*
18	663*	12	557	7	475	18	438	11	375
12	624*					10	428	8	371
14	673	10		10		11	407		
9	603	12		12	502	12	408	10	
10	617	13	521	13	487	13	421	13	
10	619	14	536	14	477	14	404	14	366*
12	615	8	532	15	482	15	407	15	378
8	594	16	511	16	491	16	404	16	362
4	566	17	499	17	479	17	416	17	380
4	556	18	499	18	466	18	417	18	382
6	571	19	506	19	481	19	412	19	382
5	569	20	522	20	477	20	412	20	380
14	575	21	510	21	477	21	411	21	372
8	544	22	485	22	452	22	410	22	377
13	591	23	481	23	455	23	404	23	374
9	563	6	482	7	457	8	399	7	372

75. 6.24. Y		75. 6.25. Y		75. 6.26. Y		75. 6.27. Y		75. 6.28. Y		
T	v	T	v	T	v	T	v	T	v	
1	366			7	403		6	366	2	520
2	366			6	386				11	516
3	366						6	397*	13	517
4	484	5	354*	9	411					
5	484			11	386		6	401*		
6	484			11	392				26	536
7	484	19	369	11	401		17	421	9	522
8	484	9	363	17	436		10	450		
9	484			18			11	450		
10	484			17	368*		14	466	10	662
11	484	11	393	41	349*		14	466	16	619
12	484	11	383				14	473	27	642
13	484	11	383				12	483	7	578
14	484	11	395				12	483	16	598
15	484	8	395				24	506	9	555
16	484	13	424*	13	386*		14	530	9	553
17	484	13	394	24	366*		19	490	5	549
18	484	15	392	11	401*		20	515		
19	484						20	511		
20	484	13	400				18	501	9	543
21	484	9	384							
22	484	6	382	10	404*		11	511	10	543
23	484	6	388	11	391*					
24	484	9	397							

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75. 6.29. Y		75. 6.30. Y		75. 7. 1. Y		75. 7. 2. Y		75. 7. 3. Y	
T	v	T	v	T	v	T	v	T	v
5	550			14	459	5	537	10	521
30	641	6	535	11	454	6	539	7	523
20	634	20	485	10	433	12	537	7	525
19	650	7	464	9	445			8	542
39	630	11	450	35	395*				
		7	482	10	419				
23	569	15	473	10	421				
				11	434				
7	537	6	497	8	436				
7	526	14	482						
		12	472						
11	537	6	469						
13	520	6	464						
13	519	7	450						
12	517	7	427						
6	520	12	432						
7	520	13	433						
7	477	13	425						
507		13	459						
		7	434						

75. 7. 4. Y		75. 7. 5. Y		75. 7. 6. Y		75. 7. 7. Y		75. 7. 8. Y	
1	444	1	446	1	446	1	446	1	446
2	444	2	446	2	446	2	446	2	446
3	444	3	446	3	446	3	446	3	446
4	444	4	446	4	446	4	446	4	446
5	444	5	446	5	446	5	446	5	446
6	444	6	446	6	446	6	446	6	446
7	444	7	446	7	446	7	446	7	446
8	444	8	446	8	446	8	446	8	446
9	444	9	446	9	446	9	446	9	446
10	444	10	446	10	446	10	446	10	446
11	444	11	446	11	446	11	446	11	446
12	444	12	446	12	446	12	446	12	446
13	444	13	446	13	446	13	446	13	446
14	444	14	446	14	446	14	446	14	446
15	444	15	446	15	446	15	446	15	446
16	444	16	446	16	446	16	446	16	446
17	444	17	446	17	446	17	446	17	446
18	444	18	446	18	446	18	446	18	446
19	444	19	446	19	446	19	446	19	446
20	444	20	446	20	446	20	446	20	446

75. 7. 9. Y		75. 7. 10. Y		75. 7. 11. Y		75. 7. 12. Y		75. 7. 13. Y	
1	443	1	540	1	494	1	515	1	455
2	454	2	538	2	507	2	510	2	447
3	454	3	530	3	503	3	491	3	467
4	438	4	571	4	536	4	475	4	490
5	448	5	541	5	589	5	472	5	490
6	499	6	543	6	568	6	481	6	505
7	541	7	578	7	551	7	495	7	505
8	554	8	549	8	558	8	469	8	504
9	571	9	531	9	551	9	462	9	574
10	541	10	533	10	558	10	469	10	550
11	554	11	500	11	542	11	497	11	550
12	578	12	500	12	563	12	498	12	550
13	554	13	500	13	544	13	488	13	550
14	549	14	500	14	531	14	478	14	550
15	566	15	500	15	521	15	472	15	550
16	590	16	500	16	521	16	455	16	550
17	590	17	500	17	521	17	455	17	550
18	590	18	500	18	521	18	455	18	550
19	590	19	500	19	521	19	455	19	550
20	590	20	500	20	521	20	455	20	550

75. 7.14. v		75. 7.15. v		75. 7.16. v		75. 7.17. v		75. 7.18. v	
22	588								
20	581	7	561				9	536	
	585	7	570	15	614			7	583
	554		579						
6	538	6	554				10	558	
16	584	7	568				11	562	
24	618	7	563				12	567	
7	556	8	561				4	555	
10	586	8	573				6	558	
7	571	17	567				4	576	
		6	550				7	553	
12	623	19	559						
8	580	19	530				12	626	
		19	595				10	625	
							9	621	
							9	627	
							18	629	

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75. 7.30. v		75. 7.31. *		75. 8. 1. v		75. 8. 2. v		75. 8. 3. *	
	462								
	463	12	377	11	388				
	454	13	375	19	381				
	444	20	361	9	398				
	416	47	371		399				
		53	327	12	365				
		10	327	17	371				
		24	378	27	357				
		10	372	13	364				
		8	382	7	378				
		8	391	9	377				
		16	389	8	389				
		16	393	7	356				
		19	377	14	328				
		16	394	18	307				
		13	388	16	350				
		13	393	10	371				
		9	394						
		10	389						

75. 8.14.

1	380
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75. 8.15.

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75. 8.16.

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75. 8.17.

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75. 8.18.

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75. 8.19.

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75. 8.20.

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75. 8.21.

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75. 8.22.

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75. 8.23.

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75. 8.27. #

T	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200																																																	
y	388	389	390	391	392	393	394	395	396	397	398	399	400	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460	461	462	463	464	465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480	481	482	483	484	485	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500

75. 8.26. #

T	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200																																																					
y	388	389	390	391	392	393	394	395	396	397	398	399	400	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460	461	462	463	464	465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480	481	482	483	484	485	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500

75. 8.29. #

T	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200													
y	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460	461	462	463	464	465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480	481	482	483	484	485	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500

75. 9. 8. #

T	20	406
y	395	

75. 9.10. #

T	21	22	23	24
y	527	538	547	555

75. 9.11. #

T	17	18	19	20	21	22	23	24										
y	546	527	556	522	559	564	632	558	572	552	531	536	511	518	519	537	516	508

75. 9.12. #

T	18	26	20	19	14	15	16	17	18	19	13	22	23	24
y	555	516	531	541	514	514	538	513	506					

75. 9.13. #

T	33	15	9	24	13	16	13	16	10	17	24	39	19	13	7
y	572	552	539	554	525	520	483	471	495	504	464	478	499	457	435

75. 9.14. #

T	20	14	8	13	12	13	11	9	11	10	11	13	14	7		
y	440	405	429	432	432	424	423	425	430	426	416	415	408	427	425	453

75. 9.15. #

T	9	8	10	16	13	13	13	15	16	17	18	19	20	21	22	23	24
y	466	467	468	490	452	453	466	466	466	466	466	466	466	466	466	466	466

75. 9.16. #		75. 9.17. #		75. 9.18. #		75. 9.19. #		75. 9.20. #	
T	Y	T	Y	T	Y	T	Y	T	Y
1		7	379	1	20			16	507
2		8	382	2	16			17	510
3	413	9	406	3	19			18	513
4		10		4	34			19	498
5	418	11	367	5	38			20	486
6		12		6	47			21	479
7		13		7	34		13	20	504
8	387	14		8	21		10	21	474
9		15		9	26		11	22	491
10	373	16	300	10	32		12	23	486
11		17	368	11	21		13	24	488
12		18		12	19		14	25	461
13		19		13	16		15	26	455
14		20		14	17		16	27	461
15	392	21	341	15	18		17	28	461
16	388	22	340	16	30		18	29	461
17	396	23	348	17	19		19	30	461
18		24	394	18	20		20	31	461
19			387	19	21		21	32	461
20			398	20	22		22	33	461
21	413		420	21	23		23	34	461
22			445	22	24		24	35	461
23				23				36	461
24				24				37	461

75. 9.21. #		75. 9.22. #		75. 9.23. #		75. 9.24. #		75. 9.25. #	
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2		2	510	2				11	370
3		3	521	3				12	372
4		4	465	4				13	
5		5	476	5				14	
6		6	480	6				15	
7		7	471	7				16	
8		8	503	8				17	
9		9	506	9				18	
10		10	432	10				19	
11		11	480	11				20	
12		12	480	12				21	
13		13	480	13				22	
14		14	480	14				23	
15		15	480	15				24	
16		16	480	16				25	
17		17	480	17				26	
18		18	480	18				27	
19		19	480	19				28	
20		20	480	20				29	
21		21	480	21				30	
22		22	480	22				31	
23		23	480	23				32	
24		24	480	24				33	

75. 9.27. M		75. 9.28. M		75. 9.29. M		75. 9.30. M		75. 10. 01. M	
T	V	T	V	T	V	T	V	T	V
115	356	10	351	10	396	11	313	11	415
116	362	11	361	11	410	12	312	12	412
6	329	12	363	12	421	13	314	13	417
5	324	13	374	13	426	14	316	14	423
		14	373	14	439	15	364	15	402
		15	376	15	444	16	369	16	379
		16	370	16	450	17	318	17	390
		17	370	17	455	18	361	18	437
		18	370	18	461	19	366	19	375
		19	370	19	467	20	369	20	378
		20	370	20	473	21	318	21	373
		21	370	21	479	22	361	22	363
		22	370	22	485	23	366	23	375
		23	370	23	491	24	369	24	377
		24	370	24	497				367
									368
									369
									355
									363

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75. 10. 2.		75. 10. 3.		75. 10. 4.		75. 10. 5.		75. 10. 6.		75. 10. 7.	
T	V	T	V	T	V	T	V	T	V	T	V
115	362	13	319	11	307	17	439	12	317	18	506
116	368	14	309	12	307	18	448	13	317	19	478
6	373	15	307	13	307	19	448	14	317	20	478
5	373	16	307	14	307	20	448	15	317	21	478
		17	307	15	307	21	448	16	317	22	478
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		20	307	18	307	24	448	19	317	25	478
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		22	307	20	307	26	448	21	317	27	478
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				24	307	30	448	25	317	31	478
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75.II.1. V
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75.II.2. V
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75.II.3. V
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75.II.5. V
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75.II.6. V
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75.II.21. V
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75.II.22. V
 10 15 466
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 16 21 464
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 22 23 613

75.II.23. V
 10 9 537
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 12 14 546
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 16 25 596
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75.II.24. V
 10 9 527
 11 16 491
 12 4 508
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 15 4 476
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75.II.25. V
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75. II. 26. v		75. II. 27. v		75. II. 28. v		75. II. 29. v		75. II. 30. v	
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2	425	2	449	2	403	2		2	457
3	440	3	454	3	418	3		3	488
4	451	4	438	4	421	4		4	448
5	455	5	447	5	419	5		5	454
6	430	6	461	6	435	6		6	420
7	449	7	458	7	432	7	23	7	421
8	438	8	447	8	449	8	30	8	419
9	458	9	471	9	456	9		9	407
10	454	10	468	10	408	10		10	389
11	454	11	439	11	437	11	9	11	395
12	433	12	434	12	462	12	9	12	3
13	422	13	438	13	425	13	6	13	3
14	419	14	414	14	477	14	5	14	7
15	408	15	442	15	521	15	9	15	368
16	381	16	457	16	532	16	19	16	484
17	395	17	450	17	538	17	27	17	399
18	393	18	461	18	560	18	19	18	4
19	412	19	473	19		19	21	19	4
20	392	20	468	20		20	27	20	8
21	406	21	468	21		21	9	21	343
22	399	22	468	22		22	7	22	7
23	422	23	468	23		23	6	23	381
24		24	468	24		24	5	24	384

75. I2. 1. v		75. I2. 2. v		75. I2. 3. v		75. I2. 7. v		75. I2. 8. v	
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4	381	4	453	4	616	4	17	4	552
5		5	478	5	561	5	12	5	548
6		6	437	6		6		6	562
7		7	440	7		7		7	567
8		8	473	8		8		8	563
9		9	494	9		9		9	573
10		10	507	10		10		10	545
11		11	504	11		11		11	537
12		12	482	12		12	13	12	532
13		13	487	13		13	20	13	517
14		14	466	14		14	14	14	515
15		15	479	15		15	10	15	508
16		16	482	16		16	10	16	508
17		17	498	17		17	18	17	513
18		18	496	18		18	11	18	535
19		19	515	19		19	9	19	539
20		20	502	20		20	16	20	542
21		21	527	21		21	13	21	533
22		22	542	22		22	12	22	585
23		23	534	23		23	15	23	545
24		24	535	24		24	16	24	568

75.12.9.

16	557
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13	527
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13	488

75.12.10.

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7	404
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75.12.11.

5	389
5	399
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5	384
5	381
5	388
17	357
72	243
10	516
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11	528
11	525
12	522
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13	520
13	522
8	497
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5	491
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10	498
6	485
13	500
16	507
12	519
12	519
16	501
14	505
12	490

75.12.15.

2	424
13	523
6	527
11	476
4	440
1	530
2	523
3	513
4	513
5	493
6	463
9	470
10	474
14	465
13	477
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75.12.16.

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17	424
17	360
12	438

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75.12.17.

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75.12.18.

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17	421
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10	500
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19	513
16	509
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75.12.24.

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11	525
12	522
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75.12.25.

12	477
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75.12.27.

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76. I. 4. v

23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

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76. I. 5. v

10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

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 16 528
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76. I. 6. v

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76. I. 9.

10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

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 24 535
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76. I. 10.

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17 536
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76. I. 31. v

10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

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75. 2. 12. v

10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

415 430 469 344 447 455 410 392 387 423 415 396 423 378 382
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76. 2. 9. v

10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

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76. 2. 10. v

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76. 2. 11. v

10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

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76. 2.13. y

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7	330
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9	390
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76. 2.14. y

16	459
17	473
18	440
19	433
20	455
21	424
22	425
23	446
24	472
25	447
26	469
27	439
28	480
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33	410
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36	448
37	408

76. 2.15. y

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11	456
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18	507
19	461
20	514
21	424
22	443
23	528

76. 2.16. y

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16	485
16	466
21	445
23	443
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18	461
16	484
15	499
16	477
14	459
14	456
18	448
14	431
5	422
13	406
11	421
10	411

76. 2.17. y

15	415
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17	466

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76. 2.19. y

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76. 2.20. y

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5	413
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27	437
16	446
39	401
9	332

76. 2.21. y

16	413
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9	428
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14	426
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53	370
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14	405
18	426
16	413
16	410
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13	453
12	446
7	438

76. 2.22. y

5	434
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13	431
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7	397
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7	412
5	422
16	420
7	390

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76. 2. 24. 12 568

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76. 2. 24. 12 568

76. 2. 25. 12 568

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76. 2. 26. 12 568

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76. 2. 27. 12 568

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76. 3. 4. 459 461 459 437 452

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76. 3. 5. 398 403 390 413

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76. 3.21. y
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76. 3.22. y
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76. 3.23. y
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76. 3.25. y
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76. 3.27. y
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76. 3.28. y
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76. 3.29. y
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76. 3.30. y
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76. 3.31. y
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76. 4. 17.
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76. 4. 17.
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