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CONSTANTIN DRÂMBĂ
(1907 – 1977)

Professor Constantin Drâmbă, member of the Romanian Academy, honorary President of the *Romanian National Committee on Astronomy* and of the Editorial Board of the *Romanian Astronomical Journal*, passed-away on 10 February 1997, following a long and painful illness.

Constantin Drâmbă was born on 19 July, 1907, in Borşani – Bacău.

He attended primary school in his native village and secondary school at "Vasile Alecsandri" high-school in Galaţi, with brilliant results.

He did his university studies at the Bucharest University, Faculty of Sciences, Department of Mathematics, between 1926 – 1929, where he had professors such as Gheorghe Ţiţeica, David Emanuel, Traian Lalescu, Nicolae Coculescu and other famous mathematicians.

Feeling an interest in astronomy studies, Constantin Drâmbă was appointed, even beginning with the years of college, namely starting from 1 March, 1928, an *observer* at the Astronomical Observatory in Bucharest, led by professor Nicolae Coculescu.

In the years 1934 – 1936, Constantin Drâmbă passed a stage at the *Paris Observatory*, headed by Ernest Esclangon, a professor of astronomy at Sorbonne and a member of the Academy of Sciences in Paris.

In parallel, under the guidance of his professor of celestial mechanics, Jean Chazy, he carried out researches on the difficult problem of the collisions between the celestial bodies, the results being finalized in his doctoral thesis – *"Sur les singularités réelles et imaginaires dans le problème des trois corps"*, defended successfully at Sorbonne, on 5 March, 1940.

Titular astronomer, after, at *Bucharest Astronomical Observatory*, Constantin Drâmbă was to bring a remarkable contribution to the development of that observatory, both at the scientific level and at the organizational one (as a director in the years 1963 – 1977).

Concomitantly, as a professor of mathematics, celestial mechanics and astronomy, he carried out a vast and prodigious didactic activity at the *Bucharest University*, as well as at the *Polytechnical Institute* and at the *Institute of Oil, Gas and Geology*.

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The major scientific contributions of Professor Constantin Drâmbă in the fields of mathematics, astronomy and geodesy are well known. They have been generously expressed by him both at home and abroad, on the occasions of the visits paid to academic and university centers in Romania, as well as to astronomical observatories in Brussels, Belgrade, Cagliari, Moscow, Pulkovo – St. Petersburg and others.

It is worth mentioning that some of the results published by Constantin Drâmbă continued to raise a great echo along time after their publication, such is the cause of the discovery of the *fundamental equation (with partial derivatives of the first order) of the inverse problem of dynamics* (in the case of a rotating frame), an equation that bears his name, besides that of the V. Szebehely (e.g. Astron. Nachr. **314** (1993), 2, and **317** (1996), 3).

In acknowledgement of his remarkable scientific merits to the development of astronomy, Professor Constantin Drâmbă was named a member of the *International Astronomical Union (IAU)* in 1958, and participated in the IAU General Assemblies in Moscow (1958), Prague (1967), Brighton (1970), as well as in other IAU scientific meetings.

In 1963 Professor Constantin Drâmbă was chosen as corresponding member of the Romanian Academy and in 1990 as full member.

Professor Constantin Drâmbă's great professional prestige was doubled by important personal qualities, such as communicativeness, friendliness and altruism, which won him the esteem and appreciation of all his collaborators and students from many generations, to whose training and education he thoroughly contributed. All these will keep alive in their memories the face and kindness of Professor CONSTANTIN DRÂMBĂ.

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NEW CLASSES OF ANALYTIC STELLAR MODELS

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Abstract A method for constructing new classes of analytic stellar models is given, supposing that the product between the local values of gravitational acceleration and density is a known function of radius. As applications, three classes of models are considered.

Key words: astrophysics – stars – analytic models.

1. INTRODUCTION

The importance of the analytic models in the study of stellar structure and of stellar evolution is well known. In a recent paper we proposed a new class of analytic stellar models, supposing that between the local gravitational acceleration $g(r)$ and the local density $\rho(r)$ the following relation is valid (Ureche, 1994)

$$g(r)\,\rho(r) = constant. \tag{1}$$

Now, we shall generalize those results by generalizing the relation (1). So, we shall suppose that the product between $g(r)$ and $\rho(r)$ is generally a function of r. In this manner all models of stellar interior can be, in principle, generated. For a concrete problem of stellar structure, we can choose from this large variety of models a more restricted class, using a given physical constraint.

2. EQUILIBRIUM EQUATIONS AND THEIR FORMAL SOLUTIONS

We shall consider a star without rotation, without magnetic field, and in the absence of tidal effects. In this case the star will possess spherical symmetry. The equations of mass and hydrostatic equilibrium will be respectively (Chandrasekhar, 1939; Cox and Giuli, 1968; Kippenhahn and Weigert, 1991)

$$\frac{dM(r)}{dr} = 4\pi r^2 \rho(r), \quad M(0) = 0, \tag{2}$$

$$\frac{dP(r)}{dr} = -G\frac{M(r)}{r^2}\rho(r), \quad P(0) = P_c, \tag{3}$$

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where the corresponding central boundary conditions were specified (the notations being usual).

From the theory of stellar structure we know that the local gravitational acceleration

$$g(r) = G\frac{M(r)}{r^2}, \quad g(0) = 0 \tag{4}$$

is an increasing function of r while the density $\rho(r)$ is a decreasing function of r $(\rho(R) = 0)$. Then the product

$$g(r)\rho(r) = \Im(r) \tag{5}$$

will be a function which is positively defined.

The equations (2) – (5) can be put in the nondimensional form through the transformations

$$r = R\eta, \quad \rho = \rho_0\psi, \quad P = P_c p, \quad M(r) = M_0 m(\eta), \tag{6}$$

where R and P_c are the radius of the star and the central pressure, while ρ_0 and M_0 are the two scale factors, respectively for the density $\rho(r)$ and the mass $M(r)$. The scale factors ρ_0 and M_0 will be defined through the equations

$$\rho_0^2 = \frac{P_c}{4\pi G R^2}, \quad M_0 = 4\pi R^3 \rho_0 . \tag{7}$$

Observing that the product $(R / P_c)\,\Im(r)$ is a dimensionless quantity, we can introduce a positively defined function $f(\eta)$ through the equation

$$\frac{R}{P_c}\Im(r\eta) = a\, f(\eta) \tag{8}$$

where the dimensionless constant a is positive.

Using the equations (2) – (8) we obtain

$$\frac{dm(\eta)}{d\eta} = \eta^2\psi(\eta), \qquad m(0) = 0 \tag{9}$$

$$\frac{dp(\eta)}{d\eta} = -\frac{m(\eta)}{\eta^2}\psi(\eta), \qquad p(0) = 1 \tag{10}$$

$$\frac{m(\eta)}{\eta^2}\psi(\eta) = af(\eta), \quad \eta \in [0, 1] . \tag{11}$$

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These are the non-dimensional equations of the mechanical equilibrium. Introducing (11) in (10) and integrating we obtain the distribution of the dimensionless pressure inside the star

$$p(\eta) = 1 - a \int_0^{\eta} f(\eta')\, d\eta'^3. \tag{12}$$

The parameter a will be determined from the condition $p(1) = 0$ (the pressure is vanishing at the star surface) that is

$$1 - a \int_0^1 f(\eta)\, d\eta = 0. \tag{13}$$

In order to obtain the distribution of the dimensionless mass, the function $\psi(\eta)$ will be eliminated between the equations (9) and (11). The following differential equation results

$$m(\eta)\, dm(\eta) = a\eta^4 f(\eta)\, d\eta, \quad m(0) = 0. \tag{14}$$

After integration we obtain

$$m^2(\eta) = 2a \int_0^{\eta} \eta'^4 f(\eta')\, d\eta'. \tag{15}$$

For a given function $f(\eta)$ from (15) we can compute the dimensionless mass $m(\eta)$.

The distribution of dimensionless density $\psi(\eta)$ can be obtained from (9) or (11), so

$$\psi(\eta) = \frac{1}{\eta^2} \frac{dm(\eta)}{d\eta} = \frac{a\eta^2 f(\eta)}{m(\eta)}. \tag{16}$$

The equations (12), (13), (15) and (16) give the formal solution of the problem for every considered function $f(\eta)$. With the transformations (6) we can obtain the dimensional structure of the star, which will depend on two parameters: radius R and central pressure P_c.

3. APPLICATIONS

1°. *The models with* $f(\eta) = 1$

In this case, from (12) – (16)

$$p(\eta) = 1 - a\eta, \quad a = 1, \tag{17}$$

$$m(\eta) = \sqrt{\frac{2}{5}}\, \eta^{\frac{5}{2}}, \quad \psi(\eta) = \frac{\sqrt{5}}{\sqrt{2\eta}}. \tag{18}$$

and we recover the quasi-homogeneous model (Ureche, 1994).

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2°. The models with $f(\eta) = \eta$

From (12) – (16) we obtain

$$p(\eta) = 1 - a\,\frac{\eta^2}{2}, \quad a = 2 \tag{19}$$

$$m(\eta) = \sqrt{\frac{2}{3}}\eta^3, \ \psi(\eta) = \sqrt{6} = constant, \tag{20}$$

that is the homogeneous model.

3°. *The models with* $f(\eta) = \eta(1 - \eta)$

The dimensionless pressure, mass and density

$$p(\eta) = 1 - \frac{a}{2}\eta^2 + \frac{a}{3}\eta^3, \quad a = 6 \tag{21}$$

$$m(\eta) = \sqrt{\frac{2}{7}}\eta^3\sqrt{7-6\eta}, \quad \psi(\eta) = 3\sqrt{14}\,\frac{1-\eta}{\sqrt{7-6\eta}}. \tag{22}$$

The physical properties of these models can be analyzed as in the previous paper (Ureche, 1994).

The dimensional distributions of the density, pressure and mass are

$$\rho(r) = 3\sqrt{\frac{7}{2}}\sqrt{\frac{P_c}{\pi G R^3}}\,\frac{R-r}{\sqrt{7R-6r}} \tag{23}$$

$$P(r) = P_c\left(2\frac{r}{R}+1\right)\left(1-\frac{r}{R}\right)^2 \tag{24}$$

$$M(r) = 2\sqrt{\frac{2\pi P_c}{7GR^2}}\,r^3\sqrt{7-6\frac{r}{R}}. \tag{25}$$

The relation between the central density and the central pressure is

$$\rho_c = 3\sqrt{2}\sqrt{\frac{P_c}{4\pi G R^2}}. \tag{26}$$

The total mass of the configuration is

$$M = \frac{4\pi}{3}\,\frac{1}{\sqrt{7}}\,\rho_c R^3, \tag{27}$$

while the degree of the concentration of the matter towards the centre is

$$\frac{\rho_c}{\rho} = \sqrt{7}. \tag{28}$$

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Taking into account the equation (26), the distribution of the density can be written

$$\rho(r)=\sqrt{7}\rho_c\frac{1-\frac{r}{R}}{\sqrt{7-6\frac{r}{R}}}, \tag{29}$$

The functions $P(r)$ and $\rho(r)$ are decreasing for $\eta \in [0, 1]$.

The relation between ρ_c and ρ_0 is

$$\rho_c = 3\sqrt{2}\,\rho_0 . \tag{30}$$

From (25) for $r = R$ we obtain

$$P_c=\frac{7}{8\pi}\frac{GM^2}{R^4} . \tag{31}$$

If we consider that the configuration consists from an ideal gas, from the gas law

$$P=\frac{k}{\mu m_u}\rho T \tag{32}$$

it results

$$T(r)=\frac{\mu m_u}{k}\frac{1}{\sqrt{7}}\frac{P_c}{\rho_C}\left(2\frac{r}{R}+1\right)\left(1-\frac{r}{R}\right)\sqrt{7-6\frac{r}{R}} . \tag{33}$$

The temperature reaches a maximum value for

$$\frac{r}{R}=\frac{37-\sqrt{889}}{60}\cong 0{,}12 , \tag{34}$$

then becomes a decreasing function for $r/R \to 1$ $(T(R) = 0)$.

In the centre $T(0) = T_c > 0$. So, the considered model can be useful for

$$\frac{r}{R}\in\left[\frac{37-\sqrt{889}}{60},1\right], \tag{35}$$

and the core of the configuration

$$\frac{r}{R}\in\left[0,\frac{37-\sqrt{889}}{60}\right] \tag{36}$$

can be considered isothermal (with $T = T_{max}$).

Applying Chandrasekhar's conditions of stability

$$\frac{1}{2}G\left(\frac{4\pi}{3}\right)^{\frac{1}{3}}\bar{\rho}^{\frac{4}{3}}M^{\frac{2}{3}}\le P_c\le\frac{1}{2}G\left(\frac{4\pi}{3}\right)^{\frac{1}{3}}\rho_c^{\frac{4}{3}}M^{\frac{2}{3}} \tag{37}$$

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we observe that the inequality from the left hand is equivalent with

$$P_c \geq \frac{3}{8\pi} \frac{GM^2}{R^4} \tag{38}$$

and is fulfilled taking into account (31). The inequality from the right hand is also fulfilled, taking into account (27). This means that the analysed model is gravitationally stable.

In comparison with the models $1^\circ\,(f(\eta)=1)$, the models $3^\circ\,(f(\eta)=\eta(1-\eta))$ have the following advantages:

– The central density ρ_c is finite.

– The density is vanishing for $r \to R$.

– The radius of the isothermal core fitted with (33) is smaller.

The relation (28) shows that the concentration of the matter towards the centre is small. It seems necessary to take the superior powers of η and $1-\eta$ in $f(\eta)$ in order to increase the ratio (28).

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VARIATION OF THE TOTAL SOLAR IRRADIANCE IN THE MINIMUM PHASE OF THE SOLAR ACTIVITY

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Abstract. The authors set out to study the link between total solar irradiance (TSI), registering performed on ERB/NIMBUS 7 and some solar activity indices, during the minimum phase of the solar cycle (SC) 22 (1985 – 1987). The solar activity indices used are: the daily sunspot number (R), the radio flux on 10.7 cm (F), the coronal index in green line (I_c), the daily scaled flare number (SFN) and the daily flare total area index ($I_f A$). The results obtained prove the existence of a real correlation between the total solar irradiance variation and the solar activity phenomena of the active regions (sunspots, flares, radio emissions). It is also concluded that such a study is necessary to perform for a whole eleven-years solar cycle.

Key words: total solar irradiance; solar activity phenomena; eleven-years solar cycle.

1. INTRODUCTION

The Sun influences the terrestrial environment in two complementary ways: on the one hand it brings an energy supply in the form of an electromagnetic and corpuscular radiation and on the other hand it works indirectly on a part of the cosmic radiation received on Earth, acting as a screen. The magnetic fields and the solar plasma clouds stretching close to our planet can filter a part of this radiation, thus modifying what is received by Earth. The electromagnetic and solar corpuscular emissions differ regarding their total energies, penetration power, fluctuation degree and intensity distribution on Earth. Each of the latter ones produces characteristic effects, generally different in the atmosphere and terrestrial magnetic field.

The temperature of the terrestrial surface and atmosphere is maintained almost entirely by the solar electromagnetic radiation, mainly by that in the infrared and visible region.

At the level of the exterior limit of the terrestrial atmosphere the total radiation amount falling on Earth is of 1360 $Jm^{-2}s^{-1}$ (Total Solar Irradiance = TSI). This amount varies by less than 1% during the maximum of the solar activity

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cycle, although in certain regions of the spectrum, such as in the X and UV regions, the intensity may vary by several times.

Unlike the maximum periods, during the solar activity minimum, a state close to the "calm Sun conditions" settles in the solar atmosphere. Because some activity is always going on, these calm ideal conditions are never perfectly accomplished. However, at the minimum phase of each solar cycle some parts of the solar atmosphere nevertheless approximate the "calm conditions" rather well.

In a previous paper (Mariş and Dinulescu, 1994) we set out to analyse the link between TSI and some solar activity indices in the maximum periods for the solar cycles (SCs) 21 (1979-1980) and 22 (1989-1990). Now we are to do the same analysis for the minimum phase period of the SC 22 (1985 – 1987), and to make a comparison with the results obtained in the previous study on the maximum periods of the SC 21 and 22 (Mariş, Dinulescu, 1994).

2. DATA AND PROCESSING METHOD

From the observations made throughout several minimum periods of the 11 years solar cycles variations were emphasized in most of the solar activity indices. For this reason the authors plan to study here the relationship between TSI (registerings made on ERB/NIMBUS 7) and the most significant solar activity indices, in the minimum phase period for the solar cycle 22 (1985 – 1987), and to make a comparison with the results obtained in a previous study on the maximum periods of the solar cycles 21 and 22 (Mariş and Dinulescu, 1994).

From among the solar activity indices we choose the following as significant for the present study:

R – the daily relative sunspot number, the Wolf number (Sunspot Bulletin, SIDC – Brussels), calculated according to the formula:

$$R = k(10g + f), \tag{1}$$

where g is the number of sunspot groups, f is the total number of spots in groups and k is a standardization factor that depends on the observer and the instrument.

F – the radio flux on 10.7 cm (2800 **Mhz***),* daily values expressed in units of $10^{-22}\,\mathrm{Wm^{-2}Hz^{-1}}$ (Solar Geophysical Data, NGDC – Boulder, Colorado). The radio flux density on 10.7 cm includes the emission integrated from all sources existing on the solar disk at a given moment, such as active regions, large-scale magnetic structures localized in the low corona and overheated regions emitting in the radio field. This index is well correlated with R ; this points to the connection with the active regions, but also with indices characterizing the solar emission in the lines

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of Ca-K, MgII, EUV, X rays, thus indicating the connection with the large-scale phenomena in the low corona.

*I_c – **the coronal index in the green line, 530.3 nm*** (Tatranska Lomnica Observatory). It is well known that the intensity of this line depends on the solar activity level. The coronal index I_c used in this study stands for the energy emitted by the entire solar corona in green line and is expressed in Wsr^{-1}. The coronal index is deduced from the daily intensities measured around the solar disk.

*SFN – **the daily scaled flare number*** defined as (Pap and Vrsnak, 1989):

$$SFN = \sum k_i N_i \tag{2}$$

where k_i is a scalar coefficient with values ranging between 0.5 and 50, according to the importance class of the flares, namely subflares, flares of importance: 1, 2, 3 and, 4. This classification is made in keeping with an international standard in agreement with the brightness area in the solar chromosphere observed in the line Hα (656.3 nm); N_i is the daily number of the flares of importance i.

*I_fA – **the daily index of the total flare area***, defined as:

$$I_fA = \sum A_i , \tag{3}$$

where $\sum A_i$ is the sum of the flare areas during one day, expressed in millionths of disk.

The processing method is that of the correlation coefficient:

$$r(x,y) = \frac{\sum (x_i - \bar{x})(y_i - \bar{y})}{\sqrt{\sum (x_i - \bar{x})^2 (y_i - \bar{y})^2}} \tag{4}$$

where x_i and y_i are the daily values of the correlated indices, and $\bar{x}$ and $\bar{y}$ are the mean values of the indices over the analysed interval .

In this analysis we have used different time scales, because the magnetic mechanism governing the solar activity itself manifests differently on certain time intervals. Thus, the magnetic mechanisms of the surface photospheric activity, which contribute to the TSI variations, can be separated into:

– short-duration mechanisms (the time scale is of at the most one solar rotation), which characterize the existence of the active regions, anticorrelated with TSI;

– average-duration mechanisms (the time scale is of the order of one year), which determine weak variations in the solar luminosity and irradiance, correlated with the large-scale magnetic field;

– long-duration mechanisms (solar cycle) correlated with the mean magnetic flux, which throughout a solar cycle affects TSI (Foukal, 1992).

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The correlation between TSI and the solar activity indices defined above is analysed during the following sequences:

a) the minimum period of solar activity: 1985 – 1987, representing the end of the SC 21 and the beginning of the SC 22;

b) the annual periods: 1985, 1986, 1987;

c) the Carrington rotations (CR): from the CR 1758 to the CR 1796;

d) the "deep" of irradiance (D '86): 3 September 1985 – 31 December 1986, which coincides with the minimum phase of solar cycle 22.

The analysis is made on the basis of the mentioned above indices, the index series being organized for the proposed intervals of study, namely on the *a, b, c* and *d* types.

3. RESULTS AND DISCUSSIONS

The correlation coefficients between TSI and the solar activity indices used for this analysis are presented in Table 1.

Table 1

The Correlation Coefficients between Total Solar Irradiance and the Solar Activity Indices during the Minimum Phase

Interval	*R*	*F*	I_c	I_fA	*SFN*
'85 – '87	+0.091	+0.224	+0.435	–0.086	–0.022
1985	–0.233	–0.228	+0.285	–0.320	–0.252
1986	–0.199	–0.199	–0.189	+0.335	–0.177
1987	+0.202	+0.384	+0.684	+0.042	+0.077
D '86	–0.350	–0.228	+0.435	–0.281	–0.244

Over the entire period analysed (1985-1987) one remarks the absence of any linear correlation between TSI and *R*, I_fA and *SFN*, namely the indices evaluating the small scale magnetic activity of the active regions. On the contrary, between TSI and *F* or I_c there is a positive correlation proving the contribution of the emissions of the large-scale magnetic structures in the corona to the TSI variation. For the end of the SC 21 (1985) and the minimum phase of the SC 22 (1986) the linear correlation between TSI and the indices considered does not indicate a significant dependence. Nevertheless, a rather slight anticorrelation (–0.2) between TSI and the *R, F, SFN* indices is evident. The correlation between TSI and I_c on the one hand, and, TSI and I_fA on the other, has a contradictory behaviour, hard to explain in the light of the present theories. Thus, when the TSI – I_c correlation is

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positive, there is an anticorrelation between TSI and I_fA (1985). For the anti-correlation TSI – I_c there is a positive correlation between TSI and I_fA (1986).

For the I_fA index we mention that the daily values of 1986 (the minimum of the solar cycle 22) are zero in over 50% of cases, which implies also the absence of a flare activity at the chromospherical level; thus, the total luminosity of the photosphere approximated through TSI remains unaffected.

Unlike the maximum solar periods, where a large number of well-defined "deeps" is registered, in the analysed minimum only one significant "deep", 3 September 1985 – 31 December 1986, could be selected. The TSI registered a pronounced decrease over several days, followed up by a slow reversion to the previous values; this demonstrates once more the complexity of high energy phenomena at the scale of the entire solar atmosphere which by determining each other bring about unforseen consequences in the TSI variation. On the "deeps" analysed in the maximum phases, the absolute values of the correlation coefficients were without exception higher than those of the "deep" analysed in the minimum (Mariş, Dinulescu, 1994).

The "deep" emphasizes a more pronounced anticorrelation between TSI and R than in the annual intervals or throughout the entire interval considered, the same tendency being maintained also for the flare activity evaluated through I_fA and *SFN*. While between TSI and F there is a rather anticorrelation (–0.228), between TSI and I_c there is a slightly positive correlation (+0.435); this fact demonstrates, on the one hand, an antiphase variation between the TSI and the UV radiation (well approximated by the F index) from the low corona, and, on the other hand, an almost linear dependence between TSI and the green emission of the upper corona (estimated by the I_c index).

Given the intrinsic relationship between the solar differential rotation and the generation of the toroidal magnetic fields which determine the small–scale magnetic activity in the solar atmosphere (the activity regions), we have presented in detail the analysis of the linear correlation on the Carrington solar rotations. Table 2 presents the values of the correlation coefficients considered for 39 CR in the minimum period (January 24, 1985 – December 23, 1987).

Out of the total 39 solar rotations analysed, in 61% of the cases the correlation index oscillates (pendulates) between positive and negative values indicating the correlation or anticorrelation, respectively, between TSI and various manifestations of the solar activity in the photosphere, chromosphere and corona. In 13% of the rotations the correlation coefficient between TSI and the indices considered remains negative, which means that there is a variation of the analysed phenomena in the antiphase. The correlation coefficients have a strange behaviour

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Table 2

The Correlation Coefficients between Total Solar Irradiance and Solar Activity Indices on Carrington Rotation Period, during the Minimum Phase

Rotation	*R*	*F*	I_c	I_fA	*SFN*
1758	+0.131	+0.075	+0.174	–0.260	–0.195
1759	+0.396	+0.308	+0.129	+0.332	+0.360
1760	–0.006	–0.053	+0.076	+0.059	+0.140
1761	–0.536	–0.710	+0.212	–0.612	–0.553
1762	–0.037	–0.177	+0.416	–0.233	–0.341
1763	–0.402	–0.330	–0.215	–0.305	–0.272
1764	–0.371	–0.394	+0. 490	–0.318	–0.103
1765	+0.117	+0.454	+0.501	+0.149	+0.271
1766	–0.470	+0.379	+0.640	–0.385	–0.424
1767	–0.877	–0.847	–0.496	–0.824	–0.858
1768	+0.184	+0.302	+0.141	+0.239	+0.329
1769	+0.228	+0.529	+0.649	+0.233	+0.283
1770	–0.076	+0.245	+0.733	–0.034	+0.030
1771	–0.438	–0.447	–0.189	–0.562	–0.503
1772	+0.073	+0.002	+0.242	–0.267	–0.261
1773	+0.294	+0.450	+0.645	+0.196	+0.228
1774	–0.750	–0.841	+0.023	+0.108	+0.096
1775	+0.791	+0.704	+0.739	+0.480	+0.521
1776	+0.011	+0.328	+0.705	+0.142	+0.126
1777	+0.429	+0.712	+0.618	+0.017	+0.008
1778	–0.226	–0.204	+0.097	–0.199	–0.141
1779	+0.203	+0.243	–0.224	–0.021	–0.006
1780	+0.187	+0.072	–0.037	+0.095	+0.131
1781	–0.129	–0.353	+0.144	–0.331	–0.192
1782	+0.281	+0.658	+0.835	+0.383	+0.448
1783	+0.036	+0.445	+0.809	+0.090	+0.147
1784	+0.196	+0.504	+0.441	+0.323	+0.411
1785	+0.324	+0.272	+0.234	–0.098	–0.098
1786	–0.241	+0.010	+0.283	–0.068	+0.028
1787	–0.567	–0.336	+0.335	–0.227	–0.255
1788	+0.017	+0.425	+0.586	+0.074	+0.014
1789	–0.807	–0.751	+0.609	–0.597	–0.551
1790	+0.028	–0.015	+0.109	–0.192	–0.149
1791	+0.607	+0.609	+0.770	–0.128	–0.022
1792	–0.525	–0.703	–0.261	+0.348	+0.154
1793	–0.531	–0.510	+0.058	–0.256	–0.234
1794	–0.399	–0.475	+0.025	–0.385	–0.319
1795	–0.263	–0.409	+0.250	–0.160	–0.371
1796	–0.139	+0.074	–0.420	–0.104	–0.006

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in 26% of the rotations studied, when they remain positive for all the analysed phenomena. The positive correlation is explained by the absence of spots groups in the photosphere ($R = 0$) in the longer periods specific to the solar activity minimum, which also determines the quasi-total absence of the flare phenomena from the chromosphere ($I_fA = 0$, $SFN = 0$).

In contrast to this situation, in the maximum period of the SC 22 (15 November 1988 – 19 December 1990), throughout 28 solar rotations there was none in which the correlation coefficients between TSI and the solar indices considered should be all positive (Mariş, Dinulescu, 1995), this being the consequence of the continuous presence of the spots groups in the photosphere, specific to the maximum period of the solar cycle.

4. CONCLUDING REMARK

The physical interpretation of the measurements made with high precision equipment on TSI essentially requires a mathematical modelling that should take into consideration the set of non-stationary phenomena emphasized in the solar atmosphere (sunspots, flares, flaring events, etc.). Consequently, studies on cyclic periods of 11 years are necessary to follow the solar activity parameters correlated with measurements of precision radiometers for a wide range of very small TSI variations. Likewise, the presence of a distinct 11 years modulation of TSI suggests that long-term variations can be important for the long-term forecasts of the Earth climate.

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COLLISION AND INFINITY MANIFOLDS FOR THE SCHWARZSCHILD PROBLEM

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Abstract: The Schwarzschild problem (i.e. the two-body problem associated to a potential of the form $A/r + B/r^3$, where r = distance between particles, and A, B = real constants) is qualitatively tackled. The equations of motion are written in Hamiltonian formalism, and the first integrals of energy and angular momentum are pointed out. Using McGehee's transformations, the motion equations are regularized, and the collision singularity is replaced by the collision manifold. The flow on this manifold is described. Analogously, one introduces the infinity manifold (corresponding to $r \to \infty$), and one characterizes the respective flow.

Key words: celestial mechanics – Schwarzschild problem – McGehee transformations.

1. INTRODUCTION

Schwarzschild (1916) gave the solution of Einstein's field equations in the relativistic central force problem. As it is well-known, the respective metric leads to a Binet-type equation which describes the motion as governed by a force originating in a potential of the form $A/r + B/r^3$, where the constants A and B have well established expressions. We shall use the name of *Schwarzschild problem* for the two-body problem associated to such a potential in which A and B may take any real value.

We know that the Schwarzschild problem is an integrable problem; its solution can be expressed in terms of elliptic functions (see e.g. Brumberg 1972; Chandrasekhar 1983; Damour and Schaefer 1986). However, the closed form of the solution does not reveal the geometric properties of the motion. That is why we start here a systematic qualitative study of the problem (see also Saari 1974; Belenkii 1981; Szebehely and Bond 1983; Cid et al. 1983).

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In this first paper we use the Hamiltonian formalism to write the equations of motion, then we emphasize the first integrals of angular momentum and energy. We next resort to McGehee's transformations of the second kind to regularize the motion equations. Under these transformations the (collision) singularity is blown up and replaced by a manifold past on the phase space. The flow on this manifold (which has no real significance, but allows the understanding of the behaviour of near-collisional orbits) is then described. The collision manifold is homeomorphic to a 2D torus (imbedded in the 4D full phase space) on which the flow is foliated by heteroclinic orbits joining the lower circle and the upper circle, that are formed only by degenerate equilibria.

To tackle symmetrically another limit situation, the so-called infinity manifold (for $r \to \infty$) is also pointed out via another set of McGehee-type transformations of the second kind. This manifold proves to be a 2D torus (imbedded in the 4D full phase space), too, on which the flow is similar to that corresponding to the collision manifold: heteroclinic orbits joining the upper and the lower circles (both consisting of degenerate fixed points).

Of course, this is only a first step. Other significant results were already obtained by us within the framework of this problem (the global flow for the zero energy case, the analysis of the equilibria outside the collision and infinity manifolds), but they will appear elsewhere. Here we restrict ourselves to the description of the flow on the two limit manifolds: that of collision and that of infinity.

2. EQUATIONS OF MOTION AND FIRST INTEGRALS

In Hamiltonian formalism, the equations of motion which characterize the Schwarzschild problem read

$$\begin{aligned} \dot{\mathbf{q}} &= \partial H(\mathbf{q},\mathbf{p}) / \partial \mathbf{p}, \\ \dot{\mathbf{p}} &= -\partial H(\mathbf{q},\mathbf{p}) / \partial \mathbf{q}, \end{aligned} \tag{1}$$

where $\mathbf{q} = (\mathbf{q}_1, \mathbf{q}_2)$ is the configuration of the system; $\mathbf{q}_1, \mathbf{q}_2 \in \mathbf{R}^2$ are the position vectors of the two particles in an absolute frame; $\mathbf{p} = (\mathbf{p}_1, \mathbf{p}_2)$, $\mathbf{p}_1, \mathbf{p}_2 \in \mathbf{R}^2$ are the momenta of the particles, the dot stands for time-differentiation, whereas H is the Hamiltonian function

$$H(\mathbf{q},\mathbf{p}) = \frac{\mathbf{p}_1^{\mathrm{T}} + \mathbf{p}_2^{\mathrm{T}}\mathbf{p}_2}{2} - \frac{A}{|\mathbf{q}_2 - \mathbf{q}_1|} - \frac{B}{|\mathbf{q}_2 - \mathbf{q}_1|^3}, \tag{2}$$

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in which the superscript T denotes transposition. The Hamiltonian has the property

$$H(\mathbf{q}, \mathbf{p}) = h/2, \tag{3}$$

which represents the first integral of energy (h being the energy constant).

Introducing the relative coordinate $\mathbf{r} = |\mathbf{q}_2 - \mathbf{q}_1|$, the two-body problem is reduced to a central force problem, within whose framework the equations of motion read

$$\begin{aligned} \dot{\mathbf{r}} &= \partial H(\mathbf{r}, \mathbf{p}) / \partial \mathbf{p}, \\ \dot{\mathbf{p}} &= -\partial H(\mathbf{r}, \mathbf{p}) / \partial \mathbf{r}, \end{aligned} \tag{4}$$

with the Hamiltonian $H(\mathbf{r}, \mathbf{p}) = (\mathbf{p}^T\mathbf{p})/2 - A/|\mathbf{r}| - B/|\mathbf{r}|^3$. The relative motion equations (easily deducible by eliminating the momentum) are equivalent to

$$\ddot{\mathbf{r}} = -(A / r^3 + 3B / r^5)\,\mathbf{r}, \tag{5}$$

where $r = |\mathbf{r}|$. Passing to polar coordinates (r, θ), and studying the motion in the plane to which it is confined (since the force field is central), equation (5) reverts to the system

$$\begin{aligned} \ddot{r} - r\dot{\theta}^2 &= -A / r^2 - 3B / r^4, \\ r\ddot{\theta} + 2\dot{r}\dot{\theta} &= 0. \end{aligned} \tag{6}$$

The second equation (6) leads immediately to the first integral of angular momentum

$$r^2\dot{\theta} = C, \tag{7}$$

with C = constant of angular momentum. As to the energy integral, in polar coordinates (3) becomes

$$\dot{r}^2 + r^2\dot{\theta}^2 - 2A / r - 2B / r^3 = h. \tag{8}$$

3. REGULARIZATION OF MOTION EQUATIONS

To regularize the motion equations, which have a singularity if and only if $r = 0$ (see also Saari 1974), we shall resort to the powerful tool of McGehee's transformations of the second kind (McGehee 1974). Performing successively the transformations (corresponding to our case):

$$u = \dot{r}, \quad v = r\dot{\theta}; \tag{9}$$

$$x = r^{3/2}u, \quad y = r^{3/2}v, \tag{10}$$

$$ds = r^{-5/2}\,dt, \tag{11}$$

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which all are real analytic diffeomorphisms, the equations of motion (6) acquire the form

$$\begin{aligned} r' &= rx, \\ x' &= \frac{3}{2}x^2 + y^2 - Ar^2 + 3B, \\ \theta' &= y, \\ y' &= \frac{1}{2}xy, \end{aligned} \tag{12}$$

where primes signify differentiation with respect to the new (fictitious) time variable s, and we kept, by abuse, the same notations for the new functions of s.

The integral of angular momentum and that of energy become respectively

$$y = Cr^{1/2}, \tag{13}$$

$$x^2 + y^2 = hr^3 + 2Ar^2 + 2B. \tag{14}$$

For the purposes of the next section, we shall use (14) to replace the system (12) by

$$\begin{aligned} r' &= rx, \\ x' &= -\frac{1}{2}y^2 + 2Ar^2 + \frac{3}{2}hr^3, \\ \theta' &= y, \\ y' &= \frac{1}{2}xy. \end{aligned} \tag{15}$$

Both the equations of motion (12) or (15) and the first integrals (13) – (14) are now well defined for $r = 0$. This means that the phase space can be extended to contain the invariant manifold $\{(r, x, \theta, y) \,|\, r = 0\}$, on which the flow, although deprived of physical significance, provides valuable informations about near-collisional orbits (due to the continuity with respect to initial data).

4. THE FLOW ON THE COLLISION MANIFOLD

Define the *collision manifold* M_0 as the intersection of the sets $\{(r, \theta, x, y) \,|\, r = 0\}$ and $\{(r, x, \theta, y) \,|\, x^2 + y^2 = hr^3 + 2Ar^2 + 2B\}$. This intersection is the set

$$\{(r, \theta, x, y) \,|\, r = 0;\ x^2 + y^2 = 2B\}. \tag{16}$$

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In the 3D space of the coordinates $(x, \theta, y) \in \mathbf{R} \times S^1 \times \mathbf{R}$ the set (16) is a 2D cylinder, actually imbedded in the 4D full phase space (see Fig. 1). Since $\theta = 0$ and $\theta = 2\pi$ can be identified, M_0 is: a torus if $B > 0$; a circle if $B = 0$; and reduces to the empty set if $B < 0$ (that is, for $B < 0$ the motion is collision-free; Saari (1974) also established such a result, but within another framework and using another method).

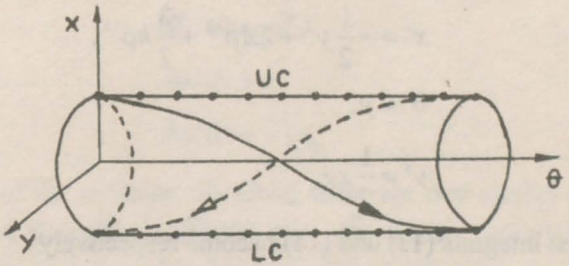


Fig.1. – The collision manifold as a cylinder and the flow on it.

The vector field on M_0 is

$$x' = -\frac{1}{2}y^2,$$
$$\theta' = y, \tag{17}$$
$$y' = \frac{1}{2}xy.$$

There are two circles of equilibria on the torus: the upper circle UC $(x = \sqrt{2B}, \theta \in S^1, y = 0)$ and the lower circle LC $(x = -\sqrt{2B}, \theta \in S^1, y = 0)$. The equilibria are degenerate. As to the other orbits on M_0, putting $x = \sqrt{2B}\cos\alpha$, $y = \sqrt{2B}\sin\alpha$, equations (17) give immediately $d\alpha / d\theta = 1/2$.. Plotting the flow in the (θ, α) plane, it is easy to see that all orbits with $y \neq 0$ come from UC and tend to LC. In other words, the flow on M_0 consists mainly of heteroclinic orbits which connect the equilibria of UC with those of LC (see Fig. 1).

By (13) one observes easily that all collisional orbits eject from UC or tend to LC. It is also clear that the so-called *black hole effect* (see e.g. Diacu et al. 1995) occurs in the Schwarzschild model, too.

To end this section, notice that for $B = 0$ (homogeneous potential) M_0 reduces to the circle of degenerate equilibria $(x = 0, \theta \in S^1, y = 0)$. Also observe, by the second equation (17), that in this case collisions can occur only for rectilinear motion. As to the $B < 0$ case, we showed above that the particle cannot collide with the centre.

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5. INFINITY MANIFOLD AND THE FLOW ON IT

By some symmetry of the treatment, let us see what happens with the escape orbits, when $r \to \infty$. For this purpose put $\rho = 1/r$; system (15) acquires the form

$$\begin{aligned} \rho' &= -\rho x, \\ x' &= -\frac{1}{2}y^2 + 2A\rho^{-2} + \frac{3}{2}h\rho^{-3}, \\ \theta' &= y, \\ y' &= \frac{1}{2}xy, \end{aligned} \tag{18}$$

whereas the first integrals (13) and (14) become respectively

$$y^2\rho = C^2, \tag{19}$$

$$\rho^3 x^2 + \rho^3 y^2 = 2B\rho^3 + 2A\rho + h. \tag{20}$$

Applying again McGehee's transformations of the second kind, which now consist of the following real analytic diffeomorphisms:

$$\xi = \rho^{3/2}x, \ \eta = \rho^{3/2}y; \tag{21}$$

$$d\tau = \rho^{-3/2}\, ds, \tag{22}$$

the vector field (18) becomes

$$\begin{aligned} d\rho/d\tau &= -\rho\xi, \\ d\xi/d\tau &= -\frac{3}{2}\xi^2 - \frac{1}{2}\eta^2 + 2A\rho + \frac{3}{2}h, \\ d\theta/d\tau &= \eta, \\ d\eta/d\tau &= -\xi\eta, \end{aligned} \tag{23}$$

(where we preserved by abuse the same notations for the new functions of τ), while the integrals (19) and (20) acquire respectively the expressions

$$\eta = C\rho, \tag{24}$$

$$\xi^2 + \eta^2 = 2B\rho^3 + 2A\rho + h. \tag{25}$$

Define the *infinity manifold* M_∞ as the intersection of the sets $\{(\rho,\xi,\theta,\eta) \mid \rho = 0\}$. and $\{(\rho,\xi,\theta,\eta) \mid \xi^2 + \eta^2 = 2B\rho^3 + 2A\rho + h\}$, namely

$$M_\infty \{(\rho,\xi,\theta,\eta) \mid \rho = 0; \xi^2 + \eta^2 = h\}. \tag{26}$$

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In the 3D space of the coordinates $(\xi, \theta, \eta,) \in \mathbf{R} \times S^1 \times \mathbf{R}$ the manifold (26) is a 2D cylinder, actually imbedded in the 4D full phase space (see Fig. 2). Because $\theta = 0$ and $\theta = 2\pi$ can be identified, M_∞ is: a torus if $h > 0$; a circle if $h = 0$; the empty set if $h < 0$ (that is, for negative energy the particle cannot escape).

The vector field on M_∞ is

$$\begin{aligned} d\xi / d\tau &= \eta^2, \\ d\theta / d\tau &= \eta, \\ d\eta / d\tau &= -\xi\eta. \end{aligned} \tag{27}$$

As in the case of the collision manifold, there are two circles of degenerate equilibria on the torus: the upper circle UC $(\xi = \sqrt{h},\ \theta \in S^1,\ \eta = 0)$ and the lower circle LC $(\xi = -\sqrt{h},\ \theta \in S^1,\ \eta = 0)$. Making $\xi = \sqrt{h}\cos\alpha$, $\eta = \sqrt{h}\sin\alpha$ in equations (27), they give $d\alpha / d\theta = -1$.

Plotting the flow in the (θ, α) plane, one observes that all trajectories for which $\eta \neq 0$ come from LC and tend to UC. This means that, except the two circles of equilibria, the flow on M_∞ consists of heteroclinic orbits connecting LC with UC (see Fig. 2).

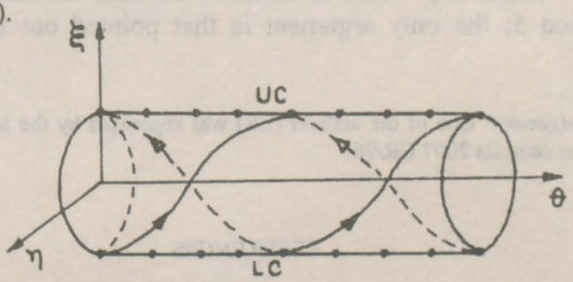


Fig. 2. – The infinity manifold as a cylinder and the flow on it.

Notice, by (24), that all orbits neighbour infinity in the zone of UC (the escaping ones) and LC (those which come from infinity).

As in the previous section, for the zero energy case M_∞ reduces to a single circle of degenerate equilibria $(\xi = 0, \theta \in S^1, \eta = 0)$. The motion with negative energy is always bounded.

6. CONCLUDING REMARKS

We obtained in Sections 4 and 5 the flow on the collision manifold M_0, and that on the infinity manifold M_∞, respectively. Of course, these flows have no real

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significance; however, their description allows us to understand the behaviour of the physical motion in two special situations: near collision, respectively very far from the centre.

Another remark concerns the way of obtaining the equations of motion (23). It is clear from (11) and (22) that $dt = r\,d\tau$ (which reveals, on the other hand, that the flows on M_0 and M_∞ have different time scales). On this basis, and using (9), (10), and (11), one easily remarks that (ξ, η) are nothing but the polar components of the velocity $(\dot{r}, r\dot{\theta})$. All that being established, equations (23) follow straightforwardly from the system (6). So, the start from the regularized equations (15) could be avoided; nevertheless, we preferred this way which seemed us more elegant.

The same comments can be made as regards the first integrals (24) and (25), which, by virtue of the above specifications, could directly follow from equations (7) and (8), respectively.

There is also another fact that deserves to be mentioned: in order to obtain the vector field (23), intended here to study the infinity manifold, we need neither start from already regularized equations as (15), nor use equation-regularizing transformations as McGehee's ones are. The reason is simple: infinity is not connected to a singularity. There is no serious reason for choosing the technique used in Section 5; the only argument is that pointed out in the previous two paragraphs.

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AN EXTENSION OF APPLICABILITY DOMAIN FOR THE LC AND KS TRANSFORMATIONS (I)

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Abstract: The applicability domain of Levi-Civita and Kustaanheimo-Stiefel transformations is extended by considering a more general family of Hamiltonian functions on which these transformations can be applied. The action-angle variables are being obtained, as well as two other sets of canonical variables.

Keywords: celestial mechanics, Hamiltonian dynamics, Levi-Civita and Kustaanheimo-Stiefel transformations, action-angle variables.

1. INTRODUCTION

The singularities of the equations of motion and of their solutions as well as the regularization and linearization of these equations, were and still are exciting subjects for many mathematicians (dealing with celestial mechanics or not). As regards the singularities of the solutions, they are presented in a modern mathematical manner in (*Diacu*, 1992), together with the methods for their regularization and with the necessary references. Although of a great theoretical importance, the solution regularization is much less significant for practical problems. The linearization and regularization techniques for the equations of motion have a much greater practical importance, due especially to the simplicity of the form the respective equations acquire. A survey of the most significant such techniques within the canonical framework is given in (*Deprit et al.*, 1994), where these ones are mathematically systematized. The implications of this subject in astrophysics and cosmology, and especially – during the last decades – in space dynamics, make increase its importance.

In the planar, perturbed two-body problem, the best known transformation which linearizes the equations of motion is the one proposed by Levi-Civita (hereafter LC), (*Levi-Civita*, 1904); the method is extended to three-dimensional perturbations by the Kustaanheimo-Stiefel (hereafter KS) transformation (*Kustaanheimo and Stiefel*, 1964). We have to emphasize the existence of a large class of perturbations for which these transformations regularize the corresponding equations of motion, allowing the understanding of near-collision dynamics. The intimate connection of the two methods is pointed out in (*Deprit et al.*, 1994).

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In this paper we propose a family of Hamiltonian functions which extends situations arising in the perturbed two-body problem.

The paper consists of a theoretical study in which we extend the applicability domain of the LC and KS transformations. After the introduction of the LC transformations in a canonical manner, by using two successive coordinate transformations, the action-angle variables are obtained; then two other sets of canonical coordinates are found. We dwell briefly on a family of Hamiltonian functions belonging to the domain of nonlinear oscillations, presenting a technique for obtaining the action-angle variables similar to that used for the LC transformation. The differences between the LC and KS transformations are pointed out, too.

2. THEORETICAL APPROACH

2.1. HAMILTONIAN FUNCTIONS

The general form of the Hamiltonian functions we deal with is:

$$H = a\frac{p_1^2 + p_2^2}{2} - \frac{b}{\sqrt{q_1^2 + q_2^2}} + F(\mathbf{J}) + \varepsilon H_1, \tag{1}$$

for the use of LC transformations, and

$$H = a\frac{p_1^2 + p_2^2 + p_3^2}{2} - \frac{b}{\sqrt{q_1^2 + q_2^2 + q_3^2}} + F(\mathbf{J}) + \varepsilon H_1, \tag{2}$$

for the use of KS transformations.

For sake of brevity, in the sequel we shall use only (1) and the LC transformations. The way in which the action-angle variables are obtained is wholly similar for the KS case; the differences between the two cases will be examined in Subsection 2.4.

In (1), $(\mathbf{q}, \mathbf{p}) = ((q_1, q_2), (p_1, p_2))$ are canonically conjugate coordinate-momentum variables;

$(J_k, \Phi_k), k = \overline{3, n_1}$ and $(J_p, \Phi_p), p = \overline{n_1 + 1,\ n_2}$, are canonically conjugate momentum-coordinate variables, too;

$(n_1, n_2) \in \mathbf{N}^* \times \mathbf{N}^*$ with $n_1 \le n_2$; $(a, b) \in \mathbf{R}_+^* \times \mathbf{R}_+^*$; $F(\mathbf{J}): D \subset \mathbf{R}^{n_1 - 3} \to \mathbf{R}$ is a smooth function of the momenta $\mathbf{J} = (J_3, \ldots, J_k, \ldots, J_{n_2})$;

$H_1 = H_1(t, \mathbf{q}, \mathbf{p}, J_k, \Phi_k, \varepsilon)$ is the perturbation, while ε is a small parameter.

We shall also use the notation $H\big|_{t=0} = h$.

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Passing to the extended phase space, denoting by J_0 the momentum conjugate to the independent variable t (formally replaced by Φ_0), and performing the canonical linear transformation $J_0 \mapsto J_0 - h$, we shall have $J_0\big|_{t=0} = 0$ and

$$H = a\frac{p_1^2 + p_2^2}{2} - \frac{b}{\sqrt{q_1^2 + q_2^2}} + F(\mathbf{J}) + J_0 - h + \varepsilon H_1. \tag{3}$$

Remark 1. For the functions (1) and (2) the usual case in which the LC or KS transformations are applied is $F(\mathbf{J}) \equiv 0, H_1 = H_1(\mathbf{q}, \mathbf{p}, \Phi_0)$. In order to obtain the partial regularization (namely with respect to the $(\mathbf{q}, \mathbf{p})$ variables) of the equations of motion by LC or KS transformations, supplementary conditions must be imposed to H_1. Such a situation is, for instance

$$H_1(t, \mathbf{q}, \mathbf{p}, J_k, \Phi_k, J_p, \Phi_p, \varepsilon) = \sum_i P_i(\mathbf{q}, \mathbf{p}) H_{1i}(t, J_k, \Phi_k, J_p, \Phi_p, \varepsilon) \tag{4}$$

where $P_i(\mathbf{q}, \mathbf{p})$ are polynomials.

The equations of motion read

$$\begin{aligned} &\frac{dq_i}{dt} = \frac{\partial H}{\partial p_i}, \quad \frac{dp_i}{dt} = -\frac{\partial H}{\partial q_i}, \quad i = 1, 2, \\ &\frac{d\Phi_k}{dt} = \frac{\partial H}{\partial J_k}, \quad \frac{dJ_k}{dt} = -\frac{\partial H}{\partial \Phi_k}, \quad k = \overline{0, 3, n_2}. \end{aligned} \tag{5}$$

The motion is confined to the manifold $H = 0$. If H_1 does not depend on Φ_0, the conjugate momentum variable J_0 does not appear in (3) anymore.

2.2. LC TRANSFORMATIONS

Performing the symplectic changes of coordinates (*Levi-Civita*, 1904):

$$\begin{aligned} &q_1 = Q_1^2 - Q_2^2, \quad q_2 = 2Q_1Q_2, \\ &p_1 = \frac{P_1Q_1 - P_2Q_2}{2(Q_1^2 + Q_2^2)}, \quad p_2 = \frac{P_1Q_2 + P_2Q_1}{2(Q_1^2 + Q_2^2)}, \end{aligned} \tag{6}$$

(which represent the geometric part of the LC transformation; the new variables are written in capitals), and the change of independent variable

$$dt = 4(Q_1^2 + Q_2^2)\, d\tau \tag{7}$$

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(the dynamic part of the LC transformation), one gets:

$$H = a\frac{P_1^2 + P_2^2}{2} - 4h(Q_1^2 + Q_2^2) - 4b + \tag{8}$$
$$+ 4(F(\mathbf{J}) + J_0)(Q_2^1 + Q_2^2) + 4\varepsilon(Q_1^2 + Q_2^2)H_1;$$

The Hamiltonian character of the equations of motion is preserved (*Stiefel and Scheifele*, 1971; *Szebehely*, 1967). The following conditions must also be fulfilled:

$$h < 0, \quad h - (F(\mathbf{J}) + J_0) < 0, \tag{9}$$

They are needed to obtain the action-angle variables (see Section 2.3 below). We have to mention that the condition $h < 0$ is not indispensable, because the action-angle variables (essential for a perturbative study) can also be obtained when only the second condition is fulfilled. We imposed however both conditions in order to make the exposition simpler and to emphasize the analogy with the manner in which such variables are obtained for the linear harmonic oscillator.

Since the motion is confined to the manifold $H = 4b$, the third term in the right-hand side of (8) will be neglected.

2.3. ACTION-ANGLE VARIABLES

To obtain the action-angle variables for the Hamiltonian function (1), let us first replace $(\mathbf{Q}, \mathbf{P}) = ((Q_1, Q_2), (P_1, P_2))$ by $((\Phi_1, \Phi_2), (J_1, J_2))$ through the changes

$$Q_i = \sqrt{\frac{J_i}{\sqrt{-\frac{2h}{a}}}} \sin \Phi_i, \quad P_i = \sqrt{4J_i\sqrt{-\frac{2h}{a}}} \cos \Phi_i, \quad i = 1, 2, \tag{10}$$

Formulae (10) constitute usual transformations for obtaining the action-angle variables in the case of the linear harmonic oscillator. In our case they are just a preliminary transformation. As it can be verified, the relation

$$dJ_1 \wedge d\Phi_1 + dJ_2 \wedge d\Phi_2 = dP_1 \wedge dQ_1 + dP_2 \wedge dQ_2$$

ensures the canonical character of the transformation.

We obtain in this way (keeping the notations for the Hamiltonian function)

$$H = \sqrt{A}\sum_{i=1}^{2} J_i(1 + B(F(\mathbf{J}) + J_0)\sin^2 \Phi_i) + \varepsilon H_1', \tag{11}$$

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with

$$H_1' = (4/\sqrt{s})\left(\sum_{i=1}^{2} J_i \sin^2 \Phi_i\right) H_1$$

and

$$A = -8ha, \quad B = -1/h, \quad s = -2h/a. \tag{12}$$

At this stage, using the generating function

$$S(J_i^*, \Phi_i) = \sum_{i=1}^{2} \mathbf{J}_1^* \arctan\left(\sqrt{1 + B(f(\mathbf{J}) + J_0^*)} \tan(\Phi_i)\right) + \\ + \sum_{k=0,\ k\neq 1,2}^{n_2} J_k^* \Phi_k, \quad i = \overline{1, n_2} \tag{13}$$

we shall obtain the action-angle variables (marked with an asterisk). The existence of the radicals in (10) and (13) is ensured by the conditions (9).

The above transformation generalizes those obtained in (*Stiefel and Scheifele*, 1971, Chapter X). By this result, the applicability domain of the LC and KS transformations is extended from the perturbed two-body problem to a larger set of Hamiltonian functions. This extension is natural and sufficiently wide; the classical case $F(\mathbf{J}) \equiv 0$ is extended to more degrees of freedom, without need of specifying the form of the function $F(\mathbf{J})$.

Using the notation

$$\omega_k = \frac{B}{4(1 + B(F(\mathbf{J}^*) + J_0^*))} \frac{\partial}{\partial J_k^*}(F(\mathbf{J}^*) + J_0^*), \quad k = 0, \overline{3, n_1}, \tag{14}$$

the old variables are expressed as functions of the new ones as follows:

$$\Phi_k = \Phi_k^* - \omega_k \sum_{i=1}^{2} J_i^* \sin 2\Phi_i^*, \quad k = 0, \overline{3, n_1}$$

$$\tan \Phi_i = (\tan \Phi_i^*)/\sqrt{1 + B(F(\mathbf{J}^*) + J_0^*)}, i = 1, 2$$

$$J_i = \frac{J_i^*}{\sqrt{1 + B(F(\mathbf{J}^*) + J_0^*)}}(1 + B(F(\mathbf{J}^*) + J_0^*)\cos^2 \Phi_i^*), \ i = 1, 2,$$

$$\Phi_k = \Phi_k^*, k = \overline{n_1 + 1, n_2}, J_k = J_k^*, k + 0, \overline{3, n_2}.$$

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To expand the perturbation expression, we need the variables $(\mathbf{Q}, \mathbf{P})$ written by means of the new coordinates and momenta:

$$Q_i = \sqrt{\frac{J_i^*}{\sqrt{s}\sqrt{1+B(F(\mathbf{J}^*)+J_0^*)}}}\sin\Phi_i^*, \quad i=1,2,$$
$$P_i = \sqrt{4J_i^*\sqrt{s}\sqrt{1+B(F(\mathbf{J}^*)+J_0^*)}}\cos\Phi_i^*, \quad i=1,2. \tag{16}$$

So, we obtain the Hamiltonian:

$$H^* = \sqrt{A}\sqrt{1+B(F(\mathbf{J}^*)+J_0^*)}(J_1^*+J_2^*)+\varepsilon H_1^*. \tag{17}$$

with

$$H_1^* = \frac{J_1^*\sin^2\Phi_1^* + J_2^*\sin^2\Phi_2^*}{\sqrt{s}\sqrt{1+B(F(\mathbf{J}^*)+J_0^*)}}H_1.$$

Remark 2. The relation with the coupled nonlinear oscillators is pointed out by (8). One can observe that a (13)-type transformation can be applied to a Hamiltonian of the form

$$H = \sum_{i=1}^{N}(a_i P_i^2 + (b_i + F_i(\mathbf{J}))Q_i^2) + \varepsilon H_1(Q_i, P_i, J_k, \Phi_k)$$

with: $(P_i, Q_i), i=\overline{1,n}, (J_k, \Phi_k), k=\overline{n+1,p}$, pairs of conjugate momentum-coordinate variables; $(a_i, b_i) \in \mathbf{R}_+^* \times \mathbf{R}_+^*$, $F_i(\mathbf{J}): D \subset \mathbf{R}^p \to \mathbf{R}$ smooth functions, strictly positive on the definition domain; $\mathbf{J} = (J_{k+1}, \ldots, J_{k+p})$. After performing the canonical transformations

$$Q_i = \sqrt{2J_i\sqrt{\frac{a_i}{b_i}}}\sin\Phi_i, P_i = \sqrt{2J_i\sqrt{\frac{b_i}{a_i}}}\cos\Phi_i, \quad i=1,n$$

and using the generating function

$$S(J_i^*, \Phi_i) = \sum_{i=1}^{n} J_i^* \arctan\left(\sqrt{1+\frac{F_i(\mathbf{J}^*)}{b_i}}\tan\Phi_i\right) + \sum_{n+1}^{p} J_k^*\Phi_k, \quad i=\overline{1,n}$$

(where the asterisk marks the new variables), one obtains the Hamiltonian in action-angle variables:

$$H = \sum_{i=1}^{n}\sqrt{4a_ib_i}J_i^*\sqrt{1+\frac{F_i(\mathbf{J}^*)}{b_i}} + H_1(J_k^*, \Phi_k^*), \quad k=\overline{1,p}.$$

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We shall suppose in the sequel, without loss of generality, that $J_1^* \geq J_2^*$.

A new set of variables is obtained through the transformations:

$$J_1^* = \frac{J^* + P^2 + Q^2}{2}, \quad J_2^* = \frac{J^* - P^2 - Q^2}{2}, \tag{18}$$

$$\Phi_1^* = \Phi^* + \arctan\frac{Q}{P}, \quad \Phi_2^* = \Phi^* - \arctan\frac{Q}{P};$$

(do not confuse the momentum J^* above with the generic vector $\mathbf{J}^*$), the rest of variables remaining unchanged. As for the changes (10), it is easy to verify that in the case of (18) the canonical character is preserved.

We shall have

$$H^* = \sqrt{A}\sqrt{1 + B(F(\mathbf{J}^*) + J_0^*)}\, J^* + \varepsilon H_1^*; \tag{19}$$

and (for the expression of the perturbation):

$$Q_1 = \sqrt{\frac{J^* + P^2 + Q^2}{2\sqrt{s}\sqrt{1 + B(F(\mathbf{J}^*) + J_0^*)}}}\, \frac{P\sin\Phi^* + Q\cos\Phi^*}{\sqrt{P^2 + Q^2}},$$

$$Q_2 = \sqrt{\frac{J^* - P^2 - Q^2}{2\sqrt{s}\sqrt{1 + B(F(\mathbf{J}^*) + J_0^*)}}}\, \frac{P\sin\Phi^* - Q\cos\Phi^*}{\sqrt{P^2 + Q^2}},$$

$$P_1 = \sqrt{2\sqrt{s}\sqrt{1 + B(F(\mathbf{J}^*) + J_0^*)}(J^* + P^2 + Q^2)}\, \frac{P\cos\Phi^* - Q\sin\Phi^*}{\sqrt{P^2 + Q^2}}, \tag{20}$$

$$P_2 = \sqrt{2\sqrt{s}\sqrt{1 + B(F(\mathbf{J}^*) + J_0^*)}(J^* - P^2 - Q^2)}\, \frac{P\cos\Phi^* + Q\sin\Phi^*}{\sqrt{P^2 + Q^2}},$$

We shall also have:

$$\Phi_k = \Phi_k^* - \overline{\omega_k}\sin(2\Phi^* + \zeta), \quad k = \overline{0, 3, n_1} \tag{21}$$

with

$$\omega_k = \omega_k \frac{\sqrt{J^{*2}(P^2 - Q^2)^2 + 4P^2Q^2(P^2 + Q^2)^2}}{P^2 + Q^2},$$

$$\cos\zeta = \frac{J^*(P^2 - Q^2)}{\sqrt{J^{*2}(P^2 - Q^2)^2 + 4P^2Q^2(P^2 + Q^2)^2}}, \tag{22}$$

$$\sin\zeta = \frac{2PQ(P^2 + Q^2)}{\sqrt{J^{*2}(P^2 - Q^2)^2 + 4P^2Q^2(P^2 + Q^2)^2}}.$$

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The introduction of the angle ζ is not strictly necessary, but this facilitates the Fourier expansion of the perturbation.

Remark 3. Coming back to the set of variables obtained by means of (13), and using the generating function:

$$S'(\mathbf{J},\Phi^*)=\Phi_1^*\left(\frac{J_1+J_2}{2}\right)+\Phi_2^*\left(\frac{J_1-J_2}{2}\right)+\Phi_k^*J_k,\ k=0,\overline{3,n_2}, \tag{23}$$

where (J_k,Φ_k) are the new variables, we get:

$$H=\sqrt{A}\sqrt{1+B(F(\mathbf{J})+J_0)}\,J_1+\varepsilon H_1, \tag{24}$$

In this way we observe that the Hamiltonian (1) is intrinsically degenerate in the case $n_2=n_1$, too. The Hamiltonian functions (19) and (24) have the same expression for their first part (unperturbed); the differences arise only in the perturbing term.

2.4. KS TRANSFORMATIONS

The general form of the Hamiltonian functions we study includes – in its unperturbed part – the Hamiltonian corresponding to the three-dimensional two-body problem; the KS transformations are applied to this part. We do this by increasing artificially the number of degrees of freedom; this is characteristic for the weakly canonical KS transformations (*Deprit et al.*, 1994; *Kustaanheimo and Stiefel*, 1964).

The Hamiltonian presents the structure (2) where:

$F(\mathbf{J})$ is some smooth function of the momenta $J_k, k=\overline{5,n_1}$,

$(\mathbf{q},\ \mathbf{p})=((q_1,q_2,q_3),(p_1,p_2,p_3))$ are the conjugate momentum-coordinate variables;

$(J_k,\Phi_k),(J_p,\Phi_p)$ are conjugate coordinate-momentum variables with $k=\overline{5,n_1}$, $p=\overline{n_1+1,n_2}$; the other notations are the same as those corresponding to (1).

Passing to the extended phase space, and keeping the notations, we get:

$$\overline{H}=a\frac{p_1^2+p_2^2+p_3^2}{2}-\frac{b}{\sqrt{q_1^2+q_2^2+q_3^2}}+F(\mathbf{J})+J_0-h+\varepsilon H_1 \tag{25}$$

Using the KS transformations for coordinates

$$\begin{aligned} q_1&=Q_1^2-Q_2^2-Q_3^2+Q_4^2,\\ q_2&=2(Q_1Q_2-Q_3Q_4),\\ q_3&=2(Q_1Q_3+Q_2Q_4), \end{aligned} \tag{26}$$

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and denoting

$$\mathbf{Q}^2 = Q_1^2 + Q_2^2 + Q_3^2 + Q_4^2 \tag{27}$$

we shall have for the momenta:

$$\begin{aligned} p_1 &= (Q_1 P_1 - Q_2 P_2 - Q_3 P_3 + Q_4 P_4)/2\mathbf{Q}^2, \\ p_1 &= (Q_1 P_2 + Q_2 P_1 - Q_3 P_4 - Q_4 P_3)/2\mathbf{Q}^2 \\ p_1 &= (Q_1 P_3 + Q_2 P_4 - Q_3 P_1 + Q_4 P_2)/2\mathbf{Q}^2 \end{aligned} \tag{28}$$

Observe that the following relation is fulfilled:

$$Q_4 P_1 - Q_3 P_2 + Q_2 P_3 - Q_1 P_4 = 0. \tag{29}$$

After the time-variable change

$$d\tau = 4(Q_1^2 + Q_3^2 + Q_3^2 + Q_4^2)\, dt \tag{30}$$

we obtain

$$\begin{aligned} \overline{H} = a\frac{P_1^2 + P_2^2 + P_3^2 + P_4^2}{2} - 4h(Q_1^2 + Q_2^2 + Q_3^2 + Q_4^2) - 4b + \\ + 4(F(\mathbf{J}) + J_0)(Q_1^2 + Q_2^2 + Q_3^2 + Q_4^2) + 4\varepsilon(Q_1^2 + Q_2^2 + Q_3^2 + Q_4^2) H_1, \end{aligned} \tag{31}$$

and, in action-angle variables (deduced in the same way as before; see also Remark 2):

$$H = \sqrt{A}\sqrt{1 + B(F(\mathbf{J}^*) + J_0^*)}\,(J_1^* + J_2^* + J_3^* + J_4^*) + \varepsilon H_1 \tag{32}$$

(the previous notations being kept).

3. EXAMPLES, SUMMARY AND CONCLUDING REMARKS

To point out the applicability of these transformations, we shall exemplify by a special N-body problem (modelling the solar system). Let m_0, m_1, m_2, $m_i, (i = \overline{3, N-1})$ respectively be the Moon, the Earth, the Sun, and other planets in the system. Using in the classical way the Jacobi coordinates, we obtain the Hamiltonian function, for which the barycenter motion of the Earth-Moon system and the motion of the other bodies around the Sun were modelled in Delaunay variables:

$$H = a\frac{p_1^2 + p_2^2 + p_3^2}{2} - \frac{b}{\sqrt{q_1^2 + q_2^2 + q_3^2}} - \sum_{i=1}^{N-2} \frac{\mu_i}{2L_i^2} - h + Pert, \tag{33}$$

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where a, b, μ_i are parameters depending on the masses, L_i – classical Delaunay variables, and *Pert* – the perturbation of this special N-body problem (see *Brouwer and Clemence*, 1961).

Using the theory we proposed, after applying the KS transformations (condition (4) is fulfilled, as one can verify), and obtaining the action-angle variables, we find:

$$H = \sqrt{A}\sqrt{1+B\left(\sum_{i=1}^{N-2}\frac{\mu_i}{2L_i^2}\right)}\,(J_1+J_2+J_3+J_4)+Pert. \tag{34}$$

We shall not present this problem in detail here; an extended application can be found in Şelaru's (1997) paper.

We have to specify that the use of LC/KS transformations has not as primary goal the regularization of the equations of motion (this depending on the concrete problem), but rather the simplicity of these equations (acquired as a result of the respective transformations). Among the purposes of the use of such transformations we mention: a more facile expansion of the perturbation; avoiding the truncations in the perturbation considered as function of the eccentricity of motion in the binary system modelled by the first two terms in (1)/(2); an attempt to reduce certain problems specific to celestial mechanics to problems of nonlinear oscillations (or to use in this latter domain the results of celestial mechanics).

We must also mention that a topological description of the phase space obtained by applying the LC transformations or the weakly canonical KS extension within a canonical framework is necessary and will be made in a subsequent paper.

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ON THE ACCURACY ANALYSIS OF CCD ASTROMETRIC POSITIONS

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Abstract: The paper presents a method of accuracy analysis for the CCD positions, used for the rejection of the erroneous positions.

Key words: CCD Astrometry, Planetary Satellites.

1. CCD ASTROMETRY IN BUCHAREST

The first CCD astronomical camera in Romania was mounted at the Astronomical Institute of the Romanian Academy in Bucharest, in the autumn of 1994, within the international collaboration occasioned by the PHESAT'95 campaign, whose main goal was to observe the mutual phenomena in the system of Saturn's satellites. The observations within this campaign began in the summer of 1995 (Vass, Ştefănescu, Văduvescu, 1996).

The camera was mounted on the visual telescope of the Prin-Merz astrograph, with a 38 cm diameter and a 6 m focal distance. The astronomical CCD camera HI-SIS 22, with which the images were obtained, has a detector of KODAK KAF-0400 type. Under the conditions in Bucharest (unsatisfactory transparency and appreciable light pollution), the camera has been used in "binning 2" mode, which had as a result images of 384 × 256 pixels. If we note a primary pixel with p and an actual (binning 2) pixel with P, in the astrograph + CCD system we have $1P = 2\,p = 0.018$ mm $= 0.6188$ arcsec.

The field of this system is of 4 × 2.5 arc minutes.

The time basis is provided by the time service of Bucharest Observatory, by means of a chronographic card designed by M. Dequin and F. Chollet (of Paris Observatory) and made in Bucharest. To make the best of the use of the chronographic card, we resorted (Ştefănescu, 1996) to a specially designed program (TSR – Terminate, Stay Resident), meant to ensure the periodical synchronization of the real time clock of the computer (with a one second or one minute step).

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2. ACCURACY ESTIMATION FOR CCD ABSOLUTE POSITIONS

The transformation from the equatorial coordinates (α,δ) to the ideal (standard) ones (ξ, η) and the reverse are given by the gnomonic projection relationships (Smart, 1948).

Let (X,Y) be the reference system of the CCD, in which the image processing software measures the coordinates, expressed in pixels. The relation between (ξ, η) and (X,Y) is given by the mathematical model adopted for the phenomenon of image formation; the simplest model is that of the linear transformation, in which case we have:

$$\begin{bmatrix} \xi \\ \eta \end{bmatrix} = \begin{bmatrix} a & b \\ d & e \end{bmatrix} \cdot \begin{bmatrix} X \\ Y \end{bmatrix} + \begin{bmatrix} c \\ f \end{bmatrix}. \qquad (1)$$

When there are only two catalogue stars, the simplified model of rotation and translation ($e = a$ and $d = -b$) can be applied.

Inversely, in the case of a globular cluster, there are several dozens stars which can be measured, consequently we can write the relations (1) for many stars and determine the unknown coefficients, through the least squares method; an even more complicated model than that of the relations (1) can be taken into consideration.

In order to estimate the accuracy of the absolute determined positions, we divide the stars of the globular cluster into two categories: "reference stars" and "control stars". The first ones permit us to determine the coefficients of (1); the second ones will be determined on this basis and their residuals, i.e. the differences between the real and the calculated positions, will be the starting point to estimate the mean square error of stellar images reduction in the globular cluster.

Of course, a too high level of r.m.s. obliges us to reiterate the whole process by rejecting the reference stars which have too great residuals.

Anyway, the important thing is that the r.m.s. is calculated for independent control stars, not included in the determination of the coefficients of (1); this means that r.m.s. is a sure one.

The following table contains the mean square errors (in position) obtained at the reduction of 12 images of M15, depending on the various criteria used for rejecting the stars.

We can see that, in the case of the astrograph in Bucharest, the average of mean square errors at the reduction of cluster M15 ranges between 0.125 and 0.098 arc seconds in positions, which corresponds to a mean square error, for each coordinate, ranging between 0.09 and 0.07 arc seconds.

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Table 1

Number of reference stars and r.m.s, for 3, 2 and 1.7 σ elimination criteria

Date	Stars / σ		Stars / σ		Stars / σ	
06.26.1995	23	.203	17	.087	9	.046
06.27.1995	27	.084	21	.102	16	.042
06.28.1995	29	.159	24	.114	16	.076
07.03.1995	25	.252	22	.227	14	.111
07.20.1995	21	.232	13	.107	11	.080
07.24.1995	28	.203	15	.105	14	.113
08.06.1995	21	.190	15	.056	13	.044
08.23.1995	25	.221	21	.188	19	.185
08.24.1995	21	.085	18	.101	17	.117
09.01.1995	27	.176	27	.176	22	.153
09.03.1995	18	.190	17	.145	15	.126
09.13.1995	28	.060	23	.088	22	.079
Mean values	**24.4**	**.175**	**19.4**	**.125**	**15.6**	**.098**

3. ACCURACY ESTIMATION FOR CCD RELATIVE POSITIONS

CCD astrometry has several characteristics which distinguish it from the photographic one; the first one is the smallness of the field which, in our case, is of 4 x 2.6 arc minutes.

In such a small field, the probability of catalogue stars existing in the same field with a given object is inherently very small. Even the number of ordinary stars is often reduced by the small integration time, which is established depending on the brightness of the observed object. Consequently, generally speaking, the determination of the absolute astronomical coordinates is out of question.

There is only the possibility of determining relative positions referred (in PHESAT'95 campaign) to one of the satellites, whose orbit is better known.

The determination of the coefficients in the transformation (1) between the standard and the measured coordinates, leaving aside a translation, is named "determination of the orientation".

In the above mentioned context, the problem of determining the orientation of the CCD camera becomes fundamental, because the knowledge of this orientation allows the transformation of the relative positions to the astronomical reference system, instead of leaving these positions in the arbitrary system of the instrument.

Usually, we can have relative positions for planetary satellites or for other kind of stellar objects. But, especially in the case of planetary satellites, there are

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different sources for individual errors, such as the atmospheric agitation; these kinds of errors may be amplified by the shortness of the integration time, due to the brightness of the planet.

Therefore, we cannot extrapolate the previous estimation of the accuracy; it is absolutely necessary to perform an accuracy analysis of the relative positions and, on this basis, to reject the wrong positions.

4. ACCURACY ANALYSIS AND THE ELIMINATION OF WRONG POSITIONS

Such kind of analysis can be performed by using the best polynomial fitting of the determined coordinates, depending on time. Obviously, the fitting process must minimize the sum of squares of individual residuals.

But, without any other (external) information, the diminution of the residuals can be obtained either by increasing the degree of the polynomial, or by rejecting some inconvenient positions.

In order to eliminate this ambiguity, we decided to obtain the necessary external information by fitting previously the positions given by the ephemeris, for the moments of the observations. We increased the degree until the mean square error did not suffer any significant variation. During all this process, no positions were rejected.

After this step, we retained only the *degree* of the optimal fitting polynomial; in the next step, a new polynomial, of the same degree, for the observed positions, is calculated.

We resorted to an iterative method which, at each step, excluded the positions presenting too great residuals. The used elimination criterion was the overstepping of the $\mathbf{n}$-σ limit, where $\mathbf{n}$ was usually considered equal to 2; in some cases, smaller values ($\mathbf{n}$ = 1.8 or even 1.7) were used. The program permits also the intervention of the user, for exclusions on more "subjective" criteria.

Figures 1a – 1c present the determination of the fitting polynomial for the positions given by the ephemeris (only $\Delta\alpha$); we can see the diminution of the accuracy indicator from 0.6 arcsec (for the first degree polynomial) to 0.3 arcsec (for the third degree polynomial).

Figures 2a – 2c present the fitting process of the observed positions, by determining a third degree polynomial, and by eliminating the wrong positions in some consecutive steps.

Only after all these operations, the determined positions were compared with the ephemeris (given by Satellite Almanac), the O-C differences were calculated and included in the database.

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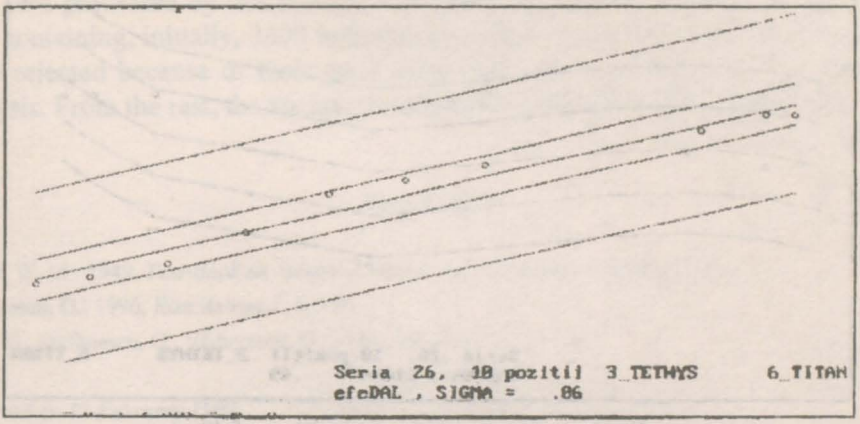


Fig. 1 a – Ephemeris: 1st degree, $\sigma = 0.6$ arcsec.

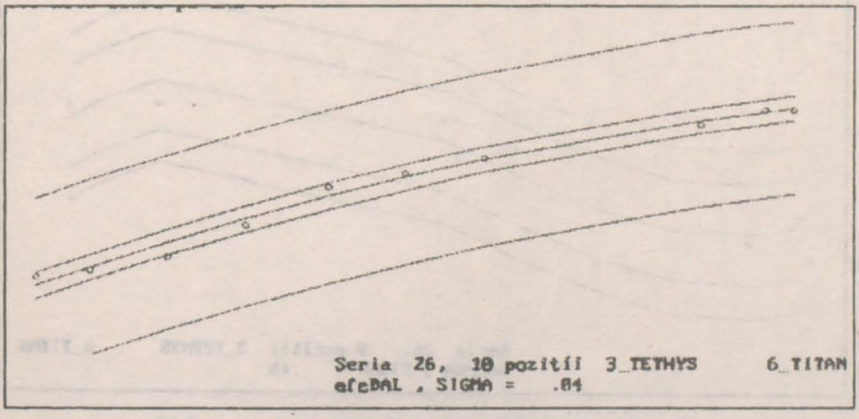


Fig. 1 b – Ephemeris: 2nd degree, $\sigma = 0.4$ arcsec.

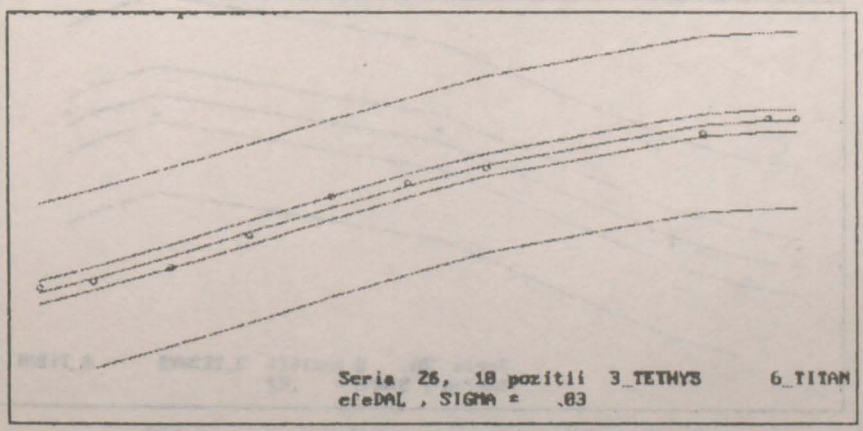


Fig. 1 c – Ephemeris: 3rd degree, $\sigma = 0.03$ arcsec.

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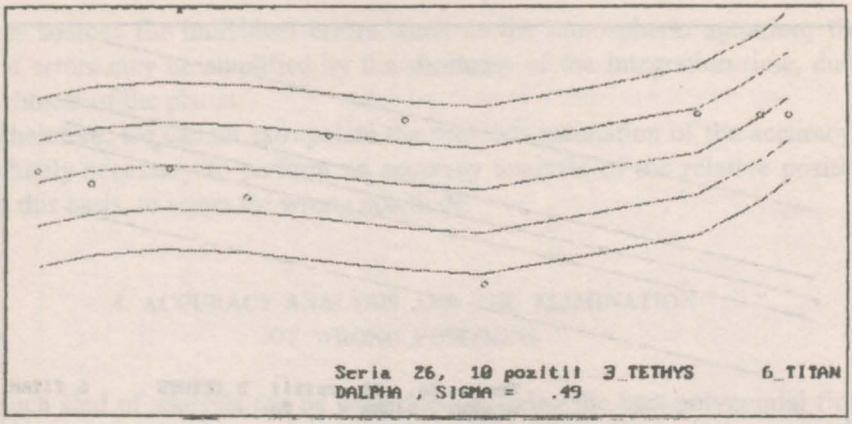


Fig. 2 a – Observed positions: initial, $\sigma = 0.49$ arcsec.

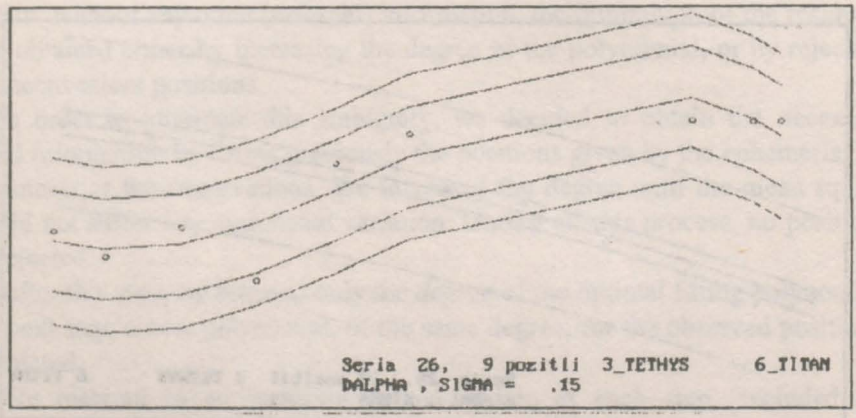


Fig. 2 b – Observed positions: first elimination: $\sigma = 0.15$ arcsec.

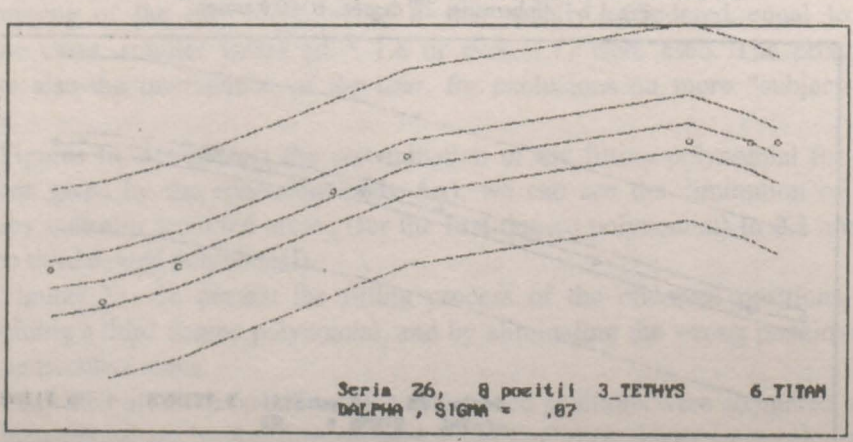


Fig. 2 c – Observed positions: second elimination: $\sigma = 0.07$ arcsec.

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We processed by this method 126 series of positions of the saturnian satellites containing, initially, 3600 individual positions; 13 series (with 270 positions) were rejected because of their great dispersion, put in evidence by the accuracy analysis. From the rest, the accuracy analysis rejected about 21% of positions.

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CCD POSITIONS OF THE SATURNIAN SATELLITES IN 1995

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Abstract: The paper presents the CCD positions obtained in Bucharest during PHESAT'95 for the satellites of Saturn.

Key words: CCD Astrometry, Saturn, Planetary Satellites, PHESAT'95.

1. ASTROMETRIC CCD OBSERVATIONS PERFORMED IN BUCHAREST

In Bucharest, the observations within the PHESAT'95 campaign began in the summer of 1995 (Vass, Ştefănescu, Văduvescu, 1996). A HI-SIS 22 CCD camera, with a detector of KODAK KAF-0400 type, was mounted on the visual telescope of the Prin-Merz astrograph, with a 38 cm diameter and a 6 m focal distance.

The time basis is provided by the time service of Bucharest Observatory, by means of a chronographic card designed by M. Dequin and F. Chollet (of Paris Observatory) and made in Bucharest. To make the best of the use of the chronographic card, we resorted to a specially designed program (TSR – Terminate, Stay Resident), meant to ensure the periodical synchronization of the real time clock of the computer (with a one second or one minute step).

In view of the fact there were only approximately 30 nights when observations were actually carried out for PHESAT'95 and also the fact that each night dozens or hundreds of auxiliary images (for flat-field and thermal noise corrections, for various windows used) were made, it results that the number of auxiliary images made during this time amounts to no less than 2000–3000. To these, the images themselves, over 4000 in number, have to be added. From among the latter ones, 2670 are astrometric images, containing images of Saturn's satellites (2520) and of the M15 cluster (150), which are used to orientate the camera.

As the observation data accumulated, the necessary programs of preliminary processing were elaborated (we refer here to the pre-processing and to the measurement programs). The astrometric reduction programs began to be elaborated only towards the end of the campaign and were finished in the summer of 1996.

The accuracy of the obtained CCD positions can be generally estimated by the mean square error of stellar images reduction in a globular cluster, which is an error calculated for independent stars, not included in the determination of the transformation's coefficients. In the case of the astrograph in Bucharest, the average

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of mean square errors at the reduction of cluster M15 ranges between 0.125 and 0.098 arc seconds in positions, which corresponds to a mean square error, for each coordinate, ranging between 0.09 and 0.07 arc seconds.

After the determination of the astrometric positions, we performed an analysis of their accuracy, in order to reject the wrong positions (Vass, 1997).

2. GENERAL SITUATION OF THE DATA

During PHESAT'95 we determined relative positions for the following Saturnian satellites:

2 - ENCELADUS, 3 - TETHYS, 4 - DIONE, 5 - RHEA, 7 - HYPERION and 8 - IAPETUS. As origin, we used, generally, the satellite 6 - TITAN.

The 126 series of positions of the Saturnian satellites contained, initially, 3600 individual positions.

13 series (with 270 positions) were rejected because of their great dispersion, put in evidence by the accuracy analysis.

104 series were "cleaned up" using a normal, 2-s criterion of exclusion.

For 9 series it was necessary to use a 1.7-s limit, or some subjective intervention of us.

Finally, from the 113 usable series (3330 positions), by rejecting 790 wrong positions (21.7%), resulted 2540 positions with a satisfactory internal consistency.

Only after all these operations, the determined positions were compared with the ephemeris (Satellite Almanac), the O-C differences were calculated and included in the database.

A single series, of IAPETUS, was rejected after viewing O-C differences; it is obvious because of a wrong identification of the satellite, which was confounded with a star, during the measurement.

The final database – listed in the table I – contains the following data:

1 – Number and Name of the Satellite (only the first three letters);
2 – Number and Name of the Origin Satellite (idem);
3 – Date (Year, Month, Day) of the observation;
4 – Time (Hours, Minutes, Seconds) of the observation (UTC);
5 – $\Delta\alpha$ (");
6 – O-C ($\Delta\alpha$);
7 – $\Delta\delta$ (");
8 – O-C ($\Delta\delta$);
9 – Signal to Noise ratio;
10 – Integration time (seconds);
11 – Dispersion for $\Delta\alpha$;
12 – Dispersion for $\Delta\delta$.

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Table I

1	2	3			4			5	6	7	8	9	10	11	12
2_ENC	4_DIO	1995	6	30	0	49	39.78	-20.22	.4	1.72	.2	2.4	2.0	.15	.22
2_ENC	4_DIO	1995	6	30	0	50	10.81	-20.53	.1	1.32	-.2	1.9	2.0	.15	.22
2_ENC	4_DIO	1995	6	30	0	52	8.57	-20.71	-.1	1.65	.1	1.7	2.0	.15	.22
2_ENC	4_DIO	1995	6	30	0	52	20.55	-20.51	.0	1.25	-.2	2.8	2.0	.15	.22
2_ENC	4_DIO	1995	10	30	17	8	59.18	-73.00	.4	4.43	-.3	6.1	2.0	.05	.03
2_ENC	4_DIO	1995	10	30	17	9	12.31	-72.94	.4	4.49	-.3	7.0	2.0	.05	.03
2_ENC	4_DIO	1995	10	30	17	9	24.83	-72.89	.5	4.37	-.4	6.6	2.0	.05	.03
2_ENC	4_DIO	1995	10	30	17	9	35.76	-72.99	.4	4.39	-.4	3.3	2.0	.05	.03
2_ENC	4_DIO	1995	10	30	17	9	51.97	-73.05	.3	4.39	-.4	5.1	2.0	.05	.03
2_ENC	6_TIT	1995	8	7	23	29	51.21	53.73	-.4	-4.43	-.1	6.0	5.0	.09	.08
2_ENC	6_TIT	1995	8	7	23	39	31.61	53.53	-.4	-4.23	.1	6.4	5.0	.09	.08
2_ENC	6_TIT	1995	8	7	23	40	27.57	53.58	-.3	-4.39	-.1	5.8	5.0	.09	.08
2_ENC	6_TIT	1995	8	7	23	41	8.33	53.72	-.2	-4.31	.0	5.9	5.0	.09	.08
2_ENC	6_TIT	1995	8	7	23	41	51.89	53.58	-.3	-4.19	.1	5.5	5.0	.09	.08
2_ENC	6_TIT	1995	8	7	23	42	45.66	53.69	-.2	-4.27	.1	5.1	5.0	.09	.08
2_ENC	6_TIT	1995	8	7	23	43	41.13	53.52	-.3	-4.16	.2	7.8	5.0	.09	.08
2_ENC	6_TIT	1995	8	7	23	44	51.05	53.67	-.2	-4.10	.2	6.1	5.0	.09	.08
2_ENC	6_TIT	1995	8	7	23	45	54.44	53.79	.0	-4.02	.3	7.2	5.0	.09	.08
2_ENC	6_TIT	1995	8	8	0	47	32.79	53.30	-.4	-4.31	.0	8.5	10.0	.02	.07
2_ENC	6_TIT	1995	8	8	0	48	41.39	53.38	-.3	-4.33	.0	7.0	10.0	.02	.07
2_ENC	6_TIT	1995	8	8	0	51	10.46	53.37	-.3	-4.39	-.1	8.8	10.0	.02	.07
2_ENC	6_TIT	1995	8	8	0	52	22.41	53.36	-.4	-4.27	.0	7.3	10.0	.02	.07
2_ENC	6_TIT	1995	8	8	0	55	49.87	53.43	-.3	-4.27	.0	7.4	10.0	.02	.07
2_ENC	6_TIT	1995	8	8	0	58	13.00	53.45	-.3	-4.49	-.2	7.2	10.0	.02	.07
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2_ENC	6_TIT	1995	9	13	23	49	26.14	72.11	.2	-8.35	.4	3.4	2.0	.17	.18
2_ENC	6_TIT	1995	9	13	23	55	1.18	72.02	.7	-8.39	.3	2.9	2.0	.17	.18
2_ENC	6_TIT	1995	9	13	23	55	7.50	71.80	.5	-8.43	.2	2.6	2.0	.17	.18
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2_ENC	6_TIT	1995	9	13	23	58	42.75	71.38	.4	-8.42	.2	4.0	2.0	.17	.18
2_ENC	6_TIT	1995	9	13	23	58	58.63	71.64	.7	-8.39	.2	3.2	2.0	.17	.18
2_ENC	6_TIT	1995	9	14	0	5	3.94	70.62	.2	-8.57	-.1	2.9	2.0	.17	.18
2_ENC	6_TIT	1995	9	14	0	9	27.03	70.33	.3	-8.22	.2	3.6	2.0	.17	.18
2_ENC	6_TIT	1995	9	14	0	9	33.84	70.18	.1	-8.21	.2	3.9	2.0	.17	.18
2_ENC	6_TIT	1995	9	14	0	15	30.80	69.72	.3	-8.41	.0	3.3	2.0	.17	.18
2_ENC	6_TIT	1995	9	14	0	15	37.94	69.99	.6	-8.38	.0	3.4	2.0	.17	.18
2_ENC	6_TIT	1995	9	14	0	15	44.21	69.75	.3	-8.18	.2	2.6	2.0	.17	.18
2_ENC	6_TIT	1995	9	14	0	30	6.04	68.69	.6	-7.90	.4	2.7	2.0	.17	.18
2_ENC	6_TIT	1995	9	14	0	30	18.95	68.45	.4	-7.89	.4	3.0	2.0	.17	.18

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Table I (continued)

1	2	3			4			5	6	7	8	9	10	11	12
2_ENC	6_TIT	1995	9	14	0	30	27.96	68.40	.3	-8.45	-.2	2.8	2.0	.17	.18
2_ENC	6_TIT	1995	9	14	0	34	33.25	68.15	.4	-8.00	.3	3.6	2.0	.17	.18
2_ENC	6_TIT	1995	9	14	0	34	40.78	68.29	.5	-8.47	-.2	2.3	2.0	.17	.18
2_ENC	6_TIT	1995	9	14	0	34	48.63	68.02	.3	-8.40	-.1	2.1	2.0	.17	.18
2_ENC	6_TIT	1995	9	14	0	40	55.48	67.68	.4	-7.92	.3	3.7	2.0	.17	.18
2_ENC	6_TIT	1995	9	14	0	41	1.96	67.62	.3	-7.89	.3	4.6	2.0	.17	.18
2_ENC	6_TIT	1995	9	14	0	48	51.96	66.98	.3	-7.94	.2	1.8	2.0	.17	.18
2_ENC	6_TIT	1995	9	14	0	48	59.37	66.91	.2	-8.30	-.2	3.3	2.0	.17	.18
2_ENC	6_TIT	1995	9	14	0	55	19.24	66.26	.1	-7.93	.2	2.3	2.0	.17	.18
2_ENC	6_TIT	1995	9	14	0	56	29.65	66.43	.3	-7.99	.1	4.0	3.0	.17	.18
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2_ENC	6_TIT	1995	9	14	1	4	38.43	66.01	.5	-7.93	.1	2.8	3.0	.17	.18
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2_ENC	6_TIT	1995	9	14	1	19	2.14	65.18	.7	-8.22	-.3	3.3	3.0	.17	.18
2_ENC	6_TIT	1995	9	14	1	19	13.23	65.05	.6	-8.14	-.2	2.4	3.0	.17	.18
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2_ENC	6_TIT	1995	9	14	1	28	24.14	64.16	.3	-7.84	.0	3.5	3.0	.17	.18
2_ENC	6_TIT	1995	9	14	1	33	23.48	64.29	.7	-8.16	-.4	3.9	3.0	.17	.18
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2_ENC	6_TIT	1995	9	14	1	34	6.65	64.09	.5	-7.66	.1	2.8	3.0	.17	.18
2_ENC	6_TIT	1995	9	14	1	45	41.18	63.26	.4	-7.80	-.1	4.3	3.0	.17	.18
2_ENC	6_TIT	1995	9	14	1	45	50.41	63.43	.6	-7.99	-.2	3.9	3.0	.17	.18
2_ENC	6_TIT	1995	9	14	1	45	57.66	63.03	.2	-7.93	-.2	2.3	3.0	.17	.18
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2_ENC	6_TIT	1995	9	14	1	52	59.00	62.69	.3	-7.91	-.2	4.8	3.0	.17	.18
2_ENC	6_TIT	1995	9	14	1	53	6.30	62.83	.4	-7.71	.0	4.7	3.0	.17	.18
2_ENC	6_TIT	1995	9	14	1	53	13.28	62.71	.3	-7.89	-.2	4.4	3.0	.17	.18
2_ENC	6_TIT	1995	9	14	1	53	20.53	62.97	.6	-7.74	-.1	4.2	3.0	.17	.18
2_ENC	6_TIT	1995	9	14	1	53	27.67	62.65	.3	-7.77	-.1	3.3	3.0	.17	.18
2_ENC	6_TIT	1995	9	14	1	53	34.92	62.78	.4	-7.73	-.1	4.2	3.0	.17	.18
2_ENC	6_TIT	1995	9	14	1	53	42.33	62.62	.2	-7.82	-.2	4.2	3.0	.17	.18
2_ENC	6_TIT	1995	9	14	1	59	39.40	62.44	.4	-7.51	.1	4.1	3.0	.17	.18
2_ENC	6_TIT	1995	9	14	2	15	58.94	61.80	.5	-7.96	-.4	3.7	3.0	.17	.18
2_ENC	6_TIT	1995	9	14	2	16	33.16	61.32	.0	-7.29	.2	3.8	3.0	.17	.18
2_ENC	6_TIT	1995	9	14	2	21	46.35	60.97	-.1	-7.69	-.2	3.2	3.0	.17	.18
2_ENC	6_TIT	1995	9	14	2	21	53.82	61.30	.3	-7.54	.0	1.9	3.0	.17	.18
2_ENC	6_TIT	1995	9	14	2	22	20.57	61.43	.4	-7.45	.1	3.3	3.0	.17	.18
2_ENC	6_TIT	1995	9	14	2	22	31.28	61.28	.3	-7.65	-.1	2.9	3.0	.17	.18
2_ENC	6_TIT	1995	9	14	2	22	39.19	61.09	.1	-7.45	.1	3.6	3.0	.17	.18

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Table I (continued)

1	2	3	4	5	6	7	8	9	10	11	12
2_ENC	6_TIT	1995 9 14	2 22 46.82	60.94	.0	-7.59	-.1	3.4	3.0	.17	.18
2_ENC	6_TIT	1995 10 3	20 32 32.85	-132.36	.3	7.55	-.3	5.8	1.0	.09	.22
2_ENC	6_TIT	1995 10 3	20 33 .10	-132.02	.7	7.55	-.3	3.8	1.0	.09	.22
2_ENC	6_TIT	1995 10 3	20 43 21.52	-131.82	.5	7.72	-.1	5.0	1.0	.09	.22
2_ENC	6_TIT	1995 10 3	20 44 7.94	-132.06	.3	7.97	.2	4.1	1.0	.09	.22
2_ENC	6_TIT	1995 10 3	20 44 17.22	-131.93	.4	7.87	.1	3.9	1.0	.09	.22
2_ENC	6_TIT	1995 10 3	20 45 43.73	-131.81	.5	7.66	-.1	3.7	1.0	.09	.22
2_ENC	6_TIT	1995 10 3	20 45 54.55	-131.69	.6	8.17	.4	4.0	1.0	.09	.22
2_ENC	6_TIT	1995 10 3	20 46 3.44	-131.92	.4	8.00	.2	5.5	1.0	.09	.22
2_ENC	6_TIT	1995 10 3	20 46 17.07	-131.86	.4	7.30	-.5	3.7	1.0	.09	.22
2_ENC	6_TIT	1995 10 3	20 46 26.02	-131.76	.5	7.65	-.2	3.7	1.0	.09	.22
2_ENC	6_TIT	1995 10 3	20 51 6.36	-131.86	.3	7.90	.1	4.8	1.0	.09	.22
2_ENC	6_TIT	1995 10 3	20 51 18.66	-131.66	.5	7.66	-.1	4.9	1.0	.09	.22
2_ENC	6_TIT	1995 10 3	20 51 44.04	-131.80	.4	7.73	-.1	4.6	1.0	.09	.22
2_ENC	6_TIT	1995 10 3	20 51 53.21	-131.72	.5	8.13	.3	3.6	1.0	.09	.22
2_ENC	6_TIT	1995 10 3	20 52 4.47	-131.71	.5	7.75	-.1	3.0	1.0	.09	.22
2_ENC	6_TIT	1995 10 3	20 59 45.57	-131.58	.5	7.73	-.1	3.7	1.0	.09	.22
2_ENC	6_TIT	1995 10 3	21 0 7.43	-131.46	.6	7.50	-.3	3.7	1.0	.09	.22
2_ENC	6_TIT	1995 10 3	21 0 16.38	-131.59	.5	7.91	.1	4.3	1.0	.09	.22
2_ENC	6_TIT	1995 10 3	21 0 25.28	-131.46	.6	7.45	-.3	4.6	1.0	.09	.22
2_ENC	6_TIT	1995 10 3	22 24 42.38	-131.41	.6	7.56	.0	3.4	1.0	.09	.22
2_ENC	6_TIT	1995 10 3	22 24 51.17	-131.56	.4	7.55	.0	3.1	1.0	.09	.22
2_ENC	6_TIT	1995 10 3	22 25 8.74	-131.49	.5	7.42	-.1	5.0	1.0	.09	.22
2_ENC	6_TIT	1995 10 3	22 25 22.97	-131.57	.4	7.12	-.4	3.8	1.0	.09	.22
2_ENC	6_TIT	1995 10 3	22 30 39.01	-131.62	.5	7.29	-.2	4.6	1.0	.09	.22
2_ENC	6_TIT	1995 10 3	22 30 59.17	-131.53	.6	7.33	-.2	4.0	1.0	.09	.22
2_ENC	6_TIT	1995 10 3	22 31 7.85	-131.66	.5	7.85	.3	5.0	1.0	.09	.22
2_ENC	6_TIT	1995 10 3	22 31 17.02	-131.72	.4	7.23	-.3	5.6	1.0	.09	.22
2_ENC	6_TIT	1995 10 3	22 31 25.64	-131.62	.5	7.65	.1	5.0	1.0	.09	.22
2_ENC	6_TIT	1995 10 3	22 48 57.52	-132.01	.5	7.13	-.4	4.8	1.0	.09	.22
2_ENC	6_TIT	1995 10 3	22 49 10.21	-131.90	.6	7.71	.2	5.1	1.0	.09	.22
2_ENC	6_TIT	1995 10 3	22 49 19.44	-131.93	.5	7.06	-.5	3.7	1.0	.09	.22
2_ENC	6_TIT	1995 10 3	22 49 29.76	-132.20	.3	7.45	-.1	5.1	1.0	.09	.22
2_ENC	6_TIT	1995 10 3	22 56 32.63	-132.39	.3	7.26	-.2	4.0	1.0	.09	.22
2_ENC	6_TIT	1995 10 3	22 56 42.19	-132.20	.5	7.49	.0	4.4	1.0	.09	.22
2_ENC	6_TIT	1995 10 3	22 56 51.20	-132.25	.5	7.17	-.3	4.2	1.0	.09	.22
2_ENC	6_TIT	1995 10 3	22 57 1.14	-132.23	.5	7.60	.1	4.4	1.0	.09	.22
2_ENC	6_TIT	1995 10 3	22 57 10.20	-132.28	.4	7.16	-.3	4.4	1.0	.09	.22
2_ENC	6_TIT	1995 10 3	23 1 3.14	-132.28	.5	7.70	.2	5.5	1.0	.09	.22
2_ENC	6_TIT	1995 10 3	23 1 14.13	-132.34	.5	7.47	.0	4.7	1.0	.09	.22
2_ENC	6_TIT	1995 10 3	23 1 31.87	-132.44	.4	7.04	-.5	5.0	1.0	.09	.22

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Table I (continued)

1	2	3			4			5	6	7	8	9	10	11	12
2_ENC	6_TIT	1995	10	3	23	1	40.88	-132.46	.4	7.39	-.1	3.4	1.0	.09	.22
2_ENC	6_TIT	1995	10	4	0	18	11.77	-135.17	.8	7.58	.0	3.3	2.0	.14	.11
2_ENC	6_TIT	1995	10	4	0	18	22.92	-135.25	.8	7.58	.0	4.3	2.0	.14	.11
2_ENC	6_TIT	1995	10	4	0	18	32.59	-135.38	.6	7.70	.1	2.9	2.0	.14	.11
2_ENC	6_TIT	1995	10	4	0	25	42.43	-135.78	.7	7.69	.0	5.3	2.0	.14	.11
2_ENC	6_TIT	1995	10	4	0	26	25.44	-135.45	1.0	7.59	-.1	3.6	2.0	.14	.11
2_ENC	6_TIT	1995	10	4	0	34	21.04	-136.12	.8	7.15	-.5	2.1	2.0	.14	.11
2_ENC	6_TIT	1995	10	4	0	34	30.87	-136.39	.6	7.23	-.5	3.9	2.0	.14	.11
2_ENC	6_TIT	1995	10	14	19	13	40.25	191.19	.2	-18.69	-.3	2.0	1.0	.21	.15
2_ENC	6_TIT	1995	10	14	19	13	49.65	190.93	-.1	-19.08	-.6	2.1	1.0	.21	.15
2_ENC	6_TIT	1995	10	14	19	23	15.27	192.42	1.2	-18.39	.1	1.1	1.0	.21	.15
2_ENC	6_TIT	1995	10	14	19	23	26.91	192.33	1.1	-18.45	.1	2.4	1.0	.21	.15
2_ENC	6_TIT	1995	10	14	19	23	36.41	191.88	.6	-18.46	.1	3.2	1.0	.21	.15
2_ENC	6_TIT	1995	10	14	19	23	45.86	191.69	.4	-18.03	.5	2.8	1.0	.21	.15
2_ENC	6_TIT	1995	10	14	19	23	55.42	191.81	.5	-18.28	.3	2.7	1.0	.21	.15
2_ENC	6_TIT	1995	10	14	19	24	4.87	192.18	.9	-18.41	.1	2.6	1.0	.21	.15
2_ENC	6_TIT	1995	10	14	19	39	1.31	192.14	.5	-18.41	.3	3.1	1.0	.21	.15
2_ENC	6_TIT	1995	10	14	19	39	10.92	192.12	.4	-18.24	.5	3.1	1.0	.21	.15
2_ENC	6_TIT	1995	10	14	19	39	20.25	192.46	.8	-18.43	.3	2.8	1.0	.21	.15
2_ENC	6_TIT	1995	10	14	19	39	29.92	192.08	.4	-18.69	.0	2.3	1.0	.21	.15
2_ENC	6_TIT	1995	10	14	19	45	25.89	192.08	.3	-18.27	.5	3.0	1.0	.21	.15
2_ENC	6_TIT	1995	10	14	19	45	49.84	192.28	.5	-18.28	.5	3.2	1.0	.21	.15
2_ENC	6_TIT	1995	10	14	19	46	.61	192.48	.7	-18.58	.2	2.5	1.0	.21	.15
2_ENC	6_TIT	1995	10	14	19	46	14.89	192.38	.6	-18.37	.4	3.3	1.0	.21	.15
2_ENC	6_TIT	1995	10	14	20	45	32.80	192.53	.2	-18.78	.3	1.9	1.0	.20	.11
2_ENC	6_TIT	1995	10	14	20	45	43.84	192.38	.1	-19.07	.0	1.7	1.0	.20	.11
2_ENC	6_TIT	1995	10	14	20	45	54.22	192.01	-.3	-19.08	.0	1.7	1.0	.20	.11
2_ENC	6_TIT	1995	10	14	20	46	4.98	192.59	.3	-19.00	.1	1.8	1.0	.20	.11
2_ENC	6_TIT	1995	10	14	20	56	17.29	192.17	-.1	-18.69	.5	1.6	1.0	.20	.11
3_TET	4_DIO	1995	6	30	0	49	39.78	-96.53	.0	6.59	-.3	6.7	2.0	.08	.14
3_TET	4_DIO	1995	6	30	0	50	10.81	-96.32	.2	6.41	-.5	6.2	2.0	.08	.14
3_TET	4_DIO	1995	6	30	0	50	32.07	-96.40	.1	6.24	-.7	7.1	2.0	.08	.14
3_TET	4_DIO	1995	6	30	0	59	24.74	-96.55	.1	6.99	.1	4.5	2.0	.08	.14
3_TET	4_DIO	1995	8	6	22	30	5.07	-85.26	.4	6.12	.1	5.3	1.0	.15	.13
3_TET	4_DIO	1995	8	6	22	30	39.07	-85.04	.7	5.79	-.2	5.4	1.0	.15	.13
3_TET	4_DIO	1995	8	6	22	30	58.62	-85.18	.6	5.89	-.1	6.2	1.0	.15	.13
3_TET	4_DIO	1995	8	6	22	31	39.26	-85.23	.6	5.80	-.2	6.1	1.0	.15	.13
3_TET	4_DIO	1995	8	6	22	32	18.48	-85.07	.7	5.70	-.3	5.0	1.0	.15	.13
3_TET	4_DIO	1995	8	6	22	32	39.08	-84.63	1.2	6.00	.0	3.9	1.0	.15	.13
3_TET	4_DIO	1995	9	2	1	17	23.07	18.68	-1.0	-2.30	.1	4.1	2.0	.12	.14

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Table I (continued)

1	2	3			4			5	6	7	8	9	10	11	12
3_TET	4_DIO	1995	9	2	1	17	48.39	18.63	-1.1	-2.59	-.2	2.6	2.0	.12	.14
3_TET	4_DIO	1995	9	2	1	18	1.02	18.41	-1.3	-2.33	.1	4.1	2.0	.12	.14
3_TET	4_DIO	1995	9	2	1	25	10.59	18.67	-.8	-2.48	-.1	3.1	2.0	.12	.14
3_TET	4_DIO	1995	9	2	1	25	27.35	18.49	-1.0	-2.42	.0	3.6	2.0	.12	.14
3_TET	4_DIO	1995	9	2	1	30	12.30	18.29	-1.1	-2.46	-.1	4.6	2.0	.12	.14
3_TET	4_DIO	1995	9	2	1	30	41.03	18.38	-1.0	-2.32	.1	4.2	2.0	.12	.14
3_TET	4_DIO	1995	9	2	1	40	46.47	18.32	-.7	-2.23	.2	3.8	2.0	.12	.14
3_TET	4_DIO	1995	9	2	1	47	2.05	17.90	-1.0	-2.68	-.3	3.3	2.0	.12	.14
3_TET	4_DIO	1995	9	2	1	57	44.95	17.92	-.6	-2.23	.1	4.2	2.0	.12	.14
3_TET	4_DIO	1995	9	2	2	17	58.92	17.22	-.7	-2.39	-.1	5.9	2.0	.12	.14
3_TET	4_DIO	1995	9	2	2	18	23.47	17.43	-.5	-2.63	-.3	4.2	2.0	.12	.14
3_TET	4_DIO	1995	9	2	2	18	37.42	17.46	-.5	-2.63	-.3	6.8	2.0	.12	.14
3_TET	4_DIO	1995	9	2	2	18	48.90	17.20	-.7	-2.42	-.1	3.4	2.0	.12	.14
3_TET	4_DIO	1995	9	3	22	37	3.38	-80.36	-.7	5.76	-.1	3.7	2.0	.13	.13
3_TET	4_DIO	1995	9	3	22	37	19.80	-80.23	-.6	6.01	.1	4.7	2.0	.13	.13
3_TET	4_DIO	1995	9	3	22	37	34.85	-80.59	-.9	6.08	.2	3.9	2.0	.13	.13
3_TET	4_DIO	1995	9	3	22	37	51.27	-80.43	-.8	6.11	.2	4.7	2.0	.13	.13
3_TET	4_DIO	1995	9	3	22	38	7.53	-80.34	-.7	5.80	-.1	6.6	2.0	.13	.13
3_TET	4_DIO	1995	9	3	22	38	22.42	-80.45	-.8	5.95	.1	5.4	2.0	.13	.13
3_TET	4_DIO	1995	9	3	22	40	55.60	-80.66	-.9	6.10	.2	3.3	2.0	.13	.13
3_TET	4_DIO	1995	9	3	22	57	26.96	-80.51	-.6	6.10	.2	5.0	2.0	.13	.13
3_TET	4_DIO	1995	9	3	22	57	48.32	-80.79	-.9	6.04	.1	4.9	2.0	.13	.13
3_TET	4_DIO	1995	9	3	22	58	.57	-80.66	-.8	5.92	.0	4.0	2.0	.13	.13
3_TET	4_DIO	1995	9	3	22	58	13.37	-80.60	-.7	6.20	.3	4.4	2.0	.13	.13
3_TET	4_DIO	1995	9	3	22	58	27.65	-80.45	-.5	5.91	.0	3.9	2.0	.13	.13
3_TET	4_DIO	1995	9	3	22	58	44.95	-80.72	-.8	6.25	.3	5.4	2.0	.13	.13
3_TET	4_DIO	1995	9	3	22	59	10.16	-80.67	-.8	6.14	.2	4.3	2.0	.13	.13
3_TET	4_DIO	1995	9	3	22	59	27.13	-80.36	-.5	6.11	.2	4.7	2.0	.13	.13
3_TET	4_DIO	1995	9	3	22	59	41.69	-80.53	-.6	6.08	.2	3.2	2.0	.13	.13
3_TET	4_DIO	1995	9	3	23	0	34.47	-80.59	-.7	6.01	.1	3.4	2.0	.13	.13
3_TET	4_DIO	1995	9	3	23	0	49.85	-80.80	-.9	6.31	.4	3.1	2.0	.13	.13
3_TET	4_DIO	1995	9	3	23	1	5.89	-80.57	-.7	5.91	.0	4.8	2.0	.13	.13
3_TET	4_DIO	1995	9	3	23	1	21.43	-80.47	-.6	6.04	.1	5.4	2.0	.13	.13
3_TET	4_DIO	1995	9	3	23	1	36.54	-80.45	-.5	5.90	.0	5.2	2.0	.13	.13
3_TET	4_DIO	1995	9	3	23	55	26.54	-80.54	-.5	6.12	.1	7.2	5.0	.12	.09
3_TET	4_DIO	1995	9	3	23	55	47.74	-80.58	-.5	5.93	-.1	7.7	5.0	.12	.09
3_TET	4_DIO	1995	9	3	23	56	5.59	-80.64	-.6	6.25	.2	6.8	5.0	.12	.09
3_TET	4_DIO	1995	9	3	23	56	23.61	-80.93	-.9	6.02	.0	7.1	5.0	.12	.09
3_TET	4_DIO	1995	9	3	23	56	39.26	-80.90	-.9	6.09	.0	7.5	5.0	.12	.09
3_TET	4_DIO	1995	9	3	23	57	.41	-80.63	-.6	5.94	-.1	6.6	5.0	.12	.09
3_TET	4_DIO	1995	9	3	23	57	17.43	-80.86	-.8	6.08	.0	7.9	5.0	.12	.09

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Table I (continued)

1	2	3			4			5	6	7	8	9	10	11	12
3_TET	4_DIO	1995	9	3	23	57	32.65	-80.65	-.6	6.14	.1	8.0	5.0	.12	.09
3_TET	4_DIO	1995	9	3	23	57	46.76	-80.76	-.7	6.06	.0	8.5	5.0	.12	.09
3_TET	4_DIO	1995	9	3	23	58	5.44	-80.72	-.7	6.16	.1	8.5	5.0	.12	.09
3_TET	4_DIO	1995	10	30	17	8	59.18	-80.77	.3	3.32	-.3	18.4	2.0	.07	.06
3_TET	4_DIO	1995	10	30	17	9	12.31	-80.69	.4	3.38	-.2	20.6	2.0	.07	.06
3_TET	4_DIO	1995	10	30	17	9	24.83	-80.73	.4	3.30	-.3	20.4	2.0	.07	.06
3_TET	4_DIO	1995	10	30	17	9	35.76	-80.70	.5	3.52	-.1	11.3	2.0	.07	.06
3_TET	4_DIO	1995	10	30	17	9	51.97	-80.93	.3	3.50	-.1	16.9	2.0	.07	.06
3_TET	6_TIT	1995	6	28	23	58	32.41	-45.86	.9	5.72	.1	4.5	1.0	.12	.14
3_TET	6_TIT	1995	6	28	23	58	44.00	-46.03	.7	5.56	.0	3.8	1.0	.12	.14
3_TET	6_TIT	1995	6	28	23	58	54.05	-46.17	.5	5.81	.2	4.9	1.0	.12	.14
3_TET	6_TIT	1995	6	28	23	59	4.70	-45.82	.9	5.38	-.2	5.9	1.0	.12	.14
3_TET	6_TIT	1995	6	28	23	59	14.21	-45.83	.9	5.57	.0	5.2	1.0	.12	.14
3_TET	6_TIT	1995	6	28	23	59	25.47	-46.10	.6	5.47	-.1	4.8	1.0	.12	.14
3_TET	6_TIT	1995	6	28	23	59	35.57	-45.91	.8	5.42	-.2	4.9	1.0	.12	.14
3_TET	6_TIT	1995	6	29	0	1	47.89	-45.56	1.1	5.66	.1	3.2	1.0	.12	.14
3_TET	6_TIT	1995	6	29	0	1	58.60	-45.63	1.0	5.35	-.3	3.1	1.0	.12	.14
3_TET	6_TIT	1995	6	29	0	2	8.54	-45.62	1.1	5.41	-.2	3.8	1.0	.12	.14
3_TET	6_TIT	1995	6	29	0	2	20.30	-45.70	1.0	5.59	.0	3.1	1.0	.12	.14
3_TET	6_TIT	1995	6	29	0	2	31.72	-45.77	.9	5.32	-.3	3.4	1.0	.12	.14
3_TET	6_TIT	1995	6	29	0	4	36.95	-45.66	1.0	5.54	-.1	2.7	1.0	.12	.14
3_TET	6_TIT	1995	6	29	0	24	13.18	-46.00	.5	5.88	.3	4.5	1.0	.09	.14
3_TET	6_TIT	1995	6	29	0	24	27.19	-45.86	.6	5.68	.1	4.5	1.0	.09	.14
3_TET	6_TIT	1995	6	29	0	24	40.92	-45.74	.8	5.70	.1	6.5	1.0	.09	.14
3_TET	6_TIT	1995	6	29	0	24	52.45	-45.92	.6	5.91	.3	5.8	1.0	.09	.14
3_TET	6_TIT	1995	6	29	0	25	6.90	-45.72	.8	5.59	.0	5.7	1.0	.09	.14
3_TET	6_TIT	1995	6	29	0	29	36.36	-45.62	.9	5.42	-.2	12.1	2.0	.09	.14
3_TET	6_TIT	1995	6	29	0	30	1.63	-45.57	.9	5.29	-.3	9.2	2.0	.09	.14
3_TET	6_TIT	1995	6	29	0	30	12.01	-45.63	.9	5.52	-.1	11.3	2.0	.09	.14
3_TET	6_TIT	1995	6	29	0	30	23.87	-45.64	.9	5.54	-.1	12.1	2.0	.09	.14
3_TET	6_TIT	1995	6	29	0	30	47.49	-45.46	1.0	5.37	-.2	13.1	2.0	.09	.14
3_TET	6_TIT	1995	6	29	0	30	58.69	-45.66	.8	5.40	-.2	10.5	2.0	.09	.14
3_TET	6_TIT	1995	6	29	0	32	48.82	-45.67	.8	5.59	.0	14.0	3.0	.09	.14
3_TET	6_TIT	1995	6	29	0	33	6.18	-45.71	.8	5.75	.2	15.2	3.0	.09	.14
3_TET	6_TIT	1995	6	29	0	33	18.65	-45.47	1.0	5.37	-.2	14.6	3.0	.09	.14
3_TET	6_TIT	1995	6	29	0	33	30.01	-45.60	.9	5.67	.1	14.3	3.0	.09	.14
3_TET	6_TIT	1995	6	29	0	33	41.71	-45.65	.8	5.54	-.1	14.5	3.0	.09	.14
3_TET	6_TIT	1995	6	29	0	35	7.95	-45.60	.9	5.57	.0	18.7	5.0	.09	.14
3_TET	6_TIT	1995	6	29	0	35	21.51	-45.49	1.0	5.76	.2	18.4	5.0	.09	.14
3_TET	6_TIT	1995	6	29	0	35	34.75	-45.64	.8	5.56	.0	17.4	5.0	.09	.14
3_TET	6_TIT	1995	6	29	0	35	48.48	-45.51	.9	5.50	-.1	16.5	5.0	.09	.14

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Table I (continued)

1	2	3			4			5	6	7	8	9	10	11	12
3_TET	6_TIT	1995	6	29	0	36	2.10	-45.60	.8	5.53	-.1	17.0	5.0	.09	.14
3_TET	6_TIT	1995	6	29	0	49	32.64	-45.72	.6	5.80	.2	8.0	1.0	.09	.14
3_TET	6_TIT	1995	6	29	0	49	43.18	-45.84	.5	5.59	.0	6.7	1.0	.09	.14
3_TET	6_TIT	1995	6	29	0	50	4.94	-45.72	.6	5.43	-.2	7.6	1.0	.09	.14
3_TET	6_TIT	1995	6	29	0	50	15.76	-45.69	.6	5.55	.0	8.8	1.0	.09	.14
3_TET	6_TIT	1995	6	29	0	50	26.69	-45.82	.5	5.65	.0	5.9	1.0	.09	.14
3_TET	6_TIT	1995	6	29	0	50	38.00	-45.65	.6	5.40	-.2	9.5	1.0	.09	.14
3_TET	6_TIT	1995	6	29	0	50	50.74	-45.69	.6	5.39	-.2	7.1	1.0	.09	.14
3_TET	6_TIT	1995	6	29	0	51	13.92	-45.62	.7	5.61	.0	7.8	1.0	.09	.14
3_TET	6_TIT	1995	6	29	0	52	3.13	-45.48	.8	5.47	-.1	8.9	1.0	.09	.14
3_TET	6_TIT	1995	6	29	0	52	26.97	-45.49	.8	5.62	.0	6.6	1.0	.09	.14
3_TET	6_TIT	1995	6	29	0	52	51.36	-45.68	.6	5.76	.2	8.1	1.0	.09	.14
3_TET	6_TIT	1995	6	29	0	53	29.86	-45.59	.7	5.77	.2	3.2	1.0	.09	.14
3_TET	6_TIT	1995	6	29	0	53	52.05	-45.57	.7	5.64	.0	7.7	1.0	.09	.14
3_TET	6_TIT	1995	6	29	0	54	50.05	-45.65	.6	5.82	.2	7.0	1.0	.09	.14
3_TET	6_TIT	1995	6	29	0	56	32.05	-45.51	.8	5.79	.2	7.4	1.0	.09	.14
3_TET	6_TIT	1995	6	29	0	56	52.15	-45.74	.6	5.47	-.1	6.3	1.0	.09	.14
3_TET	6_TIT	1995	6	29	0	59	11.17	-45.50	.8	5.60	.0	5.0	.5	.09	.14
3_TET	6_TIT	1995	6	29	0	59	30.72	-45.39	.9	5.66	.1	5.2	.5	.09	.14
3_TET	6_TIT	1995	6	29	0	59	52.58	-45.39	.9	5.64	.0	4.0	.5	.09	.14
3_TET	6_TIT	1995	6	29	1	2	.06	-45.28	1.0	5.34	-.3	5.9	.5	.09	.14
3_TET	6_TIT	1995	6	30	1	15	21.10	-182.80	.3	14.04	-.3	10.0	5.0	.14	.16
3_TET	6_TIT	1995	6	30	1	16	41.45	-183.20	-.1	14.19	-.1	8.0	5.0	.14	.16
3_TET	6_TIT	1995	6	30	1	16	56.78	-182.94	.2	14.19	-.1	9.1	5.0	.14	.16
3_TET	6_TIT	1995	6	30	1	17	11.94	-182.82	.3	14.53	.2	9.7	5.0	.14	.16
3_TET	6_TIT	1995	6	30	1	17	30.67	-183.23	-.1	14.14	-.2	8.2	5.0	.14	.16
3_TET	6_TIT	1995	6	30	1	17	43.90	-182.86	.3	14.23	-.1	7.5	5.0	.14	.16
3_TET	6_TIT	1995	6	30	1	17	57.64	-183.06	.1	14.22	-.1	8.3	5.0	.14	.16
3_TET	6_TIT	1995	6	30	1	18	11.09	-183.22	.0	14.39	.1	8.9	5.0	.14	.16
3_TET	6_TIT	1995	6	30	1	18	25.59	-183.10	.1	14.09	-.2	8.6	5.0	.14	.16
3_TET	6_TIT	1995	6	30	1	18	39.54	-182.85	.4	14.15	-.1	9.8	5.0	.14	.16
3_TET	6_TIT	1995	6	30	1	22	56.10	-183.24	.2	13.97	-.3	5.2	2.0	.14	.16
3_TET	6_TIT	1995	6	30	1	23	29.50	-183.48	.0	14.14	-.2	5.7	2.0	.14	.16
3_TET	6_TIT	1995	6	30	1	23	40.37	-183.53	.0	14.28	.0	3.9	2.0	.14	.16
3_TET	6_TIT	1995	6	30	1	24	1.79	-183.28	.2	14.42	.1	8.0	2.0	.14	.16
3_TET	6_TIT	1995	6	30	1	24	12.28	-183.36	.1	14.25	.0	6.3	2.0	.14	.16
3_TET	6_TIT	1995	6	30	1	24	22.94	-183.44	.1	14.41	.1	5.6	2.0	.14	.16
3_TET	6_TIT	1995	6	30	1	24	36.83	-183.30	.2	14.05	-.2	4.3	2.0	.14	.16
3_TET	6_TIT	1995	6	30	1	27	25.07	-183.51	.2	14.44	.1	15.4	10.0	.14	.16
3_TET	6_TIT	1995	6	30	1	27	45.23	-183.40	.3	14.11	-.2	15.2	10.0	.14	.16
3_TET	6_TIT	1995	6	30	1	28	3.90	-183.37	.3	14.00	-.3	14.4	10.0	.14	.16

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Table I (continued)

1	2	3			4			5	6	7	8	9	10	11	12
3_TET	6_TIT	1995	6	30	1	35	26.60	-183.96	.1	14.30	.0	7.1	2.0	.14	.16
3_TET	6_TIT	1995	6	30	1	35	41.65	-183.87	.2	13.97	-.3	6.0	2.0	.14	.16
3_TET	6_TIT	1995	6	30	1	35	51.98	-183.81	.3	14.28	.0	5.5	2.0	.14	.16
3_TET	6_TIT	1995	6	30	1	36	12.91	-184.18	-.1	13.89	-.4	6.2	2.0	.14	.16
3_TET	6_TIT	1995	7	1	0	27	6.09	-130.78	.1	10.61	-.2	8.2	2.0	.14	.13
3_TET	6_TIT	1995	7	1	0	27	20.20	-130.73	.2	10.42	-.4	7.8	2.0	.14	.13
3_TET	6_TIT	1995	7	1	0	27	31.24	-130.55	.3	10.48	-.3	7.3	2.0	.14	.13
3_TET	6_TIT	1995	7	1	0	27	41.51	-130.63	.3	10.50	-.3	8.6	2.0	.14	.13
3_TET	6_TIT	1995	7	1	0	27	52.28	-130.59	.3	10.46	-.3	8.4	2.0	.14	.13
3_TET	6_TIT	1995	7	1	0	28	33.97	-130.46	.4	10.64	-.2	4.0	1.0	.14	.13
3_TET	6_TIT	1995	7	1	0	28	55.06	-130.66	.2	10.25	-.6	4.2	1.0	.14	.13
3_TET	6_TIT	1995	7	1	0	43	51.44	-130.93	.0	10.56	-.2	3.2	.5	.14	.13
3_TET	6_TIT	1995	7	1	0	43	51.44	-130.93	.0	10.56	-.2	3.5	.6	.14	.13
3_TET	6_TIT	1995	7	1	0	46	36.49	-131.02	-.1	10.91	.1	2.5	.7	.14	.13
3_TET	6_TIT	1995	7	1	0	46	56.87	-130.80	.1	10.78	.0	2.4	.7	.14	.13
3_TET	6_TIT	1995	7	1	0	47	6.43	-130.80	.1	10.77	.0	2.8	.7	.14	.13
3_TET	6_TIT	1995	7	1	0	47	16.53	-131.01	-.1	10.86	.1	3.0	.7	.14	.13
3_TET	6_TIT	1995	7	1	0	47	45.92	-130.84	.1	10.53	-.3	3.4	.7	.14	.13
3_TET	6_TIT	1995	7	1	0	48	42.44	-130.60	.3	10.95	.1	4.1	.8	.14	.13
3_TET	6_TIT	1995	7	1	0	50	6.58	-130.67	.2	10.83	.0	3.5	.8	.14	.13
3_TET	6_TIT	1995	7	1	0	50	19.38	-130.74	.2	10.68	-.1	3.8	.8	.14	.13
3_TET	6_TIT	1995	7	1	0	51	37.10	-130.63	.3	10.70	-.1	3.9	.9	.14	.13
3_TET	6_TIT	1995	7	1	0	52	18.68	-130.99	-.1	10.76	.0	5.4	.9	.14	.13
3_TET	6_TIT	1995	7	1	0	52	28.68	-130.97	-.1	10.97	.2	5.5	.9	.14	.13
3_TET	6_TIT	1995	7	1	0	52	48.12	-130.99	-.1	10.85	.0	4.4	.9	.14	.13
3_TET	6_TIT	1995	7	1	0	54	1.11	-131.04	-.1	10.73	-.1	4.6	1.0	.14	.13
3_TET	6_TIT	1995	7	1	0	54	20.39	-130.68	.2	10.61	-.2	4.8	1.0	.14	.13
3_TET	6_TIT	1995	7	15	23	41	12.39	-106.96	.9	9.42	.0	6.8	1.0	.07	.13
3_TET	6_TIT	1995	7	15	23	44	40.40	-107.12	.7	9.65	.2	3.7	1.0	.07	.13
3_TET	6_TIT	1995	7	15	23	49	41.99	-106.94	.8	9.69	.3	3.5	1.0	.07	.13
3_TET	6_TIT	1995	7	16	0	0	7.87	-106.55	.8	9.40	-.1	3.5	1.0	.07	.13
3_TET	6_TIT	1995	7	16	0	5	1.17	-106.37	.9	9.55	.1	5.0	1.0	.07	.13
3_TET	6_TIT	1995	7	16	0	24	6.15	-106.29	.7	9.79	.4	3.9	1.0	.07	.13
3_TET	6_TIT	1995	7	16	0	28	13.53	-106.30	.6	9.42	.0	5.3	1.0	.07	.13
3_TET	6_TIT	1995	7	16	0	30	4.10	-106.30	.6	9.55	.2	4.7	1.0	.07	.13
3_TET	6_TIT	1995	7	21	1	5	37.41	-95.95	.1	4.38	-.2	7.7	1.0	.16	.12
3_TET	6_TIT	1995	7	21	1	5	48.28	-95.62	.4	4.53	-.1	7.3	1.0	.16	.12
3_TET	6_TIT	1995	7	21	1	5	59.43	-95.86	.1	4.25	-.3	7.8	1.0	.16	.12
3_TET	6_TIT	1995	7	21	1	6	10.14	-95.74	.2	4.33	-.3	6.7	1.0	.16	.12
3_TET	6_TIT	1995	7	21	1	6	31.29	-95.50	.5	4.33	-.3	7.2	1.0	.16	.12
3_TET	6_TIT	1995	7	21	1	6	42.77	-95.44	.5	4.30	-.3	6.2	1.0	.16	.12

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Table I (continued)

1	2	3			4		5	6	7	8	9	10	11	12
3_TET	6_TIT	1995	7	21	1	6 54.41	-95.45	.5	4.11	-.5	5.2	1.0	.16	.12
3_TET	6_TIT	1995	7	21	1	7 5.94	-95.54	.4	4.43	-.2	7.6	1.0	.16	.12
3_TET	6_TIT	1995	7	21	1	7 15.61	-95.40	.5	4.10	-.5	7.9	1.0	.16	.12
3_TET	6_TIT	1995	7	21	1	7 26.65	-95.84	.0	4.31	-.3	5.0	1.0	.16	.12
3_TET	6_TIT	1995	7	21	1	7 39.50	-95.44	.4	4.22	-.4	6.0	1.0	.16	.12
3_TET	6_TIT	1995	7	21	1	8 3.78	-95.50	.3	4.46	-.1	6.4	1.0	.16	.12
3_TET	6_TIT	1995	7	21	1	8 14.33	-95.80	.0	4.56	.0	7.5	1.0	.16	.12
3_TET	6_TIT	1995	7	21	1	8 24.54	-95.56	.2	4.42	-.2	7.8	1.0	.16	.12
3_TET	6_TIT	1995	7	21	1	11 25.19	-95.28	.2	4.27	-.3	10.3	2.0	.16	.12
3_TET	6_TIT	1995	7	21	1	11 36.34	-95.22	.2	4.42	-.2	8.1	2.0	.16	.12
3_TET	6_TIT	1995	7	21	1	11 47.27	-95.05	.4	4.41	-.2	10.1	2.0	.16	.12
3_TET	6_TIT	1995	7	21	1	11 58.26	-95.20	.2	4.31	-.3	10.4	2.0	.16	.12
3_TET	6_TIT	1995	7	21	1	12 9.96	-95.13	.2	4.50	-.1	11.0	2.0	.16	.12
3_TET	6_TIT	1995	7	21	1	12 37.69	-94.94	.4	4.31	-.3	7.2	1.0	.16	.12
3_TET	6_TIT	1995	7	21	1	12 49.61	-95.19	.1	4.61	.0	7.3	1.0	.16	.12
3_TET	6_TIT	1995	7	21	1	12 59.88	-94.84	.4	4.41	-.2	6.7	1.0	.16	.12
3_TET	6_TIT	1995	7	21	1	13 9.28	-95.27	.0	4.30	-.3	7.5	1.0	.16	.12
3_TET	6_TIT	1995	7	21	1	13 28.23	-95.02	.2	4.38	-.2	7.3	1.0	.16	.12
3_TET	6_TIT	1995	7	21	1	13 39.21	-95.16	.0	4.32	-.2	6.5	1.0	.16	.12
3_TET	6_TIT	1995	7	21	1	13 58.93	-95.18	.0	4.30	-.3	7.1	1.0	.16	.12
3_TET	6_TIT	1995	7	21	1	14 9.20	-95.10	.0	4.62	.1	8.1	1.0	.16	.12
3_TET	6_TIT	1995	7	21	1	14 18.92	-95.10	.0	4.26	-.3	7.5	1.0	.16	.12
3_TET	6_TIT	1995	7	21	1	15 47.52	-95.10	-.1	4.19	-.4	3.9	.5	.16	.12
3_TET	6_TIT	1995	7	21	1	16 17.67	-94.73	.2	4.43	-.1	3.9	.5	.16	.12
3_TET	6_TIT	1995	7	21	1	16 47.22	-94.67	.2	4.44	-.1	3.9	.5	.16	.12
3_TET	6_TIT	1995	7	21	1	16 57.00	-94.53	.3	4.49	.0	4.7	.5	.16	.12
3_TET	6_TIT	1995	7	21	1	17 5.95	-94.65	.2	4.54	.0	4.4	.5	.16	.12
3_TET	6_TIT	1995	7	21	1	17 15.62	-94.38	.4	4.25	-.3	3.7	.5	.16	.12
3_TET	6_TIT	1995	7	21	1	17 33.25	-94.60	.2	4.41	-.1	5.2	.5	.16	.12
3_TET	6_TIT	1995	7	21	1	17 56.48	-94.82	-.1	4.36	-.2	2.8	.5	.16	.12
3_TET	6_TIT	1995	7	21	1	20 3.85	-94.54	.0	4.33	-.2	3.9	.5	.16	.12
3_TET	6_TIT	1995	7	21	1	21 14.32	-94.23	.1	4.12	-.4	3.8	.5	.16	.12
3_TET	6_TIT	1995	7	21	1	21 49.75	-94.25	.1	4.07	-.4	4.2	.5	.16	.12
3_TET	6_TIT	1995	7	21	1	22 9.30	-93.98	.3	4.42	-.1	3.4	.5	.16	.12
3_TET	6_TIT	1995	7	21	1	22 32.87	-94.11	.1	4.20	-.3	4.6	.5	.16	.12
3_TET	6_TIT	1995	7	21	1	23 9.56	-94.34	-.2	4.23	-.2	3.8	.5	.16	.12
3_TET	6_TIT	1995	7	21	1	23 37.68	-93.85	.3	4.13	-.3	4.6	.5	.16	.12
3_TET	6_TIT	1995	7	21	1	23 59.38	-93.70	.4	4.21	-.3	3.9	.5	.16	.12
3_TET	6_TIT	1995	7	21	1	24 33.70	-93.99	.0	3.99	-.5	4.1	.5	.16	.12
3_TET	6_TIT	1995	7	21	1	25 6.77	-93.99	.0	4.31	-.1	3.1	.5	.16	.12
3_TET	6_TIT	1995	7	21	1	25 17.86	-93.77	.2	4.31	-.1	2.0	.5	.16	.12

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Table I (continued)

1	2	3			4			5	6	7	8	9	10	11	12
3_TET	6_TIT	1995	7	21	1	25	36.21	-93.82	.1	4.43	.0	3.3	.5	.16	.12
3_TET	6_TIT	1995	7	21	1	28	5.94	-93.86	-.2	4.07	-.4	3.1	.5	.16	.12
3_TET	6_TIT	1995	7	21	1	28	22.30	-93.28	.4	4.07	-.3	3.4	.5	.16	.12
3_TET	6_TIT	1995	7	21	1	28	43.34	-93.59	.0	3.91	-.5	3.5	.5	.16	.12
3_TET	6_TIT	1995	7	21	1	31	30.42	-93.13	.2	4.26	-.1	5.7	1.0	.16	.12
3_TET	6_TIT	1995	7	21	1	31	46.90	-93.38	-.1	4.07	-.3	5.6	1.0	.16	.12
3_TET	6_TIT	1995	7	21	1	32	2.01	-93.15	.1	3.98	-.4	3.8	1.0	.16	.12
3_TET	6_TIT	1995	7	21	1	32	17.99	-93.03	.2	4.12	-.3	4.6	1.0	.16	.12
3_TET	6_TIT	1995	7	21	1	33	10.28	-93.27	-.1	4.13	-.2	5.2	1.0	.16	.12
3_TET	6_TIT	1995	7	21	1	33	25.44	-93.11	.1	4.34	.0	5.1	1.0	.16	.12
3_TET	6_TIT	1995	7	21	1	33	41.48	-92.73	.4	4.21	-.1	5.0	1.0	.16	.12
3_TET	6_TIT	1995	7	21	1	34	22.67	-92.80	.3	4.11	-.2	5.0	1.0	.16	.12
3_TET	6_TIT	1995	7	21	1	34	39.20	-92.62	.4	4.18	-.2	5.4	1.0	.16	.12
3_TET	6_TIT	1995	7	21	1	34	57.49	-92.74	.3	4.26	-.1	5.8	1.0	.16	.12
3_TET	6_TIT	1995	7	21	1	35	26.00	-92.90	.1	4.14	-.2	6.0	1.0	.16	.12
3_TET	6_TIT	1995	7	21	1	35	43.96	-92.97	.0	4.14	-.2	5.7	1.0	.16	.12
3_TET	6_TIT	1995	7	24	22	51	25.66	147.76	.4	-11.50	.5	2.4	2.0	.12	.13
3_TET	6_TIT	1995	7	24	22	51	54.11	147.71	.3	-11.87	.2	77.7	2.0	.12	.13
3_TET	6_TIT	1995	7	24	22	55	1.79	147.60	-.2	-11.51	.5	31.3	2.0	.12	.13
3_TET	6_TIT	1995	7	24	22	55	15.63	147.37	-.4	-11.66	.4	2.4	2.0	.12	.13
3_TET	6_TIT	1995	7	24	23	17	20.65	149.87	-.3	-11.70	.5	5.2	2.0	.12	.13
3_TET	6_TIT	1995	7	24	23	17	44.71	150.04	-.1	-11.79	.4	4.9	2.0	.12	.13
3_TET	6_TIT	1995	7	24	23	18	21.95	150.54	.3	-12.02	.2	5.0	2.0	.12	.13
3_TET	6_TIT	1995	8	7	2	5	9.21	-11.86	.3	-.24	.0	5.9	1.0	.10	.08
3_TET	6_TIT	1995	8	7	2	5	19.10	-11.73	.4	-.46	-.2	4.1	1.0	.10	.08
3_TET	6_TIT	1995	8	7	2	5	36.84	-11.76	.4	-.44	-.2	6.2	1.0	.10	.08
3_TET	6_TIT	1995	8	7	2	5	55.90	-12.03	.1	-.26	.0	6.0	1.0	.10	.08
3_TET	6_TIT	1995	8	7	2	6	12.59	-11.94	.1	-.27	.0	7.4	1.0	.10	.08
3_TET	6_TIT	1995	8	7	2	6	48.79	-11.81	.2	-.34	-.1	5.6	1.0	.10	.08
3_TET	6_TIT	1995	8	7	2	7	38.77	-11.72	.2	-.30	.0	9.4	2.0	.10	.08
3_TET	6_TIT	1995	8	7	2	7	51.35	-11.47	.4	-.30	.0	10.1	2.0	.10	.08
3_TET	6_TIT	1995	8	7	2	8	11.67	-11.66	.2	-.36	-.1	9.0	2.0	.10	.08
3_TET	6_TIT	1995	8	7	2	8	23.26	-11.65	.1	-.35	-.1	9.6	2.0	.10	.08
3_TET	6_TIT	1995	8	7	2	8	44.46	-11.46	.3	-.27	.0	9.3	2.0	.10	.08
3_TET	6_TIT	1995	8	7	2	9	.89	-11.48	.2	-.45	-.2	9.8	2.0	.10	.08
3_TET	6_TIT	1995	8	7	2	9	43.89	-11.36	.3	-.43	-.1	11.0	2.0	.10	.08
3_TET	6_TIT	1995	8	7	2	10	6.08	-11.29	.3	-.51	-.2	7.4	2.0	.10	.08
3_TET	6_TIT	1995	8	7	2	10	21.02	-11.32	.2	-.57	-.3	8.6	2.0	.10	.08
3_TET	6_TIT	1995	8	7	2	10	50.96	-11.27	.2	-.45	-.1	10.5	2.0	.10	.08
3_TET	6_TIT	1995	8	7	22	15	7.09	124.42	-.6	-9.34	-.1	5.6	1.0	.17	.14
3_TET	6_TIT	1995	8	7	22	20	2.37	124.62	-.5	-9.27	.0	6.7	1.0	.17	.14

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Table I (continued)

1	2	3			4			5	6	7	8	9	10	11	12
3_TET	6_TIT	1995	8	7	22	30	37.09	124.40	-.7	-9.21	.1	5.7	1.0	.17	.14
3_TET	6_TIT	1995	8	7	22	33	.72	124.60	-.5	-9.12	.2	8.3	1.0	.17	.14
3_TET	6_TIT	1995	8	7	22	35	4.58	124.83	-.3	-9.15	.1	6.9	1.0	.17	.14
3_TET	6_TIT	1995	8	7	22	38	57.62	124.88	-.3	-9.09	.2	5.9	1.0	.17	.14
3_TET	6_TIT	1995	8	7	22	40	30.50	124.24	-1.0	-9.34	.0	7.8	1.0	.17	.14
3_TET	6_TIT	1995	8	7	22	42	47.87	124.54	-.7	-9.08	.2	6.7	1.0	.17	.14
3_TET	6_TIT	1995	8	7	22	45	17.54	124.51	-.7	-9.14	.2	5.9	1.0	.17	.14
3_TET	6_TIT	1995	8	7	22	47	40.79	124.69	-.6	-8.81	.5	6.6	1.0	.17	.14
3_TET	6_TIT	1995	8	7	22	48	41.04	124.37	-.9	-9.09	.2	6.2	1.0	.17	.14
3_TET	6_TIT	1995	8	7	22	50	35.62	124.45	-.8	-8.77	.5	7.5	1.0	.17	.14
3_TET	6_TIT	1995	8	7	22	54	24.88	124.33	-.9	-9.36	-.1	6.6	1.0	.17	.14
3_TET	6_TIT	1995	8	7	22	55	26.67	124.43	-.8	-8.91	.4	5.5	1.0	.17	.14
3_TET	6_TIT	1995	8	7	22	57	9.10	124.65	-.6	-9.20	.1	6.2	1.0	.17	.14
3_TET	6_TIT	1995	8	7	22	58	.29	124.79	-.4	-9.18	.1	4.6	1.0	.17	.14
3_TET	6_TIT	1995	8	7	23	29	51.21	124.48	-.6	-9.17	.1	18.0	5.0	.04	.04
3_TET	6_TIT	1995	8	7	23	35	13.62	124.46	-.5	-9.17	.1	21.6	5.0	.04	.04
3_TET	6_TIT	1995	8	7	23	39	31.61	124.33	-.6	-9.13	.2	17.4	5.0	.04	.04
3_TET	6_TIT	1995	8	7	23	40	27.57	124.31	-.6	-9.27	.0	18.9	5.0	.04	.04
3_TET	6_TIT	1995	8	7	23	41	51.89	124.25	-.6	-9.24	.1	18.2	5.0	.04	.04
3_TET	6_TIT	1995	8	7	23	42	45.66	124.30	-.6	-9.25	.1	17.6	5.0	.04	.04
3_TET	6_TIT	1995	8	7	23	43	41.13	124.24	-.7	-9.19	.1	17.4	5.0	.04	.04
3_TET	6_TIT	1995	8	7	23	44	51.05	124.29	-.6	-9.19	.2	13.9	5.0	.04	.04
3_TET	6_TIT	1995	8	7	23	45	54.44	124.33	-.6	-9.19	.2	17.2	5.0	.04	.04
3_TET	6_TIT	1995	8	8	0	47	32.79	123.10	-.7	-9.17	.1	21.0	10.0	.03	.05
3_TET	6_TIT	1995	8	8	0	48	41.39	123.10	-.6	-9.14	.2	18.3	10.0	.03	.05
3_TET	6_TIT	1995	8	8	0	51	10.46	123.06	-.6	-9.15	.1	18.5	10.0	.03	.05
3_TET	6_TIT	1995	8	8	0	52	22.41	122.92	-.7	-9.21	.1	19.3	10.0	.03	.05
3_TET	6_TIT	1995	8	8	0	55	49.87	122.91	-.7	-9.19	.1	18.6	10.0	.03	.05
3_TET	6_TIT	1995	8	8	0	58	13.00	122.81	-.7	-9.03	.3	18.1	10.0	.03	.05
3_TET	6_TIT	1995	8	23	0	33	49.93	68.83	-.6	-3.58	.3	10.8	2.0	.11	.14
3_TET	6_TIT	1995	8	23	0	35	40.77	68.79	-.7	-3.90	.0	15.8	2.0	.11	.14
3_TET	6_TIT	1995	8	23	0	46	42.18	69.06	-.5	-3.97	-.1	8.7	2.0	.11	.14
3_TET	6_TIT	1995	8	23	0	47	.09	69.05	-.5	-3.87	.0	11.7	2.0	.11	.14
3_TET	6_TIT	1995	8	23	0	47	14.10	69.13	-.4	-3.87	.0	8.9	2.0	.11	.14
3_TET	6_TIT	1995	8	23	0	48	12.21	69.16	-.4	-3.98	-.2	12.0	2.0	.11	.14
3_TET	6_TIT	1995	8	23	0	48	26.32	69.08	-.5	-3.83	.0	10.6	2.0	.11	.14
3_TET	6_TIT	1995	8	23	0	48	39.29	69.04	-.6	-3.69	.1	20.0	2.0	.11	.14
3_TET	6_TIT	1995	8	23	0	50	5.79	69.17	-.4	-4.07	-.3	9.5	2.0	.11	.14
3_TET	6_TIT	1995	8	23	0	50	21.06	69.03	-.6	-3.70	.1	11.7	2.0	.11	.14
3_TET	6_TIT	1995	8	23	1	7	13.67	69.19	-.5	-3.88	.0	11.5	2.0	.11	.14
3_TET	6_TIT	1995	8	23	1	7	50.80	69.10	-.6	-3.76	.1	15.4	2.0	.11	.14
3_TET	6_TIT	1995	8	23	1	8	2.88	69.16	-.5	-3.86	.0	13.8	2.0	.11	.14

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Table I (continued)

1	2	3			4			5	6	7	8	9	10	11	12
3_TET	6_TIT	1995	8	23	1	8	31.11	69.12	-.6	-3.65	.3	14.3	2.0	.11	.14
3_TET	6_TIT	1995	8	23	1	9	10.22	69.37	-.3	-3.89	.0	8.9	2.0	.11	.14
3_TET	6_TIT	1995	8	23	1	9	24.01	69.27	-.4	-3.99	-.1	12.2	2.0	.11	.14
3_TET	6_TIT	1995	8	23	1	9	37.68	69.15	-.6	-3.60	.3	10.2	2.0	.11	.14
3_TET	6_TIT	1995	8	23	1	9	52.73	69.36	-.3	-3.85	.1	11.9	2.0	.11	.14
3_TET	6_TIT	1995	8	23	1	10	6.90	69.13	-.6	-3.75	.2	7.3	2.0	.11	.14
3_TET	6_TIT	1995	8	23	1	10	22.72	69.12	-.6	-4.02	-.1	12.8	2.0	.11	.14
3_TET	6_TIT	1995	8	23	1	10	41.40	69.18	-.5	-3.55	.4	6.8	2.0	.11	.14
3_TET	6_TIT	1995	8	23	1	11	16.66	69.13	-.6	-3.61	.3	17.2	2.0	.11	.14
3_TET	6_TIT	1995	8	23	1	11	29.24	69.00	-.7	-3.93	.0	15.0	2.0	.11	.14
3_TET	6_TIT	1995	8	23	1	12	23.67	69.11	-.6	-3.69	.2	12.7	2.0	.11	.14
3_TET	6_TIT	1995	8	23	1	12	55.09	69.06	-.6	-3.67	.2	14.6	2.0	.11	.14
3_TET	6_TIT	1995	8	23	1	13	7.28	69.21	-.5	-3.79	.1	13.6	2.0	.11	.14
3_TET	6_TIT	1995	8	23	1	13	49.90	69.05	-.7	-3.72	.2	4.7	2.0	.11	.14
3_TET	6_TIT	1995	8	23	1	14	38.24	68.98	-.7	-3.60	.3	13.0	2.0	.11	.14
3_TET	6_TIT	1995	8	23	1	14	51.47	69.04	-.7	-3.77	.1	13.2	2.0	.11	.14
3_TET	6_TIT	1995	8	23	1	15	16.68	69.18	-.5	-4.01	-.1	14.9	2.0	.11	.14
3_TET	6_TIT	1995	8	23	1	15	30.03	69.03	-.7	-3.84	.1	7.5	2.0	.11	.14
3_TET	6_TIT	1995	8	23	1	15	42.55	69.30	-.4	-3.67	.2	13.3	2.0	.11	.14
3_TET	6_TIT	1995	8	23	1	15	55.85	69.01	-.7	-3.66	.2	12.4	2.0	.11	.14
3_TET	6_TIT	1995	8	23	1	23	18.05	69.17	-.6	-3.59	.3	12.7	2.0	.11	.14
3_TET	6_TIT	1995	8	23	1	24	6.17	69.10	-.6	-3.57	.4	15.1	2.0	.11	.14
3_TET	6_TIT	1995	8	23	1	24	19.40	69.29	-.5	-3.96	.0	13.4	2.0	.11	.14
3_TET	6_TIT	1995	8	23	1	24	36.98	69.25	-.5	-3.70	.3	9.5	2.0	.11	.14
3_TET	6_TIT	1995	8	23	1	24	50.27	69.25	-.5	-3.72	.2	13.6	2.0	.11	.14
3_TET	6_TIT	1995	8	23	1	25	1.97	69.10	-.6	-3.97	.0	16.9	2.0	.11	.14
3_TET	6_TIT	1995	8	23	1	25	15.87	69.14	-.6	-4.02	-.1	8.6	2.0	.11	.14
3_TET	6_TIT	1995	8	23	1	25	52.01	69.32	-.4	-3.61	.3	4.2	2.0	.11	.14
3_TET	6_TIT	1995	8	23	1	26	5.85	69.40	-.4	-4.01	-.1	15.8	2.0	.11	.14
3_TET	6_TIT	1995	8	23	1	26	35.78	69.30	-.5	-3.83	.1	15.7	2.0	.11	.14
3_TET	6_TIT	1995	8	23	1	26	51.44	69.16	-.6	-3.84	.1	10.8	2.0	.11	.14
3_TET	6_TIT	1995	8	23	1	27	27.30	69.02	-.8	-3.63	.3	6.1	2.0	.11	.14
3_TET	6_TIT	1995	8	23	1	27	40.65	69.18	-.6	-3.89	.1	14.8	2.0	.11	.14
3_TET	6_TIT	1995	8	23	1	28	7.18	69.13	-.7	-3.63	.4	9.6	2.0	.11	.14
3_TET	6_TIT	1995	8	23	1	28	22.50	69.24	-.5	-3.91	.1	9.7	2.0	.11	.14
3_TET	6_TIT	1995	8	23	1	28	35.63	69.41	-.4	-3.85	.1	20.6	2.0	.11	.14
3_TET	6_TIT	1995	8	23	1	29	15.56	69.05	-.7	-4.08	-.1	12.3	2.0	.11	.14
3_TET	6_TIT	1995	8	23	1	32	2.64	69.23	-.6	-3.83	.1	11.4	2.0	.11	.14
3_TET	6_TIT	1995	8	23	1	32	16.21	69.22	-.6	-3.79	.2	14.5	2.0	.11	.14
3_TET	6_TIT	1995	8	23	1	32	31.54	69.18	-.6	-3.95	.0	9.3	2.0	.11	.14
3_TET	6_TIT	1995	8	23	1	32	42.85	69.07	-.7	-3.71	.3	11.2	2.0	.11	.14
3_TET	6_TIT	1995	8	23	1	33	8.12	69.40	-.4	-3.98	.0	8.2	2.0	.11	.14

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Table I (continued)

1	2	3			4		5	6	7	8	9	10	11	12
3_TET	6_TIT	1995	8	23	1	33 36.46	69.12	-.7	-3.77	.2	16.8	2.0	.11	.14
3_TET	6_TIT	1995	8	23	1	34 .84	69.18	-.6	-3.92	.0	12.2	2.0	.11	.14
3_TET	6_TIT	1995	8	23	1	34 37.86	69.35	-.5	-3.73	.2	10.9	2.0	.11	.14
3_TET	6_TIT	1995	8	23	1	34 51.43	69.20	-.6	-3.75	.2	14.5	2.0	.11	.14
3_TET	6_TIT	1995	8	23	1	46 17.07	69.13	-.7	-4.04	-.1	12.8	2.0	.11	.14
3_TET	6_TIT	1995	8	23	1	46 29.26	69.17	-.6	-3.81	.2	9.3	2.0	.11	.14
3_TET	6_TIT	1995	8	23	1	47 10.84	68.95	-.8	-3.99	.0	15.6	2.0	.11	.14
3_TET	6_TIT	1995	8	23	1	47 44.18	69.04	-.8	-3.59	.4	14.1	2.0	.11	.14
3_TET	6_TIT	1995	8	23	1	47 55.60	69.02	-.8	-3.86	.1	13.9	2.0	.11	.14
3_TET	6_TIT	1995	8	23	1	48 42.56	69.06	-.7	-3.87	.1	12.0	2.0	.11	.14
3_TET	6_TIT	1995	8	23	1	49 55.56	68.90	-.9	-3.73	.3	13.6	2.0	.11	.14
3_TET	6_TIT	1995	8	23	1	50 32.69	69.22	-.6	-3.80	.2	16.8	2.0	.11	.14
3_TET	6_TIT	1995	8	23	1	50 45.76	69.00	-.8	-3.67	.3	14.8	2.0	.11	.14
3_TET	6_TIT	1995	8	23	20	18 20.23	36.76	-.7	-2.29	.2	1.8	1.0	.13	.09
3_TET	6_TIT	1995	8	23	20	24 31.08	37.24	-.5	-2.37	.2	1.8	1.0	.13	.09
3_TET	6_TIT	1995	8	23	20	56 26.39	38.76	-.5	-2.55	.1	2.8	1.0	.13	.09
3_TET	6_TIT	1995	8	23	21	8 24.54	39.81	-.1	-2.65	.0	3.5	1.5	.13	.09
3_TET	6_TIT	1995	8	23	21	12 44.56	39.94	-.2	-2.76	-.1	2.3	1.5	.13	.09
3_TET	6_TIT	1995	8	23	21	21 29.32	40.19	-.4	-2.79	-.1	2.3	1.0	.13	.09
3_TET	6_TIT	1995	8	23	21	27 5.18	40.60	-.3	-2.81	.0	2.8	1.0	.13	.09
3_TET	6_TIT	1995	8	23	21	34 16.18	41.18	-.2	-2.53	.3	10.8	1.0	.13	.09
3_TET	6_TIT	1995	8	23	21	39 31.13	41.59	-.1	-2.47	.3	2.4	1.0	.13	.09
3_TET	6_TIT	1995	8	24	0	16 2.62	54.16	.1	-3.31	.2	3.5	1.0	.17	.13
3_TET	6_TIT	1995	8	24	0	17 14.57	54.20	.0	-3.49	.0	3.1	1.0	.17	.13
3_TET	6_TIT	1995	8	24	0	17 35.72	54.46	.2	-3.56	-.1	3.4	1.0	.17	.13
3_TET	6_TIT	1995	8	24	0	18 44.38	54.51	.1	-3.26	.2	3.3	1.0	.17	.13
3_TET	6_TIT	1995	8	24	0	19 7.33	54.18	-.2	-3.40	.1	3.3	1.0	.17	.13
3_TET	6_TIT	1995	8	24	0	19 30.07	54.38	-.1	-3.26	.2	4.9	1.0	.17	.13
3_TET	6_TIT	1995	8	24	0	21 15.59	54.90	.3	-3.26	.3	2.5	1.0	.17	.13
3_TET	6_TIT	1995	8	24	0	21 29.54	54.52	-.1	-3.58	-.1	2.7	1.0	.17	.13
3_TET	6_TIT	1995	8	24	0	22 14.36	54.72	.0	-3.31	.2	4.6	1.0	.17	.13
3_TET	6_TIT	1995	8	24	0	22 41.98	54.59	-.2	-3.64	-.1	2.3	1.0	.17	.13
3_TET	6_TIT	1995	8	24	0	23 13.73	54.96	.1	-3.40	.1	4.6	1.0	.17	.13
3_TET	6_TIT	1995	8	24	0	33 45.48	55.69	-.2	-3.79	-.2	5.1	2.0	.17	.13
3_TET	6_TIT	1995	8	24	0	33 59.54	55.87	.0	-3.75	-.1	4.4	2.0	.17	.13
3_TET	6_TIT	1995	8	24	0	34 33.60	56.15	.2	-3.65	.0	6.4	2.0	.17	.13
3_TET	6_TIT	1995	8	24	0	34 45.46	55.97	.0	-3.66	-.1	6.7	2.0	.17	.13
3_TET	6_TIT	1995	8	24	0	34 59.03	56.24	.2	-3.80	-.2	6.2	2.0	.17	.13
3_TET	6_TIT	1995	8	24	0	36 14.88	56.01	-.1	-3.77	-.2	4.9	2.0	.17	.13
3_TET	6_TIT	1995	8	24	0	37 10.25	56.25	.0	-3.77	-.2	6.3	2.0	.17	.13
3_TET	6_TIT	1995	8	24	0	37 23.87	56.16	-.1	-3.81	-.2	5.2	2.0	.17	.13
3_TET	6_TIT	1995	8	24	0	37 49.90	56.54	.3	-3.89	-.3	6.7	2.0	.17	.13

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Table I (continued)

1	2	3			4		5	6	7	8	9	10	11	12
3_TET	6_TIT	1995	8	24	0	41 .71	56.46	-.1	-3.73	-.1	4.5	1.0	.17	.13
3_TET	6_TIT	1995	8	24	0	41 29.27	56.45	-.2	-3.76	-.1	3.2	1.0	.17	.13
3_TET	6_TIT	1995	8	24	0	41 40.64	56.52	-.2	-3.48	.1	3.0	1.0	.17	.13
3_TET	6_TIT	1995	8	24	0	41 50.91	56.67	.0	-3.52	.1	3.7	1.0	.17	.13
3_TET	6_TIT	1995	8	24	0	42 14.59	56.78	.1	-3.73	-.1	3.3	1.0	.17	.13
3_TET	6_TIT	1995	8	24	0	43 .01	56.93	.1	-3.83	-.2	2.9	1.0	.17	.13
3_TET	6_TIT	1995	8	24	0	45 12.00	56.87	-.2	-3.63	.0	4.6	2.0	.17	.13
3_TET	6_TIT	1995	8	24	0	45 51.27	57.32	.2	-3.98	-.3	5.4	2.0	.17	.13
3_TET	6_TIT	1995	8	24	0	46 11.04	56.94	-.2	-3.73	-.1	4.6	2.0	.17	.13
3_TET	6_TIT	1995	8	24	0	47 35.79	57.55	.3	-3.49	.2	3.8	2.0	.17	.13
3_TET	6_TIT	1995	8	24	0	48 49.89	57.60	.2	-3.98	-.3	4.3	2.0	.17	.13
3_TET	6_TIT	1995	8	24	0	50 2.72	57.45	-.1	-3.85	-.1	5.0	2.0	.17	.13
3_TET	6_TIT	1995	8	24	0	50 30.84	57.74	.2	-3.54	.2	4.9	2.0	.17	.13
3_TET	6_TIT	1995	8	24	0	55 6.29	57.97	-.1	-3.79	-.1	3.7	1.0	.17	.13
3_TET	6_TIT	1995	8	24	0	56 19.62	58.42	.2	-3.83	-.1	5.9	1.0	.17	.13
3_TET	6_TIT	1995	8	24	0	56 36.09	58.43	.2	-3.78	-.1	3.0	1.0	.17	.13
3_TET	6_TIT	1995	8	24	0	56 48.78	58.57	.3	-3.80	-.1	3.7	1.0	.17	.13
3_TET	6_TIT	1995	8	24	1	8 39.46	59.63	.2	-3.56	.2	4.1	1.0	.17	.13
3_TET	6_TIT	1995	8	24	1	10 52.00	59.71	.0	-3.87	-.1	3.7	1.0	.17	.13
3_TET	6_TIT	1995	8	24	1	11 5.35	60.02	.3	-3.71	.1	3.1	1.0	.17	.13
3_TET	6_TIT	1995	8	24	1	11 27.32	59.90	.1	-3.60	.2	3.9	1.0	.17	.13
3_TET	6_TIT	1995	8	24	1	12 14.66	59.80	-.1	-3.65	.2	4.3	1.0	.17	.13
3_TET	6_TIT	1995	8	24	1	15 24.92	60.06	-.2	-3.86	.0	4.8	2.0	.17	.13
3_TET	6_TIT	1995	8	24	1	15 51.34	60.10	-.2	-3.59	.3	4.7	2.0	.17	.13
3_TET	6_TIT	1995	8	24	1	17 2.58	60.33	-.1	-3.85	.0	6.9	2.0	.17	.13
3_TET	6_TIT	1995	8	24	1	17 26.20	60.13	-.4	-3.64	.2	4.4	2.0	.17	.13
3_TET	6_TIT	1995	8	24	1	17 57.84	60.37	-.2	-3.77	.1	5.4	2.0	.17	.13
3_TET	6_TIT	1995	8	24	1	18 27.28	60.59	.0	-3.67	.2	6.3	2.0	.17	.13
3_TET	6_TIT	1995	8	24	1	18 39.52	60.36	-.3	-3.67	.2	4.7	2.0	.17	.13
3_TET	6_TIT	1995	8	24	1	19 33.19	60.57	-.2	-3.71	.2	4.7	2.0	.17	.13
3_TET	6_TIT	1995	8	24	1	19 44.61	60.70	-.1	-3.84	.1	5.7	2.0	.17	.13
3_TET	6_TIT	1995	8	24	1	20 15.37	60.51	-.3	-3.88	.0	4.7	2.0	.17	.13
3_TET	6_TIT	1995	8	24	1	20 39.21	60.52	-.4	-3.89	.0	5.1	2.0	.17	.13
3_TET	6_TIT	1995	8	24	1	21 8.26	60.56	-.4	-3.69	.2	4.3	2.0	.17	.13
3_TET	6_TIT	1995	8	24	1	23 1.35	61.10	.0	-3.82	.1	4.2	1.0	.17	.13
3_TET	6_TIT	1995	8	24	1	24 38.02	61.11	-.2	-3.93	.0	2.8	1.0	.17	.13
3_TET	6_TIT	1995	8	24	1	26 32.10	61.27	-.2	-3.68	.2	3.3	1.0	.17	.13
3_TET	6_TIT	1995	8	24	1	27 8.96	61.11	-.5	-3.96	-.1	3.7	1.0	.17	.13
3_TET	6_TIT	1995	8	24	1	27 40.49	61.29	-.4	-3.91	.0	3.4	1.0	.17	.13
3_TET	6_TIT	1995	8	24	1	29 25.06	61.73	-.1	-4.08	-.2	4.3	2.0	.17	.13
3_TET	6_TIT	1995	8	24	1	30 30.42	61.81	-.1	-3.81	.1	4.4	2.0	.17	.13

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Table I (continued)

1	2	3			4			5	6	7	8	9	10	11	12
3_TET	6_TIT	1995	8	24	1	30	51.19	61.61	-.4	-4.16	-.2	3.0	2.0	.17	.13
3_TET	6_TIT	1995	8	24	1	31	36.99	61.77	-.3	-3.98	.0	3.8	2.0	.17	.13
3_TET	6_TIT	1995	8	24	1	32	17.53	61.73	-.4	-3.98	.0	3.3	2.0	.17	.13
3_TET	6_TIT	1995	8	24	1	32	29.17	61.93	-.2	-4.04	-.1	4.7	2.0	.17	.13
3_TET	6_TIT	1995	8	24	1	32	44.88	62.12	-.1	-3.87	.1	3.9	2.0	.17	.13
3_TET	6_TIT	1995	8	24	1	33	20.31	62.05	-.2	-3.92	.0	2.9	2.0	.17	.13
3_TET	6_TIT	1995	8	24	1	33	34.37	61.97	-.3	-4.05	-.1	4.1	2.0	.17	.13
3_TET	6_TIT	1995	8	24	1	33	47.17	62.29	.0	-4.21	-.2	5.2	2.0	.17	.13
3_TET	6_TIT	1995	8	24	23	50	54.31	188.40	-.2	-13.00	.3	8.2	2.0	.15	.17
3_TET	6_TIT	1995	8	24	23	51	28.80	188.07	-.5	-13.02	.3	5.3	2.0	.15	.17
3_TET	6_TIT	1995	8	24	23	52	7.85	188.08	-.5	-13.41	-.1	.0	2.0	.15	.17
3_TET	6_TIT	1995	8	24	23	52	55.86	188.33	-.2	-13.44	-.1	11.4	2.0	.15	.17
3_TET	6_TIT	1995	8	24	23	53	34.31	188.39	-.1	-13.40	-.1	-.4	2.0	.15	.17
3_TET	6_TIT	1995	8	24	23	54	25.72	188.00	-.5	-13.21	.1	3.9	2.0	.15	.17
3_TET	6_TIT	1995	8	24	23	54	41.87	187.90	-.6	-13.50	-.2	5.6	2.0	.15	.17
3_TET	6_TIT	1995	8	25	0	1	29.03	187.62	-.6	-13.19	.1	4.1	2.0	.15	.17
3_TET	6_TIT	1995	8	25	0	1	46.06	187.82	-.4	-13.03	.3	24.4	2.0	.15	.17
3_TET	6_TIT	1995	8	25	0	3	56.78	187.83	-.3	-13.03	.3	10.3	2.0	.15	.17
3_TET	6_TIT	1995	8	25	0	4	48.90	187.82	-.3	-12.84	.5	15.2	2.0	.15	.17
3_TET	6_TIT	1995	8	25	0	5	3.90	187.58	-.5	-12.99	.3	6.7	2.0	.15	.17
3_TET	6_TIT	1995	8	25	0	5	17.03	187.90	-.2	-13.27	.0	16.8	2.0	.15	.17
3_TET	6_TIT	1995	8	25	0	19	51.82	187.13	-.4	-13.09	.3	10.5	2.0	.15	.17
3_TET	6_TIT	1995	8	25	0	20	46.04	186.92	-.6	-12.95	.4	5.9	2.0	.15	.17
3_TET	6_TIT	1995	9	2	1	13	1.18	-198.51	.4	12.87	-.3	4.5	2.0	.16	.15
3_TET	6_TIT	1995	9	2	1	13	18.10	-198.93	.0	13.27	.1	3.0	2.0	.16	.15
3_TET	6_TIT	1995	9	2	1	13	40.13	-198.98	.0	12.77	-.4	3.7	2.0	.16	.15
3_TET	6_TIT	1995	9	2	1	13	52.59	-199.06	.0	13.19	.0	2.8	2.0	.16	.15
3_TET	6_TIT	1995	9	2	1	27	53.50	-200.76	-.3	12.67	-.6	3.9	2.0	.16	.15
3_TET	6_TIT	1995	9	2	1	42	53.46	-202.51	-.4	13.43	.1	5.7	2.0	.16	.15
3_TET	6_TIT	1995	9	2	1	43	7.46	-202.41	-.3	13.41	.0	5.3	2.0	.16	.15
3_TET	6_TIT	1995	9	2	1	43	20.26	-202.45	-.3	13.47	.1	3.5	2.0	.16	.15
3_TET	6_TIT	1995	9	2	1	43	31.74	-202.37	-.2	13.26	-.1	3.8	2.0	.16	.15
3_TET	6_TIT	1995	9	2	2	4	59.80	-204.51	-.3	13.68	.1	8.2	2.0	.16	.15
3_TET	6_TIT	1995	9	2	2	5	49.23	-204.58	-.3	13.75	.1	5.4	2.0	.16	.15
3_TET	6_TIT	1995	9	2	2	6	26.52	-204.27	.1	14.05	.4	4.3	2.0	.16	.15
3_TET	6_TIT	1995	9	2	2	6	37.18	-204.56	-.2	13.87	.3	3.2	2.0	.16	.15
3_TET	6_TIT	1995	9	2	2	6	53.33	-204.27	.2	13.78	.2	5.0	2.0	.16	.15
3_TET	6_TIT	1995	9	2	2	7	8.05	-204.20	.2	13.80	.2	4.9	2.0	.16	.15
3_TET	6_TIT	1995	9	2	2	7	22.05	-204.57	-.1	13.84	.2	4.3	2.0	.16	.15
3_TET	6_TIT	1995	9	2	2	32	19.65	-206.56	.3	14.23	.4	3.8	2.0	.16	.15
3_TET	6_TIT	1995	9	2	2	32	34.87	-206.94	.0	13.74	-.1	2.8	2.0	.16	.15

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Table I (continued)

1	2	3			4			5	6	7	8	9	10	11	12
3_TET	6_TIT	1995	9	2	2	34	22.25	-207.27	-.2	13.98	.1	5.7	2.0	.16	.15
3_TET	6_TIT	1995	9	2	2	34	37.19	-206.74	.4	14.13	.3	4.9	2.0	.16	.15
3_TET	6_TIT	1995	9	2	2	35	.86	-206.98	.2	14.13	.3	4.2	2.0	.16	.15
3_TET	6_TIT	1995	9	2	2	35	26.51	-207.09	.1	14.37	.5	3.5	2.0	.16	.15
3_TET	6_TIT	1995	9	2	2	35	39.09	-207.04	.2	14.33	.5	4.8	2.0	.16	.15
3_TET	6_TIT	1995	9	13	20	59	18.95	83.73	.8	-8.28	.6	2.1	1.0	.14	.08
3_TET	6_TIT	1995	9	13	20	59	25.10	83.54	.7	-8.25	.6	3.1	1.0	.14	.08
3_TET	6_TIT	1995	9	13	20	59	47.35	83.75	.9	-8.53	.4	5.0	1.0	.14	.08
3_TET	6_TIT	1995	9	13	21	9	22.09	83.69	.4	-8.89	-.1	3.2	1.0	.14	.08
3_TET	6_TIT	1995	9	13	21	9	30.22	83.96	.7	-8.82	.0	4.7	1.0	.14	.08
3_TET	6_TIT	1995	9	13	21	9	37.80	84.17	.9	-8.95	-.1	4.1	1.0	.14	.08
3_TET	6_TIT	1995	9	13	21	19	36.59	84.38	.8	-9.02	-.2	4.1	1.0	.14	.08
3_TET	6_TIT	1995	10	14	19	13	40.25	204.65	-.1	-19.70	.1	8.9	1.0	.09	.08
3_TET	6_TIT	1995	10	14	19	13	49.65	204.91	.2	-19.53	.3	8.9	1.0	.09	.08
3_TET	6_TIT	1995	10	14	19	23	15.27	204.34	.1	-19.73	.1	6.6	1.0	.09	.08
3_TET	6_TIT	1995	10	14	19	23	26.91	204.11	-.1	-19.52	.3	8.7	1.0	.09	.08
3_TET	6_TIT	1995	10	14	19	23	36.41	204.33	.1	-19.67	.1	12.3	1.0	.09	.08
3_TET	6_TIT	1995	10	14	19	23	45.86	204.24	.0	-19.57	.2	8.5	1.0	.09	.08
3_TET	6_TIT	1995	10	14	19	23	55.42	204.11	-.1	-19.57	.2	10.1	1.0	.09	.08
3_TET	6_TIT	1995	10	14	19	24	4.87	204.22	.0	-19.49	.3	11.0	1.0	.09	.08
3_TET	6_TIT	1995	10	14	19	38	51.42	203.25	-.2	-19.71	.2	9.7	1.0	.09	.08
3_TET	6_TIT	1995	10	14	19	39	1.31	203.49	.0	-19.63	.3	9.1	1.0	.09	.08
3_TET	6_TIT	1995	10	14	19	39	10.92	203.32	-.1	-19.67	.2	9.4	1.0	.09	.08
3_TET	6_TIT	1995	10	14	19	39	20.25	203.50	.1	-19.62	.3	14.1	1.0	.09	.08
3_TET	6_TIT	1995	10	14	19	39	29.92	203.36	-.1	-19.72	.2	9.6	1.0	.09	.08
3_TET	6_TIT	1995	10	14	19	45	25.89	203.04	-.1	-19.60	.3	13.8	1.0	.09	.08
3_TET	6_TIT	1995	10	14	19	45	37.54	203.18	.1	-19.80	.1	11.7	1.0	.09	.08
3_TET	6_TIT	1995	10	14	19	45	49.84	203.05	-.1	-19.52	.4	13.0	1.0	.09	.08
3_TET	6_TIT	1995	10	14	19	46	.61	203.10	.0	-19.75	.1	10.3	1.0	.09	.08
3_TET	6_TIT	1995	10	14	19	46	14.89	203.09	.0	-19.69	.2	11.6	1.0	.09	.08
3_TET	6_TIT	1995	10	14	20	45	32.80	199.41	-.1	-19.96	-.1	7.4	1.0	.10	.14
3_TET	6_TIT	1995	10	14	20	45	43.84	199.49	.0	-19.73	.2	6.8	1.0	.10	.14
3_TET	6_TIT	1995	10	14	20	45	54.22	199.32	-.2	-19.94	.0	6.6	1.0	.10	.14
3_TET	6_TIT	1995	10	14	20	46	4.98	199.39	-.1	-20.05	-.2	7.2	1.0	.10	.14
3_TET	6_TIT	1995	10	14	20	46	14.54	199.25	-.2	-19.62	.3	6.9	1.0	.10	.14
3_TET	6_TIT	1995	10	14	20	56	17.29	198.45	-.3	-19.73	.2	6.3	1.0	.10	.14
3_TET	6_TIT	1995	10	14	20	56	30.25	198.71	.0	-19.89	.1	3.9	1.0	.10	.14
3_TET	6_TIT	1995	10	14	20	56	49.81	198.61	-.1	-19 98	.0	6.2	1.0	.10	.14
3_TET	6_TIT	1995	10	14	20	56	59.58	198.45	-.3	-19.78	.2	7.0	1.0	.10	.14
3_TET	6_TIT	1995	10	14	21	4	1.74	197.80	-.4	-19.70	.3	6.7	1.0	.10	.14
3_TET	6_TIT	1995	10	14	21	4	33.21	197.89	-.3	-19.94	.1	7.8	1.0	.10	.14

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Table I (continued)

1	2	3	4	5	6	7	8	9	10	11	12
3_TET	6_TIT	1995 10 14	21 6 57.83	197.73	-.3	-19.61	.4	4.8	1.0	.10	.14
3_TET	6_TIT	1995 10 14	21 7 21.12	197.94	.0	-20.02	.0	5.1	1.0	.10	.14
3_TET	6_TIT	1995 10 14	21 7 37.21	197.69	-.3	-19.81	.2	7.2	1.0	.10	.14
3_TET	6_TIT	1995 10 23	21 43 1.02	-70.84	-1.4	14.35	-.3	12.0	5.0	.14	.12
3_TET	6_TIT	1995 10 23	21 43 35.02	-70.38	-1.0	14.31	-.3	25.0	5.0	.14	.12
3_TET	6_TIT	1995 10 23	22 0 47.67	-66.52	.6	14.31	-.1	11.2	5.0	.14	.12
3_TET	6_TIT	1995 10 23	22 1 16.23	-66.35	.7	14.68	.3	10.3	5.0	.14	.12
3_TET	6_TIT	1995 10 23	22 1 43.09	-66.51	.5	14.47	.1	10.9	5.0	.14	.12
3_TET	6_TIT	1995 10 23	22 2 13.14	-66.54	.4	14.33	-.1	6.7	5.0	.14	.12
3_TET	6_TIT	1995 10 23	22 26 28.94	-63.54	.3	13.92	-.2	12.4	5.0	.14	.12
3_TET	6_TIT	1995 10 23	22 27 9.25	-63.16	.6	13.98	-.2	12.7	5.0	.14	.12
3_TET	6_TIT	1995 10 23	22 27 24.96	-63.18	.6	13.91	-.2	9.3	5.0	.14	.12
3_TET	6_TIT	1995 10 23	22 28 5.49	-63.12	.5	14.05	-.1	10.2	5.0	.14	.12
3_TET	6_TIT	1995 10 23	22 28 24.17	-63.27	.3	14.19	.1	9.4	5.0	.14	.12
3_TET	6_TIT	1995 10 23	22 29 17.72	-63.15	.3	14.20	.1	13.9	5.0	.14	.12
3_TET	6_TIT	1995 10 23	22 42 19.15	-61.39	.5	13.77	-.1	11.2	5.0	.14	.12
3_TET	6_TIT	1995 10 23	22 43 17.48	-61.30	.5	13.86	.0	11.4	5.0	.14	.12
3_TET	6_TIT	1995 10 23	22 44 31.85	-61.06	.6	13.83	.0	15.9	5.0	.14	.12
3_TET	6_TIT	1995 11 2	19 2 52.00	-10.09	.2	-7.66	-.3	3.0	2.0	.11	.09
3_TET	6_TIT	1995 11 2	19 3 20.95	-9.88	.5	-7.51	-.1	3.8	2.0	.11	.09
3_TET	6_TIT	1995 11 2	19 3 40.72	-9.93	.5	-7.40	.0	2.5	2.0	.11	.09
3_TET	6_TIT	1995 11 2	19 4 2.86	-10.19	.3	-7.36	.0	3.3	2.0	.11	.09
3_TET	6_TIT	1995 11 2	19 5 12.94	-10.49	.1	-7.34	.1	3.0	2.0	.11	.09
3_TET	6_TIT	1995 11 2	19 6 15.78	-10.60	.1	-7.31	.1	3.6	2.0	.11	.09
3_TET	6_TIT	1995 11 2	19 6 37.47	-10.52	.2	-7.59	-.2	2.9	2.0	.11	.09
3_TET	6_TIT	1995 11 2	19 10 8.93	-10.85	.3	-7.52	-.1	6.5	5.0	.11	.09
3_TET	6_TIT	1995 11 2	19 10 29.42	-10.77	.4	-7.40	.0	6.3	5.0	.11	.09
3_TET	6_TIT	1995 11 2	19 10 44.25	-10.95	.2	-7.36	.0	6.5	5.0	.11	.09
3_TET	6_TIT	1995 11 2	19 11 1.55	-10.95	.3	-7.52	-.1	6.0	5.0	.11	.09
3_TET	6_TIT	1995 11 2	19 12 32.46	-10.89	.5	-7.56	-.2	6.5	5.0	.11	.09
3_TET	6_TIT	1995 11 2	19 12 48.11	-11.05	.3	-7.41	.0	6.8	5.0	.11	.09
3_TET	6_TIT	1995 11 2	19 13 8.10	-11.16	.3	-7.50	-.1	5.5	5.0	.11	.09
3_TET	6_TIT	1995 11 2	19 13 23.98	-11.10	.3	-7.45	.0	6.6	5.0	.11	.09
3_TET	8_IAP	1995 8 22	22 56 37.94	231.89	-1.4	-43.72	.6	14.6	2.0	.09	.12
3_TET	8_IAP	1995 8 22	22 56 54.03	231.69	-1.6	-43.71	.6	12.3	2.0	.09	.12
3_TET	8_IAP	1995 8 22	22 57 10.18	231.71	-1.6	-43.69	.6	11.0	2.0	.09	.12
3_TET	8_IAP	1995 8 22	22 57 57.03	231.90	-1.5	-43.73	.6	14.7	2.0	.09	.12
3_TET	8_IAP	1995 8 22	22 58 51.63	231.73	-1.6	-43.95	.3	20.9	2.0	.09	.12
3_TET	8_IAP	1995 8 22	23 4 38.54	232.10	-1.3	-43.95	.3	10.4	2.0	.09	.12
3_TET	8_IAP	1995 8 22	23 5 48.84	232.16	-1.2	-43.82	.4	11.5	2.0	.09	.12

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Table I (continued)

1	2	3					4	5	6	7	8	9	10	11	12
3_TET	8_IAP	1995	8	22	23	6	6.42	232.04	-1.4	-43.93	.3	11.7	2.0	.09	.12
3_TET	8_IAP	1995	8	22	23	6	23.78	232.06	-1.3	-43.86	.4	16.8	2.0	.09	.12
3_TET	8_IAP	1995	8	22	23	6	37.89	231.90	-1.5	-43.60	.6	11.9	2.0	.09	.12
3_TET	8_IAP	1995	8	22	23	6	52.23	232.02	-1.4	-43.63	.6	15.2	2.0	.09	.12
3_TET	8_IAP	1995	8	22	23	7	6.29	231.94	-1.5	-43.64	.6	19.0	2.0	.09	.12
3_TET	8_IAP	1995	8	22	23	7	56.22	231.95	-1.4	-43.93	.3	19.0	2.0	.09	.12
3_TET	8_IAP	1995	8	22	23	8	23.40	231.89	-1.5	-43.66	.6	14.2	2.0	.09	.12
3_TET	8_IAP	1995	8	22	23	8	52.68	232.02	-1.4	-43.69	.5	13.6	2.0	.09	.12
3_TET	8_IAP	1995	8	22	23	9	7.45	232.03	-1.4	-43.73	.5	11.5	2.0	.09	.12
3_TET	8_IAP	1995	8	22	23	11	55.53	232.07	-1.4	-43.58	.6	10.3	2.0	.09	.12
3_TET	8_IAP	1995	8	22	23	12	28.76	232.09	-1.3	-43.69	.5	13.5	2.0	.09	.12
3_TET	8_IAP	1995	8	22	23	12	44.08	231.91	-1.5	-43.59	.6	13.8	2.0	.09	.12
3_TET	8_IAP	1995	8	22	23	12	59.90	232.14	-1.3	-43.86	.3	13.2	2.0	.09	.12
3_TET	8_IAP	1995	8	22	23	13	14.18	232.10	-1.3	-43.79	.4	15.3	2.0	.09	.12
3_TET	8_IAP	1995	8	22	23	13	52.85	232.15	-1.3	-43.66	.5	11.4	2.0	.09	.12
3_TET	8_IAP	1995	8	22	23	14	24.05	232.02	-1.4	-43.73	.5	16.8	2.0	.09	.12
3_TET	8_IAP	1995	8	22	23	14	38.55	232.16	-1.3	-43.81	.4	20.2	2.0	.09	.12
3_TET	8_IAP	1995	8	22	23	14	55.02	232.22	-1.2	-43.92	.3	14.1	2.0	.09	.12
3_TET	8_IAP	1995	8	22	23	15	16.50	232.09	-1.4	-43.89	.3	12.9	2.0	.09	.12
3_TET	8_IAP	1995	8	22	23	15	42.97	232.24	-1.2	-43.67	.5	15.3	2.0	.09	.12
3_TET	8_IAP	1995	8	22	23	15	57.25	232.30	-1.2	-43.97	.2	11.1	2.0	.09	.12
3_TET	8_IAP	1995	8	22	23	16	13.13	231.98	-1.5	-43.78	.4	17.0	2.0	.09	.12
3_TET	8_IAP	1995	8	22	23	17	7.56	232.07	-1.4	-43.58	.6	12.5	2.0	.09	.12
3_TET	8_IAP	1995	8	22	23	17	45.90	232.15	-1.3	-43.86	.3	22.1	2.0	.09	.12
3_TET	8_IAP	1995	8	22	23	18	.18	232.23	-1.2	-43.84	.4	15.8	2.0	.09	.12
3_TET	8_IAP	1995	8	22	23	18	12.75	232.13	-1.4	-43.78	.4	16.0	2.0	.09	.12
3_TET	8_IAP	1995	8	22	23	18	53.67	232.18	-1.3	-43.84	.4	20.2	2.0	.09	.12
3_TET	8_IAP	1995	8	22	23	19	7.90	231.97	-1.5	-43.64	.6	14.4	2.0	.09	.12
3_TET	8_IAP	1995	8	22	23	19	57.22	232.17	-1.3	-43.60	.6	15.0	2.0	.09	.12
3_TET	8_IAP	1995	8	22	23	20	9.53	232.14	-1.4	-43.79	.4	13.0	2.0	.09	.12
3_TET	8_IAP	1995	8	22	23	20	24.85	232.27	-1.2	-43.78	.4	10.8	2.0	.09	.12
3_TET	8_IAP	1995	8	22	23	20	39.13	232.09	-1.4	-43.98	.2	16.9	2.0	.09	.12
3_TET	8_IAP	1995	8	22	23	20	53.74	232.21	-1.3	-43.86	.3	14.6	2.0	.09	.12
3_TET	8_IAP	1995	8	22	23	21	8.30	232.20	-1.3	-43.86	.3	14.0	2.0	.09	.12
3_TET	8_IAP	1995	8	22	23	21	56.63	232.06	-1.5	-43.67	.5	6.6	2.0	.09	.12
3_TET	8_IAP	1995	8	22	23	31	48.01	232.04	-1.6	-43.69	.4	11.3	2.0	.09	.12
3_TET	8_IAP	1995	8	22	23	32	16.36	232.09	-1.5	-43.69	.4	12.6	2.0	.09	.12
3_TET	8_IAP	1995	8	22	23	33	49.29	232.17	-1.5	-43.88	.2	7.7	2.0	.09	.12
3_TET	8_IAP	1995	8	22	23	34	1.70	232.07	-1.6	-43.64	.5	13.4	2.0	.09	.12
3_TET	8_IAP	1995	8	22	23	34	15.38	232.17	-1.5	-43.85	.3	13.6	2.0	.09	.12
3_TET	8_IAP	1995	8	22	23	34	30.43	232.08	-1.6	-43.44	.7	25.0	2.0	.09	.12

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Table I (continued)

1	2	3			4			5	6	7	8	9	10	11	12
3_TET	8_IAP	1995	8	22	23	34	45.92	231.97	-1.7	-43.62	.5	14.9	2.0	.09	.12
3_TET	8_IAP	1995	8	22	23	34	58.55	232.20	-1.5	-43.74	.4	17.1	2.0	.09	.12
3_TET	8_IAP	1995	8	22	23	37	53.87	232.20	-1.5	-43.77	.3	12.9	2.0	.09	.12
3_TET	8_IAP	1995	8	22	23	38	23.15	232.11	-1.6	-43.62	.5	11.4	2.0	.09	.12
3_TET	8_IAP	1995	8	22	23	38	35.12	232.14	-1.5	-43.62	.5	14.0	2.0	.09	.12
3_TET	8_IAP	1995	8	22	23	38	48.52	232.27	-1.4	-43.76	.3	14.3	2.0	.09	.12
3_TET	8_IAP	1995	8	22	23	39	1.87	232.01	-1.7	-43.48	.6	12.2	2.0	.09	.12
3_TET	8_IAP	1995	8	22	23	40	8.77	232.10	-1.6	-43.66	.4	18.4	2.0	.09	.12
3_TET	8_IAP	1995	8	22	23	40	21.84	232.24	-1.5	-43.55	.5	12.2	2.0	.09	.12
3_TET	8_IAP	1995	8	22	23	40	48.81	232.04	-1.7	-43.50	.6	17.3	2.0	.09	.12
3_TET	8_IAP	1995	8	22	23	41	2.54	232.20	-1.5	-43.63	.5	15.3	2.0	.09	.12
4_DIO	3_TET	1995	6	30	1	2	39.83	96.53	-.2	-7.08	-.2	9.8	5.0	.15	.12
4_DIO	3_TET	1995	6	30	1	2	56.80	96.70	-.1	-6.91	.0	10.9	5.0	.15	.12
4_DIO	3_TET	1995	6	30	1	3	14.87	96.47	-.3	-6.89	.0	10.2	5.0	.15	.12
4_DIO	3_TET	1995	6	30	1	3	43.87	96.76	.0	-7.04	-.1	9.4	5.0	.15	.12
4_DIO	3_TET	1995	6	30	1	4	.85	96.94	.2	-6.68	.2	11.2	5.0	.15	.12
4_DIO	3_TET	1995	6	30	1	4	14.03	97.00	.2	-6.74	.2	11.0	5.0	.15	.12
4_DIO	3_TET	1995	6	30	1	4	47.75	96.96	.2	-6.67	.2	9.0	5.0	.15	.12
4_DIO	3_TET	1995	6	30	1	5	14.50	96.75	-.1	-6.97	-.1	9.8	5.0	.15	.12
4_DIO	3_TET	1995	6	30	1	5	42.18	97.12	.3	-6.86	.0	11.2	5.0	.15	.12
4_DIO	3_TET	1995	6	30	1	5	56.74	97.01	.2	-6.94	.0	11.3	5.0	.15	.12
4_DIO	3_TET	1995	6	30	1	6	10.47	96.69	-.1	-6.95	.0	12.0	5.0	.15	.12
4_DIO	3_TET	1995	6	30	1	6	38.76	96.90	.1	-6.83	.1	12.5	5.0	.15	.12
4_DIO	3_TET	1995	6	30	1	6	53.81	97.00	.2	-6.78	.1	10.9	5.0	.15	.12
4_DIO	3_TET	1995	6	30	1	7	7.32	97.12	.3	-6.86	.0	13.2	5.0	.15	.12
4_DIO	6_TIT	1995	6	26	23	38	14.27	104.84	.0	-6.20	.1	8.9	5.0	.12	.16
4_DIO	6_TIT	1995	6	26	23	38	44.20	105.01	.1	-6.08	.2	13.0	5.0	.12	.16
4_DIO	6_TIT	1995	6	26	23	39	2.60	104.84	-.1	-6.07	.2	10.2	5.0	.12	.16
4_DIO	6_TIT	1995	6	26	23	39	37.15	104.97	.1	-5.93	.4	12.8	5.0	.12	.16
4_DIO	6_TIT	1995	6	26	23	39	53.41	104.88	.0	-5.98	.3	14.1	5.0	.12	.16
4_DIO	6_TIT	1995	6	26	23	40	15.38	104.95	.1	-5.84	.5	11.8	5.0	.12	.16
4_DIO	6_TIT	1995	6	26	23	40	34.28	104.81	-.1	-5.82	.5	11.3	5.0	.12	.16
4_DIO	6_TIT	1995	6	26	23	40	53.50	104.89	.0	-6.11	.2	14.6	5.0	.12	.16
4_DIO	6_TIT	1995	6	26	23	41	11.95	104.99	.1	-6.03	.3	13.6	5.0	.12	.16
4_DIO	6_TIT	1995	6	26	23	41	37.06	105.05	.2	-6.16	.1	11.2	5.0	.12	.16
4_DIO	6_TIT	1995	6	26	23	44	52.32	104.74	-.2	-5.87	.4	9.9	5.0	.12	.16
4_DIO	6_TIT	1995	6	26	23	45	18.35	105.14	.2	-6.17	.1	10.3	5.0	.12	.16
4_DIO	6_TIT	1995	6	26	23	46	59.41	104.97	.1	-5.88	.4	15.4	5.0	.12	.16
4_DIO	6_TIT	1995	6	26	23	47	24.46	104.87	.0	-6.05	.2	12.1	5.0	.12	.16

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Table I (continued)

1	2	3	4	5	6	7	8	9	10	11	12
4_DIO	6_TIT	1995 6 26	23 48 54.81	104.99	.1	-6.04	.3	11.9	5.0	.12	.16
4_DIO	6_TIT	1995 6 26	23 49 29.69	104.87	.0	-5.72	.6	13.3	5.0	.12	.16
4_DIO	6_TIT	1995 6 26	23 50 11.16	104.95	.0	-6.27	.0	14.6	5.0	.12	.16
4_DIO	6_TIT	1995 6 26	23 51 18.94	105.00	.1	-6.21	.1	10.7	5.0	.12	.16
4_DIO	6_TIT	1995 6 26	23 52 9.91	104.72	-.2	-5.86	.4	11.2	5.0	.12	.16
4_DIO	6_TIT	1995 6 26	23 52 30.78	104.71	-.2	-6.01	.3	11.9	5.0	.12	.16
4_DIO	6_TIT	1995 6 26	23 52 57.64	105.06	.2	-5.93	.4	13.7	5.0	.12	.16
4_DIO	6_TIT	1995 6 26	23 53 34.55	104.89	.0	-6.18	.1	15.1	5.0	.12	.16
4_DIO	6_TIT	1995 6 26	23 53 55.25	104.87	.0	-6.11	.2	13.4	5.0	.12	.16
4_DIO	6_TIT	1995 6 26	23 57 8.43	105.18	.3	-6.41	-.1	9.3	2.0	.12	.16
4_DIO	6_TIT	1995 6 26	23 57 31.22	104.89	.1	-5.88	.4	8.4	2.0	.12	.16
4_DIO	6_TIT	1995 6 26	23 57 48.96	104.80	.0	-6.07	.2	9.0	2.0	.12	.16
4_DIO	6_TIT	1995 6 26	23 58 14.45	104.99	.2	-5.86	.4	8.8	2.0	.12	.16
4_DIO	6_TIT	1995 6 26	23 58 37.90	105.15	.3	-5.90	.4	7.8	2.0	.12	.16
4_DIO	6_TIT	1995 6 26	23 59 49.52	105.01	.2	-6.37	-.1	9.2	2.0	.12	.16
4_DIO	6_TIT	1995 6 26	23 59 58.86	104.80	.0	-6.21	.1	9.4	2.0	.12	.16
4_DIO	6_TIT	1995 6 27	0 1 59.64	105.10	.3	-6.02	.3	4.6	1.0	.12	.16
4_DIO	6_TIT	1995 6 27	0 2 16.45	104.99	.2	-6.43	-.1	3.8	1.0	.12	.16
4_DIO	6_TIT	1995 6 27	0 2 27.22	104.82	.0	-6.49	-.2	4.8	1.0	.12	.16
4_DIO	6_TIT	1995 6 27	0 2 40.73	105.12	.3	-6.35	.0	4.5	1.0	.12	.16
4_DIO	6_TIT	1995 6 30	1 16 41.45	-85.89	.3	7.45	.1	11.0	5.0	.13	.09
4_DIO	6_TIT	1995 6 30	1 16 56.78	-85.76	.4	7.34	-.1	10.1	5.0	.13	.09
4_DIO	6_TIT	1995 6 30	1 17 11.94	-85.71	.5	7.46	.1	10.9	5.0	.13	.09
4_DIO	6_TIT	1995 6 30	1 17 30.67	-85.58	.6	7.40	.0	8.9	5.0	.13	.09
4_DIO	6_TIT	1995 6 30	1 17 43.90	-85.77	.4	7.55	.2	8.9	5.0	.13	.09
4_DIO	6_TIT	1995 6 30	1 17 57.64	-85.91	.3	7.46	.1	10.8	5.0	.13	.09
4_DIO	6_TIT	1995 6 30	1 18 11.09	-86.03	.2	7.51	.1	10.1	5.0	.13	.09
4_DIO	6_TIT	1995 6 30	1 18 25.59	-85.86	.4	7.31	-.1	9.7	5.0	.13	.09
4_DIO	6_TIT	1995 6 30	1 18 39.54	-85.79	.5	7.46	.1	10.4	5.0	.13	.09
4_DIO	6_TIT	1995 6 30	1 21 52.55	-85.84	.6	7.48	.1	2.5	1.0	.13	.09
4_DIO	6_TIT	1995 6 30	1 22 23.48	-85.78	.6	7.21	-.2	2.4	1.0	.13	.09
4_DIO	6_TIT	1995 6 30	1 22 56.10	-86.23	.2	7.32	-.1	6.2	2.0	.13	.09
4_DIO	6_TIT	1995 6 30	1 23 19.01	-85.96	.5	7.54	.1	5.5	2.0	.13	.09
4_DIO	6_TIT	1995 6 30	1 23 29.50	-86.17	.3	7.22	-.2	5.8	2.0	.13	.09
4_DIO	6_TIT	1995 6 30	1 24 12.28	-85.92	.6	7.54	.1	6.3	2.0	.13	.09
4_DIO	6_TIT	1995 6 30	1 24 48.26	-85.83	.7	7.36	-.1	4.7	2.0	.13	.09
4_DIO	6_TIT	1995 6 30	1 27 25.07	-86.25	.4	7.50	.0	18.1	10.0	.13	.09
4_DIO	6_TIT	1995 6 30	1 27 45.23	-86.17	.5	7.44	.0	16.4	10.0	.13	.09
4_DIO	6_TIT	1995 6 30	1 28 3.90	-86.19	.5	7.27	-.2	16.9	10.0	.13	.09
4_DIO	6_TIT	1995 6 30	1 35 41.65	-86.55	.5	7.30	-.2	5.1	2.0	.13	.09
4_DIO	6_TIT	1995 6 30	1 35 51.98	-86.42	.7	7.32	-.2	5.7	2.0	.13	.09

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Table I (continued)

1	2	3			4			5	6	7	8	9	10	11	12
4_DIO	6_TIT	1995	6	30	1	36	2.52	-86.64	.5	7.33	-.2	5.7	2.0	.13	.09
4_DIO	6_TIT	1995	6	30	1	36	12.91	-86.49	.6	7.32	-.2	7.3	2.0	.13	.09
4_DIO	6_TIT	1995	7	4	0	4	27.78	-176.50	.1	11.50	-.2	5.8	2.0	.10	.05
4_DIO	6_TIT	1995	7	4	0	4	41.95	-176.70	-.1	11.53	-.2	5.6	2.0	.10	.05
4_DIO	6_TIT	1995	7	4	0	4	53.81	-176.41	.2	11.63	-.1	6.8	2.0	.10	.05
4_DIO	6_TIT	1995	7	4	0	31	2.05	-176.20	-.1	11.70	.1	6.6	2.0	.10	.05
4_DIO	6_TIT	1995	7	8	0	27	55.30	183.19	-.5	-15.42	.2	6.5	2.0	.16	.14
4_DIO	6_TIT	1995	7	8	0	28	15.62	183.27	-.5	-15.32	.3	6.5	2.0	.16	.14
4_DIO	6_TIT	1995	7	8	0	28	28.36	183.61	-.2	-15.34	.2	5.2	2.0	.16	.14
4_DIO	6_TIT	1995	7	8	0	36	49.28	183.91	-.4	-15.63	.0	6.2	2.0	.16	.14
4_DIO	6_TIT	1995	7	8	0	37	13.18	184.04	-.3	-15.46	.1	5.7	2.0	.16	.14
4_DIO	6_TIT	1995	7	8	0	38	13.05	184.06	-.3	-15.57	.0	6.8	2.0	.16	.14
4_DIO	6_TIT	1995	7	8	0	45	42.61	184.72	-.1	-15.29	.4	2.7	1.0	.16	.14
4_DIO	6_TIT	1995	7	8	0	45	55.96	184.68	-.2	-15.32	.3	3.4	1.0	.16	.14
4_DIO	6_TIT	1995	7	8	0	46	7.82	184.70	-.2	-15.69	.0	3.8	1.0	.16	.14
4_DIO	6_TIT	1995	7	8	0	46	21.50	184.43	-.5	-15.21	.5	3.0	1.0	.16	.14
4_DIO	6_TIT	1995	7	8	0	57	59.27	185.34	-.3	-15.48	.2	3.4	1.0	.16	.14
4_DIO	6_TIT	1995	7	8	0	58	12.62	185.34	-.3	-15.21	.5	3.9	1.0	.16	.14
4_DIO	6_TIT	1995	7	8	0	58	23.71	185.78	.1	-15.60	.1	3.2	1.0	.16	.14
4_DIO	6_TIT	1995	7	8	0	58	48.05	185.76	.0	-15.76	-.1	5.0	1.0	.16	.14
4_DIO	6_TIT	1995	7	8	1	0	21.14	185.87	.0	-15.47	.2	12.8	5.0	.16	.14
4_DIO	6_TIT	1995	7	8	1	0	37.62	185.64	-.2	-15.47	.2	11.9	5.0	.16	.14
4_DIO	6_TIT	1995	7	8	1	0	52.40	185.50	-.4	-15.63	.1	12.6	5.0	.16	.14
4_DIO	6_TIT	1995	7	8	1	1	7.83	185.55	-.3	-15.53	.2	12.1	5.0	.16	.14
4_DIO	6_TIT	1995	7	8	1	1	23.81	185.48	-.4	-15.44	.3	14.2	5.0	.16	.14
4_DIO	6_TIT	1995	7	8	1	12	31.49	186.08	-.5	-15.54	.2	3.3	1.0	.16	.14
4_DIO	6_TIT	1995	7	8	1	12	46.81	186.51	-.1	-15.52	.2	3.9	1.0	.16	.14
4_DIO	6_TIT	1995	7	8	1	14	8.93	186.32	-.3	-15.63	.1	4.5	1.0	.16	.14
4_DIO	6_TIT	1995	7	8	1	14	24.42	186.38	-.3	-15.34	.4	5.5	1.0	.16	.14
4_DIO	6_TIT	1995	7	8	1	15	45.32	186.47	-.3	-15.71	.0	5.9	1.0	.16	.14
4_DIO	6_TIT	1995	7	8	1	17	2.55	186.49	-.3	-15.29	.4	4.5	1.0	.16	.14
4_DIO	6_TIT	1995	7	8	1	17	34.90	186.44	-.4	-15.44	.3	5.0	1.0	.16	.14
4_DIO	6_TIT	1995	7	8	1	17	52.91	186.38	-.5	-15.44	.3	4.3	1.0	.16	.14
4_DIO	6_TIT	1995	7	8	1	18	42.84	186.34	-.6	-15.68	.0	3.9	1.0	.16	.14
4_DIO	6_TIT	1995	7	8	1	19	8.82	186.54	-.4	-15.58	.1	3.6	1.0	.16	.14
4_DIO	6_TIT	1995	7	8	1	20	22.14	186.89	-.1	-15.58	.1	3.9	1.0	.16	.14
4_DIO	6_TIT	1995	7	8	1	21	59.14	187.07	-.1	-15.66	.1	3.5	1.0	.16	.14
4_DIO	6_TIT	1995	7	8	1	23	9.72	187.09	-.1	-15.42	.3	4.6	1.0	.16	.14
4_DIO	6_TIT	1995	7	8	1	26	27.45	187.13	-.3	-15.54	.2	4.4	1.0	.16	.14
4_DIO	6_TIT	1995	7	8	1	26	54.37	186.96	-.5	-15.32	.4	2.9	1.0	.16	.14
4_DIO	6_TIT	1995	7	8	1	27	22.93	187.32	-.2	-15.45	.3	3.2	1.0	.16	.14

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Table I (continued)

1	2	3			4			5	6	7	8	9	10	11	12
4_DIO	6_TIT	1995	7	8	1	27	52.53	187.23	-.3	-15.49	.3	4.8	1.0	.16	.14
4_DIO	6_TIT	1995	7	8	1	28	30.76	187.53	-.1	-15.42	.4	5.1	1.0	.16	.14
4_DIO	6_TIT	1995	7	8	1	28	53.94	187.27	-.4	-15.44	.4	6.3	1.0	.16	.14
4_DIO	6_TIT	1995	7	8	1	29	25.85	187.48	-.2	-15.36	.4	2.9	1.0	.16	.14
4_DIO	6_TIT	1995	7	8	1	29	37.28	187.69	.0	-15.19	.6	2.4	1.0	.16	.14
4_DIO	6_TIT	1995	7	8	1	29	59.58	187.44	-.3	-15.75	.0	4.3	1.0	.16	.14
4_DIO	6_TIT	1995	7	15	23	41	12.39	-110.85	.3	8.86	.2	4.0	1.0	.07	.18
4_DIO	6_TIT	1995	7	15	23	44	40.40	-111.10	-.1	8.75	.0	4.3	1.0	.07	.18
4_DIO	6_TIT	1995	7	15	23	54	47.76	-110.82	-.2	8.76	.1	4.3	1.0	.07	.18
4_DIO	6_TIT	1995	7	16	0	0	7.87	-110.15	.2	8.65	.0	4.1	1.0	.07	.18
4_DIO	6_TIT	1995	7	16	0	5	1.17	-109.48	.7	8.79	.1	9.3	1.0	.07	.18
4_DIO	6_TIT	1995	7	16	0	10	12.11	-108.74	1.2	9.38	.7	5.7	1.0	.07	.18
4_DIO	6_TIT	1995	7	16	0	24	6.15	-106.85	2.6	10.19	1.6	1.7	1.0	.07	.18
4_DIO	6_TIT	1995	7	16	0	30	4.10	-106.99	2.3	9.49	.9	4.5	1.0	.07	.18
4_DIO	6_TIT	1995	7	24	21	17	51.67	217.39	-.8	-15.99	.8	3.9	2.0	.22	.20
4_DIO	6_TIT	1995	7	24	21	18	21.65	217.54	-.6	-15.71	1.1	3.3	2.0	.22	.20
4_DIO	6_TIT	1995	7	24	21	18	33.46	218.02	-.1	-15.65	1.2	2.9	2.0	.22	.20
4_DIO	6_TIT	1995	7	24	21	18	48.13	217.70	-.4	-16.19	.6	9.4	2.0	.22	.20
4_DIO	6_TIT	1995	7	24	21	54	38.90	216.22	-.5	-15.97	.6	7.7	2.0	.22	.20
4_DIO	6_TIT	1995	7	24	21	54	51.48	216.84	.1	-16.11	.5	7.1	2.0	.22	.20
4_DIO	6_TIT	1995	7	24	21	55	28.77	216.39	-.3	-16.47	.1	6.8	2.0	.22	.20
4_DIO	6_TIT	1995	7	24	22	16	9.82	215.90	.0	-16.05	.6	5.2	2.0	.22	.20
4_DIO	6_TIT	1995	7	24	22	16	31.35	215.27	-.6	-16.05	.6	7.5	2.0	.22	.20
4_DIO	6_TIT	1995	7	24	22	16	41.56	215.66	-.2	-16.30	.3	5.9	2.0	.22	.20
4_DIO	6_TIT	1995	7	24	22	16	52.71	215.71	-.1	-15.94	.7	7.0	2.0	.22	.20
4_DIO	6_TIT	1995	7	24	22	17	51.65	215.94	.2	-16.43	.2	4.2	1.0	.22	.20
4_DIO	6_TIT	1995	7	24	22	18	16.47	215.88	.1	-15.92	.7	3.4	1.0	.22	.20
4_DIO	6_TIT	1995	7	24	22	18	27.40	215.56	-.2	-16.03	.6	3.8	1.0	.22	.20
4_DIO	6_TIT	1995	7	24	22	49	36.19	214.42	.1	-15.86	.5	3.1	1.0	.22	.20
4_DIO	6_TIT	1995	7	24	22	49	54.42	213.98	-.3	-15.81	.6	5.0	1.0	.22	.20
4_DIO	6_TIT	1995	7	24	22	50	6.29	214.53	.2	-15.99	.4	2.1	1.0	.22	.20
4_DIO	6_TIT	1995	7	24	22	51	25.66	213.76	-.5	-15.69	.7	8.0	2.0	.22	.20
4_DIO	6_TIT	1995	7	24	22	51	54.11	214.14	-.1	-16.16	.2	7.4	2.0	.22	.20
4_DIO	6_TIT	1995	7	24	22	55	1.79	213.93	-.2	-15.94	.5	7.6	2.0	.22	.20
4_DIO	6_TIT	1995	7	24	22	55	15.63	213.71	-.4	-16.05	.4	7.1	2.0	.22	.20
4_DIO	6_TIT	1995	7	24	23	17	20.65	212.77	-.3	-15.73	.5	7.3	2.0	.22	.20
4_DIO	6_TIT	1995	7	24	23	17	44.71	212.84	-.2	-15.97	.3	8.8	2.0	.22	.20
4_DIO	6_TIT	1995	7	24	23	17	57.45	213.10	.1	-16.13	.1	9.7	2.0	.22	.20
4_DIO	6_TIT	1995	7	24	23	18	9.15	212.72	-.3	-15.89	.3	7.1	2.0	.22	.20
4_DIO	6_TIT	1995	7	24	23	21	18.15	212.86	.0	-15.64	.6	4.9	1.0	.22	.20
4_DIO	6_TIT	1995	7	24	23	21	27.98	212.58	-.2	-16.09	.1	5.1	1.0	.22	.20

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Table I (continued)

1	2	3			4			5	6	7	8	9	10	11	12
4_DIO	6_TIT	1995	7	24	23	21	38.64	212.58	-.2	-15.71	.5	6.8	1.0	.22	.20
4_DIO	6_TIT	1995	7	24	23	21	48.74	212.65	-.1	-15.94	.3	5.6	1.0	.22	.20
4_DIO	6_TIT	1995	7	24	23	21	59.62	212.90	.1	-16.10	.1	5.1	1.0	.22	.20
4_DIO	6_TIT	1995	7	24	23	31	42.82	212.52	.3	-16.03	.2	5.7	1.0	.22	.20
4_DIO	6_TIT	1995	7	24	23	31	52.26	212.26	.1	-16.10	.1	4.9	1.0	.22	.20
4_DIO	6_TIT	1995	7	24	23	32	1.82	212.52	.3	-15.69	.5	5.4	1.0	.22	.20
4_DIO	6_TIT	1995	7	24	23	32	11.38	211.88	-.3	-15.52	.7	5.6	1.0	.22	.20
4_DIO	6_TIT	1995	7	24	23	36	25.35	211.75	-.2	-15.55	.6	5.2	1.0	.22	.20
4_DIO	6_TIT	1995	7	24	23	36	42.49	212.09	.1	-15.95	.2	5.7	1.0	.22	.20
4_DIO	6_TIT	1995	7	24	23	36	58.64	211.78	-.2	-16.13	.0	4.6	1.0	.22	.20
4_DIO	6_TIT	1995	7	24	23	37	8.74	211.78	-.2	-15.88	.3	4.7	1.0	.22	.20
4_DIO	6_TIT	1995	7	24	23	37	18.85	211.76	-.2	-15.50	.6	5.9	1.0	.22	.20
4_DIO	6_TIT	1995	7	24	23	45	12.97	211.21	-.3	-15.50	.6	4.6	1.0	.22	.20
4_DIO	6_TIT	1995	7	24	23	45	34.28	211.16	-.4	-15.86	.2	3.1	1.0	.22	.20
4_DIO	6_TIT	1995	7	24	23	53	56.19	211.04	-.1	-15.51	.6	5.0	1.0	.22	.20
4_DIO	6_TIT	1995	7	24	23	54	10.14	211.34	.2	-16.12	-.1	3.8	1.0	.22	.20
4_DIO	6_TIT	1995	7	24	23	54	20.74	210.83	-.3	-15.87	.2	4.3	1.0	.22	.20
4_DIO	6_TIT	1995	7	24	23	54	31.07	210.77	-.3	-15.64	.4	5.1	1.0	.22	.20
4_DIO	6_TIT	1995	7	24	23	54	41.72	210.76	-.3	-15.83	.2	6.4	1.0	.22	.20
4_DIO	6_TIT	1995	8	13	21	2	5.70	7.83	1.2	.08	.3	3.0	1.0	.13	.04
4_DIO	6_TIT	1995	8	13	21	2	24.82	7.27	.7	-.09	.2	2.7	1.0	.13	.04
4_DIO	6_TIT	1995	8	13	21	2	33.00	7.46	.9	-.09	.2	3.9	1.0	.13	.04
4_DIO	6_TIT	1995	8	13	21	2	48.11	7.59	1.1	-.20	.0	3.3	1.0	.13	.04
4_DIO	6_TIT	1995	8	13	21	2	59.15	7.46	1.0	-.12	.1	3.1	1.0	.13	.04
4_DIO	6_TIT	1995	8	13	21	3	53.36	7.39	1.0	.00	.2	3.8	1.0	.13	.04
4_DIO	6_TIT	1995	8	13	21	4	33.01	7.46	1.1	-.03	.2	3.3	1.0	.13	.04
4_DIO	6_TIT	1995	8	13	21	4	49.82	7.02	.7	.00	.2	2.8	1.0	.13	.04
4_DIO	6_TIT	1995	8	13	21	4	59.54	6.98	.7	-.01	.2	2.5	1.0	.13	.04
4_DIO	6_TIT	1995	8	13	21	5	9.48	7.16	.9	-.09	.1	3.3	1.0	.13	.04
4_DIO	6_TIT	1995	8	13	21	5	15.58	7.17	.9	.01	.2	3.6	1.0	.13	.04
4_DIO	6_TIT	1995	8	13	21	5	29.92	7.13	.9	-.02	.2	2.7	1.0	.13	.04
4_DIO	6_TIT	1995	8	13	21	5	38.05	6.96	.7	-.15	.0	4.8	1.0	.13	.04
4_DIO	6_TIT	1995	8	13	21	5	52.44	7.37	1.2	-.22	.0	5.1	1.0	.13	.04
4_DIO	6_TIT	1995	8	23	20	12	48.31	141.00	.2	-9.77	.4	1.6	1.0	.18	.18
4_DIO	6_TIT	1995	8	23	20	13	29.94	140.98	.1	-9.90	.3	1.9	1.0	.18	.18
4_DIO	6_TIT	1995	8	23	20	18	20.23	140.84	.0	-10.15	.1	1.9	1.0	.18	.18
4_DIO	6_TIT	1995	8	23	20	24	31.08	140.74	-.3	-9.88	.4	1.6	1.0	.18	.18
4_DIO	6_TIT	1995	8	23	20	38	50.78	141.38	.2	-10.23	.0	1.4	1.0	.18	.18
4_DIO	6_TIT	1995	8	23	20	55	18.12	141.62	.3	-10.36	-.1	1.6	1.0	.18	.18
4_DIO	6_TIT	1995	8	23	21	21	29.32	141.60	.0	-10.64	-.4	2.1	1.0	.18	.18
4_DIO	6_TIT	1995	8	23	21	27	5.18	141.53	-.1	-10.64	-.4	2.0	1.0	.18	.18

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Table I (continued)

1	2	3			4			5	6	7	8	9	10	11	12
4_DIO	6_TIT	1995	8	23	21	34	16.18	141.61	-.1	-10.20	.1	2.9	1.0	.18	.18
4_DIO	6_TIT	1995	8	23	21	36	47.78	141.22	-.5	-9.77	.5	1.9	1.0	.18	.18
4_DIO	6_TIT	1995	8	23	21	39	31.13	140.54	-1.3	-10.30	.0	3.0	1.0	.18	.18
4_DIO	6_TIT	1995	8	24	0	15	46.91	140.90	.2	-10.68	-.4	2.6	1.0	.17	.24
4_DIO	6_TIT	1995	8	24	0	16	2.62	141.16	.4	-10.05	.2	4.1	1.0	.17	.24
4_DIO	6_TIT	1995	8	24	0	17	14.57	140.79	.1	-10.72	-.4	3.9	1.0	.17	.24
4_DIO	6_TIT	1995	8	24	0	17	35.72	141.08	.4	-10.41	-.1	3.4	1.0	.17	.24
4_DIO	6_TIT	1995	8	24	0	18	14.00	140.83	.1	-9.90	.4	2.7	1.0	.17	.24
4_DIO	6_TIT	1995	8	24	0	19	30.07	141.02	.3	-10.18	.1	5.4	1.0	.17	.24
4_DIO	6_TIT	1995	8	24	0	20	7.64	141.05	.4	-10.60	-.3	2.9	1.0	.17	.24
4_DIO	6_TIT	1995	8	24	0	21	29.54	141.02	.3	-10.37	-.1	3.3	1.0	.17	.24
4_DIO	6_TIT	1995	8	24	0	22	14.36	140.74	.1	-10.06	.2	4.6	1.0	.17	.24
4_DIO	6_TIT	1995	8	24	0	23	13.73	140.99	.4	-10.51	-.2	3.3	1.0	.17	.24
4_DIO	6_TIT	1995	8	24	0	40	48.90	140.67	.4	-10.29	-.1	3.0	1.0	.17	.24
4_DIO	6_TIT	1995	8	24	0	41	.71	140.64	.4	-9.73	.5	2.5	1.0	.17	.24
4_DIO	6_TIT	1995	8	24	0	41	50.91	140.51	.2	-10.15	.1	4.0	1.0	.17	.24
4_DIO	6_TIT	1995	8	24	0	42	14.59	140.58	.3	-10.16	.1	3.3	1.0	.17	.24
4_DIO	6_TIT	1995	8	24	0	42	38.81	140.76	.5	-10.18	.1	2.8	1.0	.17	.24
4_DIO	6_TIT	1995	8	24	0	43	.01	140.97	.7	-10.09	.1	3.1	1.0	.17	.24
4_DIO	6_TIT	1995	8	24	0	54	49.92	140.26	.3	-9.78	.5	3.3	1.0	.17	.24
4_DIO	6_TIT	1995	8	24	0	55	6.29	140.52	.5	-10.09	.2	3.3	1.0	.17	.24
4_DIO	6_TIT	1995	8	24	0	55	49.13	140.20	.2	-10.04	.2	3.0	1.0	.17	.24
4_DIO	6_TIT	1995	8	24	0	56	19.62	140.32	.3	-10.33	-.1	2.1	1.0	.17	.24
4_DIO	6_TIT	1995	8	24	0	56	36.09	140.38	.4	-10.07	.2	4.1	1.0	.17	.24
4_DIO	6_TIT	1995	8	24	0	56	48.78	140.15	.2	-9.94	.3	3.9	1.0	.17	.24
4_DIO	6_TIT	1995	8	24	1	8	39.46	140.16	.5	-9.65	.5	3.4	1.0	.17	.24
4_DIO	6_TIT	1995	8	24	1	9	59.43	140.18	.6	-10.21	.0	2.7	1.0	.17	.24
4_DIO	6_TIT	1995	8	24	1	10	38.82	139.75	.2	-10.00	.2	4.2	1.0	.17	.24
4_DIO	6_TIT	1995	8	24	1	10	52.00	140.20	.6	-9.76	.4	3.3	1.0	.17	.24
4_DIO	6_TIT	1995	8	24	1	11	5.35	140.18	.6	-10.02	.2	3.1	1.0	.17	.24
4_DIO	6_TIT	1995	8	24	1	11	27.32	139.76	.2	-10.05	.2	3.8	1.0	.17	.24
4_DIO	6_TIT	1995	8	24	1	11	46.21	139.66	.1	-9.76	.4	4.3	1.0	.17	.24
4_DIO	6_TIT	1995	8	24	1	12	14.66	139.65	.1	-9.89	.3	4.1	1.0	.17	.24
4_DIO	6_TIT	1995	8	24	1	12	42.84	139.53	.0	-10.30	-.1	4.5	1.0	.17	.24
4_DIO	6_TIT	1995	8	24	1	23	1.35	139.79	.5	-10.35	-.1	4.2	1.0	.17	.24
4_DIO	6_TIT	1995	8	24	1	23	37.28	139.80	.5	-10.35	-.1	2.6	1.0	.17	.24
4_DIO	6_TIT	1995	8	24	1	23	51.94	139.45	.1	-9.73	.5	3.7	1.0	.17	.24
4_DIO	6_TIT	1995	8	24	1	24	7.92	139.44	.1	-10.26	-.1	3.5	1.0	.17	.24
4_DIO	6_TIT	1995	8	24	1	24	38.02	139.72	.4	-10.37	-.2	3.2	1.0	.17	.24
4_DIO	6_TIT	1995	8	24	1	26	32.10	139.60	.3	-10.12	.1	3.2	1.0	.17	.24
4_DIO	6_TIT	1995	8	24	1	27	40.49	139.72	.5	-9.61	.6	3.2	1.0	.17	.24

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Table I (continued)

1	2	3			4			5	6	7	8	9	10	11	12
4_DIO	6_TIT	1995	8	24	23	50	13.77	91.63	-.4	-5.83	.2	5.0	2.0	.12	.07
4_DIO	6_TIT	1995	8	24	23	50	30.91	91.75	-.3	-5.73	.3	4.1	2.0	.12	.07
4_DIO	6_TIT	1995	8	24	23	50	54.31	91.64	-.4	-5.84	.2	5.8	2.0	.12	.07
4_DIO	6_TIT	1995	8	24	23	51	28.80	91.72	-.3	-5.81	.2	6.2	2.0	.12	.07
4_DIO	6_TIT	1995	8	24	23	52	7.85	91.74	-.3	-5.88	.1	4.9	2.0	.12	.07
4_DIO	6_TIT	1995	8	24	23	52	55.86	91.93	-.1	-5.98	.0	5.0	2.0	.12	.07
4_DIO	6_TIT	1995	8	25	0	1	29.03	92.22	.1	-5.99	-.1	6.9	2.0	.12	.07
4_DIO	6_TIT	1995	8	25	0	3	56.78	92.13	.0	-5.83	.1	6.3	2.0	.12	.07
4_DIO	6_TIT	1995	8	25	0	4	22.38	92.17	.0	-5.96	-.1	6.3	2.0	.12	.07
4_DIO	6_TIT	1995	8	25	0	4	48.90	92.14	.0	-5.76	.1	6.3	2.0	.12	.07
4_DIO	6_TIT	1995	8	25	0	5	41.19	92.25	.1	-5.87	.0	5.2	2.0	.12	.07
4_DIO	6_TIT	1995	8	25	0	7	23.90	92.11	-.1	-5.85	.0	3.0	2.0	.12	.07
4_DIO	6_TIT	1995	8	25	0	7	46.04	91.99	-.2	-5.83	.1	5.6	2.0	.12	.07
4_DIO	6_TIT	1995	8	25	0	8	15.15	92.00	-.2	-5.87	.0	4.9	2.0	.12	.07
4_DIO	6_TIT	1995	8	25	0	8	40.42	92.13	-.1	-5.74	.2	5.8	2.0	.12	.07
4_DIO	6_TIT	1995	8	25	0	8	58.54	91.99	-.2	-5.79	.1	5.0	2.0	.12	.07
4_DIO	6_TIT	1995	8	25	0	9	12.60	92.03	-.2	-5.91	.0	5.0	2.0	.12	.07
4_DIO	6_TIT	1995	8	25	0	9	32.43	92.17	.0	-5.79	.1	5.9	2.0	.12	.07
4_DIO	6_TIT	1995	8	25	0	9	48.85	92.11	-.1	-5.88	.0	6.1	2.0	.12	.07
4_DIO	6_TIT	1995	8	25	0	10	2.75	92.27	.1	-5.89	.0	5.7	2.0	.12	.07
4_DIO	6_TIT	1995	8	25	0	10	52.84	91.97	-.3	-5.87	.0	4.4	2.0	.12	.07
4_DIO	6_TIT	1995	8	25	0	11	8.27	91.97	-.3	-5.89	.0	5.3	2.0	.12	.07
4_DIO	6_TIT	1995	8	25	0	11	27.83	91.88	-.3	-5.77	.1	5.6	2.0	.12	.07
4_DIO	6_TIT	1995	8	25	0	11	39.80	92.28	.0	-5.86	.1	5.6	2.0	.12	.07
4_DIO	6_TIT	1995	8	25	0	12	6.33	91.98	-.3	-5.72	.2	6.8	2.0	.12	.07
4_DIO	6_TIT	1995	8	25	0	12	18.08	92.14	-.1	-5.83	.1	5.7	2.0	.12	.07
4_DIO	6_TIT	1995	8	25	0	12	47.25	92.03	-.2	-5.81	.1	5.9	2.0	.12	.07
4_DIO	6_TIT	1995	8	25	0	13	11.03	91.88	-.4	-5.79	.1	5.5	2.0	.12	.07
4_DIO	6_TIT	1995	8	25	0	19	12.17	92.29	-.1	-5.80	.2	4.1	2.0	.12	.07
4_DIO	6_TIT	1995	8	25	0	19	51.82	92.32	-.1	-5.87	.1	6.6	2.0	.12	.07
4_DIO	6_TIT	1995	8	25	0	20	46.04	92.27	-.2	-5.78	.2	6.1	2.0	.12	.07
4_DIO	6_TIT	1995	8	25	0	22	58.52	92.12	-.4	-5.76	.2	5.9	2.0	.12	.07
4_DIO	6_TIT	1995	8	25	0	23	31.97	92.18	-.3	-5.88	.1	5.3	2.0	.12	.07
4_DIO	6_TIT	1995	8	25	0	27	51.82	92.41	-.2	-5.94	.1	4.8	2.0	.12	.07
4_DIO	6_TIT	1995	8	25	0	28	26.15	92.44	-.2	-5.82	.2	5.5	2.0	.12	.07
4_DIO	6_TIT	1995	8	25	0	28	37.63	92.45	-.2	-5.85	.2	4.9	2.0	.12	.07
4_DIO	6_TIT	1995	8	25	0	29	5.86	92.60	-.1	-5.69	.3	6.9	2.0	.12	.07
4_DIO	6_TIT	1995	8	25	0	30	5.23	92.58	-.1	-5.80	.2	5.0	2.0	.12	.07
4_DIO	6_TIT	1995	8	28	20	5	5.23	165.32	.5	-13.80	-.2	1.5	2.0	.11	.21
4_DIO	6_TIT	1995	8	28	20	5	23.03	165.51	.7	-13.30	.3	1.2	2.0	.11	.21
4_DIO	6_TIT	1995	8	28	20	6	43.77	165.11	.3	-13.75	-.1	1.4	2.0	.11	.21

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Table I (continued)

1	2	3			4			5	6	7	8	9	10	11	12
4_DIO	6_TIT	1995	8	28	20	7	11.78	164.83	.0	-14.01	-.4	1.3	2.0	.11	.21
4_DIO	6_TIT	1995	8	28	21	1	30.51	166.10	.2	-14.00	-.3	2.2	2.0	.20	.23
4_DIO	6_TIT	1995	8	28	21	2	9.34	166.57	.6	-13.35	.4	1.5	2.0	.20	.23
4_DIO	6_TIT	1995	8	28	21	4	11.99	166.35	.4	-14.06	-.3	2.1	2.0	.20	.23
4_DIO	6_TIT	1995	8	28	21	6	32.22	165.99	.0	-13.47	.3	3.3	2.0	.20	.23
4_DIO	6_TIT	1995	8	28	21	7	40.87	166.20	.1	-13.70	.1	3.3	2.0	.20	.23
4_DIO	6_TIT	1995	8	28	21	7	57.08	166.24	.2	-13.65	.1	3.7	2.0	.20	.23
4_DIO	6_TIT	1995	8	28	21	9	16.94	166.14	.1	-13.73	.1	3.1	2.0	.20	.23
4_DIO	6_TIT	1995	8	28	21	9	51.71	166.63	.5	-13.42	.4	3.0	2.0	.20	.23
4_DIO	6_TIT	1995	8	28	21	10	27.79	166.22	.1	-13.88	-.1	3.4	2.0	.20	.23
4_DIO	6_TIT	1995	8	28	21	44	27.56	166.84	.2	-14.47	-.6	1.1	2.0	.20	.19
4_DIO	6_TIT	1995	8	28	21	56	.28	166.64	-.1	-13.67	.2	1.6	2.0	.20	.19
4_DIO	6_TIT	1995	8	28	21	57	7.29	167.09	.3	-13.73	.2	3.1	2.0	.20	.19
4_DIO	6_TIT	1995	8	28	21	57	19.48	167.41	.6	-13.71	.2	2.0	2.0	.20	.19
4_DIO	6_TIT	1995	8	28	21	57	58.26	167.21	.4	-14.21	-.3	2.5	2.0	.20	.19
4_DIO	6_TIT	1995	8	28	21	58	14.79	167.07	.3	-13.95	-.1	2.5	2.0	.20	.19
4_DIO	6_TIT	1995	8	28	22	5	8.99	167.29	.4	-13.32	.6	2.6	2.0	.20	.19
4_DIO	6_TIT	1995	8	28	22	5	25.46	166.97	.1	-13.65	.2	2.0	2.0	.20	.19
4_DIO	6_TIT	1995	8	28	22	7	3.34	167.22	.3	-13.66	.2	3.1	2.0	.20	.19
4_DIO	6_TIT	1995	8	28	22	7	32.62	167.59	.7	-13.87	.0	3.0	2.0	.20	.19
4_DIO	6_TIT	1995	8	28	22	8	11.23	166.99	.1	-13.52	.4	3.3	2.0	.20	.19
4_DIO	6_TIT	1995	8	28	22	8	41.93	167.17	.3	-13.53	.4	2.9	2.0	.20	.19
4_DIO	6_TIT	1995	8	28	22	8	41.93	167.17	.3	-13.54	.4	2.9	2.0	.20	.19
4_DIO	6_TIT	1995	8	28	22	9	5.72	167.39	.5	-13.70	.2	2.8	2.0	.20	.19
4_DIO	6_TIT	1995	9	1	22	6	18.14	-201.43	.8	13.70	-.3	5.3	2.0	.10	.10
4_DIO	6_TIT	1995	9	1	22	7	.71	-201.36	.9	13.80	-.2	5.6	2.0	.10	.10
4_DIO	6_TIT	1995	9	1	22	7	28.66	-201.40	.9	14.02	.0	4.5	2.0	.10	.10
4_DIO	6_TIT	1995	9	1	22	7	57.28	-201.73	.7	14.06	.1	5.1	2.0	.10	.10
4_DIO	6_TIT	1995	9	1	22	45	27.03	-205.10	.9	14.29	.0	6.2	2.0	.10	.10
4_DIO	6_TIT	1995	9	1	22	45	44.71	-205.29	.8	14.13	-.2	5.0	2.0	.10	.10
4_DIO	6_TIT	1995	9	1	22	46	3.00	-205.15	1.0	14.19	-.1	5.8	2.0	.10	.10
4_DIO	6_TIT	1995	9	1	22	46	19.10	-205.22	.9	14.16	-.2	6.8	2.0	.10	.10
4_DIO	6_TIT	1995	9	1	22	46	31.40	-205.49	.7	14.33	.0	7.1	2.0	.10	.10
4_DIO	6_TIT	1995	9	1	22	46	43.48	-205.40	.8	14.33	.0	4.9	2.0	.10	.10
4_DIO	6_TIT	1995	9	1	22	46	56.77	-205.30	.9	14.26	-.1	3.8	2.0	.10	.10
4_DIO	6_TIT	1995	9	1	22	47	10.40	-205.50	.7	14.20	-.1	5.9	2.0	.10	.10
4_DIO	6_TIT	1995	9	1	22	47	22.48	-205.46	.8	14.41	.1	5.7	2.0	.10	.10
4_DIO	6_TIT	1995	9	1	22	47	33.96	-205.60	.7	14.49	.1	5.5	2.0	.10	.10
4_DIO	6_TIT	1995	9	1	23	5	47.58	-207.33	.6	14.45	-.1	4.7	2.0	.10	.10
4_DIO	6_TIT	1995	9	1	23	6	3.07	-207.22	.8	14.54	.0	7.2	2.0	.10	.10
4_DIO	6_TIT	1995	9	1	23	6	26.63	-207.39	.7	14.42	-.1	5.4	2.0	.10	.10

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Table I (continued)

1	2	3			4			5	6	7	8	9	10	11	12
4_DIO	6_TIT	1995	9	1	23	6	37.34	-207.14	.9	14.44	-.1	6.0	2.0	.10	.10
4_DIO	6_TIT	1995	9	1	23	18	38.62	-208.45	.7	14.51	-.2	7.1	2.0	.10	.10
4_DIO	6_TIT	1995	9	1	23	19	10.15	-208.45	.8	14.50	-.2	7.5	2.0	.10	.10
4_DIO	6_TIT	1995	9	1	23	19	22.73	-208.51	.7	14.62	-.1	5.9	2.0	.10	.10
4_DIO	6_TIT	1995	9	1	23	19	39.65	-208.35	.9	14.61	-.1	5.5	2.0	.10	.10
4_DIO	6_TIT	1995	9	1	23	19	51.62	-208.39	.9	14.44	-.3	5.3	2.0	.10	.10
4_DIO	6_TIT	1995	9	1	23	33	8.10	-209.75	.7	14.76	.0	6.0	2.0	.10	.10
4_DIO	6_TIT	1995	9	1	23	33	20.40	-209.77	.7	14.50	-.2	4.8	2.0	.10	.10
4_DIO	6_TIT	1995	9	1	23	33	47.92	-209.69	.9	14.69	-.1	5.5	2.0	.10	.10
4_DIO	6_TIT	1995	9	1	23	33	59.01	-209.75	.8	14.65	-.1	5.7	2.0	.10	.10
4_DIO	6_TIT	1995	9	1	23	54	32.31	-211.59	.8	14.87	-.1	4.9	2.0	.10	.10
4_DIO	6_TIT	1995	9	1	23	55	9.27	-211.47	1.0	14.86	-.1	6.1	2.0	.10	.10
4_DIO	6_TIT	1995	9	1	23	55	20.48	-211.84	.6	15.08	.1	5.7	2.0	.10	.10
4_DIO	6_TIT	1995	9	2	0	19	1.02	-213.73	.8	15.10	.0	6.4	2.0	.10	.10
4_DIO	6_TIT	1995	9	2	0	19	14.20	-213.78	.8	15.10	.0	8.1	2.0	.10	.10
4_DIO	6_TIT	1995	9	2	0	19	27.00	-213.66	.9	14.95	-.1	7.2	2.0	.10	.10
4_DIO	6_TIT	1995	9	2	0	19	41.00	-213.66	.9	14.86	-.2	5.9	2.0	.10	.10
4_DIO	6_TIT	1995	9	2	0	19	53.14	-213.78	.8	14.93	-.2	7.2	2.0	.10	.10
4_DIO	6_TIT	1995	9	2	0	20	38.18	-213.77	.9	14.85	-.3	5.5	2.0	.10	.10
4_DIO	6_TIT	1995	9	2	0	21	7.35	-214.06	.6	14.91	-.2	4.3	2.0	.10	.10
4_DIO	6_TIT	1995	9	2	0	21	19.92	-213.74	1.0	14.83	-.3	5.0	2.0	.10	.10
4_DIO	6_TIT	1995	9	2	1	13	1.18	-218.34	.5	15.46	-.1	4.9	2.0	.00	.24
4_DIO	6_TIT	1995	9	2	1	13	18.10	-218.23	.6	15.55	-.1	4.6	2.0	.08	.24
4_DIO	6_TIT	1995	9	2	1	13	40.13	-218.27	.6	15.60	.0	5.3	2.0	.08	.24
4_DIO	6_TIT	1995	9	2	1	13	52.59	-218.15	.7	15.48	-.1	3.6	2.0	.08	.24
4_DIO	6_TIT	1995	9	2	1	27	37.63	-219.24	.7	15.59	-.1	5.8	2.0	.08	.24
4_DIO	6_TIT	1995	9	2	1	27	53.50	-219.09	.8	15.45	-.2	4.9	2.0	.08	.24
4_DIO	6_TIT	1995	9	2	1	28	22.83	-219.14	.8	15.75	.1	4.7	2.0	.08	.24
4_DIO	6_TIT	1995	9	2	1	28	35.14	-219.13	.9	15.40	-.3	6.4	2.0	.08	.24
4_DIO	6_TIT	1995	9	2	1	42	53.46	-220.50	.5	15.68	-.1	6.0	2.0	.08	.24
4_DIO	6_TIT	1995	9	2	1	43	7.46	-220.43	.6	15.65	-.1	6.8	2.0	.08	.24
4_DIO	6_TIT	1995	9	2	1	43	20.26	-220.21	.9	15.78	.0	5.4	2.0	.08	.24
4_DIO	6_TIT	1995	9	2	1	43	31.74	-220.30	.8	15.88	.1	5.3	2.0	.08	.24
4_DIO	6_TIT	1995	9	2	1	43	58.10	-220.48	.6	15.52	-.3	4.6	2.0	.08	.24
4_DIO	6_TIT	1995	9	2	2	5	26.27	-221.70	.9	15.73	-.2	4.2	2.0	.08	.24
4_DIO	6_TIT	1995	9	2	2	5	49.23	-221.65	1.0	15.72	-.2	3.8	2.0	.08	.24
4_DIO	6_TIT	1995	9	2	2	6	26.52	-221.56	1.1	16.25	.3	5.2	2.0	.08	.24
4_DIO	6_TIT	1995	9	2	2	6	37.18	-221.77	.9	15.79	-.2	3.8	2.0	.08	.24
4_DIO	6_TIT	1995	9	2	2	7	8.05	-221.82	.9	16.18	.2	5.1	2.0	.08	.24
4_DIO	6_TIT	1995	9	2	2	7	22.05	-221.71	1.0	16.55	.6	4.0	2.0	.08	.24
4_DIO	6_TIT	1995	9	2	2	34	37.19	-223.73	.8	16.19	.0	5.6	2.0	.08	.24

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Table I (continued)

1	2	3			4			5	6	7	8	9	10	11	12
4_DIO	6_TIT	1995	9	2	2	35	.86	-223.64	1.0	16.14	-.1	4.7	2.0	.08	.24
4_DIO	6_TIT	1995	9	2	2	35	26.51	-223.76	.9	17.07	.9	2.4	2.0	.08	.24
4_DIO	6_TIT	1995	9	2	2	35	39.09	-223.76	.9	16.65	.5	3.7	2.0	.08	.24
4_DIO	6_TIT	1995	9	3	21	57	46.25	-144.41	.6	10.72	.0	10.6	5.0	.05	.04
4_DIO	6_TIT	1995	9	3	21	58	21.13	-144.45	.6	10.66	.0	11.5	5.0	.05	.04
4_DIO	6_TIT	1995	9	3	21	58	38.49	-144.52	.5	10.61	-.1	13.0	5.0	.05	.04
4_DIO	6_TIT	1995	9	3	21	59	36.27	-144.59	.5	10.71	.0	13.2	5.0	.05	.04
4_DIO	6_TIT	1995	9	3	22	16	36.62	-145.26	.6	10.75	-.1	12.7	5.0	.05	.04
4_DIO	6_TIT	1995	9	3	22	16	54.36	-145.32	.6	10.77	.0	13.1	5.0	.05	.04
4_DIO	6_TIT	1995	9	3	22	17	17.70	-145.28	.6	10.77	.0	11.9	5.0	.05	.04
4_DIO	6_TIT	1995	9	3	22	17	33.41	-145.32	.6	10.71	-.1	11.7	5.0	.05	.04
4_DIO	6_TIT	1995	9	3	22	17	54.89	-145.33	.6	10.77	.0	11.0	5.0	.05	.04
4_DIO	6_TIT	1995	9	3	22	30	51.42	-146.09	.6	10.75	-.2	11.3	5.0	.05	.04
4_DIO	6_TIT	1995	9	3	22	31	6.31	-146.02	.6	10.86	.0	10.8	5.0	.05	.04
4_DIO	6_TIT	1995	9	3	22	31	43.88	-146.06	.6	10.91	.0	13.1	5.0	.05	.04
4_DIO	6_TIT	1995	9	3	22	32	1.18	-146.08	.6	10.83	-.1	13.9	5.0	.05	.04
4_DIO	6_TIT	1995	9	3	22	32	21.72	-146.04	.7	10.82	-.1	11.9	5.0	.05	.04
4_DIO	6_TIT	1995	9	3	22	32	37.27	-146.11	.6	10.87	.0	13.3	5.0	.05	.04
4_DIO	6_TIT	1995	9	3	22	45	35.83	-146.84	.5	10.87	.0	10.0	5.0	.05	.04
4_DIO	6_TIT	1995	9	3	22	45	52.37	-146.81	.6	10.93	.0	12.7	5.0	.05	.04
4_DIO	6_TIT	1995	9	3	22	46	49.82	-146.84	.6	10.92	.0	13.9	5.0	.05	.04
4_DIO	6_TIT	1995	9	3	22	47	6.35	-146.77	.7	10.97	.1	13.4	5.0	.05	.04
4_DIO	6_TIT	1995	9	3	22	47	22.72	-146.96	.5	10.94	.0	14.0	5.0	.05	.04
4_DIO	6_TIT	1995	9	3	22	47	39.42	-146.94	.5	10.92	.0	12.4	5.0	.05	.04
4_DIO	6_TIT	1995	9	3	22	48	6.61	-146.93	.6	10.91	.0	12.5	5.0	.05	.04
4_DIO	6_TIT	1995	9	3	22	48	25.44	-146.98	.5	10.97	.1	12.5	5.0	.05	.04
4_DIO	6_TIT	1995	9	3	22	49	.60	-146.89	.7	10.91	.0	12.8	5.0	.05	.04
4_DIO	6_TIT	1995	9	3	22	49	16.53	-146.97	.6	10.96	.1	14.1	5.0	.05	.04
4_DIO	6_TIT	1995	9	3	22	49	52.78	-147.03	.6	10.99	.1	14.7	5.0	.05	.04
4_DIO	6_TIT	1995	9	3	22	50	9.53	-147.03	.6	10.99	.1	12.4	5.0	.05	.04
4_DIO	6_TIT	1995	9	3	22	50	27.71	-147.03	.6	10.91	.0	11.5	5.0	.05	.04
4_DIO	6_TIT	1995	9	3	22	50	43.86	-147.06	.6	10.92	.0	14.9	5.0	.05	.04
4_DIO	6_TIT	1995	9	3	22	51	.55	-147.04	.6	10.98	.1	12.6	5.0	.05	.04
4_DIO	6_TIT	1995	9	3	23	7	37.62	-147.93	.7	11.02	.0	12.9	5.0	.05	.04
4_DIO	6_TIT	1995	9	3	23	7	57.12	-147.94	.7	10.92	-.1	14.1	5.0	.05	.04
4_DIO	6_TIT	1995	9	3	23	8	13.48	-147.90	.7	11.03	.0	13.2	5.0	.05	.04
4_DIO	6_TIT	1995	9	3	23	8	29.91	-148.03	.6	10.97	.0	13.5	5.0	.05	.04
4_DIO	6_TIT	1995	9	3	23	8	50.50	-148.01	.6	10.99	.0	13.2	5.0	.05	.04
4_DIO	6_TIT	1995	9	3	23	10	18.00	-148.11	.6	11.03	.0	9.6	5.0	.05	.04
4_DIO	6_TIT	1995	9	3	23	10	38.82	-148.06	.7	10.96	.0	8.8	5.0	.05	.04
4_DIO	6_TIT	1995	9	3	23	10	56.01	-148.26	.5	10.90	-.1	7.3	5.0	.05	.04

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Table I (continued)

1	2	3			4			5	6	7	8	9	10	11	12
4_DIO	6_TIT	1995	9	3	23	11	33.19	-148.17	.6	10.94	-.1	10.6	5.0	.05	.04
4_DIO	6_TIT	1995	9	3	23	47	22.54	-149.93	.9	11.14	.0	8.0	5.0	.05	.04
4_DIO	6_TIT	1995	9	3	23	48	48.28	-150.04	.9	11.13	-.1	8.7	5.0	.05	.04
4_DIO	6_TIT	1995	9	3	23	49	4.09	-150.04	.9	11.15	.0	7.8	5.0	.05	.04
4_DIO	6_TIT	1995	9	3	23	49	19.03	-150.13	.8	11.19	.0	9.3	5.0	.05	.04
4_DIO	6_TIT	1995	10	3	20	32	20.33	-107.91	.7	4.71	.0	15.5	1.0	.08	.06
4_DIO	6_TIT	1995	10	3	20	32	32.85	-108.14	.5	4.58	-.1	17.8	1.0	.08	.06
4_DIO	6_TIT	1995	10	3	20	33	.10	-108.17	.5	4.55	-.2	17.2	1.0	.08	.06
4_DIO	6_TIT	1995	10	3	20	33	9.38	-108.05	.6	4.77	.1	18.2	1.0	.08	.06
4_DIO	6_TIT	1995	10	3	20	43	21.52	-108.64	.5	4.63	-.1	22.1	1.0	.08	.06
4_DIO	6_TIT	1995	10	3	20	43	54.64	-108.70	.5	4.70	.0	18.6	1.0	.08	.06
4_DIO	6_TIT	1995	10	3	20	44	7.94	-108.86	.3	4.67	-.1	19.3	1.0	.08	.06
4_DIO	6_TIT	1995	10	3	20	45	43.73	-108.79	.5	4.69	-.1	20.0	1.0	.08	.06
4_DIO	6_TIT	1995	10	3	20	46	17.07	-108.84	.5	4.55	-.2	22.7	1.0	.08	.06
4_DIO	6_TIT	1995	10	3	20	46	26.02	-108.86	.5	4.61	-.2	18.8	1.0	.08	.06
4_DIO	6_TIT	1995	10	3	20	51	6.36	-109.28	.3	4.69	-.1	16.9	1.0	.08	.06
4_DIO	6_TIT	1995	10	3	20	51	44.04	-109.07	.5	4.62	-.2	15.3	1.0	.08	.06
4_DIO	6_TIT	1995	10	3	20	51	53.21	-109.18	.4	4.58	-.2	18.1	1.0	.08	.06
4_DIO	6_TIT	1995	10	3	20	52	4.47	-109.14	.5	4.69	-.1	19.5	1.0	.08	.06
4_DIO	6_TIT	1995	10	3	20	59	45.57	-109.45	.6	4.79	.0	16.7	1.0	.08	.06
4_DIO	6_TIT	1995	10	3	20	59	56.33	-109.69	.4	4.75	-.1	15.4	1.0	.08	.06
4_DIO	6_TIT	1995	10	3	21	0	16.38	-109.59	.5	4.80	.0	15.3	1.0	.08	.06
4_DIO	6_TIT	1995	10	3	21	0	25.28	-109.49	.6	4.76	.0	16.9	1.0	.08	.06
4_DIO	6_TIT	1995	10	3	22	24	42.38	-114.87	.7	5.04	-.1	12.9	1.0	.08	.09
4_DIO	6_TIT	1995	10	3	22	24	51.17	-114.90	.6	5.15	.0	11.6	1.0	.08	.09
4_DIO	6_TIT	1995	10	3	22	25	.07	-114.78	.8	5.11	.0	16.8	1.0	.08	.09
4_DIO	6_TIT	1995	10	3	22	25	8.74	-114.91	.6	4.87	-.2	16.6	1.0	.08	.09
4_DIO	6_TIT	1995	10	3	22	25	22.97	-114.95	.6	5.04	-.1	17.1	1.0	.08	.09
4_DIO	6_TIT	1995	10	3	22	30	39.01	-115.24	.7	5.14	.0	19.3	1.0	.08	.09
4_DIO	6_TIT	1995	10	3	22	30	59.17	-115.21	.7	5.29	.2	15.3	1.0	.08	.09
4_DIO	6_TIT	1995	10	3	22	31	7.85	-115.38	.6	5.34	.2	16.9	1.0	.08	.09
4_DIO	6_TIT	1995	10	3	22	31	17.02	-115.38	.6	5.17	.1	19.4	1.0	.08	.09
4_DIO	6_TIT	1995	10	3	22	31	25.64	-115.17	.8	5.38	.3	20.0	1.0	.08	.09
4_DIO	6_TIT	1995	10	3	22	49	10.21	-116.42	.8	5.47	.3	15.8	1.0	.08	.09
4_DIO	6_TIT	1995	10	3	22	49	19.44	-116.64	.6	5.31	.1	13.3	1.0	.08	.09
4_DIO	6_TIT	1995	10	3	22	49	29.76	-116.44	.8	5.26	.1	17.3	1.0	.08	.09
4_DIO	6_TIT	1995	10	3	22	49	39.43	-116.53	.7	5.47	.3	15.6	1.0	.08	.09
4_DIO	6_TIT	1995	10	3	22	56	32.63	-117.04	.7	5.13	-.1	13.5	1.0	.08	.09
4_DIO	6_TIT	1995	10	3	22	56	42.19	-117.13	.6	5.37	.1	14.4	1.0	.08	.09
4_DIO	6_TIT	1995	10	3	22	56	51.20	-117.18	.6	5.31	.0	11.7	1.0	.08	.09
4_DIO	6_TIT	1995	10	3	22	57	1.14	-117.27	.5	5.32	.1	15.0	1.0	.08	.09

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Table I (continued)

1	2	3	4	5	6	7	8	9	10	11	12
4_DIO	6_TIT	1995 10 3	22 57 10.20	-117.03	.8	5.14	-.1	15.6	1.0	.08	.09
4_DIO	6_TIT	1995 10 3	23 1 3.14	-117.34	.7	5.33	.0	17.7	1.0	.08	.09
4_DIO	6_TIT	1995 10 3	23 1 14.13	-117.41	.7	5.25	-.1	18.9	1.0	.08	.09
4_DIO	6_TIT	1995 10 3	23 1 22.97	-117.38	.7	5.14	-.2	14.3	1.0	.08	.09
4_DIO	6_TIT	1995 10 3	23 1 31.87	-117.42	.7	5.18	-.1	16.8	1.0	.08	.09
4_DIO	6_TIT	1995 10 4	0 17 59.80	-123.25	.8	5.68	.0	13.1	2.0	.16	.15
4_DIO	6_TIT	1995 10 4	0 18 11.77	-123.09	1.0	5.58	-.1	14.4	2.0	.16	.15
4_DIO	6_TIT	1995 10 4	0 18 22.92	-123.18	.9	5.55	-.1	17.1	2.0	.16	.15
4_DIO	6_TIT	1995 10 4	0 18 32.59	-123.30	.8	5.66	.0	16.0	2.0	.16	.15
4_DIO	6_TIT	1995 10 4	0 18 42.09	-123.24	.9	5.44	-.3	12.0	2.0	.16	.15
4_DIO	6_TIT	1995 10 4	0 25 42.43	-123.82	.8	5.94	.2	19.3	2.0	.16	.15
4_DIO	6_TIT	1995 10 4	0 25 53.75	-124.11	.6	5.55	-.2	12.6	2.0	.16	.15
4_DIO	6_TIT	1995 10 4	0 26 3.53	-124.13	.6	5.49	-.3	14.8	2.0	.16	.15
4_DIO	6_TIT	1995 10 4	0 26 13.47	-123.75	.9	6.00	.2	12.8	2.0	.16	.15
4_DIO	6_TIT	1995 10 4	0 26 25.44	-123.64	1.1	5.80	.0	11.1	2.0	.16	.15
4_DIO	6_TIT	1995 10 4	0 33 58.85	-124.25	1.1	5.95	.1	9.1	2.0	.16	.15
4_DIO	6_TIT	1995 10 4	0 34 21.04	-124.58	.8	5.82	.0	10.5	2.0	.16	.15
4_DIO	6_TIT	1995 10 4	0 34 30.87	-124.82	.5	5.63	-.2	11.8	2.0	.16	.15
4_DIO	6_TIT	1995 10 4	0 34 41.69	-124.58	.8	5.84	.0	7.7	2.0	.16	.15
4_DIO	6_TIT	1995 10 14	19 13 40.25	216.23	.3	-21.86	.1	7.7	1.0	.09	.07
4_DIO	6_TIT	1995 10 14	19 13 49.65	216.19	.3	-21.80	.2	8.3	1.0	.09	.07
4_DIO	6_TIT	1995 10 14	19 23 15.27	215.78	.4	-21.78	.2	6.7	1.0	.09	.07
4_DIO	6_TIT	1995 10 14	19 23 26.91	215.53	.1	-21.74	.3	8.2	1.0	.09	.07
4_DIO	6_TIT	1995 10 14	19 23 36.41	215.68	.3	-21.70	.3	14.5	1.0	.09	.07
4_DIO	6_TIT	1995 10 14	19 23 45.86	215.56	.2	-21.79	.2	8.0	1.0	.09	.07
4_DIO	6_TIT	1995 10 14	19 23 55.42	215.44	.1	-21.61	.4	9.3	1.0	.09	.07
4_DIO	6_TIT	1995 10 14	19 24 4.87	215.66	.3	-21.61	.4	9.5	1.0	.09	.07
4_DIO	6_TIT	1995 10 14	19 38 51.42	214.59	.1	-21.77	.2	9.8	1.0	.09	.07
4_DIO	6_TIT	1995 10 14	19 39 1.31	214.81	.4	-21.59	.4	8.5	1.0	.09	.07
4_DIO	6_TIT	1995 10 14	19 39 10.92	214.64	.2	-21.80	.2	9.6	1.0	.09	.07
4_DIO	6_TIT	1995 10 14	19 39 20.25	214.73	.3	-21.75	.2	13.3	1.0	.09	.07
4_DIO	6_TIT	1995 10 14	19 39 29.92	214.48	.0	-21.66	.3	10.7	1.0	.09	.07
4_DIO	6_TIT	1995 10 14	19 45 25.89	214.27	.2	-21.60	.4	13.6	1.0	.09	.07
4_DIO	6_TIT	1995 10 14	19 46 .61	214.42	.4	-21.76	.2	10.7	1.0	.09	.07
4_DIO	6_TIT	1995 10 14	19 46 14.89	214.30	.3	-21.75	.3	13.3	1.0	.09	.07
4_DIO	6_TIT	1995 10 14	20 45 32.80	210.45	.2	-21.71	.2	6.9	1.0	.09	.11
4_DIO	6_TIT	1995 10 14	20 45 43.84	210.57	.4	-21.62	.3	6.7	1.0	.09	.11
4_DIO	6_TIT	1995 10 14	20 45 54.22	210.42	.2	-21.77	.1	6.8	1.0	.09	.11
4_DIO	6_TIT	1995 10 14	20 46 4.98	210.53	.4	-21.87	.0	6.6	1.0	.09	.11
4_DIO	6_TIT	1995 10 14	20 46 14.54	210.33	.2	-21.58	.3	6.2	1.0	.09	.11
4_DIO	6_TIT	1995 10 14	20 56 17.29	209.63	.2	-21.61	.3	6.0	1.0	.09	.11

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Table I (continued)

1	2	3	4	5	6	7	8	9	10	11	12
4_DIO	6_TIT	1995 10 14	20 56 30.25	209.72	.3	-21.95	.0	4.8	1.0	.09	.11
4_DIO	6_TIT	1995 10 14	20 56 49.81	209.70	.3	-21.69	.2	5.6	1.0	.09	.11
4_DIO	6_TIT	1995 10 14	20 56 59.58	209.62	.2	-21.70	.2	6.5	1.0	.09	.11
4_DIO	6_TIT	1995 10 14	21 4 1.74	208.99	.1	-21.67	.2	7.3	1.0	.09	.11
4_DIO	6_TIT	1995 10 14	21 4 33.21	209.10	.3	-21.92	.0	8.3	1.0	.09	.11
4_DIO	6_TIT	1995 10 14	21 6 57.83	208.78	.1	-21.63	.3	4.6	1.0	.09	.11
4_DIO	6_TIT	1995 10 14	21 7 21.12	209.00	.4	-21.83	.1	4.9	1.0	.09	.11
4_DIO	6_TIT	1995 10 14	21 7 37.21	208.84	.3	-21.85	.0	6.4	1.0	.09	.11
4_DIO	6_TIT	1995 10 23	21 11 36.85	-134.99	.6	15.96	-.1	10.1	5.0	.06	.09
4_DIO	6_TIT	1995 10 23	21 11 36.85	-134.87	.8	16.05	.0	10.7	5.0	.06	.09
4_DIO	6_TIT	1995 10 23	21 12 44.63	-134.88	.8	15.87	-.2	11.4	5.0	.06	.09
4_DIO	6_TIT	1995 10 23	21 13 19.24	-134.78	.9	15.98	-.1	11.9	5.0	.06	.09
4_DIO	6_TIT	1995 10 23	21 13 19.24	-134.97	.7	15.95	-.1	11.6	5.0	.06	.09
4_DIO	6_TIT	1995 10 23	21 18 56.97	-135.18	.6	15.89	-.2	11.4	5.0	.06	.09
4_DIO	6_TIT	1995 10 23	21 19 16.14	-135.18	.6	15.83	-.3	13.8	5.0	.06	.09
4_DIO	6_TIT	1995 10 23	21 20 14.91	-135.17	.6	15.88	-.2	11.1	5.0	.06	.09
4_DIO	6_TIT	1995 10 23	21 41 54.06	-135.91	.5	15.74	-.6	11.3	5.0	.06	.09
4_DIO	6_TIT	1995 10 23	21 42 12.13	-135.89	.5	15.72	-.6	9.5	5.0	.06	.09
4_DIO	6_TIT	1995 10 23	21 42 33.67	-135.94	.4	16.03	-.3	11.1	5.0	.06	.09
4_DIO	6_TIT	1995 10 23	21 43 1.02	-135.98	.4	15.96	-.4	12.1	5.0	.06	.09
4_DIO	6_TIT	1995 10 23	21 43 18.15	-135.93	.5	15.84	-.5	13.5	5.0	.06	.09
4_DIO	6_TIT	1995 10 23	21 43 35.02	-135.93	.5	16.08	-.3	13.2	5.0	.06	.09
4_DIO	6_TIT	1995 10 23	21 58 8.88	-136.41	.3	16.02	-.4	14.1	5.0	.06	.09
4_DIO	6_TIT	1995 10 23	22 0 7.03	-136.28	.4	16.02	-.4	11.0	5.0	.06	.09
4_DIO	6_TIT	1995 10 23	22 1 16.23	-136.32	.4	16.08	-.3	13.3	5.0	.06	.09
4_DIO	6_TIT	1995 10 23	22 1 43.09	-136.37	.4	16.23	-.2	13.5	5.0	.06	.09
4_DIO	6_TIT	1995 10 23	22 2 13.14	-136.30	.5	16.16	-.3	15.2	5.0	.06	.09
4_DIO	6_TIT	1995 10 23	22 26 28.94	-136.84	.4	16.35	-.3	19.2	5.0	.06	.09
4_DIO	6_TIT	1995 10 23	22 27 9.25	-136.76	.5	16.27	-.3	19.7	5.0	.06	.09
4_DIO	6_TIT	1995 10 23	22 27 24.96	-136.91	.4	16.15	-.4	15.6	5.0	.06	.09
4_DIO	6_TIT	1995 10 23	22 28 5.49	-136.78	.5	16.29	-.3	14.8	5.0	.06	.09
4_DIO	6_TIT	1995 10 23	22 29 17.72	-136.89	.4	16.46	-.1	18.8	5.0	.06	.09
4_DIO	6_TIT	1995 10 23	22 43 17.48	-137.19	.4	16.27	-.4	14.3	5.0	.06	.09
4_DIO	6_TIT	1995 10 23	22 44 31.85	-137.10	.5	16.28	-.4	16.9	5.0	.06	.09
4_DIO	6_TIT	1995 11 2	19 2 52.00	9.06	.5	-8.35	.0	5.8	2.0	.04	.04
4_DIO	6_TIT	1995 11 2	19 3 20.95	8.95	.4	-8.39	.0	5.2	2.0	.04	.04
4_DIO	6_TIT	1995 11 2	19 4 2.86	8.96	.4	-8.32	.0	4.3	2.0	.04	.04
4_DIO	6_TIT	1995 11 2	19 4 19.39	8.99	.5	-8.36	.0	4.3	2.0	.04	.04
4_DIO	6_TIT	1995 11 2	19 5 12.94	9.03	.5	-8.44	-.1	3.8	2.0	.04	.04
4_DIO	6_TIT	1995 11 2	19 6 15.78	8.98	.5	-8.45	-.1	5.3	2.0	.04	.04
4_DIO	6_TIT	1995 11 2	19 6 37.47	8.98	.5	-8.34	.0	4.6	2.0	.04	.04

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Table I (continued)

1	2	3			4			5	6	7	8	9	10	11	12
4_DIO	6_TIT	1995	11	2	19	6	54.00	8.92	.5	-8.35	.0	5.9	2.0	.04	.04
4_DIO	6_TIT	1995	11	2	19	10	44.25	8.75	.5	-8.35	.0	10.8	5.0	.04	.04
4_DIO	6_TIT	1995	11	2	19	11	1.55	8.73	.5	-8.37	-.1	10.9	5.0	.04	.04
4_DIO	6_TIT	1995	11	2	19	12	32.46	8.62	.4	-8.35	.0	10.9	5.0	.04	.04
4_DIO	6_TIT	1995	11	2	19	12	48.11	8.56	.4	-8.25	.1	12.1	5.0	.04	.04
4_DIO	6_TIT	1995	11	2	19	13	8.10	8.61	.5	-8.37	.0	11.2	5.0	.04	.04
4_DIO	6_TIT	1995	11	2	19	13	23.98	8.65	.5	-8.34	.0	12.9	5.0	.04	.04
5_RHE	3_TET	1995	6	28	0	22	12.23	-10.69	1.2	1.98	-1.4	10.5	5.0	.09	.09
5_RHE	3_TET	1995	6	28	0	23	1.28	-10.97	.9	2.35	-1.0	14.5	5.0	.09	.09
5_RHE	3_TET	1995	6	28	0	26	30.11	-10.96	.9	2.10	-1.2	18.1	5.0	.09	.09
5_RHE	3_TET	1995	6	28	0	26	52.02	-10.86	1.0	2.14	-1.2	16.0	5.0	.09	.09
5_RHE	3_TET	1995	6	28	0	30	55.12	-10.83	1.1	2.05	-1.3	11.4	5.0	.09	.09
5_RHE	3_TET	1995	6	28	0	31	18.19	-10.95	.9	2.13	-1.2	16.7	5.0	.09	.09
5_RHE	3_TET	1995	6	28	0	32	.98	-10.85	1.0	2.03	-1.3	16.7	5.0	.09	.09
5_RHE	3_TET	1995	6	28	0	57	11.49	-11.30	.5	2.28	-1.2	19.3	5.0	.09	.09
5_RHE	3_TET	1995	6	28	0	58	8.94	-11.40	.4	2.32	-1.2	18.1	5.0	.09	.09
5_RHE	3_TET	1995	6	28	0	58	24.43	-11.29	.5	2.19	-1.3	22.7	5.0	.09	.09
5_RHE	3_TET	1995	6	28	0	58	39.86	-11.49	.3	2.27	-1.2	21.9	5.0	.09	.09
5_RHE	3_TET	1995	6	28	1	0	40.20	-11.27	.5	2.32	-1.2	21.4	5.0	.09	.09
5_RHE	3_TET	1995	6	28	1	4	34.35	-11.39	.4	2.27	-1.2	10.1	1.0	.09	.09
5_RHE	3_TET	1995	6	28	1	5	30.76	-11.52	.3	2.28	-1.2	9.8	1.0	.09	.09
5_RHE	3_TET	1995	6	28	1	5	42.57	-11.45	.4	2.45	-1.1	9.3	1.0	.09	.09
5_RHE	3_TET	1995	6	28	1	6	5.91	-11.29	.5	2.45	-1.1	7.8	1.0	.09	.09
5_RHE	3_TET	1995	6	28	1	6	56.61	-11.38	.4	2.35	-1.2	9.4	1.0	.09	.09
5_RHE	3_TET	1995	6	28	1	7	25.39	-11.62	.2	2.38	-1.1	5.0	1.0	.09	.09
5_RHE	3_TET	1995	6	28	1	7	39.23	-11.41	.4	2.17	-1.3	11.1	1.0	.09	.09
5_RHE	3_TET	1995	6	28	1	7	51.59	-11.41	.4	2.21	-1.3	10.2	1.0	.09	.09
5_RHE	3_TET	1995	6	28	1	8	18.39	-11.33	.5	2.22	-1.3	11.6	1.0	.09	.09
5_RHE	3_TET	1995	6	28	1	8	31.41	-11.57	.2	2.30	-1.2	9.1	1.0	.09	.09
5_RHE	3_TET	1995	6	28	1	8	42.78	-11.40	.4	2.13	-1.4	10.0	1.0	.09	.09
5_RHE	3_TET	1995	6	28	1	16	36.35	-11.56	.2	2.27	-1.2	24.1	5.0	.09	.09
5_RHE	3_TET	1995	6	28	1	16	57.66	-11.63	.2	2.36	-1.1	21.1	5.0	.09	.09
5_RHE	3_TET	1995	6	28	1	17	12.60	-11.56	.2	2.21	-1.3	22.6	5.0	.09	.09
5_RHE	3_TET	1995	6	28	1	17	28.03	-11.47	.3	2.32	-1.2	19.1	5.0	.09	.09
5_RHE	3_TET	1995	6	28	1	17	42.20	-11.51	.3	2.28	-1.2	25.2	5.0	.09	.09
5_RHE	3_TET	1995	6	28	1	17	56.81	-11.53	.3	2.29	-1.2	23.2	5.0	.09	.09
5_RHE	3_TET	1995	6	30	1	2	39.83	62.66	-.9	-5.39	.7	25.5	5.0	.18	.13
5_RHE	3_TET	1995	6	30	1	3	43.87	63.02	-.7	-5.39	.7	12.4	5.0	.18	.13
5_RHE	3_TET	1995	6	30	1	4	14.03	63.27	-.5	-5.35	.8	5.6	5.0	.18	.13
5_RHE	3_TET	1995	6	30	1	5	1.15	62.94	-.9	-5.02	1.1	11.6	5.0	.18	.13

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Table I (continued)

1	2	3			4			5	6	7	8	9	10	11	12
5_RHE	3_TET	1995	6	30	1	5	27.74	63.42	-.5	-5.01	1.1	9.2	5.0	.18	.13
5_RHE	3_TET	1995	6	30	1	6	10.47	63.70	-.3	-5.07	1.1	5.3	5.0	.18	.13
5_RHE	3_TET	1995	6	30	1	6	24.20	63.63	-.4	-5.15	1.0	7.8	5.0	.18	.13
5_RHE	3_TET	1995	6	30	1	7	7.32	63.45	-.6	-5.31	.9	8.7	5.0	.18	.13
5_RHE	3_TET	1995	7	6	0	16	19.94	90.30	-.2	-5.78	1.0	7.7	2.0	.18	.15
5_RHE	3_TET	1995	7	6	0	18	6.17	90.56	.2	-6.02	.7	9.5	2.0	.18	.15
5_RHE	3_TET	1995	7	6	0	18	19.30	90.53	.2	-5.65	1.1	8.0	2.0	.18	.15
5_RHE	3_TET	1995	7	6	0	19	18.56	90.27	.1	-6.03	.7	4.9	2.0	.18	.15
5_RHE	3_TET	1995	7	6	0	20	.47	90.29	.2	-5.50	1.2	9.4	2.0	.18	.15
5_RHE	3_TET	1995	7	6	0	36	59.12	87.88	-.2	-5.90	.6	9.8	2.0	.18	.15
5_RHE	3_TET	1995	7	6	0	41	33.52	87.59	.1	-5.66	.8	9.4	2.0	.18	.15
5_RHE	3_TET	1995	7	6	0	41	45.33	87.82	.3	-5.85	.6	10.1	2.0	.18	.15
5_RHE	3_TET	1995	7	6	0	41	57.75	87.13	-.3	-5.69	.8	10.2	2.0	.18	.15
5_RHE	3_TET	1995	7	6	0	47	48.61	86.78	.0	-5.34	1.1	11.0	2.0	.18	.15
5_RHE	3_TET	1995	7	6	0	48	4.43	86.87	.1	-5.48	.9	11.6	2.0	.18	.15
5_RHE	3_TET	1995	7	6	0	48	17.28	86.68	.0	-5.24	1.2	13.6	2.0	.18	.15
5_RHE	4_DIO	1995	8	6	22	30	5.07	-7.90	.7	1.04	.4	7.9	1.0	.12	.19
5_RHE	4_DIO	1995	8	6	22	30	20.17	-8.33	.3	.52	-.1	6.7	1.0	.12	.19
5_RHE	4_DIO	1995	8	6	22	30	39.07	-8.13	.6	.63	.0	9.4	1.0	.12	.19
5_RHE	4_DIO	1995	8	6	22	30	58.62	-8.23	.5	.71	.1	10.1	1.0	.12	.19
5_RHE	4_DIO	1995	8	6	22	31	18.56	-8.07	.7	.91	.3	9.7	1.0	.12	.19
5_RHE	4_DIO	1995	8	6	22	31	39.26	-8.06	.8	.49	-.1	9.7	1.0	.12	.19
5_RHE	4_DIO	1995	8	6	22	31	58.05	-8.19	.7	.92	.3	8.4	1.0	.12	.19
5_RHE	4_DIO	1995	8	6	22	32	18.48	-8.17	.8	.60	.0	5.1	1.0	.12	.19
5_RHE	4_DIO	1995	8	6	22	32	39.08	-8.05	.9	.90	.3	5.4	1.0	.12	.19
5_RHE	4_DIO	1995	9	3	22	8	13.56	-111.46	.1	9.30	-1.5	12.5	2.0	.09	.12
5_RHE	4_DIO	1995	9	3	22	8	49.15	-111.45	.1	9.17	-1.6	13.9	2.0	.09	.12
5_RHE	4_DIO	1995	9	3	22	9	12.27	-111.53	.0	9.07	-1.7	11.5	2.0	.09	.12
5_RHE	4_DIO	1995	9	3	22	9	29.74	-111.53	.0	9.17	-1.6	12.2	2.0	.09	.12
5_RHE	4_DIO	1995	9	3	22	22	15.84	-111.34	.2	9.40	-1.4	13.4	2.0	.09	.12
5_RHE	4_DIO	1995	9	3	22	22	39.95	-111.47	.0	9.47	-1.3	11.6	2.0	.09	.12
5_RHE	4_DIO	1995	9	3	22	22	53.19	-111.49	.0	9.38	-1.4	11.8	2.0	.09	.12
5_RHE	4_DIO	1995	9	3	22	23	8.07	-111.36	.1	9.22	-1.6	14.2	2.0	.09	.12
5_RHE	4_DIO	1995	9	3	22	23	29.16	-111.44	.1	9.22	-1.6	13.2	2.0	.09	.12
5_RHE	4_DIO	1995	9	3	22	23	50.75	-111.48	.0	9.29	-1.5	13.4	2.0	.09	.12
5_RHE	4_DIO	1995	9	3	22	24	7.61	-111.23	.3	9.03	-1.8	13.7	2.0	.09	.12
5_RHE	4_DIO	1995	9	3	22	24	19.48	-111.44	.1	9.28	-1.5	13.0	2.0	.09	.12
5_RHE	4_DIO	1995	9	3	22	24	32.05	-111.22	.3	9.27	-1.5	11.9	2.0	.09	.12
5_RHE	4_DIO	1995	9	3	22	24	44.74	-111.52	.0	9.26	-1.5	12.0	2.0	.09	.12
5_RHE	4_DIO	1995	9	3	22	37	3.38	-111.16	.3	9.45	-1.4	13.1	2.0	.09	.12

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Table I (continued)

1	2	3			4			5	6	7	8	9	10	11	12
5_RHE	4_DIO	1995	9	3	22	37	19.80	-111.19	.2	9.38	-1.5	11.8	2.0	.09	.12
5_RHE	4_DIO	1995	9	3	22	37	34.85	-111.43	.0	9.46	-1.4	12.9	2.0	.09	.12
5_RHE	4_DIO	1995	9	3	22	38	7.53	-111.36	.1	9.35	-1.5	12.0	2.0	.09	.12
5_RHE	4_DIO	1995	9	3	22	38	22.42	-111.29	.1	9.19	-1.7	10.4	2.0	.09	.12
5_RHE	4_DIO	1995	9	3	22	40	28.64	-111.10	.3	9.07	-1.8	12.9	2.0	.09	.12
5_RHE	4_DIO	1995	9	3	22	40	41.82	-111.30	.1	9.19	-1.7	10.5	2.0	.09	.12
5_RHE	4_DIO	1995	9	3	22	40	55.60	-111.13	.3	9.17	-1.7	12.4	2.0	.09	.12
5_RHE	4_DIO	1995	9	3	22	41	10.76	-111.28	.1	9.10	-1.8	12.7	2.0	.09	.12
5_RHE	4_DIO	1995	9	3	22	57	26.96	-111.22	-.1	9.50	-1.4	13.5	2.0	.09	.12
5_RHE	4_DIO	1995	9	3	22	58	.57	-111.24	-.1	9.33	-1.6	12.0	2.0	.09	.12
5_RHE	4_DIO	1995	9	3	22	58	13.37	-111.11	.0	9.51	-1.4	12.5	2.0	.09	.12
5_RHE	4_DIO	1995	9	3	22	58	27.65	-111.16	.0	9.15	-1.7	12.4	2.0	.09	.12
5_RHE	4_DIO	1995	9	3	22	58	44.95	-111.06	.1	9.29	-1.6	13.0	2.0	.09	.12
5_RHE	4_DIO	1995	9	3	22	58	58.85	-110.98	.1	9.42	-1.5	11.7	2.0	.09	.12
5_RHE	4_DIO	1995	9	3	22	59	10.16	-111.21	-.1	9.54	-1.4	13.2	2.0	.09	.12
5_RHE	4_DIO	1995	9	3	22	59	27.13	-111.08	.0	9.39	-1.5	12.5	2.0	.09	.12
5_RHE	4_DIO	1995	9	3	22	59	41.69	-111.09	.0	9.18	-1.7	14.2	2.0	.09	.12
5_RHE	4_DIO	1995	9	3	23	0	34.47	-111.17	-.1	9.36	-1.5	14.5	2.0	.09	.12
5_RHE	4_DIO	1995	9	3	23	0	49.85	-111.17	-.1	9.48	-1.4	12.3	2.0	.09	.12
5_RHE	4_DIO	1995	9	3	23	1	5.89	-111.18	-.1	9.32	-1.6	14.6	2.0	.09	.12
5_RHE	4_DIO	1995	9	3	23	1	21.43	-111.00	.1	9.34	-1.6	12.8	2.0	.09	.12
5_RHE	4_DIO	1995	9	3	23	1	36.54	-111.11	.0	9.17	-1.7	14.2	2.0	.09	.12
5_RHE	4_DIO	1995	9	3	23	55	26.54	-110.15	-.1	9.43	-1.6	14.6	5.0	.05	.09
5_RHE	4_DIO	1995	9	3	23	55	47.74	-110.10	.0	9.18	-1.8	13.7	5.0	.05	.09
5_RHE	4_DIO	1995	9	3	23	56	5.59	-110.17	-.1	9.48	-1.5	13.0	5.0	.05	.09
5_RHE	4_DIO	1995	9	3	23	56	39.26	-110.22	-.2	9.25	-1.8	14.3	5.0	.05	.09
5_RHE	4_DIO	1995	9	3	23	57	.41	-110.26	-.2	9.37	-1.6	15.1	5.0	.05	.09
5_RHE	4_DIO	1995	9	3	23	57	17.43	-110.34	-.3	9.24	-1.8	16.9	5.0	.05	.09
5_RHE	4_DIO	1995	9	3	23	57	32.65	-110.27	-.2	9.26	-1.7	15.3	5.0	.05	.09
5_RHE	4_DIO	1995	9	3	23	57	46.76	-110.28	-.2	9.35	-1.7	15.4	5.0	.05	.09
5_RHE	4_DIO	1995	9	3	23	58	5.44	-110.22	-.2	9.33	-1.7	18.0	5.0	.05	.09
5_RHE	4_DIO	1995	10	30	17	8	59.18	42.37	.4	-5.25	1.6	28.7	2.0	.06	.02
5_RHE	4_DIO	1995	10	30	17	9	12.31	42.34	.4	-5.21	1.7	28.8	2.0	.06	.02
5_RHE	4_DIO	1995	10	30	17	9	24.83	42.30	.4	-5.27	1.6	33.7	2.0	.06	.02
5_RHE	4_DIO	1995	10	30	17	9	35.76	42.49	.6	-5.24	1.7	17.9	2.0	.06	.02
5_RHE	4_DIO	1995	10	30	17	9	51.97	42.34	.4	-5.21	1.7	27.5	2.0	.06	.02
5_RHE	6_TIT	1995	6	26	23	38	14.27	116.39	.6	-6.47	.8	15.8	5.0	.08	.11
5_RHE	6_TIT	1995	6	26	23	38	44.20	116.25	.5	-6.18	1.1	19.1	5.0	.08	.11
5_RHE	6_TIT	1995	6	26	23	39	2.60	116.23	.5	-6.44	.9	19.4	5.0	.08	.11
5_RHE	6_TIT	1995	6	26	23	39	37.15	116.31	.7	-6.23	1.1	22.3	5.0	.08	.11

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Table I (continued)

1	2	3			4			5	6	7	8	9	10	11	12
5_RHE	6_TIT	1995	6	26	23	39	53.41	116.09	.5	-6.32	1.0	21.2	5.0	.08	.11
5_RHE	6_TIT	1995	6	26	23	40	15.38	116.17	.6	-6.13	1.2	21.6	5.0	.08	.11
5_RHE	6_TIT	1995	6	26	23	40	34.28	116.00	.5	-6.25	1.0	20.8	5.0	.08	.11
5_RHE	6_TIT	1995	6	26	23	40	53.50	116.18	.7	-6.37	.9	19.2	5.0	.08	.11
5_RHE	6_TIT	1995	6	26	23	41	11.95	116.12	.6	-6.25	1.0	19.6	5.0	.08	.11
5_RHE	6_TIT	1995	6	26	23	41	37.06	116.00	.6	-6.41	.9	19.9	5.0	.08	.11
5_RHE	6_TIT	1995	6	26	23	44	52.32	115.72	.6	-6.18	1.1	16.7	5.0	.08	.11
5_RHE	6_TIT	1995	6	26	23	46	59.41	115.45	.5	-6.13	1.1	22.1	5.0	.08	.11
5_RHE	6_TIT	1995	6	26	23	47	24.46	115.47	.6	-6.26	1.0	18.2	5.0	.08	.11
5_RHE	6_TIT	1995	6	26	23	48	54.81	115.51	.8	-6.26	.9	20.3	5.0	.08	.11
5_RHE	6_TIT	1995	6	26	23	49	29.69	115.33	.7	-6.10	1.1	19.8	5.0	.08	.11
5_RHE	6_TIT	1995	6	26	23	50	11.16	115.31	.7	-6.41	.8	22.6	5.0	.08	.11
5_RHE	6_TIT	1995	6	26	23	51	18.94	115.13	.7	-6.34	.9	16.4	5.0	.08	.11
5_RHE	6_TIT	1995	6	26	23	52	9.91	114.83	.4	-6.15	1.1	18.1	5.0	.08	.11
5_RHE	6_TIT	1995	6	26	23	52	57.64	114.96	.7	-6.08	1.1	19.2	5.0	.08	.11
5_RHE	6_TIT	1995	6	26	23	53	34.55	114.93	.7	-6.30	.9	20.6	5.0	.08	.11
5_RHE	6_TIT	1995	6	26	23	53	55.25	114.77	.6	-6.18	1.0	21.0	5.0	.08	.11
5_RHE	6_TIT	1995	6	26	23	57	48.96	114.40	.6	-6.16	1.0	17.5	2.0	.08	.11
5_RHE	6_TIT	1995	6	26	23	58	14.45	114.49	.7	-6.19	1.0	15.6	2.0	.08	.11
5_RHE	6_TIT	1995	6	26	23	58	37.90	114.57	.8	-6.21	1.0	15.1	2.0	.08	.11
5_RHE	6_TIT	1995	6	26	23	59	49.52	114.38	.8	-6.39	.8	15.4	2.0	.08	.11
5_RHE	6_TIT	1995	6	26	23	59	58.86	114.21	.6	-6.22	1.0	14.7	2.0	.08	.11
5_RHE	6_TIT	1995	6	27	0	2	16.45	113.92	.5	-6.37	.8	7.4	1.0	.08	.11
5_RHE	6_TIT	1995	6	27	0	2	27.22	113.88	.5	-6.24	.9	9.8	1.0	.08	.11
5_RHE	6_TIT	1995	6	27	0	2	40.73	114.02	.7	-6.40	.7	7.8	1.0	.08	.11
5_RHE	6_TIT	1995	6	27	0	29	2.14	111.48	.8	-5.98	.9	13.7	5.0	.08	.11
5_RHE	6_TIT	1995	6	27	0	29	19.66	111.47	.8	-6.10	.8	16.0	5.0	.08	.11
5_RHE	6_TIT	1995	6	27	0	29	39.71	111.43	.8	-5.86	1.0	13.2	5.0	.08	.11
5_RHE	6_TIT	1995	6	27	0	29	57.73	111.31	.7	-6.07	.8	13.4	5.0	.08	.11
5_RHE	6_TIT	1995	6	27	0	30	27.50	111.24	.7	-5.97	.9	17.9	5.0	.08	.11
5_RHE	6_TIT	1995	6	27	0	41	17.54	110.22	.8	-5.74	.9	13.0	5.0	.08	.11
5_RHE	6_TIT	1995	6	27	0	41	52.53	110.22	.8	-5.96	.7	12.8	5.0	.08	.11
5_RHE	6_TIT	1995	6	28	23	58	32.41	-153.33	-.1	13.71	-1.1	7.1	1.0	.21	.18
5_RHE	6_TIT	1995	6	28	23	58	44.00	-153.40	-.2	13.55	-1.3	5.2	1.0	.21	.18
5_RHE	6_TIT	1995	6	28	23	59	25.47	-152.83	.4	13.38	-1.4	8.2	1.0	.21	.18
5_RHE	6_TIT	1995	6	28	23	59	35.57	-152.83	.4	13.33	-1.5	6.4	1.0	.21	.18
5_RHE	6_TIT	1995	6	28	23	59	45.40	-153.07	.1	13.82	-1.0	6.8	1.0	.21	.18
5_RHE	6_TIT	1995	6	29	0	1	47.89	-153.31	-.1	13.64	-1.2	5.2	1.0	.21	.18
5_RHE	6_TIT	1995	6	29	0	3	49.17	-153.20	.1	13.72	-1.1	3.5	1.0	.21	.18
5_RHE	6_TIT	1995	6	29	0	4	36.95	-152.86	.4	13.20	-1.6	4.6	1.0	.21	.18
5_RHE	6_TIT	1995	6	29	0	23	51.54	-153.00	.6	13.11	-1.6	7.6	1.0	.21	.18

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Table I (continued)

1	2	3	4	5	6	7	8	9	10	11	12
5_RHE	6_TIT	1995 6 29	0 24 1.81	-153.24	.3	13.20	-1.5	8.6	1.0	.21	.18
5_RHE	6_TIT	1995 6 29	0 24 13.18	-153.18	.4	13.37	-1.4	6.2	1.0	.21	.18
5_RHE	6_TIT	1995 6 29	0 24 27.19	-153.11	.5	13.27	-1.5	7.5	1.0	.21	.18
5_RHE	6_TIT	1995 6 29	0 24 40.92	-153.35	.2	13.67	-1.1	7.1	1.0	.21	.18
5_RHE	6_TIT	1995 6 29	0 24 52.45	-153.15	.5	13.67	-1.1	6.9	1.0	.21	.18
5_RHE	6_TIT	1995 6 29	0 25 6.90	-153.66	-.1	13.51	-1.2	6.2	1.0	.21	.18
5_RHE	6_TIT	1995 6 29	0 29 23.56	-153.43	.3	13.12	-1.7	14.0	2.0	.21	.18
5_RHE	6_TIT	1995 6 29	0 29 36.36	-153.26	.4	13.48	-1.3	15.6	2.0	.21	.18
5_RHE	6_TIT	1995 6 29	0 30 1.63	-152.93	.8	13.06	-1.7	15.4	2.0	.21	.18
5_RHE	6_TIT	1995 6 29	0 30 12.01	-153.09	.6	13.27	-1.5	15.8	2.0	.21	.18
5_RHE	6_TIT	1995 6 29	0 30 23.87	-153.43	.3	13.63	-1.2	15.6	2.0	.21	.18
5_RHE	6_TIT	1995 6 29	0 30 35.24	-153.58	.1	13.48	-1.3	15.5	2.0	.21	.18
5_RHE	6_TIT	1995 6 29	0 30 47.49	-153.25	.5	13.39	-1.4	16.8	2.0	.21	.18
5_RHE	6_TIT	1995 6 29	0 30 58.69	-153.13	.6	13.29	-1.5	15.3	2.0	.21	.18
5_RHE	6_TIT	1995 6 29	0 31 10.67	-153.61	.1	13.35	-1.5	16.4	2.0	.21	.18
5_RHE	6_TIT	1995 6 29	0 32 48.82	-153.20	.5	13.56	-1.2	19.1	3.0	.21	.18
5_RHE	6_TIT	1995 6 29	0 33 6.18	-153.47	.3	13.58	-1.2	20.8	3.0	.21	.18
5_RHE	6_TIT	1995 6 29	0 33 30.01	-152.99	.7	13.29	-1.5	18.8	3.0	.21	.18
5_RHE	6_TIT	1995 6 29	0 33 41.71	-153.31	.4	13.34	-1.5	19.4	3.0	.21	.18
5_RHE	6_TIT	1995 6 29	0 35 7.95	-153.05	.7	13.16	-1.6	23.5	5.0	.21	.18
5_RHE	6_TIT	1995 6 29	0 35 21.51	-153.11	.6	13.52	-1.3	23.7	5.0	.21	.18
5_RHE	6_TIT	1995 6 29	0 35 34.75	-153.56	.2	13.48	-1.3	22.8	5.0	.21	.18
5_RHE	6_TIT	1995 6 29	0 35 48.48	-153.16	.6	13.29	-1.5	22.0	5.0	.21	.18
5_RHE	6_TIT	1995 6 29	0 36 2.10	-153.22	.5	13.23	-1.6	22.9	5.0	.21	.18
5_RHE	6_TIT	1995 6 29	0 49 32.64	-153.01	.9	13.33	-1.4	10.2	1.0	.21	.18
5_RHE	6_TIT	1995 6 29	0 49 43.18	-153.41	.5	13.32	-1.4	9.8	1.0	.21	.18
5_RHE	6_TIT	1995 6 29	0 50 4.94	-153.40	.5	13.48	-1.2	10.2	1.0	.21	.18
5_RHE	6_TIT	1995 6 29	0 50 26.69	-153.62	.3	13.31	-1.4	8.1	1.0	.21	.18
5_RHE	6_TIT	1995 6 29	0 50 38.00	-153.37	.5	13.13	-1.6	10.3	1.0	.21	.18
5_RHE	6_TIT	1995 6 29	0 50 50.74	-153.28	.6	13.03	-1.7	8.6	1.0	.21	.18
5_RHE	6_TIT	1995 6 29	0 51 1.12	-153.41	.5	13.17	-1.5	9.4	1.0	.21	.18
5_RHE	6_TIT	1995 6 29	0 51 13.92	-153.47	.5	13.36	-1.3	10.5	1.0	.21	.18
5_RHE	6_TIT	1995 6 29	0 51 39.19	-153.56	.4	13.48	-1.2	10.5	1.0	.21	.18
5_RHE	6_TIT	1995 6 29	0 52 3.13	-153.78	.2	13.27	-1.4	9.8	1.0	.21	.18
5_RHE	6_TIT	1995 6 29	0 52 26.97	-153.86	.1	13.45	-1.3	8.7	1.0	.21	.18
5_RHE	6_TIT	1995 6 29	0 52 51.36	-153.47	.5	13.22	-1.5	11.2	1.0	.21	.18
5_RHE	6_TIT	1995 6 29	0 53 52.05	-153.94	.0	13.24	-1.5	9.5	1.0	.21	.18
5_RHE	6_TIT	1995 6 29	0 54 26.33	-153.46	.5	13.08	-1.6	10.7	1.0	.21	.18
5_RHE	6_TIT	1995 6 29	0 54 50.05	-153.15	.8	13.30	-1.4	10.3	1.0	.21	.18
5_RHE	6_TIT	1995 6 29	0 55 13.89	-153.31	.7	13.46	-1.2	10.7	1.0	.21	.18
5_RHE	6_TIT	1995 6 29	0 56 52.15	-153.58	.5	13.04	-1.7	8.0	1.0	.21	.18

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Table I (continued)

1	2	3			4			5	6	7	8	9	10	11	12
5_RHE	6_TIT	1995	6	29	0	59	11.17	-153.91	.2	13.51	-1.2	6.6	.5	.21	.18
5_RHE	6_TIT	1995	6	29	0	59	20.95	-153.47	.6	13.49	-1.2	5.5	.5	.21	.18
5_RHE	6_TIT	1995	6	29	0	59	39.73	-153.98	.1	12.94	-1.8	6.5	.5	.21	.18
5_RHE	6_TIT	1995	6	29	0	59	52.58	-153.77	.3	13.35	-1.3	4.9	.5	.21	.18
5_RHE	6_TIT	1995	6	29	1	0	9.39	-153.61	.5	13.02	-1.7	6.8	.5	.21	.18
5_RHE	6_TIT	1995	6	29	1	1	15.19	-154.10	.0	13.27	-1.4	5.6	.5	.21	.18
5_RHE	6_TIT	1995	6	29	1	2	.06	-153.85	.2	12.96	-1.7	6.2	.5	.21	.18
5_RHE	6_TIT	1995	6	30	1	16	41.45	-118.02	.1	8.88	.8	4.9	5.0	.12	.16
5_RHE	6_TIT	1995	6	30	1	16	56.78	-117.79	.3	8.75	.6	5.3	5.0	.12	.16
5_RHE	6_TIT	1995	6	30	1	17	11.94	-117.70	.4	9.03	.9	5.8	5.0	.12	.16
5_RHE	6_TIT	1995	6	30	1	17	30.67	-117.77	.3	8.95	.8	6.2	5.0	.12	.16
5_RHE	6_TIT	1995	6	30	1	17	43.90	-117.56	.5	8.72	.6	7.3	5.0	.12	.16
5_RHE	6_TIT	1995	6	30	1	17	57.64	-117.80	.3	9.08	1.0	7.3	5.0	.12	.16
5_RHE	6_TIT	1995	6	30	1	18	11.09	-117.89	.2	8.86	.8	6.8	5.0	.12	.16
5_RHE	6_TIT	1995	6	30	1	18	25.59	-117.69	.4	8.57	.5	6.0	5.0	.12	.16
5_RHE	6_TIT	1995	6	30	1	18	39.54	-117.68	.4	8.86	.8	6.9	5.0	.12	.16
5_RHE	6_TIT	1995	6	30	1	22	56.10	-117.58	.3	8.75	.7	4.4	2.0	.12	.16
5_RHE	6_TIT	1995	6	30	1	23	19.01	-117.27	.6	8.57	.5	4.4	2.0	.12	.16
5_RHE	6_TIT	1995	6	30	1	23	40.37	-117.53	.3	8.86	.8	3.5	2.0	.12	.16
5_RHE	6_TIT	1995	6	30	1	24	1.79	-117.71	.1	8.74	.7	4.8	2.0	.12	.16
5_RHE	6_TIT	1995	6	30	1	24	12.28	-117.46	.4	8.93	.9	4.4	2.0	.12	.16
5_RHE	6_TIT	1995	6	30	1	24	22.94	-117.65	.2	8.87	.8	4.0	2.0	.12	.16
5_RHE	6_TIT	1995	6	30	1	24	48.26	-117.38	.4	8.54	.5	4.8	2.0	.12	.16
5_RHE	6_TIT	1995	6	30	1	27	25.07	-117.44	.3	8.93	.9	8.4	10.0	.12	.16
5_RHE	6_TIT	1995	6	30	1	27	45.23	-117.23	.5	8.81	.8	8.5	10.0	.12	.16
5_RHE	6_TIT	1995	6	30	1	28	3.90	-117.14	.5	8.61	.6	7.4	10.0	.12	.16
5_RHE	6_TIT	1995	6	30	1	35	26.60	-116.97	.4	8.65	.7	6.2	2.0	.12	.16
5_RHE	6_TIT	1995	6	30	1	35	51.98	-116.85	.5	9.09	1.1	6.5	2.0	.12	.16
5_RHE	6_TIT	1995	6	30	1	36	2.52	-116.78	.6	8.89	1.0	4.2	2.0	.12	.16
5_RHE	6_TIT	1995	7	1	0	27	6.09	-96.02	.4	6.64	1.1	14.7	2.0	.21	.17
5_RHE	6_TIT	1995	7	1	0	27	20.20	-96.17	.3	6.63	1.1	10.7	2.0	.21	.17
5_RHE	6_TIT	1995	7	1	0	27	31.24	-95.96	.5	6.61	1.1	12.7	2.0	.21	.17
5_RHE	6_TIT	1995	7	1	0	27	41.51	-96.16	.3	6.85	1.3	12.6	2.0	.21	.17
5_RHE	6_TIT	1995	7	1	0	27	52.28	-95.98	.5	6.66	1.2	12.1	2.0	.21	.17
5_RHE	6_TIT	1995	7	1	0	28	21.06	-95.82	.6	6.86	1.4	9.4	1.0	.21	.17
5_RHE	6_TIT	1995	7	1	0	28	33.97	-96.40	.1	7.09	1.6	8.4	1.0	.21	.17
5_RHE	6_TIT	1995	7	1	0	28	44.84	-96.25	.2	6.85	1.4	9.7	1.0	.21	.17
5_RHE	6_TIT	1995	7	1	0	28	55.06	-96.06	.4	6.74	1.2	7.8	1.0	.21	.17
5_RHE	6_TIT	1995	7	1	0	29	6.10	-96.15	.3	6.95	1.5	8.1	1.0	.21	.17
5_RHE	6_TIT	1995	7	1	0	42	23.56	-96.13	.6	6.85	1.4	2.7	.6	.21	.17
5_RHE	6_TIT	1995	7	1	0	42	23.56	-96.13	.6	6.85	1.4	5.2	.5	.21	.17

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Table I (continued)

1	2	3			4	5	6	7	8	9	10	11	12
5_RHE	6_TIT	1995	7	1	0 43 41.50	-96.47	.3	6.98	1.5	4.1	.5	.21	.17
5_RHE	6_TIT	1995	7	1	0 43 41.50	-96.47	.3	6.98	1.5	3.8	.6	.21	.17
5_RHE	6_TIT	1995	7	1	0 44 1.27	-96.80	.0	6.96	1.5	5.1	.5	.21	.17
5_RHE	6_TIT	1995	7	1	0 44 1.27	-96.80	.0	6.96	1.5	4.4	.6	.21	.17
5_RHE	6_TIT	1995	7	1	0 44 12.09	-96.85	-.1	6.60	1.1	4.8	.5	.21	.17
5_RHE	6_TIT	1995	7	1	0 44 12.09	-96.85	-.1	6.60	1.1	3.7	.6	.21	.17
5_RHE	6_TIT	1995	7	1	0 44 32.31	-96.25	.5	6.85	1.3	4.8	.5	.21	.17
5_RHE	6_TIT	1995	7	1	0 44 32.31	-96.25	.5	6.85	1.3	3.1	.6	.21	.17
5_RHE	6_TIT	1995	7	1	0 45 2.24	-96.76	.0	7.15	1.6	4.4	.5	.21	.17
5_RHE	6_TIT	1995	7	1	0 45 2.24	-96.76	.0	7.15	1.6	4.3	.6	.21	.17
5_RHE	6_TIT	1995	7	1	0 46 36.49	-96.35	.5	7.24	1.7	4.8	.7	.21	.17
5_RHE	6_TIT	1995	7	1	0 46 45.83	-96.55	.3	6.71	1.2	5.1	.7	.21	.17
5_RHE	6_TIT	1995	7	1	0 46 56.87	-96.41	.4	6.81	1.3	3.9	.7	.21	.17
5_RHE	6_TIT	1995	7	1	0 47 6.43	-96.77	.1	7.02	1.5	5.1	.7	.21	.17
5_RHE	6_TIT	1995	7	1	0 47 16.53	-96.62	.2	6.76	1.3	4.7	.7	.21	.17
5_RHE	6_TIT	1995	7	1	0 47 45.92	-96.12	.7	6.95	1.5	4.9	.7	.21	.17
5_RHE	6_TIT	1995	7	1	0 48 31.18	-96.93	-.1	7.13	1.6	6.1	.8	.21	.17
5_RHE	6_TIT	1995	7	1	0 48 42.44	-96.26	.6	6.61	1.1	5.0	.8	.21	.17
5_RHE	6_TIT	1995	7	1	0 49 26.43	-96.38	.5	6.82	1.3	6.0	.8	.21	.17
5_RHE	6_TIT	1995	7	1	0 49 45.93	-96.30	.6	7.00	1.5	6.4	.8	.21	.17
5_RHE	6_TIT	1995	7	1	0 49 55.82	-96.65	.2	7.12	1.6	6.8	.8	.21	.17
5_RHE	6_TIT	1995	7	1	0 50 6.58	-96.56	.3	6.94	1.4	7.1	.8	.21	.17
5_RHE	6_TIT	1995	7	1	0 50 19.38	-96.89	.0	7.09	1.6	6.0	.8	.21	.17
5_RHE	6_TIT	1995	7	1	0 50 32.73	-96.80	.1	6.86	1.4	6.4	.8	.21	.17
5_RHE	6_TIT	1995	7	1	0 51 26.17	-96.25	.7	7.08	1.6	9.2	.9	.21	.17
5_RHE	6_TIT	1995	7	1	0 51 37.10	-96.65	.3	6.88	1.4	8.6	.9	.21	.17
5_RHE	6_TIT	1995	7	1	0 51 46.22	-96.37	.6	6.63	1.1	8.1	.9	.21	.17
5_RHE	6_TIT	1995	7	1	0 52 6.43	-96.47	.5	6.87	1.3	7.4	.9	.21	.17
5_RHE	6_TIT	1995	7	1	0 52 18.68	-96.78	.2	6.94	1.4	7.2	.9	.21	.17
5_RHE	6_TIT	1995	7	1	0 52 28.68	-96.75	.2	7.09	1.6	8.8	.9	.21	.17
5_RHE	6_TIT	1995	7	1	0 52 38.23	-96.54	.4	6.83	1.3	7.5	.9	.21	.17
5_RHE	6_TIT	1995	7	1	0 52 48.12	-96.55	.4	6.93	1.4	7.6	.9	.21	.17
5_RHE	6_TIT	1995	7	1	0 52 58.39	-96.46	.5	6.57	1.0	7.7	.9	.21	.17
5_RHE	6_TIT	1995	7	1	0 53 40.68	-96.61	.4	7.02	1.5	8.2	1.0	.21	.17
5_RHE	6_TIT	1995	7	1	0 53 51.06	-96.72	.3	6.59	1.0	8.3	1.0	.21	.17
5_RHE	6_TIT	1995	7	1	0 54 1.11	-96.81	.2	7.04	1.5	7.6	1.0	.21	.17
5_RHE	6_TIT	1995	7	1	0 54 10.78	-96.55	.4	6.73	1.2	8.0	1.0	.21	.17
5_RHE	6_TIT	1995	7	1	0 54 20.39	-96.83	.2	6.81	1.3	6.0	1.0	.21	.17
5_RHE	6_TIT	1995	7	8	0 27 21.63	58.61	-.4	-5.37	-1.2	7.8	2.0	.13	.14
5_RHE	6_TIT	1995	7	8	0 27 55.30	58.55	-.5	-5.09	-.9	9.6	2.0	.13	.14
5_RHE	6_TIT	1995	7	8	0 28 15.62	58.52	-.6	-5.32	-1.1	9.3	2.0	.13	.14

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Table I (continued)

1	2	3			4			5	6	7	8	9	10	11	12
5_RHE	6_TIT	1995	7	8	0	28	28.36	58.42	-.7	-4.96	-.8	8.9	2.0	.13	.14
5_RHE	6_TIT	1995	7	8	0	37	13.18	59.28	-.4	-5.26	-1.1	7.1	2.0	.13	.14
5_RHE	6_TIT	1995	7	8	0	37	41.41	59.42	-.2	-5.65	-1.5	7.4	2.0	.13	.14
5_RHE	6_TIT	1995	7	8	0	37	54.37	59.43	-.2	-5.38	-1.2	7.3	2.0	.13	.14
5_RHE	6_TIT	1995	7	8	0	38	13.05	59.21	-.5	-5.37	-1.2	9.5	2.0	.13	.14
5_RHE	6_TIT	1995	7	8	0	44	51.59	59.76	-.3	-5.69	-1.4	5.1	1.0	.13	.14
5_RHE	6_TIT	1995	7	8	0	45	55.96	59.81	-.3	-5.49	-1.2	4.4	1.0	.13	.14
5_RHE	6_TIT	1995	7	8	0	46	7.82	60.08	-.1	-5.49	-1.2	4.4	1.0	.13	.14
5_RHE	6_TIT	1995	7	8	0	46	21.50	59.73	-.5	-5.68	-1.4	5.7	1.0	.13	.14
5_RHE	6_TIT	1995	7	8	0	57	59.27	60.34	-.6	-5.46	-1.1	4.6	1.0	.13	.14
5_RHE	6_TIT	1995	7	8	0	58	23.71	60.27	-.7	-5.78	-1.4	21.5	1.0	.13	.14
5_RHE	6_TIT	1995	7	8	0	58	48.05	60.62	-.4	-5.62	-1.2	5.5	1.0	.13	.14
5_RHE	6_TIT	1995	7	8	1	0	21.14	60.77	-.4	-5.43	-1.0	18.5	5.0	.13	.14
5_RHE	6_TIT	1995	7	8	1	0	37.62	60.67	-.5	-5.41	-1.0	17.9	5.0	.13	.14
5_RHE	6_TIT	1995	7	8	1	0	52.40	60.59	-.6	-5.44	-1.0	17.6	5.0	.13	.14
5_RHE	6_TIT	1995	7	8	1	1	7.83	60.78	-.4	-5.51	-1.1	18.8	5.0	.13	.14
5_RHE	6_TIT	1995	7	8	1	1	23.81	60.64	-.5	-5.33	-.9	18.6	5.0	.13	.14
5_RHE	6_TIT	1995	7	8	1	12	31.49	61.10	-.8	-5.36	-.9	6.0	1.0	.13	.14
5_RHE	6_TIT	1995	7	8	1	12	46.81	61.38	-.5	-5.54	-1.0	6.4	1.0	.13	.14
5_RHE	6_TIT	1995	7	8	1	14	8.93	61.35	-.6	-5.31	-.8	6.6	1.0	.13	.14
5_RHE	6_TIT	1995	7	8	1	14	24.42	61.63	-.3	-5.60	-1.1	6.6	1.0	.13	.14
5_RHE	6_TIT	1995	7	8	1	17	2.55	61.68	-.4	-5.65	-1.2	6.7	1.0	.13	.14
5_RHE	6_TIT	1995	7	8	1	17	34.90	61.91	-.2	-5.63	-1.1	5.5	1.0	.13	.14
5_RHE	6_TIT	1995	7	8	1	17	52.91	61.59	-.6	-5.56	-1.1	6.1	1.0	.13	.14
5_RHE	6_TIT	1995	7	8	1	18	42.84	61.64	-.6	-5.73	-1.2	5.9	1.0	.13	.14
5_RHE	6_TIT	1995	7	8	1	19	8.82	61.87	-.4	-5.34	-.8	5.9	1.0	.13	.14
5_RHE	6_TIT	1995	7	8	1	19	22.77	61.85	-.4	-5.59	-1.1	7.0	1.0	.13	.14
5_RHE	6_TIT	1995	7	8	1	20	22.14	61.96	-.4	-5.69	-1.2	7.1	1.0	.13	.14
5_RHE	6_TIT	1995	7	8	1	21	59.14	62.03	-.4	-5.64	-1.1	5.3	1.0	.13	.14
5_RHE	6_TIT	1995	7	8	1	22	10.90	62.10	-.4	-5.37	-.9	5.7	1.0	.13	.14
5_RHE	6_TIT	1995	7	8	1	22	28.69	62.13	-.3	-5.40	-.9	4.7	1.0	.13	.14
5_RHE	6_TIT	1995	7	8	1	23	9.72	62.28	-.2	-5.78	-1.3	5.6	1.0	.13	.14
5_RHE	6_TIT	1995	7	8	1	26	1.20	62.38	-.3	-5.54	-1.0	4.6	1.0	.13	.14
5_RHE	6_TIT	1995	7	8	1	26	27.45	62.38	-.4	-5.69	-1.2	6.3	1.0	.13	.14
5_RHE	6_TIT	1995	7	8	1	26	54.37	62.73	-.1	-5.68	-1.2	5.6	1.0	.13	.14
5_RHE	6_TIT	1995	7	8	1	27	9.36	62.51	-.3	-5.69	-1.2	5.6	1.0	.13	.14
5_RHE	6_TIT	1995	7	8	1	27	22.93	62.52	-.3	-5.73	-1.2	5.7	1.0	.13	.14
5_RHE	6_TIT	1995	7	8	1	27	38.91	62.45	-.4	-5.82	-1.3	4.1	1.0	.13	.14
5_RHE	6_TIT	1995	7	8	1	27	52.53	62.65	-.2	-6.05	-1.5	10.8	1.0	.13	.14
5_RHE	6_TIT	1995	7	8	1	28	30.76	62.86	.0	-5.64	-1.1	10.1	1.0	.13	.14
5_RHE	6_TIT	1995	7	8	1	29	37.28	62.95	.0	-5.95	-1.5	3.6	1.0	.13	.14

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Table I (continued)

1	2	3			4			5	6	7	8	9	10	11	12
5_RHE	6_TIT	1995	7	8	1	29	59.58	62.75	-.2	-5.91	-1.4	7.1	1.0	.13	.14
5_RHE	6_TIT	1995	7	15	23	41	12.39	-179.44	.9	15.36	-1.3	8.5	1.0	.09	.13
5_RHE	6_TIT	1995	7	15	23	44	40.40	-180.10	.6	15.43	-1.2	8.9	1.0	.09	.13
5_RHE	6_TIT	1995	7	15	23	54	47.76	-181.05	.6	15.19	-1.6	9.2	1.0	.09	.13
5_RHE	6_TIT	1995	7	16	0	0	7.87	-181.86	.4	15.55	-1.3	8.5	1.0	.09	.13
5_RHE	6_TIT	1995	7	16	0	5	1.17	-182.18	.5	15.60	-1.3	8.5	1.0	.09	.13
5_RHE	6_TIT	1995	7	16	0	10	12.11	-182.79	.4	15.92	-1.0	8.6	1.0	.09	.13
5_RHE	6_TIT	1995	7	16	0	24	6.15	-184.35	.3	15.59	-1.4	6.1	1.0	.09	.13
5_RHE	6_TIT	1995	7	16	0	28	13.53	-184.93	.1	15.73	-1.3	8.9	1.0	.09	.13
5_RHE	6_TIT	1995	7	16	0	30	4.10	-184.99	.2	15.75	-1.2	7.9	1.0	.09	.13
5_RHE	6_TIT	1995	7	21	1	5	48.28	-132.17	.1	8.88	-1.7	11.2	1.0	.09	.10
5_RHE	6_TIT	1995	7	21	1	6	10.14	-132.08	.2	8.81	-1.8	10.5	1.0	.09	.10
5_RHE	6_TIT	1995	7	21	1	6	31.29	-132.05	.2	8.85	-1.7	11.3	1.0	.09	.10
5_RHE	6_TIT	1995	7	21	1	6	42.77	-132.29	.0	8.85	-1.7	8.6	1.0	.09	.10
5_RHE	6_TIT	1995	7	21	1	6	54.41	-132.04	.2	8.85	-1.7	7.6	1.0	.09	.10
5_RHE	6_TIT	1995	7	21	1	7	5.94	-132.26	.0	9.06	-1.5	11.2	1.0	.09	.10
5_RHE	6_TIT	1995	7	21	1	7	15.61	-132.10	.2	8.73	-1.9	11.6	1.0	.09	.10
5_RHE	6_TIT	1995	7	21	1	8	3.78	-132.34	-.1	8.95	-1.7	11.4	1.0	.09	.10
5_RHE	6_TIT	1995	7	21	1	8	24.54	-132.32	-.1	8.85	-1.7	11.9	1.0	.09	.10
5_RHE	6_TIT	1995	7	21	1	11	25.19	-132.25	-.1	8.84	-1.8	15.5	2.0	.09	.10
5_RHE	6_TIT	1995	7	21	1	11	36.34	-132.14	.0	8.80	-1.8	14.5	2.0	.09	.10
5_RHE	6_TIT	1995	7	21	1	11	47.27	-132.19	.0	8.83	-1.8	15.9	2.0	.09	.10
5_RHE	6_TIT	1995	7	21	1	11	58.26	-132.23	-.1	8.85	-1.7	16.4	2.0	.09	.10
5_RHE	6_TIT	1995	7	21	1	12	9.96	-132.28	-.1	8.99	-1.6	16.1	2.0	.09	.10
5_RHE	6_TIT	1995	7	21	1	12	37.69	-132.19	-.1	8.93	-1.7	11.0	1.0	.09	.10
5_RHE	6_TIT	1995	7	21	1	12	49.61	-132.19	-.1	9.04	-1.6	11.8	1.0	.09	.10
5_RHE	6_TIT	1995	7	21	1	13	9.28	-132.22	-.1	9.00	-1.6	11.3	1.0	.09	.10
5_RHE	6_TIT	1995	7	21	1	13	28.23	-132.38	-.3	9.03	-1.6	12.8	1.0	.09	.10
5_RHE	6_TIT	1995	7	21	1	13	39.21	-132.11	.0	8.80	-1.8	10.2	1.0	.09	.10
5_RHE	6_TIT	1995	7	21	1	13	48.60	-132.29	-.2	8.97	-1.6	10.1	1.0	.09	.10
5_RHE	6_TIT	1995	7	21	1	13	58.93	-132.21	-.1	8.79	-1.8	10.7	1.0	.09	.10
5_RHE	6_TIT	1995	7	21	1	14	9.20	-132.24	-.2	8.84	-1.8	11.3	1.0	.09	.10
5_RHE	6_TIT	1995	7	21	1	14	18.92	-132.20	-.1	8.70	-1.9	11.1	1.0	.09	.10
5_RHE	6_TIT	1995	7	21	1	15	47.52	-132.24	-.2	8.80	-1.8	6.0	.5	.09	.10
5_RHE	6_TIT	1995	7	21	1	16	7.78	-132.23	-.2	8.90	-1.7	6.6	.5	.09	.10
5_RHE	6_TIT	1995	7	21	1	16	17.67	-132.21	-.2	8.85	-1.7	6.2	.5	.09	.10
5_RHE	6_TIT	1995	7	21	1	16	36.62	-132.13	-.1	8.61	-2.0	4.6	.5	.09	.10
5_RHE	6_TIT	1995	7	21	1	16	47.22	-132.27	-.3	8.87	-1.7	5.9	.5	.09	.10
5_RHE	6_TIT	1995	7	21	1	16	57.00	-132.15	-.2	8.63	-2.0	6.6	.5	.09	.10
5_RHE	6_TIT	1995	7	21	1	17	15.62	-132.04	-.1	8.91	-1.7	5.7	.5	.09	.10
5_RHE	6_TIT	1995	7	21	1	17	44.40	-132.36	-.4	8.86	-1.7	5.0	.5	.09	.10

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Table I (continued)

1	2	3	4	5	6	7	8	9	10	11	12
5_RHE	6_TIT	1995 7 21	1 17 56.48	-132.31	-.4	8.71	-1.9	5.1	.5	.09	.10
5_RHE	6_TIT	1995 7 21	1 18 16.59	-132.15	-.2	8.67	-1.9	5.4	.5	.09	.10
5_RHE	6_TIT	1995 7 21	1 20 3.85	-131.97	-.1	8.56	-2.0	6.5	.5	.09	.10
5_RHE	6_TIT	1995 7 21	1 20 39.45	-132.11	-.2	8.52	-2.1	7.6	.5	.09	.10
5_RHE	6_TIT	1995 7 21	1 21 31.24	-131.91	.0	8.63	-2.0	6.3	.5	.09	.10
5_RHE	6_TIT	1995 7 21	1 21 49.75	-132.05	-.2	8.56	-2.0	5.9	.5	.09	.10
5_RHE	6_TIT	1995 7 21	1 23 59.38	-131.82	.0	8.68	-1.9	7.2	.5	.09	.10
5_RHE	6_TIT	1995 7 21	1 25 6.77	-132.10	-.3	8.78	-1.8	4.8	.5	.09	.10
5_RHE	6_TIT	1995 7 21	1 26 33.17	-131.70	.1	8.72	-1.8	5.5	.5	.09	.10
5_RHE	6_TIT	1995 7 21	1 28 5.94	-131.91	-.2	8.55	-2.0	5.9	.5	.09	.10
5_RHE	6_TIT	1995 7 21	1 28 22.30	-131.86	-.1	8.67	-1.8	7.4	.5	.09	.10
5_RHE	6_TIT	1995 7 21	1 31 14.66	-131.80	-.1	8.90	-1.6	10.4	1.0	.09	.10
5_RHE	6_TIT	1995 7 21	1 31 30.42	-131.87	-.2	8.84	-1.7	8.3	1.0	.09	.10
5_RHE	6_TIT	1995 7 21	1 32 17.99	-131.64	.0	8.84	-1.7	8.8	1.0	.09	.10
5_RHE	6_TIT	1995 7 21	1 32 49.85	-131.72	-.1	9.04	-1.5	9.4	1.0	.09	.10
5_RHE	6_TIT	1995 7 21	1 33 10.28	-131.61	.0	8.85	-1.6	8.7	1.0	.09	.10
5_RHE	6_TIT	1995 7 21	1 33 25.44	-131.66	.0	8.87	-1.6	8.2	1.0	.09	.10
5_RHE	6_TIT	1995 7 21	1 34 22.67	-131.69	-.1	8.94	-1.6	9.0	1.0	.09	.10
5_RHE	6_TIT	1995 7 21	1 34 39.20	-131.67	-.1	8.96	-1.5	8.8	1.0	.09	.10
5_RHE	6_TIT	1995 7 21	1 34 57.49	-131.57	.0	9.03	-1.5	11.0	1.0	.09	.10
5_RHE	6_TIT	1995 7 21	1 35 26.00	-131.63	.0	8.96	-1.5	8.8	1.0	.09	.10
5_RHE	6_TIT	1995 7 24	22 49 19.49	143.75	-.1	-9.81	-.5	6.2	1.0	.18	.15
5_RHE	6_TIT	1995 7 24	22 49 36.19	143.90	.1	-10.10	-.8	5.9	1.0	.18	.15
5_RHE	6_TIT	1995 7 24	22 49 54.42	143.48	-.3	-9.72	-.4	10.2	1.0	.18	.15
5_RHE	6_TIT	1995 7 24	22 50 6.29	143.57	-.2	-10.10	-.8	6.0	1.0	.18	.15
5_RHE	6_TIT	1995 7 24	22 51 25.66	143.21	-.5	-9.79	-.5	9.9	2.0	.18	.15
5_RHE	6_TIT	1995 7 24	22 51 41.97	143.75	.0	-10.03	-.7	.0	2.0	.18	.15
5_RHE	6_TIT	1995 7 24	22 51 54.11	143.34	-.3	-9.93	-.6	5.9	2.0	.18	.15
5_RHE	6_TIT	1995 7 24	22 55 15.63	143.01	-.5	-9.63	-.3	6.7	2.0	.18	.15
5_RHE	6_TIT	1995 7 24	23 17 20.65	142.01	-.3	-9.93	-.8	8.9	2.0	.18	.15
5_RHE	6_TIT	1995 7 24	23 17 44.71	142.05	-.3	-9.69	-.6	10.7	2.0	.18	.15
5_RHE	6_TIT	1995 7 24	23 17 57.45	142.22	-.1	-9.98	-.9	11.2	2.0	.18	.15
5_RHE	6_TIT	1995 7 24	23 18 9.15	141.92	-.4	-9.79	-.7	8.3	2.0	.18	.15
5_RHE	6_TIT	1995 7 24	23 18 21.95	142.17	-.1	-10.11	-1.0	10.8	2.0	.18	.15
5_RHE	6_TIT	1995 7 24	23 21 18.15	142.06	-.1	-9.84	-.7	7.0	1.0	.18	.15
5_RHE	6_TIT	1995 7 24	23 21 27.98	141.74	-.4	-9.90	-.8	7.6	1.0	.18	.15
5_RHE	6_TIT	1995 7 24	23 21 38.64	141.83	-.3	-10.10	-1.0	8.6	1.0	.18	.15
5_RHE	6_TIT	1995 7 24	23 21 48.74	141.99	-.1	-10.02	-.9	8.5	1.0	.18	.15
5_RHE	6_TIT	1995 7 24	23 22 9.72	141.78	-.3	-9.79	-.7	6.4	1.0	.18	.15
5_RHE	6_TIT	1995 7 24	23 22 28.84	141.79	-.3	-9.63	-.5	6.3	1.0	.18	.15
5_RHE	6_TIT	1995 7 24	23 31 42.82	141.37	-.1	-9.85	-.8	7.3	1.0	.18	.15

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Table I (continued)

1	2	3			4			5	6	7	8	9	10	11	12
5_RHE	6_TIT	1995	7	24	23	31	52.26	141.66	.2	-9.98	-.9	7.3	1.0	.18	.15
5_RHE	6_TIT	1995	7	24	23	32	1.82	141.21	-.3	-10.08	-1.0	8.7	1.0	.18	.15
5_RHE	6_TIT	1995	7	24	23	32	11.38	141.54	.0	-9.91	-.8	6.9	1.0	.18	.15
5_RHE	6_TIT	1995	7	24	23	36	25.35	141.11	-.2	-9.60	-.6	7.7	1.0	.18	.15
5_RHE	6_TIT	1995	7	24	23	36	42.49	140.93	-.3	-9.62	-.6	7.5	1.0	.18	.15
5_RHE	6_TIT	1995	7	24	23	36	58.64	141.33	.1	-9.84	-.8	7.4	1.0	.18	.15
5_RHE	6_TIT	1995	7	24	23	37	8.74	141.02	-.2	-9.79	-.8	7.3	1.0	.18	.15
5_RHE	6_TIT	1995	7	24	23	37	18.85	141.13	-.1	-9.87	-.8	7.9	1.0	.18	.15
5_RHE	6_TIT	1995	7	24	23	45	12.97	140.44	-.4	-9.63	-.7	8.8	1.0	.18	.15
5_RHE	6_TIT	1995	7	24	23	45	34.28	140.42	-.4	-9.83	-.9	6.6	1.0	.18	.15
5_RHE	6_TIT	1995	7	24	23	45	43.67	141.04	.2	-9.56	-.6	8.9	1.0	.18	.15
5_RHE	6_TIT	1995	7	24	23	53	56.19	140.38	.0	-9.45	-.5	5.7	1.0	.18	.15
5_RHE	6_TIT	1995	7	24	23	54	20.74	140.09	-.3	-9.86	-1.0	7.7	1.0	.18	.15
5_RHE	6_TIT	1995	7	24	23	54	31.07	140.34	.0	-9.74	-.8	8.1	1.0	.18	.15
5_RHE	6_TIT	1995	7	24	23	54	41.72	139.97	-.4	-9.53	-.6	8.4	1.0	.18	.15
5_RHE	6_TIT	1995	8	7	22	15	7.09	14.00	-.1	-.66	-1.5	8.7	1.0	.07	.06
5_RHE	6_TIT	1995	8	7	22	20	2.37	13.89	-.2	-.61	-1.4	11.0	1.0	.07	.06
5_RHE	6_TIT	1995	8	7	22	30	37.09	14.10	.0	-.68	-1.5	8.8	1.0	.07	.06
5_RHE	6_TIT	1995	8	7	22	33	.72	13.99	-.1	-.74	-1.5	9.5	1.0	.07	.06
5_RHE	6_TIT	1995	8	7	22	35	4.58	14.09	.0	-.62	-1.4	11.1	1.0	.07	.06
5_RHE	6_TIT	1995	8	7	22	38	57.62	13.96	-.1	-.83	-1.6	9.0	1.0	.07	.06
5_RHE	6_TIT	1995	8	7	22	40	30.50	13.94	-.2	-.77	-1.6	10.2	1.0	.07	.06
5_RHE	6_TIT	1995	8	7	22	42	47.87	14.04	-.1	-.74	-1.5	10.9	1.0	.07	.06
5_RHE	6_TIT	1995	8	7	22	45	17.54	13.95	-.2	-.69	-1.5	9.9	1.0	.07	.06
5_RHE	6_TIT	1995	8	7	22	47	40.79	14.01	-.2	-.71	-1.5	8.6	1.0	.07	.06
5_RHE	6_TIT	1995	8	7	22	48	41.04	13.87	-.3	-.71	-1.5	8.8	1.0	.07	.06
5_RHE	6_TIT	1995	8	7	22	54	24.88	14.13	-.1	-.77	-1.6	8.8	1.0	.07	.06
5_RHE	6_TIT	1995	8	7	22	55	26.67	14.09	-.1	-.82	-1.6	8.2	1.0	.07	.06
5_RHE	6_TIT	1995	8	7	22	57	9.10	14.09	-.1	-.68	-1.5	9.1	1.0	.07	.06
5_RHE	6_TIT	1995	8	7	22	58	.29	13.98	-.2	-.62	-1.4	5.5	1.0	.07	.06
5_RHE	6_TIT	1995	8	7	23	29	51.21	14.23	-.2	-.72	-1.5	21.9	5.0	.02	.01
5_RHE	6_TIT	1995	8	7	23	35	13.62	14.25	-.2	-.72	-1.6	26.7	5.0	.02	.01
5_RHE	6_TIT	1995	8	7	23	40	27.57	14.27	-.1	-.71	-1.6	20.9	5.0	.02	.01
5_RHE	6_TIT	1995	8	7	23	41	8.33	14.30	-.1	-.71	-1.6	21.4	5.0	.02	.01
5_RHE	6_TIT	1995	8	7	23	43	41.13	14.35	-.1	-.72	-1.6	20.4	5.0	.02	.01
5_RHE	6_TIT	1995	8	7	23	45	54.44	14.33	-.1	-.71	-1.5	19.2	5.0	.02	.01
5_RHE	6_TIT	1995	8	8	0	47	32.79	14.83	-.2	-.73	-1.6	25.5	10.0	.02	.01
5_RHE	6_TIT	1995	8	8	0	48	41.39	14.87	-.1	-.75	-1.6	26.4	10.0	.02	.01
5_RHE	6_TIT	1995	8	8	0	51	10.46	14.90	-.1	-.72	-1.5	22.3	10.0	.02	.01
5_RHE	6_TIT	1995	8	8	0	52	22.41	14.87	-.2	-.71	-1.5	25.0	10.0	.02	.01
5_RHE	6_TIT	1995	8	8	0	55	49.87	14.92	-.2	-.76	-1.6	28.9	10.0	.02	.01

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Table I (continued)

1	2	3			4			5	6	7	8	9	10	11	12
5_RHE	6_TIT	1995	8	8	0	58	13.00	14.94	-.2	-.71	-1.5	22.9	10.0	.02	.01
5_RHE	6_TIT	1995	8	11	23	46	28.51	138.21	.1	-9.57	-.6	8.1	5.0	.06	.07
5_RHE	6_TIT	1995	8	11	23	46	49.11	138.04	.0	-9.40	-.5	9.3	5.0	.06	.07
5_RHE	6_TIT	1995	8	11	23	47	16.73	138.15	.1	-9.54	-.6	7.7	5.0	.06	.07
5_RHE	6_TIT	1995	8	11	23	48	3.53	138.11	.2	-9.50	-.6	7.9	5.0	.06	.07
5_RHE	6_TIT	1995	8	11	23	50	53.85	137.88	.3	-9.74	-.8	11.6	5.0	.06	.07
5_RHE	6_TIT	1995	8	11	23	51	8.08	137.82	.2	-9.66	-.8	10.1	5.0	.06	.07
5_RHE	6_TIT	1995	8	11	23	53	8.31	137.80	.4	-9.58	-.7	11.5	5.0	.06	.07
5_RHE	6_TIT	1995	8	11	23	56	27.58	137.36	.2	-9.67	-.8	10.9	5.0	.06	.07
5_RHE	6_TIT	1995	8	11	23	57	41.84	137.20	.2	-9.59	-.8	12.5	5.0	.06	.07
5_RHE	6_TIT	1995	8	12	1	12	57.54	129.67	.2	-8.82	-.7	15.0	5.0	.07	.06
5_RHE	6_TIT	1995	8	12	1	13	32.59	129.72	.3	-9.05	-.9	15.6	5.0	.07	.06
5_RHE	6_TIT	1995	8	12	1	19	16.97	129.25	.4	-9.07	-1.1	18.6	5.0	.07	.06
5_RHE	6_TIT	1995	8	12	1	21	56.09	128.91	.3	-9.05	-1.1	12.8	5.0	.07	.06
5_RHE	6_TIT	1995	8	12	1	24	14.83	128.80	.4	-8.91	-.9	19.1	5.0	.07	.06
5_RHE	6_TIT	1995	8	12	1	24	31.36	128.70	.4	-8.97	-1.0	17.1	5.0	.07	.06
5_RHE	6_TIT	1995	8	12	1	25	12.67	128.72	.4	-9.01	-1.0	18.5	5.0	.07	.06
5_RHE	6_TIT	1995	8	12	1	38	36.06	127.44	.4	-8.96	-1.0	16.7	5.0	.07	.06
5_RHE	6_TIT	1995	8	12	1	39	24.29	127.33	.4	-8.88	-1.0	18.2	5.0	.07	.06
5_RHE	6_TIT	1995	8	12	1	41	55.33	127.09	.4	-8.85	-1.0	19.3	5.0	.07	.06
5_RHE	6_TIT	1995	8	12	1	46	22.10	126.51	.2	-8.77	-.9	22.4	5.0	.07	.06
5_RHE	6_TIT	1995	8	12	1	49	14.84	126.26	.3	-8.73	-.9	17.7	5.0	.07	.06
5_RHE	6_TIT	1995	8	12	1	50	54.37	126.11	.3	-8.69	-.9	16.5	5.0	.07	.06
5_RHE	6_TIT	1995	8	12	1	53	45.13	125.96	.4	-8.78	-1.0	15.6	5.0	.07	.06
5_RHE	6_TIT	1995	8	12	1	55	23.34	125.65	.3	-8.68	-.9	19.7	5.0	.07	.06
5_RHE	6_TIT	1995	8	12	1	59	6.89	125.33	.3	-8.53	-.8	19.8	5.0	.07	.06
5_RHE	6_TIT	1995	8	12	2	0	35.15	125.28	.4	-8.59	-.9	17.1	5.0	.07	.06
5_RHE	6_TIT	1995	8	12	2	3	35.91	124.76	.2	-8.59	-.9	18.2	5.0	.07	.06
5_RHE	6_TIT	1995	8	12	2	10	48.83	124.08	.3	-8.61	-1.0	20.2	5.0	.07	.06
5_RHE	6_TIT	1995	8	12	2	12	31.00	124.08	.4	-8.68	-1.1	20.4	5.0	.07	.06
5_RHE	6_TIT	1995	8	12	2	13	29.33	123.91	.4	-8.68	-1.1	22.3	5.0	.07	.06
5_RHE	6_TIT	1995	8	12	2	15	12.81	123.62	.2	-8.58	-1.0	20.2	5.0	.07	.06
5_RHE	6_TIT	1995	8	12	2	16	19.38	123.57	.3	-8.62	-1.1	22.5	5.0	.07	.06
5_RHE	6_TIT	1995	8	12	2	16	59.14	123.70	.5	-8.71	-1.2	23.4	5.0	.07	.06
5_RHE	6_TIT	1995	8	23	20	12	48.31	159.70	.1	-11.43	1.9	2.3	1.0	.08	.07
5_RHE	6_TIT	1995	8	23	20	13	29.94	159.71	.1	-11.55	1.8	2.8	1.0	.08	.07
5_RHE	6_TIT	1995	8	23	20	55	18.12	162.61	-.3	-11.71	1.9	3.1	1.0	.08	.07
5_RHE	6_TIT	1995	8	23	20	56	26.39	162.41	-.6	-11.58	2.1	3.0	1.0	.08	.07
5_RHE	6_TIT	1995	8	23	21	21	29.32	164.53	-.4	-11.82	2.0	5.4	1.0	.08	.07
5_RHE	6_TIT	1995	8	23	21	34	16.18	165.22	-.7	-12.13	1.8	4.6	1.0	.08	.07
5_RHE	6_TIT	1995	8	23	21	39	31.13	165.44	-.8	-12.04	1.9	5.1	1.0	.08	.07

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Table I (continued)

1	2	3			4			5	6	7	8	9	10	11	12
5_RHE	6_TIT	1995	8	24	0	15	46.91	176.64	-.2	-13.47	1.4	5.0	1.0	.14	.13
5_RHE	6_TIT	1995	8	24	0	17	14.57	176.90	.0	-13.37	1.5	5.4	1.0	.14	.13
5_RHE	6_TIT	1995	8	24	0	17	35.72	176.89	.0	-13.17	1.7	7.5	1.0	.14	.13
5_RHE	6_TIT	1995	8	24	0	18	44.38	176.90	-.1	-12.99	1.9	6.1	1.0	.14	.13
5_RHE	6_TIT	1995	8	24	0	19	30.07	176.85	-.2	-13.03	1.9	9.3	1.0	.14	.13
5_RHE	6_TIT	1995	8	24	0	21	29.54	176.97	-.2	-13.16	1.7	6.7	1.0	.14	.13
5_RHE	6_TIT	1995	8	24	0	22	14.36	177.12	-.1	-13.20	1.7	8.0	1.0	.14	.13
5_RHE	6_TIT	1995	8	24	0	22	41.98	177.14	-.1	-13.18	1.7	5.1	1.0	.14	.13
5_RHE	6_TIT	1995	8	24	0	23	13.73	177.11	-.2	-13.06	1.8	7.8	1.0	.14	.13
5_RHE	6_TIT	1995	8	24	0	40	48.90	178.23	-.1	-13.10	1.9	6.3	1.0	.14	.13
5_RHE	6_TIT	1995	8	24	0	41	.71	177.89	-.5	-13.11	1.9	7.1	1.0	.14	.13
5_RHE	6_TIT	1995	8	24	0	41	29.27	178.22	-.2	-13.41	1.6	7.5	1.0	.14	.13
5_RHE	6_TIT	1995	8	24	0	41	40.64	177.82	-.6	-13.35	1.7	6.7	1.0	.14	.13
5_RHE	6_TIT	1995	8	24	0	41	50.91	178.18	-.2	-13.18	1.8	6.2	1.0	.14	.13
5_RHE	6_TIT	1995	8	24	0	42	14.59	178.36	-.1	-13.11	1.9	7.0	1.0	.14	.13
5_RHE	6_TIT	1995	8	24	0	42	38.81	177.96	-.5	-13.06	2.0	5.7	1.0	.14	.13
5_RHE	6_TIT	1995	8	24	0	43	28.79	178.03	-.4	-13.27	1.8	7.4	1.0	.14	.13
5_RHE	6_TIT	1995	8	24	0	54	49.92	179.00	-.1	-13.19	1.9	7.2	1.0	.14	.13
5_RHE	6_TIT	1995	8	24	0	55	6.29	178.92	-.2	-13.25	1.9	6.6	1.0	.14	.13
5_RHE	6_TIT	1995	8	24	0	56	19.62	178.75	-.5	-13.20	1.9	4.6	1.0	.14	.13
5_RHE	6_TIT	1995	8	24	0	56	36.09	179.14	-.1	-13.40	1.7	7.0	1.0	.14	.13
5_RHE	6_TIT	1995	8	24	0	56	48.78	178.81	-.5	-13.35	1.7	8.1	1.0	.14	.13
5_RHE	6_TIT	1995	8	24	1	8	39.46	179.64	-.3	-13.20	1.9	6.4	1.0	.14	.13
5_RHE	6_TIT	1995	8	24	1	9	59.43	180.01	.0	-13.68	1.4	5.6	1.0	.14	.13
5_RHE	6_TIT	1995	8	24	1	10	38.82	179.82	-.2	-13.47	1.6	6.9	1.0	.14	.13
5_RHE	6_TIT	1995	8	24	1	10	52.00	180.07	.0	-13.54	1.6	7.6	1.0	.14	.13
5_RHE	6_TIT	1995	8	24	1	11	5.35	180.04	.0	-13.53	1.6	6.1	1.0	.14	.13
5_RHE	6_TIT	1995	8	24	1	11	27.32	179.78	-.3	-13.43	1.7	6.1	1.0	.14	.13
5_RHE	6_TIT	1995	8	24	1	11	46.21	179.93	-.2	-13.23	1.9	8.2	1.0	.14	.13
5_RHE	6_TIT	1995	8	24	1	23	37.28	180.95	.2	-13.59	1.6	7.0	1.0	.14	.13
5_RHE	6_TIT	1995	8	24	1	23	51.94	180.80	.0	-13.30	1.9	6.7	1.0	.14	.13
5_RHE	6_TIT	1995	8	24	1	24	7.92	180.76	.0	-13.60	1.6	8.2	1.0	.14	.13
5_RHE	6_TIT	1995	8	24	1	24	38.02	180.93	.1	-13.63	1.6	7.7	1.0	.14	.13
5_RHE	6_TIT	1995	8	24	1	25	48.44	180.72	-.2	-13.49	1.7	6.7	1.0	.14	.13
5_RHE	6_TIT	1995	8	24	1	26	32.10	180.83	-.1	-13.56	1.6	7.2	1.0	.14	.13
5_RHE	6_TIT	1995	8	24	1	27	40.49	180.77	-.2	-13.47	1.7	7.5	1.0	.14	.13
5_RHE	6_TIT	1995	8	24	23	50	13.77	183.26	-.3	-13.83	.5	8.1	2.0	.13	.16
5_RHE	6_TIT	1995	8	24	23	50	30.91	183.51	-.1	-14.09	.2	7.8	2.0	.13	.16
5_RHE	6_TIT	1995	8	24	23	50	54.31	183.55	.0	-13.93	.4	8.6	2.0	.13	.16
5_RHE	6_TIT	1995	8	24	23	51	28.80	183.45	-.1	-13.80	.5	6.3	2.0	.13	.16
5_RHE	6_TIT	1995	8	24	23	52	7.85	183.21	-.3	-14.31	.0	6.8	2.0	.13	.16

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Table I (continued)

1	2	3			4			5	6	7	8	9	10	11	12
5_RHE	6_TIT	1995	8	24	23	52	55.86	183.58	.1	-14.18	.1	13.6	2.0	.13	.16
5_RHE	6_TIT	1995	8	24	23	53	34.31	183.27	-.2	-13.88	.4	7.8	2.0	.13	.16
5_RHE	6_TIT	1995	8	24	23	54	25.72	183.28	-.1	-13.94	.4	9.1	2.0	.13	.16
5_RHE	6_TIT	1995	8	24	23	54	41.87	183.20	-.2	-14.06	.2	8.2	2.0	.13	.16
5_RHE	6_TIT	1995	8	25	0	1	29.03	183.10	.0	-13.99	.3	7.3	2.0	.13	.16
5_RHE	6_TIT	1995	8	25	0	3	56.78	183.15	.1	-13.71	.6	9.2	2.0	.13	.16
5_RHE	6_TIT	1995	8	25	0	4	22.38	183.02	.0	-13.91	.3	6.9	2.0	.13	.16
5_RHE	6_TIT	1995	8	25	0	4	48.90	183.02	.1	-13.74	.5	9.5	2.0	.13	.16
5_RHE	6_TIT	1995	8	25	0	5	3.90	182.99	.0	-13.70	.6	9.9	2.0	.13	.16
5_RHE	6_TIT	1995	8	25	0	5	17.03	182.87	-.1	-14.11	.1	11.6	2.0	.13	.16
5_RHE	6_TIT	1995	8	25	0	5	41.19	182.92	.0	-13.91	.3	9.5	2.0	.13	.16
5_RHE	6_TIT	1995	8	25	0	19	12.17	182.69	.4	-13.49	.7	8.3	2.0	.13	.16
5_RHE	6_TIT	1995	8	25	0	19	51.82	182.51	.2	-13.52	.7	12.4	2.0	.13	.16
5_RHE	6_TIT	1995	8	25	0	22	58.52	182.10	-.1	-13.24	.9	14.3	2.0	.13	.16
5_RHE	6_TIT	1995	8	25	0	23	31.97	182.20	.0	-13.64	.5	5.5	2.0	.13	.16
5_RHE	6_TIT	1995	8	28	20	5	5.23	203.61	.4	-17.76	1.4	1.7	2.0	.21	.14
5_RHE	6_TIT	1995	8	28	20	5	23.03	204.26	1.1	-17.81	1.4	1.4	2.0	.21	.14
5_RHE	6_TIT	1995	8	28	20	5	36.10	203.88	.7	-17.43	1.8	2.2	2.0	.21	.14
5_RHE	6_TIT	1995	8	28	20	5	56.15	204.03	.9	-17.88	1.3	3.1	2.0	.21	.14
5_RHE	6_TIT	1995	8	28	20	6	43.77	203.68	.6	-17.73	1.5	2.5	2.0	.21	.14
5_RHE	6_TIT	1995	8	28	20	7	30.51	203.91	.9	-17.63	1.6	2.3	2.0	.21	.14
5_RHE	6_TIT	1995	8	28	21	1	30.51	200.29	.7	-17.39	1.5	3.7	2.0	.17	.13
5_RHE	6_TIT	1995	8	28	21	2	9.34	200.58	1.0	-17.52	1.4	2.9	2.0	.17	.13
5_RHE	6_TIT	1995	8	28	21	4	11.99	200.59	1.1	-17.39	1.5	2.6	2.0	.17	.13
5_RHE	6_TIT	1995	8	28	21	6	32.22	200.00	.7	-17.49	1.4	5.7	2.0	.17	.13
5_RHE	6_TIT	1995	8	28	21	7	57.08	200.29	1.1	-17.24	1.7	5.2	2.0	.17	.13
5_RHE	6_TIT	1995	8	28	21	9	16.94	199.64	.5	-17.36	1.5	5.5	2.0	.17	.13
5_RHE	6_TIT	1995	8	28	21	9	51.71	199.87	.8	-17.30	1.6	5.7	2.0	.17	.13
5_RHE	6_TIT	1995	8	28	21	10	27.79	199.67	.6	-17.66	1.2	6.1	2.0	.17	.13
5_RHE	6_TIT	1995	8	28	21	44	27.56	197.55	.8	-17.55	1.1	3.7	2.0	.17	.13
5_RHE	6_TIT	1995	8	28	21	55	16.29	196.90	.9	-17.58	1.1	4.3	2.0	.17	.13
5_RHE	6_TIT	1995	8	28	21	57	7.29	196.51	.6	-17.11	1.6	4.4	2.0	.17	.13
5_RHE	6_TIT	1995	8	28	21	57	19.48	196.43	.5	-17.16	1.5	4.9	2.0	.17	.13
5_RHE	6_TIT	1995	8	28	21	57	58.26	196.79	.9	-17.58	1.1	3.9	2.0	.17	.13
5_RHE	6_TIT	1995	8	28	21	58	14.79	196.63	.8	-17.30	1.4	4.1	2.0	.17	.13
5_RHE	6_TIT	1995	8	28	22	5	8.99	196.35	1.1	-17.17	1.5	3.8	2.0	.17	.13
5_RHE	6_TIT	1995	8	28	22	5	25.46	196.16	.9	-17.22	1.4	2.8	2.0	.17	.13
5_RHE	6_TIT	1995	8	28	22	6	7.65	196.18	1.0	-17.09	1.5	3.3	2.0	.17	.13
5_RHE	6_TIT	1995	8	28	22	7	3.34	195.93	.8	-17.04	1.6	6.7	2.0	.17	.13
5_RHE	6_TIT	1995	8	28	22	7	32.62	196.17	1.1	-17.22	1.4	7.4	2.0	.17	.13
5_RHE	6_TIT	1995	8	28	22	8	11.23	195.58	.5	-17.33	1.3	6.2	2.0	.17	.13

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Table I (continued)

1	2	3			4			5	6	7	8	9	10	11	12
5_RHE	6_TIT	1995	8	28	22	8	26.88	195.78	.8	-17.18	1.4	4.9	2.0	.17	.13
5_RHE	6_TIT	1995	8	28	22	8	41.93	195.81	.8	-17.07	1.5	6.7	2.0	.17	.13
5_RHE	6_TIT	1995	8	28	22	8	41.93	195.81	.8	-17.07	1.5	6.8	2.0	.17	.13
5_RHE	6_TIT	1995	8	28	22	9	5.72	196.01	1.0	-17.22	1.4	5.3	2.0	.17	.13
5_RHE	6_TIT	1995	8	28	22	9	33.18	195.67	.7	-17.19	1.4	5.9	2.0	.17	.13
5_RHE	6_TIT	1995	9	1	19	36	1.02	-82.68	.5	5.00	1.8	4.2	5.0	.09	.10
5_RHE	6_TIT	1995	9	1	19	36	42.54	-82.56	.6	4.68	1.5	5.0	5.0	.09	.10
5_RHE	6_TIT	1995	9	1	19	37	56.91	-82.64	.5	4.87	1.7	7.3	5.0	.09	.10
5_RHE	6_TIT	1995	9	1	19	38	34.43	-82.68	.4	4.65	1.5	8.2	5.0	.09	.10
5_RHE	6_TIT	1995	9	1	19	39	11.78	-82.69	.4	4.64	1.4	10.5	5.0	.09	.10
5_RHE	6_TIT	1995	9	1	19	46	21.13	-82.67	.4	4.80	1.6	18.0	5.0	.09	.10
5_RHE	6_TIT	1995	9	1	19	46	21.13	-82.67	.4	4.80	1.6	18.0	5.0	.09	.10
5_RHE	6_TIT	1995	9	1	19	46	43.70	-82.79	.2	4.81	1.6	17.0	5.0	.09	.10
5_RHE	6_TIT	1995	9	1	19	46	43.70	-82.79	.2	4.81	1.6	17.0	5.0	.09	.10
5_RHE	6_TIT	1995	9	1	19	47	9.02	-82.71	.3	4.80	1.6	16.3	5.0	.09	.10
5_RHE	6_TIT	1995	9	1	19	47	9.02	-82.71	.3	4.80	1.6	16.3	5.0	.09	.10
5_RHE	6_TIT	1995	9	1	19	47	29.07	-82.66	.4	4.75	1.5	13.5	5.0	.09	.10
5_RHE	6_TIT	1995	9	1	19	47	45.66	-82.57	.5	4.57	1.4	16.7	5.0	.09	.10
5_RHE	6_TIT	1995	9	1	20	28	7.05	-82.41	.4	4.67	1.5	17.1	5.0	.09	.10
5_RHE	6_TIT	1995	9	1	20	28	36.49	-82.50	.3	4.72	1.6	18.3	5.0	.09	.10
5_RHE	6_TIT	1995	9	1	20	29	13.62	-82.48	.3	4.69	1.6	19.7	5.0	.09	.10
5_RHE	6_TIT	1995	9	1	20	29	29.16	-82.61	.2	4.79	1.7	15.7	5.0	.09	.10
5_RHE	6_TIT	1995	9	1	20	33	2.05	-82.53	.3	4.85	1.7	8.0	2.0	.09	.10
5_RHE	6_TIT	1995	9	1	20	33	19.58	-82.34	.5	4.61	1.5	7.9	2.0	.09	.10
5_RHE	6_TIT	1995	9	1	20	33	40.01	-82.32	.5	4.61	1.5	8.5	2.0	.09	.10
5_RHE	6_TIT	1995	9	1	20	34	55.20	-82.59	.2	4.89	1.8	6.6	2.0	.09	.10
5_RHE	6_TIT	1995	9	1	20	35	30.57	-82.58	.2	4.74	1.6	8.6	2.0	.09	.10
5_RHE	6_TIT	1995	9	1	20	35	44.85	-82.45	.4	4.73	1.6	7.2	2.0	.09	.10
5_RHE	6_TIT	1995	9	1	20	36	1.28	-82.43	.4	4.55	1.4	8.5	2.0	.09	.10
5_RHE	6_TIT	1995	9	1	20	36	45.05	-82.55	.3	4.66	1.6	7.9	2.0	.09	.10
5_RHE	6_TIT	1995	9	1	20	45	9.21	-82.46	.3	4.61	1.5	6.2	2.0	.09	.10
5_RHE	6_TIT	1995	9	1	20	45	35.08	-82.68	.1	4.58	1.5	6.0	2.0	.09	.10
5_RHE	6_TIT	1995	9	1	20	47	22.57	-82.51	.3	4.81	1.7	5.9	2.0	.09	.10
5_RHE	6_TIT	1995	9	1	20	48	3.71	-82.36	.4	4.72	1.6	7.2	2.0	.09	.10
5_RHE	6_TIT	1995	9	1	22	6	18.14	-82.30	.5	4.64	1.6	14.6	2.0	.04	.04
5_RHE	6_TIT	1995	9	1	22	7	.71	-82.34	.5	4.61	1.6	10.5	2.0	.04	.04
5_RHE	6_TIT	1995	9	1	22	7	28.66	-82.37	.4	4.72	1.7	11.8	2.0	.04	.04
5_RHE	6_TIT	1995	9	1	22	7	44.37	-82.43	.4	4.77	1.8	14.2	2.0	.04	.04
5_RHE	6_TIT	1995	9	1	22	7	57.28	-82.54	.3	4.73	1.7	11.8	2.0	.04	.04
5_RHE	6_TIT	1995	9	1	22	45	27.03	-82.49	.4	4.55	1.6	15.0	2.0	.06	.06
5_RHE	6_TIT	1995	9	1	22	45	44.71	-82.47	.4	4.53	1.6	13.9	2.0	.06	.06

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Table I (continued)

1	2	3			4	5	6	7	8	9	10	11	12
5_RHE	6_TIT	1995	9	1	22 46 19.10	-82.51	.4	4.60	1.6	15.3	2.0	.06	.06
5_RHE	6_TIT	1995	9	1	22 46 31.40	-82.53	.4	4.59	1.6	15.9	2.0	.06	.06
5_RHE	6_TIT	1995	9	1	22 46 43.48	-82.50	.4	4.73	1.8	11.3	2.0	.06	.06
5_RHE	6_TIT	1995	9	1	22 46 56.77	-82.70	.2	4.65	1.7	9.0	2.0	.06	.06
5_RHE	6_TIT	1995	9	1	22 47 10.40	-82.59	.3	4.72	1.7	14.5	2.0	.06	.06
5_RHE	6_TIT	1995	9	1	22 47 22.48	-82.71	.2	4.57	1.6	13.8	2.0	.06	.06
5_RHE	6_TIT	1995	9	1	23 5 47.58	-82.78	.2	4.68	1.7	11.7	2.0	.06	.06
5_RHE	6_TIT	1995	9	1	23 6 3.07	-82.83	.2	4.75	1.8	14.0	2.0	.06	.06
5_RHE	6_TIT	1995	9	1	23 6 26.63	-82.72	.3	4.70	1.8	13.9	2.0	.06	.06
5_RHE	6_TIT	1995	9	1	23 6 37.34	-82.79	.2	4.68	1.7	12.0	2.0	.06	.06
5_RHE	6_TIT	1995	9	1	23 18 38.62	-82.85	.2	4.62	1.6	15.9	2.0	.06	.06
5_RHE	6_TIT	1995	9	1	23 19 10.15	-82.76	.3	4.43	1.4	14.2	2.0	.06	.06
5_RHE	6_TIT	1995	9	1	23 19 22.73	-82.77	.3	4.58	1.6	12.1	2.0	.06	.06
5_RHE	6_TIT	1995	9	1	23 19 51.62	-82.69	.4	4.53	1.5	14.1	2.0	.06	.06
5_RHE	6_TIT	1995	9	1	23 33 8.10	-82.75	.5	4.54	1.5	12.4	2.0	.06	.06
5_RHE	6_TIT	1995	9	1	23 33 20.40	-82.63	.6	4.43	1.4	10.6	2.0	.06	.06
5_RHE	6_TIT	1995	9	1	23 33 32.81	-82.83	.4	4.56	1.6	8.9	2.0	.06	.06
5_RHE	6_TIT	1995	9	1	23 33 47.92	-82.70	.5	4.57	1.6	13.1	2.0	.06	.06
5_RHE	6_TIT	1995	9	1	23 33 59.01	-82.76	.5	4.43	1.4	13.2	2.0	.06	.06
5_RHE	6_TIT	1995	9	1	23 54 32.31	-83.07	.2	4.61	1.8	13.0	2.0	.06	.06
5_RHE	6_TIT	1995	9	1	23 54 45.98	-82.99	.3	4.73	1.9	11.2	2.0	.06	.06
5_RHE	6_TIT	1995	9	1	23 55 9.27	-82.91	.4	4.57	1.7	10.8	2.0	.06	.06
5_RHE	6_TIT	1995	9	1	23 55 20.48	-83.01	.3	4.67	1.8	11.9	2.0	.06	.06
5_RHE	6_TIT	1995	9	2	0 19 1.02	-83.16	.4	4.52	1.6	15.4	2.0	.04	.06
5_RHE	6_TIT	1995	9	2	0 19 14.20	-83.18	.4	4.59	1.7	15.9	2.0	.04	.06
5_RHE	6_TIT	1995	9	2	0 19 27.00	-83.22	.4	4.61	1.7	15.4	2.0	.04	.06
5_RHE	6_TIT	1995	9	2	0 19 41.00	-83.15	.4	4.55	1.7	14.2	2.0	.04	.06
5_RHE	6_TIT	1995	9	2	0 19 53.14	-83.19	.4	4.65	1.7	14.1	2.0	.04	.06
5_RHE	6_TIT	1995	9	2	0 20 54.55	-83.24	.4	4.75	1.8	12.5	2.0	.04	.06
5_RHE	6_TIT	1995	9	2	0 21 7.35	-83.36	.3	4.54	1.6	11.3	2.0	.04	.06
5_RHE	6_TIT	1995	9	2	0 21 19.92	-83.25	.4	4.66	1.7	12.1	2.0	.04	.06
5_RHE	6_TIT	1995	9	2	0 21 34.59	-83.37	.3	4.62	1.7	14.0	2.0	.04	.06
5_RHE	6_TIT	1995	9	2	1 13 1.18	-83.86	.4	4.58	1.6	11.4	2.0	.14	.12
5_RHE	6_TIT	1995	9	2	1 13 18.10	-83.89	.4	4.58	1.6	11.9	2.0	.14	.12
5_RHE	6_TIT	1995	9	2	1 13 29.03	-83.89	.4	4.58	1.6	9.8	2.0	.14	.12
5_RHE	6_TIT	1995	9	2	1 13 40.13	-84.03	.2	4.75	1.7	12.5	2.0	.14	.12
5_RHE	6_TIT	1995	9	2	1 13 52.59	-83.98	.3	4.67	1.7	9.0	2.0	.14	.12
5_RHE	6_TIT	1995	9	2	1 27 37.63	-84.17	.3	4.69	1.7	14.0	2.0	.14	.12
5_RHE	6_TIT	1995	9	2	1 27 53.50	-84.08	.4	4.48	1.5	10.7	2.0	.14	.12
5_RHE	6_TIT	1995	9	2	1 28 9.93	-84.35	.1	4.73	1.7	12.9	2.0	.14	.12
5_RHE	6_TIT	1995	9	2	1 28 22.83	-83.95	.5	4.77	1.8	11.8	2.0	.14	.12

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Table I (continued)

1	2	3			4	5	6	7	8	9	10	11	12
5_RHE	6_TIT	1995	9	2	1 28 35.14	-84.16	.3	4.55	1.6	13.2	2.0	.14	.12
5_RHE	6_TIT	1995	9	2	1 42 53.46	-84.43	.3	4.53	1.5	15.3	2.0	.14	.12
5_RHE	6_TIT	1995	9	2	1 43 7.46	-84.20	.6	4.60	1.6	16.2	2.0	.14	.12
5_RHE	6_TIT	1995	9	2	1 43 20.26	-84.10	.7	4.50	1.5	10.8	2.0	.14	.12
5_RHE	6_TIT	1995	9	2	1 43 31.74	-84.44	.3	4.61	1.6	13.7	2.0	.14	.12
5_RHE	6_TIT	1995	9	2	1 43 58.10	-84.39	.4	4.45	1.5	9.7	2.0	.14	.12
5_RHE	6_TIT	1995	9	2	2 4 59.80	-84.88	.3	4.73	1.7	10.1	2.0	.14	.12
5_RHE	6_TIT	1995	9	2	2 5 13.36	-84.64	.5	4.51	1.5	11.2	2.0	.14	.12
5_RHE	6_TIT	1995	9	2	2 5 26.27	-84.43	.7	4.69	1.7	9.1	2.0	.14	.12
5_RHE	6_TIT	1995	9	2	2 5 49.23	-84.59	.6	4.52	1.5	13.5	2.0	.14	.12
5_RHE	6_TIT	1995	9	2	2 6 4.39	-84.91	.2	4.67	1.7	11.2	2.0	.14	.12
5_RHE	6_TIT	1995	9	2	2 6 26.52	-84.48	.7	4.85	1.8	10.9	2.0	.14	.12
5_RHE	6_TIT	1995	9	2	2 6 37.18	-84.78	.4	4.87	1.9	8.6	2.0	.14	.12
5_RHE	6_TIT	1995	9	2	2 6 53.33	-84.70	.5	4.68	1.7	9.2	2.0	.14	.12
5_RHE	6_TIT	1995	9	2	2 7 8.05	-84.99	.2	4.65	1.6	11.2	2.0	.14	.12
5_RHE	6_TIT	1995	9	2	2 31 3.42	-84.78	.8	4.52	1.4	6.2	2.0	.14	.12
5_RHE	6_TIT	1995	9	2	2 32 19.65	-84.83	.8	4.90	1.8	6.8	2.0	.14	.12
5_RHE	6_TIT	1995	9	2	2 32 34.87	-85.09	.6	4.48	1.4	8.7	2.0	.14	.12
5_RHE	6_TIT	1995	9	2	2 34 22.25	-84.94	.7	4.78	1.7	8.0	2.0	.14	.12
5_RHE	6_TIT	1995	9	2	2 35 .86	-85.11	.6	4.59	1.5	8.1	2.0	.14	.12
5_RHE	6_TIT	1995	9	2	2 35 26.51	-85.21	.5	4.74	1.6	7.7	2.0	.14	.12
5_RHE	6_TIT	1995	9	2	2 35 39.09	-85.00	.7	4.84	1.7	10.2	2.0	.14	.12
5_RHE	6_TIT	1995	9	13	20 59 18.95	43.44	.3	-4.48	-1.1	5.9	1.0	.07	.08
5_RHE	6_TIT	1995	9	13	20 59 25.10	43.30	.2	-4.48	-1.1	7.4	1.0	.07	.08
5_RHE	6_TIT	1995	9	13	20 59 47.35	43.45	.3	-4.46	-1.1	9.1	1.0	.07	.08
5_RHE	6_TIT	1995	9	13	21 9 22.09	43.44	.2	-4.64	-1.3	12.8	1.0	.07	.08
5_RHE	6_TIT	1995	9	13	21 9 30.22	43.38	.2	-4.37	-1.1	13.1	1.0	.07	.08
5_RHE	6_TIT	1995	9	13	21 9 37.80	43.47	.3	-4.64	-1.3	11.1	1.0	.07	.08
5_RHE	6_TIT	1995	9	13	21 19 36.59	43.22	.1	-4.54	-1.1	12.0	1.0	.07	.08
5_RHE	6_TIT	1995	9	13	21 19 44.61	43.23	.1	-4.41	-1.0	11.8	1.0	.07	.08
5_RHE	6_TIT	1995	9	13	21 19 52.69	43.25	.1	-4.48	-1.1	12.1	1.0	.07	.08
5_RHE	6_TIT	1995	9	13	21 33 59.36	43.38	.2	-4.47	-1.1	11.0	1.0	.07	.08
5_RHE	6_TIT	1995	9	13	21 41 18.00	43.27	.1	-4.50	-1.1	11.9	1.0	.07	.08
5_RHE	6_TIT	1995	9	13	21 48 43.44	43.39	.2	-4.51	-1.1	14.8	1.0	.07	.08
5_RHE	6_TIT	1995	9	13	21 49 3.88	43.42	.2	-4.32	-.9	15.6	1.0	.07	.08
5_RHE	6_TIT	1995	9	13	21 49 13.21	43.49	.3	-4.58	-1.2	13.9	1.0	.07	.08
5_RHE	6_TIT	1995	9	13	22 1 58.43	43.36	.1	-4.42	-1.0	14.2	1.0	.07	.08
5_RHE	6_TIT	1995	9	13	22 2 4.42	43.53	.2	-4.31	-.9	13.0	1.0	.07	.08
5_RHE	6_TIT	1995	9	13	22 2 12.11	43.40	.1	-4.40	-1.0	12.2	1.0	.07	.08
5_RHE	6_TIT	1995	9	13	22 2 20.35	43.53	.2	-4.32	-.9	11.3	1.0	.07	.08
5_RHE	6_TIT	1995	9	13	22 14 12.13	43.42	.2	-4.42	-1.0	12.0	1.0	.07	.08

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Table I (continued)

1	2	3	4	5	6	7	8	9	10	11	12
5_RHE	6_TIT	1995 9 13	22 14 22.40	43.53	.3	-4.49	-1.0	11.6	1.0	.07	.08
5_RHE	6_TIT	1995 9 13	22 14 29.76	43.45	.2	-4.46	-1.0	11.6	1.0	.07	.08
5_RHE	6_TIT	1995 9 13	22 24 50.75	43.51	.2	-4.30	-.9	14.1	1.0	.07	.08
5_RHE	6_TIT	1995 9 13	22 24 57.89	43.52	.2	-4.31	-.9	11.7	1.0	.07	.08
5_RHE	6_TIT	1995 9 13	22 25 3.77	43.55	.2	-4.31	-.9	13.3	1.0	.07	.08
5_RHE	6_TIT	1995 9 13	22 25 11.51	43.57	.3	-4.36	-1.0	12.8	1.0	.07	.08
5_RHE	6_TIT	1995 9 13	22 41 40.99	43.59	.2	-4.33	-.8	8.8	1.0	.07	.08
5_RHE	6_TIT	1995 9 13	22 41 46.54	43.75	.3	-4.43	-.9	13.8	1.0	.07	.08
5_RHE	6_TIT	1995 9 13	22 41 52.14	43.56	.2	-4.30	-.8	12.8	1.0	.07	.08
5_RHE	6_TIT	1995 9 13	22 59 16.22	43.66	.2	-4.35	-.9	17.9	2.0	.07	.08
5_RHE	6_TIT	1995 9 13	22 59 26.22	43.63	.1	-4.47	-1.0	19.0	2.0	.07	.08
5_RHE	6_TIT	1995 9 13	22 59 33.47	43.73	.2	-4.33	-.8	19.3	2.0	.07	.08
5_RHE	6_TIT	1995 9 13	22 59 42.86	43.79	.3	-4.50	-1.0	17.1	2.0	.07	.08
5_RHE	6_TIT	1995 9 13	23 9 14.96	43.62	.0	-4.39	-.9	14.1	2.0	.07	.08
5_RHE	6_TIT	1995 9 13	23 9 22.05	43.83	.2	-4.47	-1.0	17.1	2.0	.07	.08
5_RHE	6_TIT	1995 9 13	23 9 31.39	43.71	.1	-4.44	-.9	18.9	2.0	.07	.08
5_RHE	6_TIT	1995 9 13	23 9 39.74	43.80	.2	-4.36	-.9	20.2	2.0	.07	.08
5_RHE	6_TIT	1995 9 13	23 10 23.95	43.80	.2	-4.53	-1.0	20.8	2.0	.07	.08
5_RHE	6_TIT	1995 9 13	23 19 7.94	43.78	.2	-4.46	-.9	17.5	2.0	.07	.08
5_RHE	6_TIT	1995 9 13	23 19 14.97	43.79	.2	-4.49	-.9	19.0	2.0	.07	.08
5_RHE	6_TIT	1995 9 13	23 19 22.17	43.86	.3	-4.41	-.8	16.1	2.0	.07	.08
5_RHE	6_TIT	1995 9 13	23 24 29.09	43.91	.3	-4.52	-1.0	19.7	2.0	.07	.08
5_RHE	6_TIT	1995 9 13	23 24 38.65	43.95	.3	-4.54	-1.0	17.6	2.0	.07	.08
5_RHE	6_TIT	1995 9 13	23 24 51.39	43.92	.3	-4.48	-.9	18.3	2.0	.07	.08
5_RHE	6_TIT	1995 9 13	23 24 58.97	43.99	.3	-4.49	-.9	21.6	2.0	.07	.08
5_RHE	6_TIT	1995 9 13	23 29 7.67	43.85	.2	-4.42	-.9	16.0	2.0	.07	.08
5_RHE	6_TIT	1995 9 13	23 29 18.88	43.88	.2	-4.47	-1.0	16.2	2.0	.07	.08
5_RHE	6_TIT	1995 9 13	23 29 30.52	43.93	.2	-4.47	-1.0	16.8	2.0	.07	.08
5_RHE	6_TIT	1995 9 13	23 29 38.48	43.97	.3	-4.45	-.9	18.5	2.0	.07	.08
5_RHE	6_TIT	1995 9 13	23 36 37.51	43.93	.2	-4.55	-1.0	15.7	2.0	.07	.08
5_RHE	6_TIT	1995 9 13	23 36 47.62	43.99	.3	-4.47	-.9	14.6	2.0	.07	.08
5_RHE	6_TIT	1995 9 13	23 36 55.14	44.06	.4	-4.46	-.9	18.4	2.0	.07	.08
5_RHE	6_TIT	1995 9 13	23 37 39.03	43.93	.2	-4.48	-.9	18.6	2.0	.07	.08
5_RHE	6_TIT	1995 9 13	23 42 51.55	44.10	.3	-4.51	-.9	14.8	2.0	.07	.08
5_RHE	6_TIT	1995 9 13	23 43 6.71	43.92	.2	-4.46	-.9	16.6	2.0	.07	.08
5_RHE	6_TIT	1995 9 13	23 49 6.31	44.06	.2	-4.58	-1.0	17.9	2.0	.07	.08
5_RHE	6_TIT	1995 9 13	23 49 12.79	44.09	.2	-4.59	-1.0	15.6	2.0	.07	.08
5_RHE	6_TIT	1995 9 13	23 49 19.77	43.98	.1	-4.49	-.9	20.9	2.0	.07	.08
5_RHE	6_TIT	1995 9 13	23 49 26.14	44.02	.1	-4.35	-.8	20.0	2.0	.07	.08
5_RHE	6_TIT	1995 9 13	23 54 48.00	44.08	.2	-4.30	-.7	15.6	2.0	.07	.08
5_RHE	6_TIT	1995 9 13	23 54 54.87	44.09	.2	-4.43	-.8	17.7	2.0	.07	.08

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Table I (continued)

1	2	3	4	5	6	7	8	9	10	11	12
5_RHE	6_TIT	1995 9 13	23 55 1.18	44.24	.3	-4.44	-.8	20.4	2.0	.07	.08
5_RHE	6_TIT	1995 9 13	23 55 7.50	44.20	.3	-4.41	-.8	16.1	2.0	.07	.08
5_RHE	6_TIT	1995 9 13	23 58 24.41	44.14	.2	-4.50	-.8	17.8	2.0	.07	.08
5_RHE	6_TIT	1995 9 13	23 58 42.75	44.18	.3	-4.50	-.8	20.7	2.0	.07	.08
5_RHE	6_TIT	1995 9 13	23 58 51.21	44.15	.3	-4.57	-.9	18.2	2.0	.07	.08
5_RHE	6_TIT	1995 9 13	23 58 58.63	44.20	.3	-4.57	-.9	18.3	2.0	.07	.08
5_RHE	6_TIT	1995 9 14	0 5 3.94	44.24	.2	-4.42	-.8	17.1	2.0	.07	.08
5_RHE	6_TIT	1995 9 14	0 5 11.30	44.32	.3	-4.40	-.7	15.4	2.0	.07	.08
5_RHE	6_TIT	1995 9 14	0 9 18.57	44.23	.1	-4.40	-.8	20.0	2.0	.07	.08
5_RHE	6_TIT	1995 9 14	0 9 27.03	44.17	.1	-4.53	-.9	18.4	2.0	.07	.08
5_RHE	6_TIT	1995 9 14	0 9 33.84	44.22	.1	-4.44	-.8	19.4	2.0	.07	.08
5_RHE	6_TIT	1995 9 14	0 9 41.09	44.27	.2	-4.47	-.9	15.2	2.0	.07	.08
5_RHE	6_TIT	1995 9 14	0 15 30.80	44.23	.1	-4.54	-.9	17.6	2.0	.07	.08
5_RHE	6_TIT	1995 9 14	0 15 37.94	44.31	.2	-4.56	-.9	16.9	2.0	.07	.08
5_RHE	6_TIT	1995 9 14	0 15 51.07	44.25	.2	-4.47	-.8	16.4	2.0	.07	.08
5_RHE	6_TIT	1995 9 14	0 22 2.75	44.24	.1	-4.45	-.7	11.5	2.0	.07	.08
5_RHE	6_TIT	1995 9 14	0 22 14.95	44.34	.2	-4.46	-.8	20.2	2.0	.07	.08
5_RHE	6_TIT	1995 9 14	0 22 22.09	44.40	.3	-4.42	-.7	14.5	2.0	.07	.08
5_RHE	6_TIT	1995 9 14	0 22 28.73	44.34	.2	-4.45	-.8	14.3	2.0	.07	.08
5_RHE	6_TIT	1995 9 14	0 30 6.04	44.50	.3	-4.40	-.7	19.3	2.0	.07	.08
5_RHE	6_TIT	1995 9 14	0 30 12.52	44.39	.2	-4.36	-.7	13.9	2.0	.07	.08
5_RHE	6_TIT	1995 9 14	0 30 18.95	44.47	.3	-4.51	-.8	16.5	2.0	.07	.08
5_RHE	6_TIT	1995 9 14	0 30 27.96	44.40	.2	-4.59	-.9	20.1	2.0	.07	.08
5_RHE	6_TIT	1995 9 14	0 34 21.44	44.49	.2	-4.44	-.7	16.7	2.0	.07	.08
5_RHE	6_TIT	1995 9 14	0 34 33.25	44.43	.1	-4.60	-.9	15.1	2.0	.07	.08
5_RHE	6_TIT	1995 9 14	0 40 44.22	44.54	.1	-4.48	-.8	15.9	2.0	.07	.08
5_RHE	6_TIT	1995 9 14	0 40 55.48	44.56	.2	-4.47	-.8	18.4	2.0	.07	.08
5_RHE	6_TIT	1995 9 14	0 41 1.96	44.54	.1	-4.55	-.8	19.2	2.0	.07	.08
5_RHE	6_TIT	1995 9 14	0 41 8.17	44.70	.3	-4.43	-.7	13.6	2.0	.07	.08
5_RHE	6_TIT	1995 9 14	0 48 36.91	44.68	.2	-4.57	-.9	14.5	2.0	.07	.08
5_RHE	6_TIT	1995 9 14	0 48 44.43	44.62	.1	-4.52	-.8	15.3	2.0	.07	.08
5_RHE	6_TIT	1995 9 14	0 48 51.96	44.74	.3	-4.39	-.7	14.5	2.0	.07	.08
5_RHE	6_TIT	1995 9 14	0 55 27.04	44.64	.1	-4.53	-.8	12.5	2.0	.07	.08
5_RHE	6_TIT	1995 9 14	0 55 33.30	44.76	.3	-4.55	-.8	11.3	2.0	.07	.08
5_RHE	6_TIT	1995 9 14	0 56 29.65	44.87	.4	-4.51	-.7	17.3	3.0	.07	.08
5_RHE	6_TIT	1995 9 14	0 56 39.76	44.83	.3	-4.50	-.7	15.0	3.0	.07	.08
5_RHE	6_TIT	1995 9 14	0 56 47.78	44.67	.2	-4.60	-.8	15.7	3.0	.07	.08
5_RHE	6_TIT	1995 9 14	1 4 12.46	44.76	.2	-4.46	-.7	18.0	3.0	.07	.08
5_RHE	6_TIT	1995 9 14	1 4 29.26	44.76	.2	-4.52	-.8	14.0	3.0	.07	.08
5_RHE	6_TIT	1995 9 14	1 4 38.43	44.87	.3	-4.58	-.8	14.9	3.0	.07	.08
5_RHE	6_TIT	1995 9 14	1 4 50.57	44.86	.3	-4.52	-.8	15.9	3.0	.07	.08

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Table I (continued)

1	2	3	4	5	6	7	8	9	10	11	12
5_RHE	6_TIT	1995 9 14	1 11 26.81	44.99	.3	-4.59	-.9	11.1	3.0	.07	.08
5_RHE	6_TIT	1995 9 14	1 11 38.94	44.87	.2	-4.71	-1.0	11.8	3.0	.07	.08
5_RHE	6_TIT	1995 9 14	1 11 47.02	44.84	.1	-4.59	-.9	9.5	3.0	.07	.08
5_RHE	6_TIT	1995 9 14	1 19 2.14	44.94	.1	-4.48	-.7	11.1	3.0	.07	.08
5_RHE	6_TIT	1995 9 14	1 19 28.01	44.96	.2	-4.56	-.8	11.5	3.0	.07	.08
5_RHE	6_TIT	1995 9 14	1 19 35.42	45.13	.3	-4.52	-.7	12.7	3.0	.07	.08
5_RHE	6_TIT	1995 9 14	1 19 43.88	45.04	.2	-4.47	-.7	12.1	3.0	.07	.08
5_RHE	6_TIT	1995 9 14	1 28 1.89	45.06	.1	-4.56	-.8	12.5	3.0	.07	.08
5_RHE	6_TIT	1995 9 14	1 28 16.78	45.02	.1	-4.64	-.8	15.4	3.0	.07	.08
5_RHE	6_TIT	1995 9 14	1 28 24.14	45.27	.3	-4.57	-.8	14.6	3.0	.07	.08
5_RHE	6_TIT	1995 9 14	1 33 39.68	45.20	.2	-4.73	-.9	14.2	3.0	.07	.08
5_RHE	6_TIT	1995 9 14	1 34 6.65	45.24	.2	-4.67	-.8	15.0	3.0	.07	.08
5_RHE	6_TIT	1995 9 14	1 45 41.18	45.36	.2	-4.74	-.8	16.1	3.0	.07	.08
5_RHE	6_TIT	1995 9 14	1 45 50.41	45.30	.1	-4.75	-.9	16.3	3.0	.07	.08
5_RHE	6_TIT	1995 9 14	1 45 57.66	45.36	.2	-4.52	-.6	13.1	3.0	.07	.08
5_RHE	6_TIT	1995 9 14	1 46 5.57	45.50	.3	-4.66	-.8	14.5	3.0	.07	.08
5_RHE	6_TIT	1995 9 14	1 46 37.92	45.48	.3	-4.58	-.7	15.5	3.0	.07	.08
5_RHE	6_TIT	1995 9 14	1 53 20.53	45.50	.3	-4.69	-.8	16.3	3.0	.07	.08
5_RHE	6_TIT	1995 9 14	1 53 27.67	45.44	.2	-4.68	-.8	17.3	3.0	.07	.08
5_RHE	6_TIT	1995 9 14	1 53 34.92	45.42	.2	-4.70	-.8	17.3	3.0	.07	.08
5_RHE	6_TIT	1995 9 14	1 53 42.33	45.42	.2	-4.76	-.9	18.1	3.0	.07	.08
5_RHE	6_TIT	1995 9 14	1 59 39.40	45.61	.3	-4.58	-.7	17.4	3.0	.07	.08
5_RHE	6_TIT	1995 9 14	1 59 47.48	45.63	.3	-4.59	-.7	18.3	3.0	.07	.08
5_RHE	6_TIT	1995 9 14	2 15 58.94	45.74	.1	-4.78	-.8	16.7	3.0	.07	.08
5_RHE	6_TIT	1995 9 14	2 16 14.71	45.97	.3	-4.64	-.7	14.2	3.0	.07	.08
5_RHE	6_TIT	1995 9 14	2 21 46.35	45.93	.2	-4.73	-.8	15.3	3.0	.07	.08
5_RHE	6_TIT	1995 9 14	2 21 53.82	45.92	.2	-4.57	-.6	17.2	3.0	.07	.08
5_RHE	6_TIT	1995 9 14	2 22 1.07	45.96	.2	-4.68	-.8	14.3	3.0	.07	.08
5_RHE	6_TIT	1995 9 14	2 22 8.54	46.00	.3	-4.49	-.6	13.0	3.0	.07	.08
5_RHE	6_TIT	1995 9 14	2 22 20.57	45.85	.1	-4.60	-.7	12.2	3.0	.07	.08
5_RHE	6_TIT	1995 10 3	20 32 20.33	-82.77	.6	2.25	1.4	23.0	1.0	.07	.06
5_RHE	6_TIT	1995 10 3	20 32 32.85	-82.71	.7	2.37	1.6	27.2	1.0	.07	.06
5_RHE	6_TIT	1995 10 3	20 33 .10	-82.82	.6	2.37	1.6	23.8	1.0	.07	.06
5_RHE	6_TIT	1995 10 3	20 33 9.38	-82.69	.7	2.41	1.6	26.1	1.0	.07	.06
5_RHE	6_TIT	1995 10 3	20 43 21.52	-83.30	.4	2.40	1.6	27.3	1.0	.07	.06
5_RHE	6_TIT	1995 10 3	20 43 35.86	-83.26	.5	2.39	1.5	25.7	1.0	.07	.06
5_RHE	6_TIT	1995 10 3	20 43 54.64	-83.30	.5	2.31	1.5	21.7	1.0	.07	.06
5_RHE	6_TIT	1995 10 3	20 44 7.94	-83.26	.5	2.49	1.6	25.4	1.0	.07	.06
5_RHE	6_TIT	1995 10 3	20 44 17.22	-83.34	.4	2.41	1.6	19.3	1.0	.07	.06
5_RHE	6_TIT	1995 10 3	20 45 43.73	-83.27	.6	2.37	1.5	27.8	1.0	.07	.06
5_RHE	6_TIT	1995 10 3	20 46 3.44	-83.33	.5	2.49	1.6	23.5	1.0	.07	.06

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Table I (continued)

1	2	3	4	5	6	7	8	9	10	11	12
5_RHE	6_TIT	1995 10 3	20 46 26.02	-83.36	.5	2.27	1.4	25.0	1.0	.07	.06
5_RHE	6_TIT	1995 10 3	20 51 6.36	-83.69	.4	2.31	1.4	23.5	1.0	.07	.06
5_RHE	6_TIT	1995 10 3	20 51 44.04	-83.51	.6	2.34	1.4	21.5	1.0	.07	.06
5_RHE	6_TIT	1995 10 3	20 51 53.21	-83.68	.4	2.24	1.3	21.5	1.0	.07	.06
5_RHE	6_TIT	1995 10 3	20 52 4.47	-83.56	.5	2.32	1.4	29.1	1.0	.07	.06
5_RHE	6_TIT	1995 10 3	20 59 45.57	-83.84	.5	2.27	1.4	20.2	1.0	.07	.06
5_RHE	6_TIT	1995 10 3	20 59 56.33	-83.94	.5	2.44	1.5	22.1	1.0	.07	.06
5_RHE	6_TIT	1995 10 3	21 0 16.38	-83.82	.6	2.44	1.5	20.7	1.0	.07	.06
5_RHE	6_TIT	1995 10 3	21 0 25.28	-83.91	.5	2.50	1.6	20.2	1.0	.07	.06
5_RHE	6_TIT	1995 10 3	22 24 42.38	-87.46	.5	2.46	1.4	18.1	1.0	.08	.08
5_RHE	6_TIT	1995 10 3	22 24 51.17	-87.39	.6	2.72	1.6	17.2	1.0	.08	.08
5_RHE	6_TIT	1995 10 3	22 25 .07	-87.32	.6	2.60	1.5	26.2	1.0	.08	.08
5_RHE	6_TIT	1995 10 3	22 25 8.74	-87.26	.7	2.51	1.4	25.3	1.0	.08	.08
5_RHE	6_TIT	1995 10 3	22 25 22.97	-87.46	.5	2.50	1.4	23.8	1.0	.08	.08
5_RHE	6_TIT	1995 10 3	22 30 39.01	-87.61	.6	2.53	1.4	27.2	1.0	.08	.08
5_RHE	6_TIT	1995 10 3	22 30 59.17	-87.67	.6	2.64	1.5	22.6	1.0	.08	.08
5_RHE	6_TIT	1995 10 3	22 31 7.85	-87.80	.4	2.66	1.5	29.1	1.0	.08	.08
5_RHE	6_TIT	1995 10 3	22 31 17.02	-87.67	.6	2.69	1.6	26.7	1.0	.08	.08
5_RHE	6_TIT	1995 10 3	22 31 25.64	-87.56	.7	2.75	1.6	27.1	1.0	.08	.08
5_RHE	6_TIT	1995 10 3	22 48 57.52	-88.51	.5	2.69	1.5	21.1	1.0	.08	.08
5_RHE	6_TIT	1995 10 3	22 49 19.44	-88.37	.7	2.87	1.7	20.7	1.0	.08	.08
5_RHE	6_TIT	1995 10 3	22 49 29.76	-88.32	.8	2.74	1.5	23.5	1.0	.08	.08
5_RHE	6_TIT	1995 10 3	22 49 39.43	-88.33	.7	2.81	1.6	21.4	1.0	.08	.08
5_RHE	6_TIT	1995 10 3	22 56 32.63	-88.74	.7	2.72	1.5	20.8	1.0	.08	.08
5_RHE	6_TIT	1995 10 3	22 56 42.19	-88.85	.6	2.77	1.6	21.9	1.0	.08	.08
5_RHE	6_TIT	1995 10 3	22 56 51.20	-88.87	.6	2.54	1.3	15.6	1.0	.08	.08
5_RHE	6_TIT	1995 10 3	22 57 1.14	-88.88	.6	2.79	1.6	22.6	1.0	.08	.08
5_RHE	6_TIT	1995 10 3	22 57 10.20	-88.75	.7	2.65	1.5	20.0	1.0	.08	.08
5_RHE	6_TIT	1995 10 3	23 1 14.13	-89.02	.6	2.62	1.4	27.1	1.0	.08	.08
5_RHE	6_TIT	1995 10 3	23 1 22.97	-89.02	.6	2.47	1.3	22.2	1.0	.08	.08
5_RHE	6_TIT	1995 10 3	23 1 31.87	-88.97	.7	2.62	1.4	25.1	1.0	.08	.08
5_RHE	6_TIT	1995 10 4	0 17 59.80	-92.69	.6	3.07	1.5	22.8	2.0	.10	.09
5_RHE	6_TIT	1995 10 4	0 18 11.77	-92.58	.7	2.89	1.3	26.9	2.0	.10	.09
5_RHE	6_TIT	1995 10 4	0 18 22.92	-92.59	.7	3.14	1.5	24.9	2.0	.10	.09
5_RHE	6_TIT	1995 10 4	0 18 32.59	-92.64	.7	3.08	1.5	25.1	2.0	.10	.09
5_RHE	6_TIT	1995 10 4	0 18 42.09	-92.62	.7	2.99	1.4	16.9	2.0	.10	.09
5_RHE	6_TIT	1995 10 4	0 25 42.43	-93.09	.7	3.02	1.4	26.0	2.0	.10	.09
5_RHE	6_TIT	1995 10 4	0 26 3.53	-93.24	.5	2.83	1.2	20.6	2.0	.10	.09
5_RHE	6_TIT	1995 10 4	0 26 13.47	-93.02	.8	3.12	1.5	20.0	2.0	.10	.09
5_RHE	6_TIT	1995 10 4	0 26 25.44	-92.98	.8	2.99	1.3	20.5	2.0	.10	.09
5_RHE	6_TIT	1995 10 4	0 34 21.04	-93.56	.7	3.00	1.3	18.7	2.0	.10	.09

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Table I (continued)

1	2	3	4	5	6	7	8	9	10	11	12
5_RHE	6_TIT	1995 10 4	0 34 30.87	-93.79	.4	3.02	1.3	22.1	2.0	.10	.09
5_RHE	6_TIT	1995 10 4	0 34 41.69	-93.54	.7	2.85	1.2	13.7	2.0	.10	.09
5_RHE	6_TIT	1995 10 14	19 13 49.65	81.94	.4	-10.31	-1.4	12.1	1.0	.04	.03
5_RHE	6_TIT	1995 10 14	19 19 1.07	81.45	.2	-10.33	-1.5	46.6	10.0	.04	.03
5_RHE	6_TIT	1995 10 14	19 19 1.07	81.45	.2	-10.32	-1.5	46.9	10.0	.04	.03
5_RHE	6_TIT	1995 10 14	19 19 21.18	81.47	.2	-10.40	-1.6	44.7	10.0	.04	.03
5_RHE	6_TIT	1995 10 14	19 19 40.95	81.38	.2	-10.30	-1.5	45.6	10.0	.04	.03
5_RHE	6_TIT	1995 10 14	19 19 40.95	81.38	.2	-10.30	-1.5	44.8	10.0	.04	.03
5_RHE	6_TIT	1995 10 14	19 19 59.84	81.38	.2	-10.31	-1.5	45.9	10.0	.04	.03
5_RHE	6_TIT	1995 10 14	19 19 59.84	81.39	.2	-10.32	-1.5	44.7	10.0	.04	.03
5_RHE	6_TIT	1995 10 14	19 23 15.27	81.11	.1	-10.22	-1.4	10.1	1.0	.04	.03
5_RHE	6_TIT	1995 10 14	19 23 26.91	81.14	.1	-10.28	-1.5	12.7	1.0	.04	.03
5_RHE	6_TIT	1995 10 14	19 23 36.41	81.17	.1	-10.40	-1.6	16.5	1.0	.04	.03
5_RHE	6_TIT	1995 10 14	19 23 45.86	81.20	.2	-10.36	-1.6	11.6	1.0	.04	.03
5_RHE	6_TIT	1995 10 14	19 24 4.87	81.16	.2	-10.36	-1.6	15.1	1.0	.04	.03
5_RHE	6_TIT	1995 10 14	19 26 15.09	80.97	.1	-10.30	-1.5	48.2	10.0	.04	.03
5_RHE	6_TIT	1995 10 14	19 26 15.09	80.97	.1	-10.31	-1.5	49.7	10.0	.04	.03
5_RHE	6_TIT	1995 10 14	19 26 33.77	80.99	.1	-10.32	-1.5	54.0	10.0	.04	.03
5_RHE	6_TIT	1995 10 14	19 26 33.77	80.99	.1	-10.33	-1.5	53.0	10.0	.04	.03
5_RHE	6_TIT	1995 10 14	19 26 52.39	81.02	.2	-10.30	-1.5	45.4	10.0	.04	.03
5_RHE	6_TIT	1995 10 14	19 26 52.39	81.02	.2	-10.30	-1.5	45.4	10.0	.04	.03
5_RHE	6_TIT	1995 10 14	19 27 10.79	81.02	.2	-10.30	-1.5	40.6	10.0	.04	.03
5_RHE	6_TIT	1995 10 14	19 27 10.79	81.02	.2	-10.30	-1.5	40.7	10.0	.04	.03
5_RHE	6_TIT	1995 10 14	19 27 10.79	81.02	.2	-10.30	-1.5	40.3	10.0	.04	.03
5_RHE	6_TIT	1995 10 14	19 27 29.08	80.95	.1	-10.32	-1.5	50.8	10.0	.04	.03
5_RHE	6_TIT	1995 10 14	19 27 29.08	80.96	.1	-10.31	-1.5	49.6	10.0	.04	.03
5_RHE	6_TIT	1995 10 14	19 27 48.85	80.96	.1	-10.30	-1.5	46.8	10.0	.04	.03
5_RHE	6_TIT	1995 10 14	19 27 48.85	80.96	.1	-10.29	-1.5	47.4	10.0	.04	.03
5_RHE	6_TIT	1995 10 14	19 29 23.05	80.91	.2	-10.26	-1.5	45.3	15.0	.04	.03
5_RHE	6_TIT	1995 10 14	19 29 49.25	80.82	.1	-10.27	-1.5	45.5	15.0	.04	.03
5_RHE	6_TIT	1995 10 14	19 30 13.64	80.85	.2	-10.30	-1.5	51.2	15.0	.04	.03
5_RHE	6_TIT	1995 10 14	19 41 9.50	80.23	.2	-10.21	-1.5	42.4	10.0	.04	.03
5_RHE	6_TIT	1995 10 14	19 41 9.50	80.22	.2	-10.19	-1.5	42.4	10.0	.04	.03
5_RHE	6_TIT	1995 10 14	19 41 31.36	80.16	.1	-10.21	-1.5	40.4	10.0	.04	.03
5_RHE	6_TIT	1995 10 14	19 41 31.36	80.17	.2	-10.23	-1.5	40.6	10.0	.04	.03
5_RHE	6_TIT	1995 10 14	19 41 50.42	80.14	.1	-10.22	-1.5	42.0	10.0	.04	.03
5_RHE	6_TIT	1995 10 14	19 41 50.42	80.13	.1	-10.20	-1.5	41.9	10.0	.04	.03
5_RHE	6_TIT	1995 10 14	19 42 9.92	80.16	.2	-10.17	-1.5	35.8	10.0	.04	.03
5_RHE	6_TIT	1995 10 14	19 42 9.92	80.17	.2	-10.19	-1.5	35.6	10.0	.04	.03
5_RHE	6_TIT	1995 10 14	19 42 29.75	80.18	.2	-10.21	-1.5	36.2	10.0	.04	.03
5_RHE	6_TIT	1995 10 14	19 42 29.75	80.17	.2	-10.18	-1.5	36.6	10.0	.04	.03

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Table I (continued)

1	2	3	4	5	6	7	8	9	10	11	12
5_RHE	6_TIT	1995 10 14	19 43 12.81	80.10	.2	-10.15	-1.5	43.5	15.0	.04	.03
5_RHE	6_TIT	1995 10 14	19 43 46.70	80.08	.2	-10.20	-1.5	40.9	15.0	.04	.03
5_RHE	6_TIT	1995 10 14	19 45 49.84	79.97	.2	-10.10	-1.4	18.4	1.0	.04	.03
5_RHE	6_TIT	1995 10 14	19 46 14.89	80.02	.3	-10.23	-1.5	17.4	1.0	.04	.03
5_RHE	6_TIT	1995 10 14	19 49 41.74	79.73	.2	-10.20	-1.5	45.2	10.0	.04	.03
5_RHE	6_TIT	1995 10 14	19 50 1.29	79.72	.2	-10.16	-1.5	46.3	10.0	.04	.03
5_RHE	6_TIT	1995 10 14	19 50 1.29	79.72	.2	-10.16	-1.5	47.3	10.0	.04	.03
5_RHE	6_TIT	1995 10 14	19 50 20.35	79.71	.2	-10.16	-1.5	44.3	10.0	.04	.03
5_RHE	6_TIT	1995 10 14	19 50 41.99	79.66	.2	-10.18	-1.5	48.1	10.0	.04	.03
5_RHE	6_TIT	1995 10 14	19 51 6.16	79.69	.2	-10.18	-1.5	44.1	10.0	.04	.03
5_RHE	6_TIT	1995 10 14	20 45 32.80	76.80	.3	-10.04	-1.7	9.7	1.0	.04	.07
5_RHE	6_TIT	1995 10 14	20 46 4.98	76.77	.3	-10.08	-1.8	9.2	1.0	.04	.07
5_RHE	6_TIT	1995 10 14	20 48 9.44	76.61	.2	-9.82	-1.5	41.3	10.0	.04	.07
5_RHE	6_TIT	1995 10 14	20 48 29.99	76.53	.2	-9.81	-1.5	44.0	10.0	.04	.07
5_RHE	6_TIT	1995 10 14	20 48 49.59	76.60	.2	-9.78	-1.5	39.9	10.0	.04	.07
5_RHE	6_TIT	1995 10 14	20 49 9.53	76.51	.2	-9.80	-1.5	43.4	10.0	.04	.07
5_RHE	6_TIT	1995 10 14	20 49 30.18	76.51	.2	-9.84	-1.5	46.3	10.0	.04	.07
5_RHE	6_TIT	1995 10 14	20 56 17.29	76.03	.0	-9.73	-1.5	8.5	1.0	.04	.07
5_RHE	6_TIT	1995 10 14	20 56 30.25	76.12	.1	-9.79	-1.6	6.5	1.0	.04	.07
5_RHE	6_TIT	1995 10 14	20 56 49.81	76.15	.2	-9.93	-1.7	7.9	1.0	.04	.07
5_RHE	6_TIT	1995 10 14	20 56 59.58	76.14	.2	-9.85	-1.6	8.6	1.0	.04	.07
5_RHE	6_TIT	1995 10 14	20 58 23.46	76.05	.2	-9.81	-1.6	43.6	10.0	.04	.07
5_RHE	6_TIT	1995 10 14	20 58 50.37	75.99	.1	-9.74	-1.5	40.3	10.0	.04	.07
5_RHE	6_TIT	1995 10 14	20 59 10.97	75.98	.1	-9.79	-1.6	48.1	10.0	.04	.07
5_RHE	6_TIT	1995 10 14	20 59 37.22	75.97	.1	-9.76	-1.6	43.1	10.0	.04	.07
5_RHE	6_TIT	1995 10 14	21 0 24.73	75.94	.2	-9.75	-1.6	45.8	10.0	.04	.07
5_RHE	6_TIT	1995 10 14	21 4 1.74	75.65	.1	-9.62	-1.4	9.7	1.0	.04	.07
5_RHE	6_TIT	1995 10 14	21 4 33.21	75.73	.2	-9.65	-1.4	10.7	1.0	.04	.07
5_RHE	6_TIT	1995 10 14	21 6 57.83	75.65	.2	-9.77	-1.6	7.7	1.0	.04	.07
5_RHE	6_TIT	1995 10 14	21 7 37.21	75.56	.1	-9.80	-1.6	10.1	1.0	.04	.07
5_RHE	6_TIT	1995 10 14	21 8 45.87	75.51	.2	-9.67	-1.5	42.1	10.0	.04	.07
5_RHE	6_TIT	1995 10 14	21 13 14.95	75.27	.1	-9.70	-1.5	53.2	15.0	.04	.07
5_RHE	6_TIT	1995 10 14	21 13 41.48	75.23	.1	-9.69	-1.5	49.5	15.0	.04	.07
5_RHE	6_TIT	1995 10 14	21 14 15.04	75.22	.1	-9.71	-1.6	48.1	15.0	.04	.07
5_RHE	6_TIT	1995 10 14	21 14 49.92	75.17	.1	-9.68	-1.5	42.2	15.0	.04	.07
5_RHE	6_TIT	1995 10 14	21 15 26.28	75.17	.1	-9.66	-1.5	44.6	15.0	.04	.07
5_RHE	6_TIT	1995 10 14	21 17 58.70	75.00	.1	-9.69	-1.6	45.3	10.0	.04	.07
5_RHE	6_TIT	1995 10 14	21 18 26.54	75.01	.1	-9.66	-1.5	48.0	10.0	.04	.07
5_RHE	6_TIT	1995 10 14	21 18 49.78	75.02	.2	-9.71	-1.6	42.5	10.0	.04	.07
5_RHE	6_TIT	1995 10 23	21 11 36.85	-175.23	.2	20.39	-2.1	23.7	5.0	.07	.06
5_RHE	6_TIT	1995 10 23	21 11 36.85	-175.23	.2	20.39	-2.1	23.7	5.0	.07	.06

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Table I (continued)

1	2	3	4	5	6	7	8	9	10	11	12
5_RHE	6_TIT	1995 10 23	21 12 44.63	-175.34	.1	20.41	-2.1	28.2	5.0	.07	.06
5_RHE	6_TIT	1995 10 23	21 13 19.24	-175.29	.1	20.48	-2.0	25.6	5.0	.07	.06
5_RHE	6_TIT	1995 10 23	21 13 19.24	-175.29	.1	20.48	-2.0	25.6	5.0	.07	.06
5_RHE	6_TIT	1995 10 23	21 18 56.97	-175.28	-.1	20.35	-2.1	30.0	5.0	.07	.06
5_RHE	6_TIT	1995 10 23	21 19 16.14	-175.12	.1	20.40	-2.1	36.4	5.0	.07	.06
5_RHE	6_TIT	1995 10 23	21 20 14.91	-175.20	.0	20.50	-2.0	26.9	5.0	.07	.06
5_RHE	6_TIT	1995 10 23	21 41 54.06	-174.73	-.1	20.48	-2.1	23.8	5.0	.07	.06
5_RHE	6_TIT	1995 10 23	21 42 33.67	-174.68	.0	20.53	-2.1	24.1	5.0	.07	.06
5_RHE	6_TIT	1995 10 23	21 43 1.02	-174.63	.0	20.61	-2.0	27.6	5.0	.07	.06
5_RHE	6_TIT	1995 10 23	21 43 18.15	-174.64	.0	20.56	-2.0	26.8	5.0	.07	.06
5_RHE	6_TIT	1995 10 23	21 43 35.02	-174.61	.0	20.55	-2.1	27.7	5.0	.07	.06
5_RHE	6_TIT	1995 10 23	21 58 8.88	-174.40	-.1	20.61	-2.0	26.4	5.0	.07	.06
5_RHE	6_TIT	1995 10 23	22 0 7.03	-174.07	.1	20.62	-2.0	22.0	5.0	.07	.06
5_RHE	6_TIT	1995 10 23	22 1 16.23	-174.25	-.1	20.72	-1.9	23.8	5.0	.07	.06
5_RHE	6_TIT	1995 10 23	22 1 43.09	-174.19	.0	20.60	-2.0	24.5	5.0	.07	.06
5_RHE	6_TIT	1995 10 23	22 2 13.14	-174.13	.0	20.66	-1.9	26.5	5.0	.07	.06
5_RHE	6_TIT	1995 10 23	22 26 28.94	-173.51	.1	20.71	-2.0	32.5	5.0	.07	.06
5_RHE	6_TIT	1995 10 23	22 27 9.25	-173.48	.1	20.72	-2.0	39.6	5.0	.07	.06
5_RHE	6_TIT	1995 10 23	22 28 5.49	-173.26	.3	20.67	-2.0	28.8	5.0	.07	.06
5_RHE	6_TIT	1995 10 23	22 29 17.72	-173.38	.1	20.85	-1.8	31.2	5.0	.07	.06
5_RHE	6_TIT	1995 10 23	22 42 19.15	-172.87	.3	20.73	-2.0	33.1	5.0	.07	.06
5_RHE	6_TIT	1995 10 23	22 43 17.48	-172.95	.2	20.71	-2.0	31.8	5.0	.07	.06
5_RHE	6_TIT	1995 10 23	22 44 31.85	-172.81	.3	20.49	-2.2	32.7	5.0	.07	.06
5_RHE	6_TIT	1995 11 2	19 2 52.00	-97.10	.3	3.80	-.7	5.0	2.0	.08	.06
5_RHE	6_TIT	1995 11 2	19 3 20.95	-97.36	.0	3.82	-.7	5.4	2.0	.08	.06
5_RHE	6_TIT	1995 11 2	19 4 2.86	-96.95	.4	3.56	-.9	4.1	2.0	.08	.06
5_RHE	6_TIT	1995 11 2	19 4 42.57	-97.04	.3	3.67	-.8	4.4	2.0	.08	.06
5_RHE	6_TIT	1995 11 2	19 5 12.94	-96.97	.4	3.64	-.9	3.8	2.0	.08	.06
5_RHE	6_TIT	1995 11 2	19 6 54.00	-96.98	.3	3.54	-1.0	4.0	2.0	.08	.06
5_RHE	6_TIT	1995 11 2	19 10 8.93	-97.06	.2	3.63	-.9	7.6	5.0	.08	.06
5_RHE	6_TIT	1995 11 2	19 10 29.42	-96.97	.3	3.65	-.8	10.6	5.0	.08	.06
5_RHE	6_TIT	1995 11 2	19 10 44.25	-96.94	.3	3.68	-.8	8.5	5.0	.08	.06
5_RHE	6_TIT	1995 11 2	19 11 1.55	-96.97	.3	3.52	-1.0	8.5	5.0	.08	.06
5_RHE	6_TIT	1995 11 2	19 12 32.46	-96.92	.3	3.65	-.8	8.5	5.0	.08	.06
5_RHE	6_TIT	1995 11 2	19 12 48.11	-96.94	.3	3.60	-.9	9.3	5.0	.08	.06
5_RHE	6_TIT	1995 11 2	19 13 8.10	-96.98	.3	3.66	-.8	7.7	5.0	.08	.06
5_RHE	6_TIT	1995 11 2	19 13 23.98	-96.92	.3	3.57	-.9	10.5	5.0	.08	.06
7_HYP	6_TIT	1995 10 3	20 35 56.90	38.59	.8	-5.88	-.1	4.1	10.0	.07	.10
7_HYP	6_TIT	1995 10 3	20 36 27.44	38.69	.9	-5.95	-.2	3.9	10.0	.07	.10
7_HYP	6_TIT	1995 10 3	20 36 45.73	38.37	.6	-5.66	.1	3.7	10.0	.07	.10

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Table I (continued)

1	2	3	4	5	6	7	8	9	10	11	12
7_HYP	6_TIT	1995 10 3	20 37 3.31	38.51	.7	-5.96	-.2	4.4	10.0	.07	.10
7_HYP	6_TIT	1995 10 3	20 37 31.32	38.54	.8	-5.95	-.1	3.8	10.0	.07	.10
7_HYP	6_TIT	1995 10 3	20 40 13.40	38.22	.5	-5.53	.3	5.2	10.0	.07	.10
7_HYP	6_TIT	1995 10 3	20 48 11.97	37.94	.6	-5.69	.0	6.0	10.0	.07	.10
7_HYP	6_TIT	1995 10 3	20 48 32.95	38.00	.7	-5.88	-.2	6.0	10.0	.07	.10
7_HYP	6_TIT	1995 10 3	20 48 53.33	37.96	.7	-5.78	-.1	6.3	10.0	.07	.10
7_HYP	6_TIT	1995 10 3	20 49 32.00	37.93	.7	-5.63	.1	5.3	10.0	.07	.10
7_HYP	6_TIT	1995 10 3	20 54 41.50	37.65	.6	-5.96	-.3	3.2	10.0	.07	.10
7_HYP	6_TIT	1995 10 3	20 55 1.71	37.69	.7	-5.83	-.1	4.8	10.0	.07	.10
7_HYP	6_TIT	1995 10 3	20 55 20.55	37.69	.7	-6.03	-.3	4.7	10.0	.07	.10
7_HYP	6_TIT	1995 10 3	20 55 38.46	37.65	.7	-5.93	-.2	3.4	10.0	.07	.10
7_HYP	6_TIT	1995 10 3	21 1 54.31	37.38	.7	-5.97	-.3	4.0	10.0	.07	.10
7_HYP	6_TIT	1995 10 3	21 2 13.21	37.29	.6	-5.97	-.3	4.6	10.0	.07	.10
7_HYP	6_TIT	1995 10 3	21 2 31.66	37.16	.5	-6.10	-.4	4.8	10.0	.07	.10
7_HYP	6_TIT	1995 10 3	21 2 49.51	37.27	.6	-5.99	-.3	4.3	10.0	.07	.10
7_HYP	6_TIT	1995 10 3	22 27 38.91	33.88	.9	-5.50	-.1	3.6	10.0	.10	.11
7_HYP	6_TIT	1995 10 3	22 28 40.98	33.53	.6	-5.51	-.1	4.5	10.0	.10	.11
7_HYP	6_TIT	1995 10 3	22 29 19.42	33.62	.7	-5.45	.0	5.1	10.0	.10	.11
7_HYP	6_TIT	1995 10 3	22 29 38.04	33.64	.7	-5.39	.0	3.9	10.0	.10	.11
7_HYP	6_TIT	1995 10 3	22 44 39.26	33.21	.9	-5.12	.2	3.5	10.0	.10	.11
7_HYP	6_TIT	1995 10 3	22 45 1.67	32.92	.6	-5.34	.0	4.6	10.0	.10	.11
7_HYP	6_TIT	1995 10 3	22 45 20.57	33.10	.8	-5.27	.0	4.2	10.0	.10	.11
7_HYP	6_TIT	1995 10 3	22 45 38.75	33.03	.8	-5.49	-.2	3.7	10.0	.10	.11
7_HYP	6_TIT	1995 10 3	22 45 56.65	33.07	.8	-5.40	-.1	4.9	10.0	.10	.11
7_HYP	6_TIT	1995 10 3	22 50 56.71	32.88	.8	-5.31	.0	3.4	10.0	.10	.11
7_HYP	6_TIT	1995 10 3	22 51 15.71	32.56	.5	-5.45	-.2	4.3	10.0	.10	.11
7_HYP	6_TIT	1995 10 3	22 51 33.95	32.65	.6	-5.65	-.3	4.5	10.0	.10	.11
7_HYP	6_TIT	1995 10 3	22 51 52.07	32.55	.5	-5.55	-.2	4.6	10.0	.10	.11
7_HYP	6_TIT	1995 10 3	22 52 12.18	32.72	.7	-5.30	.0	4.5	10.0	.10	.11
7_HYP	6_TIT	1995 10 3	22 59 1.92	32.29	.6	-5.75	-.5	4.1	10.0	.10	.11
7_HYP	6_TIT	1995 10 3	23 3 4.47	32.30	.8	-5.45	-.2	4.9	10.0	.10	.11
7_HYP	6_TIT	1995 10 3	23 3 23.09	32.26	.8	-5.33	-.1	4.4	10.0	.10	.11
7_HYP	6_TIT	1995 10 3	23 3 41.27	32.09	.6	-5.34	-.1	5.0	10.0	.10	.11
7_HYP	6_TIT	1995 10 3	23 3 59.01	32.11	.6	-5.26	.0	3.7	10.0	.10	.11
7_HYP	6_TIT	1995 10 3	23 4 17.08	32.17	.7	-5.31	.0	4.6	10.0	.10	.11
7_HYP	6_TIT	1995 10 4	0 19 39.43	29.07	.8	-4.97	.0	3.0	10.0	.13	.17
7_HYP	6_TIT	1995 10 4	0 20 15.08	29.25	1.0	-5.51	-.5	3.0	10.0	.13	.17
7_HYP	6_TIT	1995 10 4	0 20 32.93	29.01	.7	-5.38	-.4	2.2	10.0	.13	.17
7_HYP	6_TIT	1995 10 4	0 20 50.89	28.91	.6	-5.07	-.1	2.7	10.0	.13	.17
7_HYP	6_TIT	1995 10 4	0 36 42.53	28.41	.8	-5.14	-.2	2.1	15.0	.13	.17
7_HYP	6_TIT	1995 10 4	0 37 5.82	28.05	.5	-5.04	-.1	2.2	15.0	.13	.17

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Table I (continued)

1	2	3	4	5	6	7	8	9	10	11	12
7_HYP	6_TIT	1995 10 4	0 37 29.05	28.23	.7	-5.18	-.3	2.2	15.0	.13	.17
7_HYP	6_TIT	1995 10 14	19 19 1.07	-83.92	.6	3.25	.3	2.1	10.0	.11	.15
7_HYP	6_TIT	1995 10 14	19 19 1.07	-83.91	.6	3.25	.3	2.1	10.0	.11	.15
7_HYP	6_TIT	1995 10 14	19 19 59.84	-83.68	.8	3.34	.4	2.1	10.0	.11	.15
7_HYP	6_TIT	1995 10 14	19 19 59.84	-83.70	.8	3.37	.5	2.1	10.0	.11	.15
7_HYP	6_TIT	1995 10 14	19 26 15.09	-83.36	1.3	3.33	.4	1.5	10.0	.11	.15
7_HYP	6_TIT	1995 10 14	19 26 15.09	-83.42	1.2	3.26	.4	1.6	10.0	.11	.15
7_HYP	6_TIT	1995 10 14	19 27 10.79	-83.42	1.2	3.27	.4	2.5	10.0	.11	.15
7_HYP	6_TIT	1995 10 14	19 27 10.79	-83.42	1.2	3.26	.4	2.5	10.0	.11	.15
7_HYP	6_TIT	1995 10 14	19 27 10.79	-83.42	1.2	3.26	.4	2.5	10.0	.11	.15
7_HYP	6_TIT	1995 10 14	19 27 29.08	-83.34	1.3	3.24	.3	2.2	10.0	.11	.15
7_HYP	6_TIT	1995 10 14	19 27 29.08	-83.34	1.3	3.24	.3	2.2	10.0	.11	.15
7_HYP	6_TIT	1995 10 14	19 27 48.85	-83.56	1.1	2.92	.0	2.9	10.0	.11	.15
7_HYP	6_TIT	1995 10 14	19 27 48.85	-83.56	1.1	2.92	.0	2.2	10.0	.11	.15
7_HYP	6_TIT	1995 10 14	19 41 31.36	-84.10	.8	2.90	.0	2.4	10.0	.11	.15
7_HYP	6_TIT	1995 10 14	19 41 31.36	-84.17	.7	2.82	-.1	2.7	10.0	.11	.15
7_HYP	6_TIT	1995 10 14	19 41 50.42	-83.88	1.0	3.29	.4	1.6	10.0	.11	.15
7_HYP	6_TIT	1995 10 14	19 41 50.42	-83.90	1.0	3.30	.4	1.5	10.0	.11	.15
7_HYP	6_TIT	1995 10 14	19 42 9.92	-83.80	1.1	2.88	.0	2.5	10.0	.11	.15
7_HYP	6_TIT	1995 10 14	19 42 9.92	-83.84	1.1	2.91	.0	2.4	10.0	.11	.15
7_HYP	6_TIT	1995 10 14	19 42 29.75	-84.14	.8	3.15	.3	2.1	10.0	.11	.15
7_HYP	6_TIT	1995 10 14	19 42 29.75	-83.90	1.0	3.16	.3	2.2	10.0	.11	.15
7_HYP	6_TIT	1995 10 14	19 43 12.81	-83.85	1.1	2.78	-.1	3.5	15.0	.11	.15
7_HYP	6_TIT	1995 10 14	19 43 46.70	-83.94	1.0	2.99	.1	2.7	15.0	.11	.15
7_HYP	6_TIT	1995 10 14	19 50 1.29	-83.85	1.2	2.53	-.4	2.0	10.0	.11	.15
7_HYP	6_TIT	1995 10 14	19 50 1.29	-83.83	1.2	2.61	-.3	2.2	10.0	.11	.15
7_HYP	6_TIT	1995 10 14	19 50 41.99	-84.10	.9	2.72	-.2	1.8	10.0	.11	.15
7_HYP	6_TIT	1995 10 14	19 51 6.16	-83.98	1.0	2.35	-.6	2.0	10.0	.11	.15
7_HYP	6_TIT	1995 10 14	20 48 9.44	-85.01	1.0	2.50	-.5	1.4	10.0	.14	.20
7_HYP	6_TIT	1995 10 14	20 48 29.99	-84.98	1.0	2.82	-.2	1.7	10.0	.14	.20
7_HYP	6_TIT	1995 10 14	20 48 49.59	-85.17	.8	3.08	.1	1.4	10.0	.14	.20
7_HYP	6_TIT	1995 10 14	20 49 30.18	-84.91	1.1	2.86	-.1	1.2	10.0	.14	.20
7_HYP	6_TIT	1995 10 14	20 58 23.46	-85.14	.9	3.45	.4	1.0	10.0	.14	.20
7_HYP	6_TIT	1995 10 14	20 58 50.37	-85.46	.6	3.35	.4	1.5	10.0	.14	.20
7_HYP	6_TIT	1995 10 14	21 0 24.73	-85.45	.7	2.95	-.1	1.2	10.0	.14	.20
7_HYP	6_TIT	1995 10 14	21 8 45.87	-85.32	1.0	3.41	.4	2.3	10.0	.14	.20
7_HYP	6_TIT	1995 10 14	21 13 14.95	-85.54	.8	3.24	.2	2.2	15.0	.14	.20
7_HYP	6_TIT	1995 10 14	21 13 41.48	-85.53	.8	2.87	-.1	3.0	15.0	.14	.20
7_HYP	6_TIT	1995 10 14	21 14 49.92	-85.62	.8	2.83	-.2	2.2	15.0	.14	.20
7_HYP	6_TIT	1995 10 14	21 15 26.28	-85.69	.7	3.09	.1	1.8	15.0	.14	.20
7_HYP	6_TIT	1995 10 14	21 17 58.70	-85.35	1.1	3.48	.5	1.3	10.0	.14	.20

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Table I (continued)

1	2	3	4	5	6	7	8	9	10	11	12
7_HYP	6_TIT	1995 10 14	21 18 26.54	-85.29	1.2	3.19	.2	2.0	10.0	.14	.20
7_HYP	6_TIT	1995 10 14	21 18 49.78	-85.74	.7	3.04	.0	1.6	10.0	.14	.20
7_HYP	6_TIT	1995 10 23	21 6 39.93	110.64	-.2	.09	.0	1.9	15.0	.10	.08
7_HYP	6_TIT	1995 10 23	21 7 18.48	110.73	-.2	.18	.1	1.8	15.0	.10	.08
7_HYP	6_TIT	1995 10 23	21 24 30.48	111.72	-.1	.17	.3	2.3	15.0	.10	.08
7_HYP	6_TIT	1995 10 23	21 25 4.92	111.83	.0	.10	.2	1.8	15.0	.10	.08
7_HYP	6_TIT	1995 10 23	21 38 41.99	112.25	-.2	-.07	.0	1.9	15.0	.10	.08
7_HYP	6_TIT	1995 10 23	21 39 10.61	112.53	.1	-.08	.0	1.7	15.0	.10	.08
7_HYP	6_TIT	1995 10 23	21 46 19.41	112.73	-.1	.09	.2	1.7	15.0	.10	.08
7_HYP	6_TIT	1995 10 23	21 46 48.74	112.70	-.1	.13	.2	1.2	15.0	.10	.08
7_HYP	6_TIT	1995 10 23	21 47 14.66	112.89	.0	.13	.2	1.3	15.0	.10	.08
7_HYP	6_TIT	1995 10 23	21 55 44.81	113.35	.1	.03	.2	1.6	15.0	.10	.08
7_HYP	6_TIT	1995 10 23	22 9 53.14	113.65	-.3	-.07	.2	3.1	15.0	.10	.08
7_HYP	6_TIT	1995 10 23	22 24 18.60	114.59	.0	-.14	.2	3.0	15.0	.10	.08
7_HYP	6_TIT	1995 10 23	22 30 17.59	114.85	-.1	-.31	.0	2.9	15.0	.10	.08
7_HYP	6_TIT	1995 10 23	22 30 44.17	114.90	.0	-.32	.0	3.3	15.0	.10	.08
7_HYP	6_TIT	1995 10 23	22 31 12.79	114.74	-.2	-.29	.0	3.1	15.0	.10	.08
7_HYP	6_TIT	1995 10 23	22 38 34.67	115.26	.0	-.58	-.2	2.2	15.0	.10	.08
7_HYP	6_TIT	1995 10 23	22 39 3.06	115.26	.0	-.59	-.2	2.4	15.0	.10	.08
7_HYP	6_TIT	1995 10 23	22 39 27.94	115.35	.1	-.47	-.1	2.5	15.0	.10	.08
7_HYP	6_TIT	1995 10 23	22 40 22.70	115.16	-.2	-.31	.1	3.6	15.0	.10	.08
8_IAP	6_TIT	1995 8 23	0 33 49.93	-163.16	1.0	39.82	.0	15.1	2.0	.13	.18
8_IAP	6_TIT	1995 8 23	0 35 40.77	-163.35	.8	39.76	-.1	9.4	2.0	.13	.18
8_IAP	6_TIT	1995 8 23	0 35 53.68	-163.55	.6	39.62	-.2	12.3	2.0	.13	.18
8_IAP	6_TIT	1995 8 23	0 46 42.18	-162.83	1.0	39.49	-.2	8.8	2.0	.13	.18
8_IAP	6_TIT	1995 8 23	0 47 .09	-163.18	.7	39.70	.0	14.0	2.0	.13	.18
8_IAP	6_TIT	1995 8 23	0 48 12.21	-162.81	1.0	39.41	-.3	10.0	2.0	.13	.18
8_IAP	6_TIT	1995 8 23	0 48 26.32	-162.83	1.0	39.09	-.6	10.5	2.0	.13	.18
8_IAP	6_TIT	1995 8 23	0 48 39.29	-162.77	1.1	39.16	-.6	9.9	2.0	.13	.18
8_IAP	6_TIT	1995 8 23	1 7 13.67	-162.45	1.0	39.39	-.1	8.6	2.0	.13	.18
8_IAP	6_TIT	1995 8 23	1 7 50.80	-162.54	.9	39.32	-.2	10.8	2.0	.13	.18
8_IAP	6_TIT	1995 8 23	1 8 2.88	-162.16	1.3	38.96	-.6	12.8	2.0	.13	.18
8_IAP	6_TIT	1995 8 23	1 8 31.11	-162.44	1.0	39.37	-.1	15.9	2.0	.13	.18
8_IAP	6_TIT	1995 8 23	1 9 10.22	-162.16	1.3	38.84	-.7	29.6	2.0	.13	.18
8_IAP	6_TIT	1995 8 23	1 9 24.01	-162.25	1.2	39.41	-.1	10.2	2.0	.13	.18
8_IAP	6_TIT	1995 8 23	1 9 37.68	-162.44	1.0	39.49	.0	18.2	2.0	.13	.18
8_IAP	6_TIT	1995 8 23	1 9 52.73	-162.55	.9	38.89	-.6	11.9	2.0	.13	.18
8_IAP	6_TIT	1995 8 23	1 10 22.72	-162.39	1.0	38.92	-.6	10.6	2.0	.13	.18
8_IAP	6_TIT	1995 8 23	1 10 56.83	-162.43	1.0	38.84	-.7	10.5	2.0	.13	.18
8_IAP	6_TIT	1995 8 23	1 11 29.24	-162.15	1.2	39.18	-.3	11.6	2.0	.13	.18

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Table I (continued)

1	2	3	4	5	6	7	8	9	10	11	12
8_IAP	6_TIT	1995 8 23	1 12 55.09	-161.99	1.4	39.38	-.1	12.8	2.0	.13	.18
8_IAP	6_TIT	1995 8 23	1 13 49.90	-162.12	1.2	39.09	-.4	4.8	2.0	.13	.18
8_IAP	6_TIT	1995 8 23	1 14 51.47	-162.08	1.2	39.19	-.3	13.4	2.0	.13	.18
8_IAP	6_TIT	1995 8 23	1 15 16.68	-162.17	1.1	39.29	-.2	10.4	2.0	.13	.18
8_IAP	6_TIT	1995 8 23	1 15 30.03	-162.14	1.1	39.08	-.4	8.7	2.0	.13	.18
8_IAP	6_TIT	1995 8 23	1 15 55.85	-162.15	1.1	39.00	-.5	11.5	2.0	.13	.18
8_IAP	6_TIT	1995 8 23	1 23 18.05	-162.21	.9	39.24	-.2	8.8	2.0	.13	.18
8_IAP	6_TIT	1995 8 23	1 24 6.17	-162.06	1.1	39.28	-.1	11.5	2.0	.13	.18
8_IAP	6_TIT	1995 8 23	1 24 36.98	-162.05	1.1	39.28	-.1	5.3	2.0	.13	.18
8_IAP	6_TIT	1995 8 23	1 24 50.27	-161.97	1.1	39.11	-.3	9.6	2.0	.13	.18
8_IAP	6_TIT	1995 8 23	1 25 15.87	-162.02	1.1	38.88	-.5	6.0	2.0	.13	.18
8_IAP	6_TIT	1995 8 23	1 25 52.01	-161.86	1.2	39.32	-.1	8.0	2.0	.13	.18
8_IAP	6_TIT	1995 8 23	1 26 5.85	-162.01	1.1	39.06	-.3	9.1	2.0	.13	.18
8_IAP	6_TIT	1995 8 23	1 26 21.17	-161.99	1.1	39.27	-.1	7.7	2.0	.13	.18
8_IAP	6_TIT	1995 8 23	1 26 35.78	-161.82	1.3	39.14	-.2	10.7	2.0	.13	.18
8_IAP	6_TIT	1995 8 23	1 26 51.44	-162.02	1.0	39.38	.0	9.7	2.0	.13	.18
8_IAP	6_TIT	1995 8 23	1 27 27.30	-161.70	1.4	38.83	-.5	7.9	2.0	.13	.18
8_IAP	6_TIT	1995 8 23	1 28 22.50	-161.93	1.1	39.09	-.2	9.2	2.0	.13	.18
8_IAP	6_TIT	1995 8 23	1 28 35.63	-161.94	1.1	39.25	-.1	11.0	2.0	.13	.18
8_IAP	6_TIT	1995 8 23	1 29 15.56	-161.91	1.1	38.78	-.5	10.2	2.0	.13	.18
8_IAP	6_TIT	1995 8 23	1 32 2.64	-161.63	1.3	38.94	-.4	7.4	2.0	.13	.18
8_IAP	6_TIT	1995 8 23	1 32 16.21	-162.07	.9	39.19	-.1	9.7	2.0	.13	.18
8_IAP	6_TIT	1995 8 23	1 32 31.54	-161.95	1.0	38.94	-.4	9.9	2.0	.13	.18
8_IAP	6_TIT	1995 8 23	1 32 42.85	-161.78	1.1	39.22	-.1	11.2	2.0	.13	.18
8_IAP	6_TIT	1995 8 23	1 33 8.12	-161.87	1.0	38.78	-.5	8.5	2.0	.13	.18
8_IAP	6_TIT	1995 8 23	1 33 36.46	-161.84	1.1	38.87	-.4	12.6	2.0	.13	.18
8_IAP	6_TIT	1995 8 23	1 34 .84	-161.99	.9	39.18	-.1	8.9	2.0	.13	.18
8_IAP	6_TIT	1995 8 23	1 34 25.34	-161.95	.9	39.29	.0	9.9	2.0	.13	.18
8_IAP	6_TIT	1995 8 23	1 34 37.86	-161.55	1.3	39.18	-.1	9.6	2.0	.13	.18
8_IAP	6_TIT	1995 8 23	1 34 51.43	-161.72	1.1	39.20	-.1	9.6	2.0	.13	.18
8_IAP	6_TIT	1995 8 23	1 46 17.07	-161.61	1.0	38.99	-.2	11.1	2.0	.13	.18
8_IAP	6_TIT	1995 8 23	1 46 29.26	-161.61	1.0	38.97	-.2	10.3	2.0	.13	.18
8_IAP	6_TIT	1995 8 23	1 47 10.84	-161.84	.7	38.99	-.2	11.6	2.0	.13	.18
8_IAP	6_TIT	1995 8 23	1 47 44.18	-161.61	.9	39.10	.0	8.4	2.0	.13	.18
8_IAP	6_TIT	1995 8 23	1 47 55.60	-161.56	1.0	38.94	-.2	11.3	2.0	.13	.18
8_IAP	6_TIT	1995 8 23	1 48 42.56	-161.57	1.0	38.88	-.2	8.0	2.0	.13	.18
8_IAP	6_TIT	1995 8 23	1 49 8.32	-161.78	.7	39.18	.1	8.1	2.0	.13	.18
8_IAP	6_TIT	1995 8 23	1 49 55.56	-161.51	1.0	38.87	-.2	8.3	2.0	.13	.18
8_IAP	6_TIT	1995 8 23	1 50 32.69	-161.47	1.0	38.93	-.2	11.1	2.0	.13	.18
8_IAP	6_TIT	1995 8 23	1 50 45.76	-161.49	1.0	38.98	-.1	9.6	2.0	.13	.18
8_IAP	6_TIT	1995 8 24	0 33 45.48	-134.13	.6	25.93	-.2	4.0	2.0	.11	.08

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Table I (continued)

1	2	3	4	5	6	7	8	9	10	11	12
8_IAP	6_TIT	1995 8 24	0 33 59.54	-134.05	.7	25.87	-.3	4.7	2.0	.11	.08
8_IAP	6_TIT	1995 8 24	0 34 33.60	-133.89	.8	25.74	-.4	5.7	2.0	.11	.08
8_IAP	6_TIT	1995 8 24	0 34 59.03	-134.05	.6	26.04	-.1	4.8	2.0	.11	.08
8_IAP	6_TIT	1995 8 24	0 36 14.88	-133.97	.7	25.94	-.2	5.9	2.0	.11	.08
8_IAP	6_TIT	1995 8 24	0 37 10.25	-133.89	.8	25.90	-.2	5.6	2.0	.11	.08
8_IAP	6_TIT	1995 8 24	0 37 23.87	-134.10	.6	25.86	-.3	5.0	2.0	.11	.08
8_IAP	6_TIT	1995 8 24	0 45 12.00	-133.84	.7	26.02	.0	5.8	2.0	.11	.08
8_IAP	6_TIT	1995 8 24	0 45 51.27	-133.96	.6	25.85	-.2	4.3	2.0	.11	.08
8_IAP	6_TIT	1995 8 24	0 46 11.04	-134.08	.5	25.75	-.3	6.0	2.0	.11	.08
8_IAP	6_TIT	1995 8 24	0 46 47.84	-133.98	.6	26.00	.0	3.7	2.0	.11	.08
8_IAP	6_TIT	1995 8 24	0 47 35.79	-133.79	.7	25.92	-.1	3.8	2.0	.11	.08
8_IAP	6_TIT	1995 8 24	0 49 17.29	-133.84	.7	25.86	-.2	3.7	2.0	.11	.08
8_IAP	6_TIT	1995 8 24	0 50 30.84	-133.74	.8	25.86	-.1	6.0	2.0	.11	.08
8_IAP	6_TIT	1995 8 24	1 15 38.32	-133.50	.5	25.62	-.2	6.4	2.0	.11	.08
8_IAP	6_TIT	1995 8 24	1 15 51.34	-133.39	.6	25.56	-.2	5.5	2.0	.11	.08
8_IAP	6_TIT	1995 8 24	1 16 41.49	-133.53	.4	25.62	-.1	5.1	2.0	.11	.08
8_IAP	6_TIT	1995 8 24	1 17 2.58	-133.42	.5	25.53	-.2	7.9	2.0	.11	.08
8_IAP	6_TIT	1995 8 24	1 17 26.20	-133.23	.7	25.56	-.2	6.4	2.0	.11	.08
8_IAP	6_TIT	1995 8 24	1 17 57.84	-133.25	.7	25.67	-.1	6.9	2.0	.11	.08
8_IAP	6_TIT	1995 8 24	1 18 27.28	-133.18	.8	25.46	-.3	7.7	2.0	.11	.08
8_IAP	6_TIT	1995 8 24	1 19 33.19	-133.25	.7	25.44	-.3	5.7	2.0	.11	.08
8_IAP	6_TIT	1995 8 24	1 20 15.37	-133.45	.4	25.44	-.3	5.7	2.0	.11	.08
8_IAP	6_TIT	1995 8 24	1 20 39.21	-133.23	.7	25.54	-.2	5.1	2.0	.11	.08
8_IAP	6_TIT	1995 8 24	1 21 8.26	-133.07	.8	25.62	-.1	5.0	2.0	.11	.08
8_IAP	6_TIT	1995 8 24	1 29 25.06	-132.99	.8	25.37	-.2	4.3	2.0	.11	.08
8_IAP	6_TIT	1995 8 24	1 30 30.42	-133.14	.7	25.26	-.3	6.7	2.0	.11	.08
8_IAP	6_TIT	1995 8 24	1 30 51.19	-132.88	.9	25.15	-.4	4.1	2.0	.11	.08
8_IAP	6_TIT	1995 8 24	1 31 12.06	-132.95	.8	25.36	-.2	5.8	2.0	.11	.08
8_IAP	6_TIT	1995 8 24	1 31 36.99	-133.17	.6	25.31	-.3	6.1	2.0	.11	.08
8_IAP	6_TIT	1995 8 24	1 31 52.54	-132.75	1.0	25.12	-.5	4.9	2.0	.11	.08
8_IAP	6_TIT	1995 8 24	1 32 17.53	-132.80	1.0	25.20	-.4	4.6	2.0	.11	.08
8_IAP	6_TIT	1995 8 24	1 32 29.17	-132.87	.9	25.22	-.4	5.8	2.0	.11	.08
8_IAP	6_TIT	1995 8 24	1 32 44.88	-132.86	.9	25.30	-.3	5.6	2.0	.11	.08
8_IAP	6_TIT	1995 8 24	1 32 57.30	-133.03	.7	25.18	-.4	5.9	2.0	.11	.08
8_IAP	6_TIT	1995 8 24	1 33 9.32	-133.08	.7	25.34	-.2	5.4	2.0	.11	.08
8_IAP	6_TIT	1995 8 25	0 7 23.90	-117.30	.8	13.25	-.2	3.5	2.0	.12	.07
8_IAP	6_TIT	1995 8 25	0 7 46.04	-117.32	.8	13.15	-.3	6.8	2.0	.12	.07
8_IAP	6_TIT	1995 8 25	0 8 15.15	-117.59	.5	13.21	-.2	6.4	2.0	.12	.07
8_IAP	6_TIT	1995 8 25	0 8 40.42	-117.57	.5	13.31	-.1	6.1	2.0	.12	.07
8_IAP	6_TIT	1995 8 25	0 8 58.54	-117.37	.7	13.20	-.2	6.5	2.0	.12	.07
8_IAP	6_TIT	1995 8 25	0 9 12.60	-117.30	.8	13.19	-.2	5.1	2.0	.12	.07

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Table I (continued)

1	2	3	4	5	6	7	8	9	10	11	12
8_IAP	6_TIT	1995 8 25	0 9 32.43	-117.47	.6	13.30	-.1	6.6	2.0	.12	.07
8_IAP	6_TIT	1995 8 25	0 9 48.85	-117.36	.7	13.21	-.2	6.2	2.0	.12	.07
8_IAP	6_TIT	1995 8 25	0 10 2.75	-117.35	.8	13.08	-.3	6.3	2.0	.12	.07
8_IAP	6_TIT	1995 8 25	0 10 23.40	-117.26	.8	13.33	-.1	6.7	2.0	.12	.07
8_IAP	6_TIT	1995 8 25	0 10 52.84	-117.16	.9	13.27	-.1	5.4	2.0	.12	.07
8_IAP	6_TIT	1995 8 25	0 11 8.27	-117.53	.6	13.10	-.3	5.2	2.0	.12	.07
8_IAP	6_TIT	1995 8 25	0 11 27.83	-117.35	.8	13.16	-.2	7.5	2.0	.12	.07
8_IAP	6_TIT	1995 8 25	0 11 39.80	-117.32	.8	13.21	-.2	6.2	2.0	.12	.07
8_IAP	6_TIT	1995 8 25	0 12 6.33	-117.20	.9	13.27	-.1	6.3	2.0	.12	.07
8_IAP	6_TIT	1995 8 25	0 12 47.25	-117.34	.8	13.22	-.1	6.3	2.0	.12	.07
8_IAP	6_TIT	1995 8 25	0 13 11.03	-117.54	.6	13.33	.0	5.6	2.0	.12	.07
8_IAP	6_TIT	1995 8 25	0 27 29.96	-117.39	.6	13.08	.0	6.2	2.0	.12	.07
8_IAP	6_TIT	1995 8 25	0 28 26.15	-117.34	.7	13.25	.1	6.7	2.0	.12	.07
8_IAP	6_TIT	1995 8 25	0 29 5.86	-117.49	.5	13.17	.1	7.1	2.0	.12	.07
8_IAP	6_TIT	1995 8 25	0 29 17.67	-117.25	.8	13.07	.0	6.9	2.0	.12	.07
8_IAP	6_TIT	1995 8 25	0 29 30.13	-117.18	.8	13.08	.0	4.8	2.0	.12	.07
8_IAP	6_TIT	1995 8 25	0 30 5.23	-117.23	.8	13.07	.0	6.1	2.0	.12	.07
8_IAP	6_TIT	1995 8 25	0 30 41.54	-117.44	.6	13.03	-.1	7.3	2.0	.12	.07
8_IAP	6_TIT	1995 10 3	20 35 56.90	127.83	-.7	.46	.2	30.0	10.0	.03	.05
8_IAP	6_TIT	1995 10 3	20 36 45.73	127.85	-.7	.46	.2	28.7	10.0	.03	.05
8_IAP	6_TIT	1995 10 3	20 37 3.31	127.79	-.8	.41	.1	39.8	10.0	.03	.05
8_IAP	6_TIT	1995 10 3	20 37 31.32	127.79	-.8	.41	.1	25.5	10.0	.03	.05
8_IAP	6_TIT	1995 10 3	20 39 21.66	127.93	-.7	.48	.2	34.6	10.0	.03	.05
8_IAP	6_TIT	1995 10 3	20 40 31.25	127.88	-.7	.48	.2	27.8	10.0	.03	.05
8_IAP	6_TIT	1995 10 3	20 40 49.11	127.91	-.7	.47	.2	28.6	10.0	.03	.05
8_IAP	6_TIT	1995 10 3	20 41 7.01	127.87	-.7	.45	.1	27.1	10.0	.03	.05
8_IAP	6_TIT	1995 10 3	20 48 11.97	127.84	-.8	.67	.3	25.5	10.0	.03	.05
8_IAP	6_TIT	1995 10 3	20 48 32.95	127.89	-.7	.68	.3	30.0	10.0	.03	.05
8_IAP	6_TIT	1995 10 3	20 48 53.33	127.93	-.7	.65	.3	33.1	10.0	.03	.05
8_IAP	6_TIT	1995 10 3	20 49 13.60	127.89	-.7	.66	.3	28.9	10.0	.03	.05
8_IAP	6_TIT	1995 10 3	20 49 32.00	127.90	-.7	.61	.2	32.5	10.0	.03	.05
8_IAP	6_TIT	1995 10 3	20 54 41.50	127.80	-.7	.52	.1	34.5	10.0	.03	.05
8_IAP	6_TIT	1995 10 3	20 55 1.71	127.83	-.7	.53	.1	33.1	10.0	.03	.05
8_IAP	6_TIT	1995 10 3	20 55 20.55	127.83	-.7	.51	.1	29.2	10.0	.03	.05
8_IAP	6_TIT	1995 10 3	20 55 38.46	127.78	-.8	.61	.2	27.1	10.0	.03	.05
8_IAP	6_TIT	1995 10 3	21 1 54.31	127.84	-.7	.65	.1	36.0	10.0	.03	.05
8_IAP	6_TIT	1995 10 3	21 2 13.21	127.75	-.8	.65	.1	26.1	10.0	.03	.05
8_IAP	6_TIT	1995 10 3	21 2 31.66	127.73	-.8	.72	.2	30.7	10.0	.03	.05
8_IAP	6_TIT	1995 10 3	21 2 49.51	127.77	-.7	.68	.1	30.6	10.0	.03	.05
8_IAP	6_TIT	1995 10 3	21 3 7.97	127.77	-.7	.72	.2	29.8	10.0	.03	.05
8_IAP	6_TIT	1995 10 3	22 27 38.91	127.79	-.7	1.44	.1	27.7	10.0	.03	.02

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Table I (continued)

1	2	3			4			5	6	7	8	9	10	11	12
8_IAP	6_TIT	1995	10	3	22	28	40.98	127.71	-.8	1.48	.2	29.3	10.0	.03	.02
8_IAP	6_TIT	1995	10	3	22	29	.75	127.71	-.8	1.48	.2	25.9	10.0	.03	.02
8_IAP	6_TIT	1995	10	3	22	29	19.42	127.76	-.7	1.51	.2	27.9	10.0	.03	.02
8_IAP	6_TIT	1995	10	3	22	45	1.67	127.80	-.7	1.58	.1	28.9	10.0	.03	.02
8_IAP	6_TIT	1995	10	3	22	45	20.57	127.84	-.7	1.59	.1	26.9	10.0	.03	.02
8_IAP	6_TIT	1995	10	3	22	45	38.75	127.74	-.8	1.55	.1	27.3	10.0	.03	.02
8_IAP	6_TIT	1995	10	3	22	50	56.71	127.74	-.8	1.63	.1	28.2	10.0	.03	.02
8_IAP	6_TIT	1995	10	3	22	51	33.95	127.76	-.7	1.61	.1	25.6	10.0	.03	.02
8_IAP	6_TIT	1995	10	3	22	51	52.07	127.79	-.7	1.63	.1	24.0	10.0	.03	.02
8_IAP	6_TIT	1995	10	3	22	52	12.18	127.81	-.7	1.66	.1	29.4	10.0	.03	.02
8_IAP	6_TIT	1995	10	3	22	58	21.94	127.74	-.8	1.73	.1	24.0	10.0	.03	.02
8_IAP	6_TIT	1995	10	3	22	58	43.74	127.77	-.7	1.76	.2	27.7	10.0	.03	.02
8_IAP	6_TIT	1995	10	3	22	59	1.92	127.78	-.7	1.75	.2	30.9	10.0	.03	.02
8_IAP	6_TIT	1995	10	3	22	59	42.57	127.71	-.8	1.75	.2	29.9	10.0	.03	.02
8_IAP	6_TIT	1995	10	3	23	3	41.27	127.75	-.7	1.83	.2	28.5	10.0	.03	.02
8_IAP	6_TIT	1995	10	3	23	3	59.01	127.79	-.7	1.87	.2	25.2	10.0	.03	.02
8_IAP	6_TIT	1995	10	3	23	4	17.08	127.78	-.7	1.82	.2	26.7	10.0	.03	.02
8_IAP	6_TIT	1995	10	4	0	19	39.43	127.81	-.8	2.53	.1	22.2	10.0	.06	.08
8_IAP	6_TIT	1995	10	4	0	19	57.50	127.88	-.7	2.46	.1	20.8	10.0	.06	.08
8_IAP	6_TIT	1995	10	4	0	20	15.08	127.80	-.8	2.60	.2	19.4	10.0	.06	.08
8_IAP	6_TIT	1995	10	4	0	20	32.93	127.73	-.9	2.48	.1	23.1	10.0	.06	.08
8_IAP	6_TIT	1995	10	4	0	20	50.89	127.79	-.8	2.34	-.1	23.0	10.0	.06	.08
8_IAP	6_TIT	1995	10	4	0	35	54.69	127.75	-.8	2.67	.1	19.6	15.0	.06	.08
8_IAP	6_TIT	1995	10	4	0	36	19.73	127.74	-.9	2.55	.0	20.4	15.0	.06	.08
8_IAP	6_TIT	1995	10	4	0	36	42.53	127.78	-.8	2.66	.1	14.3	15.0	.06	.08
8_IAP	6_TIT	1995	10	4	0	37	5.82	127.92	-.7	2.78	.2	18.5	15.0	.06	.08
8_IAP	6_TIT	1995	10	4	0	37	29.05	127.86	-.7	2.59	.0	18.2	15.0	.06	.08
8_IAP	6_TIT	1995	11	2	19	2	52.00	39.51	1.1	66.60	-.5	5.3	2.0	.07	.07
8_IAP	6_TIT	1995	11	2	19	3	20.95	39.51	1.2	66.69	-.4	4.2	2.0	.07	.07
8_IAP	6_TIT	1995	11	2	19	4	2.86	39.70	1.4	66.73	-.4	3.2	2.0	.07	.07
8_IAP	6_TIT	1995	11	2	19	4	42.57	39.61	1.4	66.72	-.4	4.2	2.0	.07	.07
8_IAP	6_TIT	1995	11	2	19	6	15.78	39.49	1.4	66.63	-.5	3.0	2.0	.07	.07
8_IAP	6_TIT	1995	11	2	19	6	37.47	39.53	1.5	66.79	-.4	3.6	2.0	.07	.07
8_IAP	6_TIT	1995	11	2	19	6	54.00	39.24	1.2	66.84	-.3	4.5	2.0	.07	.07
8_IAP	6_TIT	1995	11	2	19	10	8.93	38.83	1.0	66.64	-.6	6.1	5.0	.07	.07
8_IAP	6_TIT	1995	11	2	19	10	29.42	38.95	1.2	66.75	-.4	8.0	5.0	.07	.07
8_IAP	6_TIT	1995	11	2	19	10	44.25	38.78	1.0	66.86	-.3	6.8	5.0	.07	.07
8_IAP	6_TIT	1995	11	2	19	11	1.55	38.92	1.2	66.68	-.5	7.0	5.0	.07	.07
8_IAP	6_TIT	1995	11	2	19	12	32.46	38.74	1.1	66.70	-.5	7.4	5.0	.07	.07
8_IAP	6_TIT	1995	11	2	19	12	48.11	38.80	1.2	66.81	-.4	7.9	5.0	.07	.07
8_IAP	6_TIT	1995	11	2	19	13	8.10	38.69	1.1	66.60	-.6	7.1	5.0	.07	.07
8_IAP	6_TIT	1995	11	2	19	13	23.98	38.86	1.3	66.70	-.5	8.1	5.0	.07	.07

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ROMANIAN OBJECTIVES FOR THE TOTAL SOLAR ECLIPSE OF 1999 AUGUST 11*

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1. INTRODUCTION

It is well known that a total solar eclipse is an astronomical event that very rarely takes place twice on the same location on earth; even more unusual is that an astronomical observatory should have the chance to be situated right on the center line of totality, as is the case of Bucharest Observatory at the total solar eclipse of 11 August, 1999. The Astronomical Observatory in Timişoara is also situated within the totality band, at about 25 km from the center line southward.

In Romania the totality band crosses various zones, very different in relief, all very attractive from professional and tourist viewpoints. The eclipse band enters our country in the Banat region, whose main city is Timişoara, which, historically speaking, is mentioned in documents dating back to AD 1212. Today, Timişoara is well known as an important cultural, industrial, historical center as well as one of the biggest academic centers of Romania. Also nearby the center line (about 30 km northward), there is another important city, Arad.

Of a special interest are the mountains crossed by the eclipse, namely Poiana Ruscăi, the Mountains Lotru, the Mountains Parâng and, in the first place, the Mountains Retezat, where the Romanian Academy owns a natural reservation. The highest peaks favoring observations are Peleaga (2 509 m) in the Mountains Retezat and, Parâng (2 518 m), in the Mountains Parâng. The totality band will also cover Târgu Jiu, the place where a world famous sculptor of genius, Constantin Brâncuşi, raised his Infinite Column towards the sky.

Those who will come to Romania to watch the eclipse but will not be able to climb the mountains, as well as those who will want to avoid the crowded cities, will be able to watch the event also from the Sub-Carpathian hills, which are strewn with beautiful monasteries, especially along the river Olt.

Although less picturesque, the Bărăgan plain offers many facilities for setting up observation camps. Bucharest, the Capital city of Romania, is placed in the middle of this plain and offers the best observation conditions: there, the tourists will be able to observe the eclipse just from the balcony of their hotel.

* The paper was presented at Annual JOSO Meeting, held in Tenerife (Spain), October, 1996

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However, even if the mountains offer the advantages of their height and marvelous landscape and the hills those of their picturesque zones and homely villages, no less attractive is the shore of the Black Sea, where the weather is very stable in August and there are a hospitality industry and very good places where to make observations.

On August 11, 1999, in mid-summer, the Moon shadow will cross Romania at noon, when the Sun will be at 59° above the horizon.

2. THE PRESENT STATE OF BUCHAREST AND TIMIŞOARA OBSERVATORIES

The solar working group of the Bucharest Astronomical Observatory began its activity 41 years ago with a Zeiss refractor (13/195 cm) for white light observations of the solar photosphere and a smaller refractor (10/150 cm) with a Lyot-Öhman Hα filter.

From the very beginning we carried out solar patrol observations. The data obtained on active chromospherical phenomena, as well as the relative sunspot number and the sunspot positions were reported monthly to the Solar World Data Centers and to the Pulkovo Observatory. They were published in *Solar-Geophysical Data* and *Solnechnyie Dannye*, as well as in our yearly bulletin *Observations Solaires*.

Over many years we were concerned with:

– statistical studies of the solar activity phenomena;
– the morphology and dynamics of the active regions;
– forecasts of the solar activity;
– studies of the total solar irradiance variations;
– solar prominence spectroscopy;
– MHD modelling of solar activity;
– the coronal mass ejections, the link between solar and geomagnetic disturbances;
– coronal holes, sources of high speed plasma streams in the solar wind;
– the studies of the geomagnetic and ionospheric effects of the solar activity.

More informations about our activity can be found in Popovici (1969) and in the JOSO Annual Reports 1992 and since then (Mariş, 1992).

Beyond the two refractors already mentioned, the Solar Department also has other instruments which can be used for observations, such as:

– two Bardou refractors of 10.8/165 cm;
– two Zeiss refractors of 6.3/27 cm.
– a horizontal spectrograph created by ourselves, for the students' use, that includes: a 30 cm Jensch coelostat; a 20/225 cm objective; a Bausch and Lomb

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grating with 1200 grooves/mm and, the collimator and the camera mirrors of 10/200 cm.

Bucharest Observatory also has the following instruments:

– a double astrograph of Prin-Mertz construction (38/600 cm) with a field of 2° × 2°, with a photographic camera that uses 24 × 24 cm plates, and a 768 × 512 pixell CCD camera;

– a Cassegrain telescope (50/750 cm) Zeiss-Jena, with a photoelectric photometer with photomultiplier of type EMI 9502 B and with UBV-Johnson filters using a 375 × 242 – pixell CCD.

Timişoara Observatory has a Cassegrain telescope (30/169 cm) equipped with a photomultiplier of type EMI 9862 Q.

3. PAST EXPERIENCE

There were some Romanian astronomers who had the chance to participate in the total solar eclipse observations, such as **N. Coculescu**, the first director of the Bucharest Observatory, who was sent by the Romanian government in 1893 to accompany a French team in Senegal. His results are mentioned in "Rapport Annuel de l'Observatoire de Paris – 1893". A true champion of the eclipse observations was **N. Donici**. At the age of only 26, he observed the total solar eclipse at Elche, Spain. One year later, he left for Padang to observe the eclipse of 17/18 May, 1901. Three years later he chose Phnom-Penh as observation site. The eclipse of 29/30 August 1905 found him again in Spain, at Alcala de Chisvert. On 31 August 1932, he observed another eclipse at Cap Porpoise; he was there for the 4th Congress of the International Astronomical Union (Cambridge, Massachusetts). We have to mention that all the results of his observations were reported systematically to the competent commissions of the 1st International Union for Solar Studies.

Recently, Romania was covered by the totality band of the total solar eclipse of 15 February, 1961. The center line of that eclipse crossed our country in the region of Dobrogea (south – east), in the direction Zimnicea – Constanţa; the duration was of 2m 32s near Zimnicea and of 2m 37s near Constanţa. The height of the Sun above the horizon was of about 25°. Two observation expeditions went to Dobrogea, the weather forecasts being more favorable there. One was from Eastern Germany (Potsdam) and went to the village of Murfatlar (which is very famous for the wine of its vineyards and its wine cellars); the other one was from Hungary (Konkoly) and went to Adamclisi (a village renowned for its Roman "Tropaeum Traiani" monument). Unfortunately, the sky was cloudy at both sites.

Although Bucharest was situated in the totality band, 70 km from the center line, because of the bad weather forecasts the solar astronomers stayed home. The

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size of the total eclipse was of 1.009 at Bucharest as against 1.017 at the center line. The weather was bad in Bucharest, too. **Immediately after the last contact, the sky became blue and remained cloudless for the following weeks!** Then, besides the instruments for usual observations of the photosphere and chromosphere, a device was built, consisting of three teleobjectives (8/50 cm) with the polaroids in front of the plates, at angles of 120° in between. Two small Zeiss cameras (6.3/27 cm) were also adapted for white light polarization of the corona, using two polaroids at 90° in front of their objectives. The researchers wanted to photograph the solar corona using metal-interference filters (50 Å band width in spectral regions of Hα, 6563 Å, and in the green region FXIV, 5303 Å), with the telescopes existing at that time at the solar department. At the eclipse of 1961 the Romanians obtained only some fine negatives in white light with a Zeiss photogrammetric telescope (10.8/50 cm) set up in an airplane of the Ministry of Defence, which flew above the clouds. Two of the best negatives were used to determine the isophotes and the flattening coefficient by the Ludendorff method (Ţifrea, 1996).

4. MAIN OBJECTIVES TO BE ACHIEVED UNTIL THE ECLIPSE OF 1999

In 1996, three years before the big event of 1999, we were trying to outline what we have to do in the short time left, taking into account our precarious financial situation, small number of researchers and lack of experience.

Consequently, we have set up an ambitious plan involving several issues, namely:

– participation in the eclipse of February 26, 1998 (South America);

– astroclimatic investigations along the totality band, in order to establish the optimal sites for the setting up of instruments (this action was already started in 1995);

– training of students by special lectures in solar physics and attendance of courses on this topic at a NATO Advanced Study Institute ;

– appropriate technical endowment of the Bucharest and Timişoara Observatories.

Taking into account the fact that such an event will be very impressive for the public, we have also thought about a program of scientific education. The first objective of this program is the building of a **Planetarium** with a dome of 8.5 m diameter in Bucharest (actually, right in the park of the Bucharest Observatory), with 65 seats. Now we are working on the architectural and technical project. We hope that we shall be able to inaugurate the Planetarium in 1999.

Finally, to cover the extremely large range of problems raised by this event, as well as to collect the funds necessary for the scientific campaign, we have set up

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the **International Association "Eclips '99".** It is a non-governmental, apolitical and non-profit organization, including both individuals and legal persons. Its goal is to prepare optimum conditions for the observation of the total solar eclipse of 11 August, 1999. **"E'99"** will develop an ample program of national and international symposia and conferences and will publish specialized and promotional materials; it will sustain an intense publicity program both at home and abroad. To accomplish its goals, **"E'99"** collaborates with similar institutions from Romania and abroad, with specialists of related fields, as well as with cultural, tourist, commercial etc. institutions, in other words, with everybody who can contribute to the good preparation of such an event. The funds of **"E'99"** come from the subscriptions of its members, as well as from donations and legacies. **"E'99"** will continue its activity even after the eclipse, when it will become the **International Association "Astronomy 21",** whose main goal will be to keep up the interest in this science, at the same time old and modern.

Another important objective was a **NATO ARW "*Theoretical and Observational Problems Related to Solar Eclipses*"**, which was held in Romania, at Sinaia, from 1 to 5 June, 1996, and which was a great success.

5. OBSERVATIONAL PROJECTS FOR THE TOTAL SOLAR ECLIPSE OF 1999

We intend to present here, shortly, the projects related to the stable instruments of the Observatories in Bucharest and Timişoara (for more details, see Mariş, G., 1996). A special experiment for infrared coronal observations from space was proposed by our colleagues from Space Sciences Institute (in details, see Mariş, O., 1996).

Our projects are the following:

1. ***White light observations of the corona*** at Bucharest and Timişoara, during the totality phase;
2. ***Coronal structure observations*** at the distance of 1 – 5 solar radii (streamers, helmet, arches);
3. ***Coronal structure evolution;***
4. ***Spicules observations***;
5. ***Monochromatic coronal observations in green and red line, as well as in continuum***;
6. ***The determination of the contact times C1 and C4*** (exterior contacts);
7. ***Einstein Effect***;
8. ***IR Coronal Observations from Space:***

The Multichannel Infrared Spectrometer ISTOK-1, launched in April 1996, measures emission infrared spectrum in the 4-16 mm, using 64 separated channels.

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The optical system and detectors' array are placed on a two-axes oriented platform. Among the working regimes of the instrument are the platform orientation to the Sun and the solar investigation in the medium infrared range. We propose to acquire data in the mean infrared 4-16 mm during the eclipse. Such data can be used in analyses of the solar corona and of the circumsolar dust rings.

6. CONCLUSIONS

Naturally, we shall not be able to obtain any significant results only with our present instruments. Although the odds are not in our favor, we hope to succeed in acquiring CCD camera for all the present instruments, as well as a new Hα filter. The researchers of our institute are engaged in projects of the SOHO mission, while their colleagues from SSI are co-authors to some IR space experiments. That is why we hope that in the spatial field we shall be able to initiate interesting programs of eclipse observation.

Until the **total solar eclipse of 11 August, 1999** the time is very short for all the necessary preparations, which include very many other things besides the scientific part. Romania has to meet the last astronomical event of the century properly. The path of the eclipse through Europe was not chosen by us, the Romanians, but we have to make the best of this opportunity.

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FLORIN DIACU and PHILIP HOLMES, *Celestial Encounters. The Origins of Chaos and Stability*, Princeton University Press, Princeton, N.J., 1996, xviii + 234 p., ISBN 0-691-02743-9.

Without being well defined, the *history of ideas* constitutes today one of the main trends in the scientific literature. Within this framework, the book provides a wonderful picture of the ideas that led to the birth of dynamical systems theory, in which the chaos theory is imbedded in its turn. The greatest personalities of this field, together with their contributions, march past the reader in an order not chronological but logical. The text is structured on five chapters.

Chapter 1 narrates the story of Poincaré's *discovery of chaos*, but constitutes at the same time a popular introduction to the qualitative theory of differential equations, to the mathematical foundations of celestial mechanics and dynamical systems theory.

Chapter 2, of a more technical character, has George David Birkhoff and Steven Smale as central personages, and deals mainly with the *analytic, geometric, and symbolic methods* developed by them to understand Poincaré's crucial discoveries.

Presenting the problems of celestial mechanics that had been the departure point for such fruitful researches, Chapter 3 depicts the *theory of singularities* (collisional or not) in the n-body problem, and reviews the essential contributions brought by a pleiad of scientists, from Poincaré and Painlevé up to Zhihong Xia and Joseph Gerver.

The concept of *stability* (in the solar system or much more general) is discussed in Chapter 4, where the reader meets landmark names of the domain as Laplace, Lagrange, Poisson, Spiru Haret, or Liapunov.

Lastly, Chapter 5 is concerned with the celebrated *KAM theory*, which clarified and finalized the stability problem, and also projected a new light on the notion of chaos.

The book is amply illustrated, allowing a more profound insight in the geometric study of dynamical systems. The notes and the bibliographic list which follow the main text bring rich completions intended to a deeper understanding and a wider perspective of the subject.

It is hard to find a better judgment than that formulated by Steven Smale: "an excellent book combining scientific integrity and popular appeal".

Vasile Mioc

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NOTICE TO AUTHORS

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Manuscripts should be submitted in duplicate; they must be typewritten on white A4 – sized paper, onesided and doublespaced (enclosing abstract, references, footnotes and figure captions). The first page should contain: the article's title (brief and informative), author's name and affiliation, followed by an Abstract in English and Key words. The text should be clear and concise (it is recommended not to exceed 10 pages). The Abstract will present clearly the principal conclusions of the work, in no more than 10 – 15 lines.

Chapters and Paragraphs. Papers, except short notes, should be divided into Chapters, numbered by Arabic numerals. Chapters may be divided into Paragraphs denoted by the number of the Chapter and the number of Paragraph; each Chapter and each Paragraph should have a short descriptive title (e.g. "3.2. Results").

Formulae have to be numbered consecutively in Arabic numerals, too, but included in parenthesis on the right-hand side of the manuscript; all formulae should be written in legible form. The author should underline, in the text and in formulae, with lead pencil, all characters which he wants to be italics; the bold appearance will be indicated by double underline.

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