J.A. Steppe, S. H. Oliveau, O.J. Severs; Jet Propulsion Laboratory, California Institute of Technology; Pasadena, California 91109, USA

A description of the DSN VLBI data set. and of last year's analysis can be found in last year's report (see IERS Technical Note 17, pp. R-19 to R-32). Other than including another year's data, the main changes in this year's analysis from last year's are in the use of meteorological data for determining tropospheric parameters and in the weighting of the data to account for the uncertainty in the observable caused by tropospheric effects and source structure. A priori dry zenith tropospheric delays were determined from barometric pressure measurements at the DSN sites, corrected for height differences between the pressure sensor and the antennas. A priori wet zenith tropospheric delays were derived from tables of monthly average wet zenith delays for each station, which are based on historical radiosonde data. The Lanyi function was used for mapping zenith tropospheric delays to observed elevations. The temperature at the top of the boundary layer, a parameter in the Lanyi function, was taken to be the 24--hour average of the surface temperature at the station. Adjustments to the wet troposphere zenith delays were estimated every two to three hours.

The raw observable uncertainties have been modified by adding quadratically four additional uncertainty components. The first component is a source-specific constant determined from source-specific residual scatter. It varies from 0 to 150 ps for delays (0 to 100 fs/s for delay rates), and tends to be associated with sources having known structure. The second and third components -- one for each of the two stations -- are proportional to the a priori wet tropospheric delay (which grows as elevation angle decreases) with a proportionality constant of 0.042 for delays and 7.5*10**-5*sec**-1 for delay rates. The fourth component. is an "additive noise" constant selected to make the Chi Square of the postfit residuals approximately equal to the number of degrees of freedom in the solution. The delay and delay rate additive noise constants were adjusted separately for each CAT M&E observing session. For the TEMPO data, the additive noises were adjusted for each of several blocks of observing sessions. The change in the tropospheric error model compared to last year has dramatically reduced the size of the "additive noise" constants needed for the delay rate data.

During calendar year 1994, the TEMPO project produced earth rotation measurements from 91 dual frequency observing sessions, with a median standard error along the minor axis of the error ellipse of 0.3 milliarcseconds (mas), and along the major axis of 1.4 mas. During 1994 the median turnaround time for TEMPO measurements, from observation to availability of earth orientation parameters, was 48 hours.

in the Tidal ERP table below, the argument conventions are those of Severs et al. (1993). The formal errors range from 11 to 46 microarcseconds but realistic uncertainties are probably about 70 microarcseconds (one standard deviation).

ACKNOWLEDGEMENTS. We would like to thank each and every one of the many people who contributed to the acquisition and analysis of the DSN VLBI data. The work described in this paper was carried out by the Jet Propulsion Laboratory, California Institute of Technology, under contract with the National Aeronautics and Space Administration.

Short_ Period Tidal ERP Variations

Term	Period (hours)	UT1 (microseconds) Cosine	Sine	Polar Motion Amplitude (microarcseconds) prograde	retrograde	Phase (degrees) prograde	retrograde
K2	11.96724	1.6	2.7	46	58	45	2.29
S2	12.00000	0.1	9.3	5	130	53	310
M2	12.42060	-10.8	17.0	[illegible]	248	317	275
N2	12.65835	- 1.0	2.8	16	34	88	221
K1	23.93447	11.8	24.4	176	0	154	*
P1	24.06589	-1.3	- 3.1	91	0	309	*
01	25.81934	-10.6	-13.2	155	0	301	*
Q1	26.86836	3.2	- 2.0	42	0	326	*

Celestial Ephemeris Pole Motion Model (nutations relative to ZMOA-1990-2)

IAU-Index	Period days	Phase	Component	Adjustment mas	Formal Error mas	Generalized Error mas
precession			Longitude	-3.05/yr	0.05/yr	0.07/yr
obliquity rate			Obliquity	-0.26/yr	0.03/yr	0.03/yr
Y-offset			L sin eps	-17.59	0.23	0.36
X-offset			Obliquity	+ 5.61	0.36	0.3"7
1	--6798.38	In	Longitude	- 0.27	0.25	0.41
			Obliquity	- 0.06	0.08	0.08
		Out.	Longitude	+ 0.30	0.16	0.21
			Obliquity	- 0.04	0.15	0.16
2	-3399.19	In	Obliquity	- 0.23	0.04	0.04
		Out	Longitude	- 0.29	0.10	0.11
			Obliquity	+ 0.09	0.08	0.08
10	365.26	In	Longitude	- 0.35	0.06	0.06
			Obliquity	+ 0.06	0.02	0.03
		Out	Longitude	+ 0.33	0.06	0.07
			Obliquity	- 0.01	0.02	0.03
9	182.62	In	Longitude	- 0.07	0.05	0.05
			Obliquity	- 0.02	0.02	0.03
		out	Longitude	+ 0.17	0.06	0.06
			Obliquity	+ 0.03	0.02	0.02
31	13.66	In	Longitude	- 0.24	0.04	0.11
			Obliquity	+ 0.14	0.02	0.04
		Out	Longitude	+ 0.31	0.06	0.10
			Obliquity	+ 0.10	0.02	0.04
	-429.8	In	Longitude	- 0.24	0.06	0.07
			Obliquity	+ 0.03	0.02	0.03
		Out	Longitude	- 0.45	0.06	0.06
			Obliquity	- 0.15	0.03	0.03

~'ethnical description of solution JPL 95 R 01

1 - Techni que : VLBI

2 - Analysis Center: J PL

3 - So ftware used: MODEST

4 - Data span: Ott 78 -- Jan 95

5 - Celestial Reference Frame: RSC(JPL) 95 R 01

a - Nature: extragalacti c

b - Definition of the orientation:
The Right Ascension and Declination of OJ 287 (0851+202) and the Declination of CTD 20 (0234+285) were held fixed at the values specified in RSC(IERS)94 C 01.

6 - Terrestrial Reference Frame: SSC(JPL) 95 R 01

a - Relativity scale: LE (TDT = geocentric with IAT) The relativity model used is essentially equivalent to the "consensus model" described by Eubanks.

b - Velocity of light: 299 792 458 m/s

c - Geogravitational constant: 3.9860 0448 *1O**I4 m**3*s**-2

d - Permanent tidal correction: Yes

e - Definition of the origin, and

f - Definition of the orientation:
Six constraints were applied to the nine coordinates (at epoch 1993.0) of DSS 15, DSS 45, and DSS 65, such that if a seven parameter transformation (3 translations, 3 rotations, 1 scale) between the JPL 1995-1 and ITRF-93 sYstems were estimated by unweighted l east, squares applied to the coordinates of DSS 15, 45, and 65, then the resulting 3 translation and 3 rotation parts of the transformation would be zero while the scale could be nonzero and unknown in advance of computing the catalog. (When expressed as the dot product of a nine dimensional unit vector with the nine station coordinates, each constraint. is assigned an a priori standard deviation of 5 mm; this does not affect the resulting coordinates but does affect the calculated formal errors , giving them a more spherical distribution than would result if either very large or very small a priori standard deviations were used.)

g - Reference epoch: 1993.0

h - Tectonic plate model : ITRF-93 plus adjustments

i - Constraint for time evolution:
Three-dimensional site velocities were estimated for each of the three DSN complexes. All stations in each DSN complex were assumed to have the same site velocity. The velocities were constrained so as to produce no net translation rate and no net rotation rate, for the network composed of the three DSN complexes, relative to the net motion of this network of three sites as expressed in the ITRF-93 velocity field. (When expressed as the dot product of a nine dimensional unit vector with the nine site velocity components, each constraint is assigned an a priori standard deviation of 1.0 mm/yr; this does not affect the resulting velocity components but does affect the calculated formal errors, giving them a more spherical distribution than would result if either very large or very small a priori standard deviations were used.)

7 - Earth Orientation: EOP(JPL) 95 R 01

a - A priori nutation model: ZMOA-1990-2 plus adjustments

b - Short-period tidal variations in x, y, UT1 :
As part of the JPL 1995-1 catalog solution we estimated coefficients of a model of ERP variations at nearly-diurnal and nearly-semidiurnal tidal frequencies. (Nearly-diurnal polar motion variations were constrained to have no retrograde part, thus allowing simultaneous estimation of nutations.) The reported earth rotation parameters have had these tidal frequency variations removed according to the parametric model estimated in the catalog solution. (In other words, these effects have NOT been added back in producing EOP(JPL)95 R 01.)

8 - Estimated Parameters:

a - Celestial Frame: right ascension, declination (all sources, but see 5b)

b - Terrestrial Frame: Xo, Yo, Zo, (by station) $\dot{X}$, $\dot{Y}$, $\dot{Z}$ (by site)

c - Earth Orientation:
UT0-UTC and Variation of Latitude of the baseline vector
precession constant, obliquity rate, celestial pole offsets at J2000
coefficients of 23 nutation terms
coefficients of 40 diurnal and semidiurnal tidal terms in ERP

d - Others:
wet zenith tropospheric delays
station clock offsets, rates, and frequency offsets

SUMMARY, JPL, 95, R, 01

JPL. NASA's Deep Space Network operates radio telescopes in three complexes: in Australia, Spain, and the USA (California). VLBI data collected from these sites by JPL between 1978 and 1995 were analyzed for celestial and terrestrial frames and earth rotation parameters, and reported as JPL 95 R 01. The celestial frame gives coordinates for 287 radio sources and is tied to RSC(IERS)94 C 01 through three coordinates of two sources. The terrestrial frame gives station coordinates and velocities for 10 stations in 3 sites, and is tied to ITRF-93 in both location and velocity using one station in each site. 'l'he analysis gives a time series EOP(JPL)95 R 01 containing the UT0-UTC and Variation of Latitude of a baseline vector at a frequency of two measurements per week. Additional earth rotation information is provided in estimated corrections to precession, obliquity rate, celestial pole offsets at epoch, 23 coefficients of nutation terms, and 40 coefficients of a parametric model for the nearly-diurnal and nearly-semidiurnal tidal frequency variations of UT1 and polar motion.

EOP(JPL 95 R 01

DEEP SPACE NETWORK VLBI EARTH ORIENTATION DATA FROM REFERENCE FRAME JPL 1995-1 IN THE IERS FORMAT

MJD	VAR LAT SECONDS OF ARC		UT0-UTC SECONDS OF TIME			VAR LAT ERROR ARC SEC		UT0 ERR SECONDS OF TIME			RMS DELAY NSEC	CORR VAR LAT -UT0				BSLN	CODE
43809.020	-0.31529	0.	-0.214995	0.	0.	0.00042	0.	0.000115	0	0.	0.31	-0.1811	0.	0.	0.	1443	220
43816.758	-0.28740	0.	-0.239780	0.	0.	0.00061	0.	0.000235	0.	0.	0.31	0.1111	0.	0.	0.	1443	220
43873.422	-0.12147	0.	-0.407740	0.	0.	0.00027	0.	0.000096	0.	0.	0.34	-0.1322	0.	0.	0.	1443	220
44200.813	-0.[illegible]4952	0.	-0.258893	0.	0.	0.00184	0.	0.000495	0.	0	0.57	0.2208	0.	0.	0.	1443	220
44203.301	-0.04463	0.	-0.260402	0.	0.	0.00184	0.	0.000114	0.	0	0.62	-0.8660	0.	0.	0.	1463	220
44227.570	-0.30153	0.	-0.329715	0.	0.	0.00037	0.	0.000132	0.	0.	0.52	0.0405	0.	0.	0.	1443	220
44228.707	-0.01[illegible]6	0.	-0.326759	0.	0.	0.00553	0.	0.000479	0.	0.	0.54	-0.8847	0.	0.	0.	1463	220
44234.801	-0.01007	0.	-0.342752	0.	0.	0.00319	0.	0.000182	0.	0.	0.54	-0.8456	0.	0.	0.	1463	220
44236.652	-0.28436	0.	-0.353250	0.	0.	0.00052	0.	0.000183	0.	0	0.41	-0.0549	0.	0.	0.	1443	220
44250.828	-0.26074	0.	0.612395	0.	0.	0.00047	0.	0.000160	0.	0	0.44	0.1396	0.	0.	0.	1443	220
44263.988	-0.00504	0.	0.581792	0.	0.	0.00441	0.	0.000260	0.	0	0.59	-0.8667	0.	0.	0.	1463	220
44265.613	-0.23438	0.	0.573378	0.	0.	0.00070	0.	0.000230	0.	0	0.39	0.1919	0.	0.	0.	1443	220
44283.211	-0.02642	0.	0.540509	0.	0.	0.00191	0.	0.000117	0.	0.	0.56	-0.8638	0.	0.	0.	1463	220
49729.418	-0.39076	0.	0.[illegible]84042	0.	0.	0.00039	0.	0.000185	0.	0.	0.09	0.0713	0.	0.	0.	1543	120
49732.117	-0.34010	0.	0.[illegible]6[illegible]285	0.	0.	0.00108	0.	0.000049	0.	0.	0.08	-0.9230	0.	0.	0.	1563	120
49739.113	-0.34333	0.	0.[illegible]45989	0.	0.	0.00101	0.	0.000045	0.	0.	0.05	-0.9073	0.	0.	0.	1563	120
49743.387	-0.42387	0.	0.348278	0.	0.	0.00034	0.	0.000146	0.	0.	0.11	0.0995	0.	0.	0.	1543	120
49747.070	-0.34672	0.	0.324364	0.	0.	0.00086	0.	0.000036	0.	0.	0.06	-0.9300	0.	0.	0.	1463	120
49754.051	-0.34898	0.	0.304779	0.	0.	0.00105	0.	0.000050	0.	0.	0.24	-0.8713	0.	0.	0.	1463	120
49757.320	-0.45158	0.	0.311324	0.	0.	0.00033	0.	0.000132	0.	0.	0.08	0.4460	0.	0.	0.	1443	120
49761.008	-0.34292	0.	0.289060	0.	0.	0.00093	0.	0.000041	0.	0.	0.07	-0.8819	0.	0.	0.	1463	120
49764.348	-0.46605	0.	0.293872	0.	0.	0.00025	0.	0.000092	0.	0.	0.03	-0.0840	0.	0.	0.	1443	120
49768.031	-0.33569	0.	0.270195	0.	0.	0.00097	0.	0.000041	0.	0.	0.08	-0.9257	0.	0.	0.	1463	120
49771.340	-0.47916	0.	0.274699	0.	0.	0.00025	0.	0.000093	0.	0.	0.07	-0.1322	0.	0.	0.	1443	120
49773.992	-0.33151	0.	0.255280	0.	0.	0.00137	0.	0.000055	0.	0.	0.09	-0.9569	0.	0.	0.	1463	120
49778.277	-0.49709	0.	0.254[illegible]62	0.	0.	[illegible].0[illegible]036	0.	0.000134	0.	0.	0.11	0.0027	0.	0.	0.	1543	120
49779.102	-0.31666	0.	0.240113	0.	0.	[illegible].0[illegible]138	0.	0.000076	0.	0.	0.15	-0.8194	0.	0.	0.	1563	120
49784.289	-0.51039	0.	0.235844	0.	0.	[illegible].[illegible]037	0.	0.000140	0.	0.	0.13	0.2175	0.	0.	0.	1543	120

RSC(JPL) 95 R 01

DEEP SPACE NETWORK VLBI RADIO SOURCE POSITIONS FROM REFERENCE FRAME JPL 1995-1 IN THE IERS 1993 FORMAT

IAU name	Alt. name	Right ascension hr	mn	sec	Declination dg	mn	arc sec	RA error time sec	Dec error arc sec	Corr. RA-Dec	Mean MJD	First MJD	Last MJD	No. Sns	Delay Obs	Rate Obs
0003-066	0003-066	0	6	13.89288513	- 5	23	35.3345247	0.00005973	0.0002254	-0.2545	48813.7	48196.0	49555.'2	37	80	80
0007+171	GC 0007+17	0	10	33.?9052445	17	24	18.7513855	9.90001254	0.0002271	-0.2430	48947.1	48196.0	4?552.9	16	27	27
0008-264	P 0008-264	0	11	1.24680739	-.25	12	33.3774835	0.00006406	0.0007756	-0.8854	46063.4	44227.0	48196.0	20	42	42
0013-005	P 0013-00	0	16	11.08855594	- 0	15	12.4452347	0.00001336	0.9002527	-0.5205	485?3.5	47381.0	49500.0	24	50	50
0014+813	0014+813	0	17	8.47473779	81	35	8.1361627	0.00009248	0.0001470	0.0392	48507.3	48352.!	48732.0	5	14	14
0016+731	0016+731	0	19	45.78630406	73	27	30.0173073	0.00003915	0.0001196	-0.0335	48745.3	48158.0	49600.0	32	59	69
0019+058	P 0019+058	0	22	32.44121430	5	8	4.2593502	0.00001414	0.0002580	-0.5473	45852.9	45151.0	49662.0	35	75	75
0048-097	P 0048-09	0	50	41.31738470	- 9	29	5.2099525	0.00001143	0.0002354	-0.4177	48882.3	46609.0	49662.0	94	171	171
0104-408	P 0104-408	1	6	45.10805399	-40	34	19.9502108	0.00002978	0.0003384	-9.4578	47663.5	43809.0	49652.0	95	231	232
0106+013	P 0106+01	1	8	38.77110103	1	35	0.3174175	0.00000850	0.0001681	-0.1869	45728.4	43809.0	49562.0	163	353	354
0111+021	P 0111+021	1	13	43.14492791	2	22	17.3169107	0.00002323	0.0003592	-0.8527	47223.8	44227.0	49662.0	34	79	79
0112-017	P 0112-017	1	15	17.09997114	- 1	27	4.5770448	0.00000864	0.0001760	-0.2269	48520.2	47254.0	49662.0	63	130	130
0113-118	P 0113-118	1	16	12.52198022	-11	36	15.4332610	0.00001059	0.0002360	-0.3697	47306.8	43809.0	49500.0	73	123	127
0119+115	P 0119+11	1	21	41.59503860	11	49	50.4133687	0.00000820	0.0001453	-0.0592	48516.0	47254.0	49662.0	49	101	101
0119+041	GC 0119+04	1	21	56.86169490	4	22	24.7346914	0.00000920	0.0001759	-0.2853	48010.4	45476.0	49652.0	38	72	72
0133+476	DA 55	1	36	58.594'76294	47	5:	29.1003395	0.00001433	0.0001277	-0.0401	47104.3	43873.0	49600.0	158	287	290
0146+056	0146+056	1	49	22.37087995	5	55	53.5692492	0.00002114	0.0003230	-0.8405	48132.9	47254.0	49662.0	17	37	37
0149+218	P 0149+21	1	52	18.05302523	22	7	7.7002204	0.00000969	0.0001240	-0.2156	48580.5	47301.0	49600.0	38	75	75
0159+723	0159+723	2	3	33.38489176	72	32	53.6675954	0.00004423	0.0001660	-0.1138	48915.6	48352.0	49430.0	11	32	32
0201+113	P 0201+113	2	3	46.55705961	11	34	45.4097898	0.00000892	0.0001365	-0.3244	48367.2	45432.0	49600.0	42	90	90
0202+149	P 0202+14	2	4	50.41390301	15	14	11.0433353	0.00000825	0.0001062	-0.1713	47631.8	44203.0	49662.0	128	255	256
0202+319	DW 0202+31	2	5	4.92533573	32	12	??.0957256	0.00001233	0.0001312	-0,2920	48696.4	48196.0	49555.0	21	42	42
0212+735	0212+735	2	17	30.81323036	73	49	32.5220151	0.00003598	0.0001218	-0.3196	4773'2.2	45301.0	49739.0	281	588	591
0221+067	GC 0221+06	2	24	28.42818474	5	59	23.3418518	0.00000923	0.0001457	-0.4424	48731.0	47254.0	49652.0	37	81	81
0224+671	DW 0224+67	2	28	50.05140971	67	21	3·0298329	0.00002793	0.0001804	-0.2341	47537.2	44203.0	49600.0	230	378	393
0229+131	P 0229+13	2	31	45.89404573	13	22	54.7163036	0.00000791	0.0001108	-0.2656	48605.3	47254.0	49662.0	55	124	124
0234+285	CTD 20	2	37	52.40566182	28	48	8.9902100	0.00000881	9.0000887	-0.1660	47725.5	44203.0	42743.0	345	857	857
0235+164	GC 0235+16	2	38	38.93010537	16	36	59.2747678	0.00000785	0.0000888	-0.2595	47726.4	44203.0	49743.0	282	563	555
2345-157	P 2345-16	23	48	2.60850833	-16	31	12.0216826	0.00001363	0.0002996	-0.4282	47566.5	43809.0	49652.0	84	165	174
2351+456	2351+456	23	54	21.68024330	45	53	4.2364638	0.00001689	0.0001981	0.2682	48776.0	47941.0	49562.0	18	37	37
2351-154	2351-154	23	54	30.19519947	-15	13	11.2128535	0.00001358	0.0002921	-0.4551	48519.4	47381.0	49444.0	33	60	60
2355-106	P 2355-105	23	58	10.88241228	-10	20	8.6111570	0.00001195	0.0002515	-0.4114	48141.1	46337.0	49562.0	48	105	105

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+FILE/REFERENCE
 DESCRIPTION          SSC(JPL)95 R 01    from Annual Report. to IERS
 OUTPUT               Jet Propulsion Lab, California Institute of Technology
 CONTACT              as@logos.jpl.nasa.gov   (Alan Steppe)
 SOFTWARE             MODEST
 HARDWARE             VAX
 INPUT                Deep Space Network VLBI data
-FILE/REFERENCE
*-------------------------------------------------------------------------------
+SITE/ID
*CODE PT ___DOMES_ T __STATION DESCRIPTION__  APPROX_LON_  APPROX_LAT_. _APP_H_
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 1513  1 40405s014 R DSS13 antenna ref. pt.   243 12 21.6    35 14 51.8   1094.
 1514  1 40405s001 R DSS14 antenna ref. pt.   243 06 40.9    35 25 33.3   1032.
 7231  1 40405s019 R DSS15 antenna ref. pt.   243 06 49.5    35 25 18.9    994.
 1542  1 50103s005 R DSS42 antenna ref. pt.   148 58 48.2   -35 24 08.0    664.
 1543 1  50103s001 R DSS43 antenna ref. pt.   1.48 58 48.2  -35 24 14.3    670.
 1545  1 50103s010 R DSS45 antenna ref. pt.   1-48 58 35.3  -35 2.4 00.2   672.
 1561  1 13407s003 R DSS61 antenna ref. pt.   355 45 08.3    40 25 47.7    796,
 1563  1 13407s001 R DSS63 antenna ref. pt.   355 45 11.9    40 25 56.6    812.
 1565 1  13407S010 R DSS65 antenna ref. pt.   355 44 59.7    40 25 42.1    781.
-SITE/ID
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 1513  1    1 R 81:343:00000 85:273:00000 83:297:68220
 1514  1    1 R 78:300:00000 95:002:00000 88:136:35520
 7231  1    1 R 87:276:00000 95:026:00000 91:316:30840
 1542  1    1 R 83:046:00000 87:293:00000 86:357:52680
 1543  1    1 R 78:300:00000 95:026:00000 87:254:30060
 1545  1    1 R 88:164:00000 94:310:00000 92:083:46560
 1561  1    1 R 82:262:00000 87:214 :00000 86:005:33180
 1563  1    1 R 79:329:00000 95:022:00000 87:265:81480
 1565  1    1 R 88:219:00000 94:248:00000 92:059:80640
-SOLUTION/EPOCHS
A_____________ ______________ __-._---__-.-- -------
+SOLUTION/ESTIMATE
*INDEX TYPE CODE PT SOLN _REF_EPOCH__ UNIT S __ESTIMATED VALUE____ _STD_DEV_
     1. STAX 1512  1    1 93:001:00000 mm   2   -2350443793.7          10.3
     2 STAY 1512  1    1 93:001:00000 nun  2   - 4651980801.8          13.4
     3 STAZ 1512  1    1 93:001:00000 mm   2    366563095').3          12.8
     4 VELX 1512  1    1 93:001:00000 mm/y 2      -20.4                 1.0
     5 VELY 1512  1    1 93:001:00000 nun/y 2       4.3                 1.5
     6 VELZ 1512  1    1 93:001:00000mm/y  2      -3.9                  1.3
     7 STAX 1513  1    1 93:001:00000 mm   2   -235112916'1.3          "7.4
     8 STAY 1513  1    1 93:001:00000 nun  2   - 4655477070.1          10.8
     9 STAZ 1513  1    1 93:001:00000 mm   2    3660956937."1          10.1
    10 VELX 1513  1    1 93:001:00000 nun/y 2     -20.4                 1.0
    11 VELY 1513  1    1 93:001:00000 mm/y 2        4.3                 1.5
    12 VELZ 1513  1    1 93:001:00000 nun/y 2      -3.9                 1.3
    13 STAX 1514  1    1 93:001:00000 mm   2   - 2353621232.4           5.9
    14 STAY 1514  1    1 93:001:00000 mm   2   - 4641341506.6           7.2
    15 STAZ 1514  1    1 93:001 :00000 nun 2    3677052339.2            7.8
    16 VELX 1514  1    1 93:001:00000 nun/y 2     -20.4                 1.0
    17 VELY 151.4 1    1 93:001:00000 mm/y 2        4.3                 1.5
```

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 18 VELZ 1514  1   1 93:001:00000 mm/y 2        -3.9                 1.3
 19 STAX 7231  1   1 93:001:00000 mm   2 -2353538771.6                 4.3
 20 STAY 7231  1   1 93:001:00000 mm   2 -4641649471.8                 5.7
 21 STAZ 7231  1   1 93:001:00000 mm   2  3676670012.1                 6.0
 22 VELX 7231  1   1 93:001:00000 mm/y 2       -20.4                  1.0
 23 VELY 7231  1   1 93:001:00000 mm/y 2         4.3                  1.5
 24 VELZ 7231  1   1 93:001:00000 mm/y 2        -3.9                  1.3
 25 STAX 1542  1   1 93:001:00000 mm   2 -4460981003.7                17.5
 26 STAY 1542  1   1 93:001:00000 mm   2  2682413518.0                12.4
 27 STAZ 1542  1   1 93:001:00000 mm   2 -3674582062.9                14.3
 28 VELX 1542  1   1 93:001:00000 mm/y 2       -34.7                  2.3
 29 VELY 1542  1   1 93:001:00000 mm/y 2        -1.1                  1.0
 30 VELZ 1542  1   1 93:001:00000 mm/y 2        41.1                  1.6
 31 STAX 1543  1   1 93:001:00000 mm   2 -4460894573.2                11.6
 32 STAY 1543  1   1 93:001:00000 mm   2  2682361546.4                 7.4
 33 STAZ 1543  1   1 93:001:00000 mm   2 -3674748571.6                 8.4
 34 VELX 1543  1   1 93:001:00000 mm/y 2       -34.7                  2.3
 35 VELY 1543  1   1 93:001:00000 mm/y 2        -1.1                  1.0
 36 VELZ 1543  1   1 93:001:00000 mm/y 2        41.1                  1.6
 37 STAX 1545  1   1 93:001:00000 mm   2 -4460935238.0                 9.5
 38 STAY 1545  1   1 93:001:00000 mm   2  2682765702.7                 5.2
 39 STAZ 1545  1   1 93:001:00000 mm   2 -3674381393.2                 6.2
 40 VELX 1545  1   1 93:001:00000 mm/y 2       -34.7                  2.3
 41 VELY 1545  1   1 93:001:00000 mm/y 2        -1.1                  1.0
 42 VELZ 1545  1   1 93:001:00000 mm/y 2        41.1                  1.6
 43 STAX 1561  1   1 93:001:00000 mm   2  4849245186.5                13.4
 44 STAY 1561  1   1 93:001:00000 mm   2  -360278171.6                 9.4
 45 STAZ 1561  1   1 93:001:00000 mm   2  4114884432.8                14.6
 46 VELX 1561  1   1 93:001:00000 mm/y 2       -13.5                  1.8
 47 VELY 1561  1   1 93:001:00000 mm/y 2        23.4                  1.5
 48 VELZ 1561  1   1 93:001:00000 mm/y 2        19.4                  2.2
 49 STAX 1563  1   1 93:001:00000 mm   2  4849092622.6                 8.0
 50 STAY 1563  1   1 93:001:00000 mm   2  -360180574.9                 7.9
 51 STAZ 1563  1   1 93:001:00000 mm   2  4115109100.3                10.9
 52 VELX 1563  1   1 93:001:00000 mm/y 2       -13.5                  1.8
 53 VELY 1563  1   1 93:001:00000 mm/y 2        23.4                  1.5
 54 VELZ 1563  1   1 93:001:00000 mm/y 2        19.4                  2.2
 55 STAX 1565  1   1 93:001:00000 mm   2  4849336706.0                 6.7
 56 STAY 1565  1   1 93:001:00000 mm   2  -360488865.1                 6.8
 57 STAZ 1565  1   1 93:001:00000 mm   2  4114748762.5                 9.6
 58 VELX 1565  1   1 93:001:00000 mm/y 2       -13.5                  1.8
 59 VELY 1565  1   1 93:001:00000 mm/y 2        23.4                  1.5
 60 VELZ 1565  1   1 93:001:00000 mm/y 2        19.4                  2.2
-SOLUTION/ESTIMATE
*-------------------------------
+SOLUTION/MATRIX_ESTIMATE L COVA
*PARA1 PARA2     PARA2+0              PARA2+1              PARA2+2
     1     1  .10623704515848E+03
     2     1 -.12396869586336E+02  .17[illegible]5583975[illegible]6[illegible]E+03

    60    58  .28196767412086E+01  .16930796452903E+01  48526598910152E+01
-SOLUTION/MATRIX_ESTIMATE L COVA
*-
%ENDSNX
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