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LINE-STRENGTH CALCULATIONS FOR THE 0 → 1, 0 → 2, 0 → 3, AND 1 → 2 VIBRATION-ROTATION BANDS OF HYDROGEN FLUORIDE

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ABSTRACT

Line strengths are calculated for the $0 \rightarrow 1$, $0 \rightarrow 2$, and $1 \rightarrow 2$ vibration-rotation bands of hydrogen fluoride by use of the anharmonic oscillator potential and for the $0 \rightarrow 1$, $0 \rightarrow 2$, $0 \rightarrow 3$, and $1 \rightarrow 2$ bands by use of the Morse potential. The two sets of calculations are compared, and it is found that the line strengths depend quite strongly on the shape of the potential well even for transitions involving such low-lying levels. All calculations have been carried out for a number of temperatures in the $300^{\circ}K$ to $5000^{\circ}K$ range. The partition functions and line positions used in the calculations are also presented.

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LINE-STRENGTH CALCULATIONS FOR THE 0→1, 0→2, 0→3, AND 1→2 VIBRATION-ROTATION BANDS OF HYDROGEN FLUORIDE

1 INTRODUCTION

In making spectroscopic measurements on molecules, it is often desirable to know either the absolute intensity of the lines from previous measurements or to have a reliable theory from which a reasonable estimate of line intensities may be calculated. This applies at BAMIRAC, where quantitative absorption and emission measurements are being carried out on the hydrogen fluoride molecule at temperatures ranging from 300°K to 5000°K. Recent theoretical advances [1-4] in this area have achieved qualitative agreement with experiment; therefore, it is appropriate at this time to calculate line intensities for the HF molecule for a number of temperatures in the above range, according to present theory.

The calculations have been carried out for the two potential functions most often used: the anharmonic oscillator potential and the Morse potential [5, 6]. There are several reasons for carrying out two sets of calculations. First, there is no a priori reason for preferring one potential over the other—they both represent a basic empirical assumption. Second, the calculations should be compared with each other to determine the effect of the form of the potential on the line intensities. These calculations therefore serve as more than just an aid in present HF studies. When compared with measurements now being made on the fundamental and overtone series of HF, they also will give an indication of the influence of the form of the potential function on levels lying higher in the potential well. Knowledge obtained in this manner from the simple HF molecule will be useful for treating more complicated molecules and for estimating the strengths of electronic transitions. This is of particular value at the present time in view of the recent interest in electronic band intensities [7-10].

2 GENERAL CONSIDERATIONS

The intensity of the absorption line corresponding to the transition from a level vJ to a level v'J' is given by [1]

$$I_{vJ,v'J'} = \frac{8\pi^3 N_{vJ}}{3hc(2J+1)} \nu_{vJ,v'J'} \sum_{m',m,\tau} \left| \langle v, J, m \left| \mu_\tau(r, \theta, \phi) \right| v', J', m' \rangle \right|^2 \times \left[1 - \exp\left(\frac{-\nu_{vJ,v'J'}}{kT/hc} \right) \right] \tag{1}$$

where

c = velocity of light

h = Planck's constant

J = rotational quantum number

k = Boltzmann's constant

m, m' = magnetic quantum numbers of the initial and final levels

N_{vJ} = number of molecules in the initial state

T = temperature

v = vibrational quantum number

θ, ϕ = angles in spherical polar coordinates

ν = frequency in wave numbers

$\nu_{vJ,v'J'}$ = frequency of the transition in wave numbers

$\mu_\tau(r, \theta, \phi)$ = the τ-th component of the dipole moment μ as a function of the spherical coordinates

$\langle \rangle$ = Dirac bracket symbols

The dipole moment separates into a radial part M(r) and an angular part which depends on θ and ϕ. The angular contributions to the matrix elements may be immediately evaluated, and the sums over m and m' may be carried out. Thus

$$\sum_{m,m',\tau} \left| \langle v, J, m \left| \mu_\tau(r, \theta, \phi) \right| v', J', m' \rangle \right|^2 = |m| \left| \langle v, J \left| M(r) \right| v', J \rangle \right|^2 \tag{2}$$

where the m on the right-hand side is equal to -J for P-branch transitions and is equal to J + 1 for R-branch transitions. (This m, not to be confused with the m specifying the magnetic quantum number, will be the one that appears in the following expressions.) Thus,

$$I_{vJ,v'J'} = \frac{8\pi^3 N_{vJ}}{3hc(2J+1)} \nu_{vJ,v'J'} |m| \left| \langle v, J \left| M(r) \right| v', J' \rangle \right|^2 \left[1 - \exp\left(\frac{-\nu_{vJ,v'J'}}{kT/hc} \right) \right] \tag{3}$$

Written explicitly, the matrix elements of M(r) are

$$\langle vJ \left| M(r) \right| v'J' \rangle = \int \psi_{vJ}(r) M(r) \psi_{v'J'}(r) r^2 \, dr \tag{4}$$

where $\psi_{vJ}(r)$ are solutions of the radial wave equation (ψ = wave function, r = internuclear separation):

$$\frac{1}{r^2}\frac{d}{dr}\left(r^2\frac{d\psi}{dr}\right) + \left\{-\frac{J(J+1)}{r^2} + \frac{8\pi^2\mu}{h^2}[E - U(r)]\right\}\psi = 0 \tag{5}$$

where E = total energy and U(r) = potential energy.

Once a choice of U(r) is made, the wave equation may be solved for $\psi(r)$. Calculation of the matrix elements then depends upon the form of M(r). The usual procedure is to expand M(r) in a Taylor series about the equilibrium nuclear separation r_e:

$$M(r) = M_0\frac{dM}{dr}(r - r_e) + \frac{1}{2}\frac{d^2M}{dr^2}(r - r_e)^2 + \cdots$$

or

$$M(r) = \sum_i M_i(r - r_e)^i \tag{6}$$

where M_0 is the permanent dipole moment of the molecule. In this treatment, the M_i are parameters to be determined by experimental line strength measurements for particular solutions of the wave equation.

The solutions $\psi(r)$ of the wave equation depend not only upon choice of U(r) but also upon treatment of the term $J(J+1)/r^2$. This term is usually called the "interaction term" since it represents a coupling of the rotational (J) motion and the vibrational (r-dependent) motion of the molecule. A common method is to expand $1/r^2$ in a Taylor series about r_e:

$$\frac{J(J+1)}{r^2} \cong \frac{J(J+1)}{r_e^2}\left[1 - 2\frac{(r - r_e)}{r_e} + 3\frac{(r - r_e)^2}{r_e^2} - \cdots\right] \tag{7}$$

If only the first term in the expansion is retained, the interaction term does not depend on r. This is the rigid rotor approximation in which there is no interaction of rotation with vibration. The number of terms retained in the expansion is usually fixed by the form of U(r). If harmonic oscillations are assumed, the first three terms are retained, giving the rotating harmonic oscillator model. If anharmonic oscillations are assumed, the cubic term is retained, giving the rotating anharmonic oscillator approximation.

Another common practice is to choose an empirical function which nearly approximates a realistic molecular potential. The function used most often is that of Morse:

$$U(r) = E_{e\ell} + D_e\left[1 - e^{-\beta(r - r_e)}\right]^2 \tag{8}$$

where $E_{e\ell}$ is the electronic energy and D_e the energy of dissociation. When this function is used, the first three terms in $J(J + 1)/r^2$ are retained.

The present calculations have been carried out for the rotating anharmonic oscillator and the Morse oscillator. The reduction of the matrix elements to the form used in the computation is carried out in appendixes II and III. The results are presented as a product of the matrix element of a nonrotating oscillator and $\sqrt{F(m)_{vv'}}$, a correction factor arising from the interaction of rotation and vibration:

$$\langle vJ|M|v'J'\rangle = \langle v|M|v'\rangle \sqrt{F(m)_{vv'}} \tag{9}$$

Also in appendixes II and III, for these two oscillators respectively, the J independent matrix elements $\langle v|M|v'\rangle$ are derived and the factors $\sqrt{F(m)_{vv'}}$, are presented.

3
CALCULATION OF LINE INTENSITIES OF HYDROGEN FLUORIDE

The University of Michigan's IBM 7090 computer was used to calculate line intensities $I_{vJ,v'J'}$ of HF from equation 3. The line positions $\nu_{vJ,v'J'}$ appearing in (3) were calculated from the term values given in wave numbers by

$$T_{vJ} = \sum_{j\ell} Y_{j\ell}\left(v + \frac{1}{2}\right)^j (J + 1)^\ell J^\ell \tag{10}$$

The coefficients $Y_{j\ell}$ are taken from the work of Mann et al. [11]. These positions are given in appendix IV.

The number of molecules in the initial level N_{vJ} is given by

$$N_{vJ} = \frac{N(2J + 1)}{Z}\left(\exp\frac{-T_{vJ}hc}{kT}\right) \tag{11}$$

where Z is the partition function and N is the number of molecules per cubic centimeter. For an ideal gas at a pressure P in atmospheres, $N = 1.01325 \times 10^6 \frac{P}{kT}$. The partition function is given by

$$Z = \sum_J (2J + 1)\left(\exp\frac{-T_{vJ}hc}{kT}\right) \tag{12}$$

These have been calculated for a number of temperatures and are given in appendix V. The matrix elements for the anharmonic oscillator are given by equations 29, 35, and 36, and for the Morse oscillator by equations 42, 43, and 44. The line intensities, in units $(\text{atm cm}^2)^{-1}$ are given in appendixes VI and VII. Note that the value of M_1 used in the calculations was chosen to assure agreement between theory and experiment at the band center in the anharmonic oscillator approximation, and therefore the intensities in appendix VI are not expected to agree exactly with those in appendix VII. The usefulness of the Morse calculations lies in the correction factors $F(m)_{v,v'}$. The values $M_1 = 1.5 \times 10^{-10}$ esu, $M_0 = 1.819 \times 10^{-18}$ esu cm, and $\theta = +1.32$ were used in all the calculations [12]. For the Morse calculations, D_e was taken to be 134.59 kcal/mole. [13].

4
RESULTS AND CONCLUSIONS

The effect of the correction factor is best illustrated by plotting F_{vv}, versus m, as shown in figures 1 and 2. It can be seen in each case that the correction factor causes an enhancement of the P branch relative to the R branch for both the Morse and anharmonic oscillator models, and that the effect becomes greater for high J transitions. The dependence of the correction factor upon the particular change in v as well as J emphasizes the importance of determining the validity of the treatment for high v and J.

The importance of the form of the internuclear potential is illustrated in figure 3, a plot of the ratio of the Morse and anharmonic F factors versus m for the $0 \rightarrow 1$ and $0 \rightarrow 2$ transitions. The results for the two potentials are seen to differ qualitatively as well as quantitatively. For the overtone band, the F factors are seen to be quite different, causing a greater correction for the Morse oscillator than for the anharmonic oscillator. The F factors for the $1 \rightarrow 2$ transition, however, are in much better numerical agreement, but the Morse oscillator does show a greater enhancement of the P branch relative to the R branch. Thus, even for transitions involving such low-lying levels, the importance of the form of the internuclear potential is quite apparent.

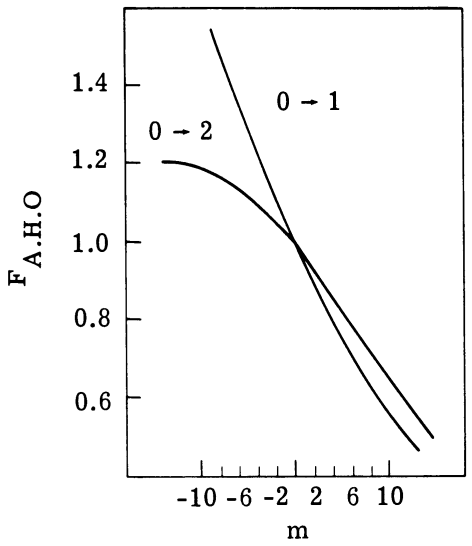

FIGURE 1. F_{01} AND F_{02} VS. m FOR THE ANHARMONIC OSCILLATOR MODEL

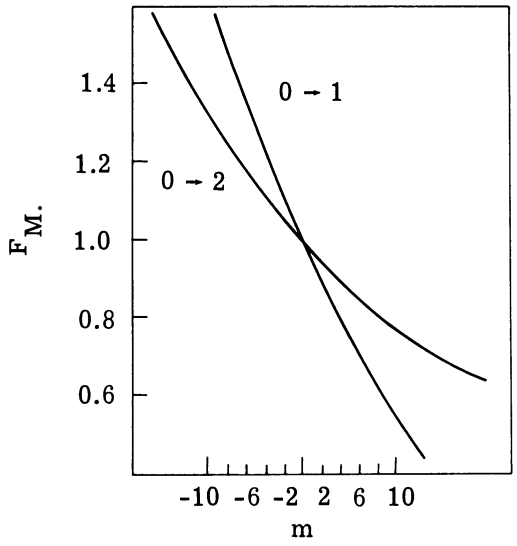

FIGURE 2. F_{01} AND F_{02} VS. m FOR THE ROTATING MORSE OSCILLATOR

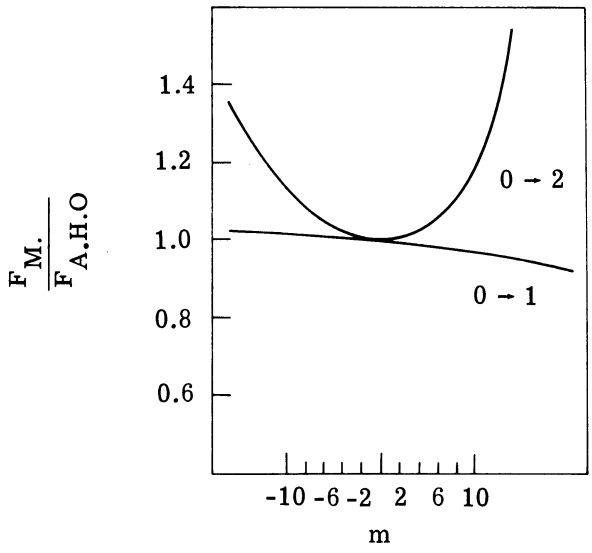

FIGURE 3. RATIO OF MORSE AND ANHARMONIC OSCILLATOR F FACTORS FOR THE 0 → 1 AND 0 → 2 TRANSITIONS

Appendix I
THE HARMONIC OSCILLATOR MODEL

I.1. THE RIGID ROTATOR

Although this approximation does not lead to satisfactory agreement with experiment, it has qualitative features which carry over to the more realistic anharmonic oscillator model. If $\psi(r)$ in equation 5 is replaced by a new function $R(r) = r\psi(r)$, the wave equation becomes

$$\frac{d^2R}{dr^2} + \frac{8\pi^2\mu}{h^2}\left[E - U(r) - \frac{h^2J(J+1)}{8\pi^2\mu r^2}\right]R = 0 \tag{13}$$

Replacing r by r_e in the interaction term gives the rigid rotor equation. Expanding U(r) in a Taylor series about r_e:

$$U(r) = \frac{1}{2}\left(\frac{d^2U}{dr^2}\right)_{r_e}(r - r_e)^2 + \ldots \tag{14}$$

or

$$U(u) = \frac{1}{2}ku^2$$

where $u = r - r_e$. In terms of the variable u, the rigid rotor equation is

$$\frac{d^2R(\mu)}{du^2} + \frac{8\pi^2\mu}{h^2}\left[E - \frac{J(J+1)h^2}{8\pi^2\mu r_e^2} - \frac{ku^2}{2}\right]R(u) = 0 \tag{15}$$

Its solutions are

$$R(u)_v = N_v H_v(x)\, e^{-x^2/2} \tag{16}$$

where

$$u = x\left[h/(2\pi\sqrt{\mu k})\right]^{1/2}$$

$$N_v = \left[2^v v!\sqrt{\pi}\sqrt{h/(2\pi\sqrt{k\mu})}\right]^{-1/2}$$

and the H_v are the Hermite polynomials. The energy levels of (15) in wave numbers are

$$\frac{2\pi E}{hc} = \omega_e\left(v + \frac{1}{2}\right) + B_e J(J+1) \tag{17}$$

where $\omega_e = \sqrt{k/\mu c^2}$ and $B_e = h/(4\pi\mu c r_e^2)$. The matrix elements of M(r) are

$$\begin{aligned} \langle v|M(r)|v'\rangle &= \int_0^\infty \psi_v(r)M(r)\psi_{v'}(r)r^2\,dr \\ &= \int_{-\infty}^{+\infty} R_v(u)M(u)R_{v'}(u)\,du \\ &= \sqrt{h/(2\pi\sqrt{\mu k})}\int_{-\infty}^{+\infty} R_v(x)M(x)R_{v'}(x)\,dx \end{aligned} \tag{18}$$

Since

$$M(x) = \sum_i M_i\left(\sqrt{h/2r\sqrt{\mu k}}\,x\right)^i \tag{19}$$

the problem of finding the matrix elements of M(x) reduces to that of finding $\langle v|x^i|v'\rangle$ for various i. These may be found in a straightforward manner by use of the recursion relations for the Hermite polynomials, and the usual pure rotation and fundamental vibrational selection rules result. For the fundamental series

$$\langle v|M_1(u)|v+1\rangle = \sqrt{\frac{M_1}{\alpha}}\sqrt{\frac{v+1}{2}} \tag{20}$$

where $\alpha = \omega_e\Big/\left(2B_e r_e^2\right)$. Similar expressions may be derived for the overtone series.

I.2. THE ROTATING OSCILLATOR

A more accurate representation of a vibrating rotating molecule is obtained by use of expansion 7. Keeping terms through u^2, and using equation 14 for U(u) as before, the wave equation 13 becomes

$$\frac{d^2S^0}{du^2} + \frac{8\pi^2\mu}{h^2}\left[E - \frac{1}{2}ku^2 - J(J+1)\frac{h^2}{8\pi^2\mu r_e^2} + 2J(J+1)\frac{h^2u}{8\pi^2\mu r_e^3} - \frac{3J(J+1)h^2u^2}{8\pi^2\mu r_e^3}\right]S^0 = 0 \tag{21}$$

where the radial wave function is now denoted by S^0 in order to distinguish it from the functions R(u). If the term linear in u is eliminated, equation 21 can be transformed into the simple harmonic oscillator form. This may be accomplished by a change of variable:

$$u = \zeta_J + a_J$$

where

$$a_J = \frac{J(J+1)\sigma r_e}{3J(J+1) + \frac{1}{2} r_e^2 k} \tag{22}$$

and

$$\sigma = \frac{h^2}{8\pi^2 \mu r_e^2}$$

With this change, equation 21 becomes

$$\frac{d^2 S^0(\zeta)}{d\zeta_J^2} + \frac{8\pi^2 \mu}{h}\left\{\left[E - J(J+1)\sigma + \frac{J^2(J+1)^2\sigma^2}{3J(J+1)\sigma + \frac{1}{2}kr_e^2}\right] - \left[\frac{1}{2}k + 3J(J+1)\frac{\sigma}{2}\right]\zeta_J^2\right\} S^0(\zeta) = 0 \tag{23}$$

This has the form of the harmonic oscillator equation

$$\frac{d^2 S^0}{d\zeta^2} + \left(\lambda - \kappa^2 \zeta_J^2\right) S^0 = 0 \tag{24}$$

Upon making another change of variable, $\eta_J = \sqrt{\alpha}_J \zeta_J$, the solutions of equation 23 may be written

$$S^0_{vJ} = N_{vJ} H_v(\eta_J) \exp\left[-\frac{1}{2}\eta_J^2\right] \tag{25}$$

where H_v are Hermite polynomials, as before, and where

$$N_{vJ} = \sqrt[4]{\frac{\alpha_j}{\pi}}\left(\frac{1}{\sqrt{2^v v!}}\right) \tag{26}$$

The dependence of the coordinate η_J on J is a consequence of the fact that the equilibrium nuclear separation is now $r_e + a_J$. The energy levels are now given by

$$\frac{2\pi E^0_{vJ}}{hc} = \left(v + \frac{1}{2}\right)\omega_e\left[1 + 3J(J+1)\gamma^2\right]^{1/2} + \sigma J(J+1)\left(1 - \frac{a_J}{r_e}\right) \tag{27}$$

where $\gamma = 2B_e/\omega_e$ and E^0 = unperturbed energy.

The matrix elements are best found using the generating functions for the Hermite polynomials. For the fundamental transition they are, to the approximation of retaining the first three terms in equation 7,

$$<0, J\left|M(\eta_J)\right|1, J\pm1> = \frac{M_1}{\sqrt{2\alpha}}\left\{1 - 2\theta m\left[1 + \frac{3\gamma}{8\theta}(m - 1)\right]\right\} \tag{28}$$

where $\theta = M_0/M_1 r_e$. In general,

$$|<vJ|M(\eta_J)|v'J'>|^2 = M^2_{vv'}F_{vv'} \tag{29}$$

where $M_{vv'}$ is the matrix element of a nonrotating harmonic oscillator. The matrix element is thus given by that for a nonrotating harmonic oscillator multiplied by a correction factor $\sqrt{F_{vv'}}$ arising from the interaction of rotation with vibration. θ is usually of order unity, whereas γ is several orders of magnitude smaller. The first term in equation 28 is therefore dominant. Terms of order γ or smaller are considered later in the discussion of the anharmonic oscillator (app. II). It is interesting to note that the matrix element between v = 0 and v = 2 does not vanish for the vibrating rotor. Its contribution is quite small to this approximation, however, and it will be seen later that an anharmonic term in the potential gives the dominant contribution.

Through the correction factor $\sqrt{F_{vv'}}$, each line in a band will have a slightly different matrix element. Depending on the value of θ, the factor $F_{vv'}$ will cause an enhancement of one branch of a band relative to the other. In the case of HF, θ is positive and greater than unity. This results in an enhancement of the P branch relative to the R branch.

Appendix II
THE ANHARMONIC OSCILLATOR MODEL

If a cubic term is included in the potential function

$$U(u) = \frac{1}{2}ku^2 + k'u^3 \tag{30}$$

and if the cubic term is retained in the interaction term (eq. 7),

$$\frac{J(J+1)}{r^2} \approx \frac{J(J+1)}{r_e^2}\left(1 - \frac{2u}{r_e} + \frac{3u^2}{r_e^2} - 4\frac{u^3}{r_e^3}\right) \tag{31}$$

the contribution $k'u^3 - 4u^3/r_e^3$ may be treated as a perturbation H_1 on the zeroth-order wave functions $S^0(\eta_J)$. This may be written

$$H_1 = hc\omega_e b_j \alpha^{3/2} u^3 \tag{32}$$

where

$$b_j = b\left[1 - \frac{2\gamma^{5/2}}{b} J(J+1)\right] \tag{33}$$

and where $b = -\frac{1}{2}\gamma^{1/2}[1 + \alpha_e/3\gamma B_e]$. The perturbed wave functions then have the form [14]

$$S_{vJ} = S^0_{vJ} + \sum_{m=0}^{\infty} C_{vmJ} S^0_{mJ} \tag{34}$$

where the constants C_{vmJ} are determined by first-order perturbation theory. Explicit expressions for S_{vJ} are found in reference [13]. These functions may then be used to find the matrix elements of the dipole moment. The results were first obtained by Herman and Wallis [2] for the $0 \rightarrow 1$, $0 \rightarrow 2$, and $1 \rightarrow 2$ transitions, and are expressed as the product of the independent matrix element $\langle v|M|v'\rangle$ and a correction factor, as before. The factors $F_{vv'}$, for the $0 \rightarrow 1$, $1 \rightarrow 2$, and $0 \rightarrow 2$ transitions are

$$F_{01} = \left\{1 - 2\theta\gamma m\left[1 + \frac{15}{2} b\gamma^{1/2} + 3\gamma - \frac{5}{2}\frac{b\gamma^{1/2}}{\theta}(m-1) + \frac{3}{8}\frac{\gamma}{\theta}(m-1)\right]\right\}$$

$$F_{12} = \left\{1 - 2\theta\gamma m\left[1 + 15b\gamma^{1/2} + 6\gamma - \frac{23}{4}\frac{b\gamma^{1/2}}{\theta}(m-1) + \frac{3}{8}\frac{\gamma}{\theta}(m-2)\right]\right\} \tag{35}$$

$$F_{02} = \left\{1 - 2\frac{\gamma^{3/2}}{b} m\left[\left(1 - \frac{3\theta}{4} + \frac{\theta}{2}\frac{b}{\gamma^{1/2}}\right) - \theta\gamma m + \frac{1}{2}\left(2\frac{\gamma^{1/2}}{b} + \frac{15}{4}\right)\gamma^{1/2} b(m+5) + \frac{3}{16}\gamma^{1/2} b(2m-3)\right]\right\}$$

The J independent factors of equation 29 are

$$M_{01} = \frac{M_1}{\sqrt{2\alpha}}$$

$$M_{12} = \frac{M_1}{\sqrt{\alpha}}$$

$$M_{02} = \frac{M_1 b}{\sqrt{2\alpha}} \tag{36}$$

Appendix III
THE ROTATING MORSE OSCILLATOR

This model assumes that the potential function is

$$U(r) = E_{e\ell} + D_e\left[1 - e^{-\beta(r-r_e)}\right]^2 \tag{37}$$

where $E_{e\ell}$ is the electronic energy at $r = r_e$, D_e is the dissociation energy referred to the potential minimum, and $\beta = \omega_e\left[2\pi^2 c\mu/D_e h\right]^{1/2}$. The first three terms in the expansion of $1/r^2$ are retained, and the wave equation is solved for the molecular wave functions. The equation is

$$\frac{d^2R}{dr^2} - \left[J(J+1) - \lambda^2\right]\frac{R}{r^2} + \frac{8\pi^2\mu}{h^2}[E - U(r)]R = 0$$

where λ is the electronic angular momentum. The solution is of the form

$$R(y) = Ne^{-z/2}z^{b/2}F(z) \tag{38}$$

where

$$z = 2d_0 y \tag{38a}$$

$$y = e^{-\beta(r-r_e)} \tag{38b}$$

$$b^2 = -\left(\frac{32\pi^2\mu}{\beta^2h^2}\right)\left[E - E_{e\ell} - D_e - A(1 - 3\epsilon + 3\epsilon^2)\right] \tag{38c}$$

and the function F(z) satisfies the confluent hypergeometric equation

$$z\frac{d^2F}{dz^2} + (b + 1 - z)\frac{dF}{dz} + vF = 0 \tag{38d}$$

For equation 38a,

$$d_0^2 = \frac{8\pi^2\mu}{\beta^2h^2}\left[D_e + A(-\epsilon + 3\epsilon^2)\right] \tag{38e}$$

$$\epsilon = 1/r_e\beta \tag{38f}$$

$$A = B_e\left[J(J+1) - \lambda^2\right] \tag{38g}$$

The normalized radial wave function is

$$R_{vJ\lambda}(r) = N_0 e^{-d_0 y} (2d_0 y)^{b/2} \, {}_1F_1(-v;\, b+1;\, 2d_0 y) \tag{39}$$

${}_1F_1(-v;\, b+1;\, 2d_0 y)$ is the confluent hypergeometric function. The vibrational matrix element for the transition from a state v,J,λ to a state v', J', λ is

$$\langle vJ\lambda | M(r) | v', J'\lambda \rangle = \frac{N_0 N'_0}{\beta} \int_0^\infty y^{-1} R_{vJ\lambda} R_{v'J'\lambda} \sum_{i=0}^{\infty} M_i \left(-\beta^{-1} \log_e y\right)^i dy \tag{40}$$

where

$$M(r) = \sum_{i=0}^{\infty} M_i (r - r_e)^i$$

$$= \sum_{i=0}^{\infty} M_i \left(-\beta^{-1} \log_e y\right)^i \tag{41}$$

and N_0 is the normalization factor. When the integration in equation 40 is carried out, the matrix element may be written in the form

$$\langle vJ\lambda | M(r) | v+n,\, J\pm 1,\, \lambda \rangle = \langle v0 | M(r) | v+n,\, 0 \rangle \sqrt{F_{v,v+n}} \tag{42}$$

where $\langle v0 | M(r) | v+n,\, 0 \rangle$ is the J independent matrix element of Heaps and Herzberg [15], $\sqrt{F_{v,v+n}}$ is a J dependent correction factor, and n = v'. The correction factors have been found for the 0→1, 1→2, 0→2, and 0→3 vibrational transitions. They are

$$\sqrt{F_{01}} = 1 - \left[\frac{\theta}{\epsilon} \log_e \left(1 + \frac{2}{s}\right) + \frac{1}{2s}\right](\delta - s\lambda) - \frac{\delta}{2}\frac{1}{(s-1)} - \frac{\Delta}{s} + \frac{\Delta}{2}\frac{1}{(s-1)}$$

$$\sqrt{F_{02}} = 1 - \left[\frac{\theta}{\epsilon} + \log_e \left(1 + \frac{3}{s}\right) + \frac{1}{2s}\right](\delta - 2s\lambda) + 2\delta - 2\lambda s - \frac{\delta}{2}\left(\frac{1}{s+2} + \frac{1}{s+1}\right) + \frac{\Delta}{2}\left(\frac{1}{s-2} - \frac{2}{s}\frac{1}{s+1}\right)$$

$$\sqrt{F_{03}} = 1 - \left[\frac{\theta}{\epsilon} + \log_e \left(1 + \frac{4}{s}\right) + \frac{1}{2s}\right](\delta - 3s\lambda) + 3\delta - \left(\frac{9}{2}\right)\lambda s - \frac{\delta}{2}\left(\frac{1}{s-3} + \frac{1}{s+1} + \frac{1}{s+2}\right) \tag{43}$$

$$+ \frac{\Delta}{2}\left(\frac{1}{s-3} - \frac{2}{s} - \frac{1}{s+1} - \frac{1}{s+2}\right)$$

$$\sqrt{F_{12}} = 1 - \left[\frac{\theta}{\epsilon} + \log_e \left(1 + \frac{4}{s}\right) + \frac{1}{2s}\right](\delta - s\lambda) + \frac{\lambda s}{2(s+1)} - \frac{\delta}{2}\left(\frac{1}{s+2} + \frac{1}{s+1} + \frac{1}{s-1}\right)$$

$$+ \frac{\Delta}{2}\left(\frac{1}{s+1} + \frac{1}{s-1} - \frac{1}{s+2} - \frac{2}{s}\right)$$

where $s = (2\epsilon^2/\gamma) - 2v - n - 1$

$\Delta = 3\gamma\epsilon(\epsilon - 1)m^2$

$\lambda = \gamma^2 m/2\epsilon(1 - 3\epsilon)$

$\delta = 3\gamma\epsilon m(1 - \epsilon)$

$\epsilon = 1/r_e\beta$

$\theta = M_0/(M_1 r_e)$

The general form of the J-independent matrix element is

$$<v0|M(r)|v+n, \sigma> = \frac{M_1}{\beta}\frac{(-1)^n}{n}\left[\frac{(n+v)!(s+1)_v(s-n)}{v!(s+n+1)_v s(s)_n}\right]^{1/2} \tag{44}$$

where the notation $(x)_i$ means

$$(x)_i = x(x+1)(x+2)\ldots(x+i-1)$$

APPENDIX IV

THE FUNDAMENTAL, FIRST OVERTONE, AND SECOND OVERTONE LINE POSITIONS OF HYDROGEN FLUORIDE

R BRANCH LINE POSITIONS FOR DELTA V = 1

J	V0 TO V1	V1 TO V2	V2 TO V3	V3 TO V4
0	4001.150	3827.472	3658.592	3493.986
1	4039.121	3863.981	3693.671	3527.663
2	4075.447	3898.890	3727.190	3559.814
3	4110.084	3932.153	3759.103	3590.396
4	4142.987	3963.728	3789.369	3619.367
5	4174.111	3993.571	3817.946	3646.685
6	4203.417	4021.644	3844.794	3672.312
7	4230.866	4047.907	3869.877	3696.211
8	4256.420	4072.325	3893.156	3718.345
9	4280.045	4094.862	3914.599	3738.682
10	4301.708	4115.480	3934.173	3757.187
11	4321.379	4134.167	3951.848	3773.831
12	4339.029	4150.876	3967.594	3788.584
13	4354.633	4165.588	3981.386	3801.421
14	4368.166	4178.278	3993.199	3812.315
15	4379.607	4188.923	4003.009	3821.242
16	4388.937	4197.504	4010.796	3828.181
17	4396.138	4204.003	4016.541	3833.112
18	4401.196	4208.402	4020.226	3836.016
19	4404.097	4210.688	4021.835	3836.874
20	4404.829	4210.849	4021.355	3835.673
21	4403.383	4208.872	4018.771	3832.395
22	4399.752	4204.749	4014.072	3827.029
23	4393.928	4198.469	4007.248	3819.565
24	4385.906	4190.026	3998.288	3809.976
25	4375.683	4179.414	3987.183	3798.266
26	4363.256	4166.626	3973.926	3784.418
27	4348.628	4151.656	3958.506	3768.419
28	4331.774	4134.499	3940.915	3750.259
29	4312.716	4115.150	3921.144	3729.923
30	4291.443	4093.601	3899.183	3707.399
31	4267.951	4069.847	3875.021	3682.671
32	4242.236	4043.877	3848.644	3655.721
33	4214.292	4015.682	3820.039	3626.532
34	4184.111	3985.250	3789.188	3595.081
35	4151.683	3952.566	3756.071	3561.343
36	4116.996	3917.619	3720.665	3525.288
37	4080.031	3880.362	3682.942	3486.885
38	4040.769	3840.795	3642.872	3446.095
39	3999.185	3798.879	3600.415	3402.875
40	3955.250	3754.577	3555.530	3357.177
41	3908.925	3707.845	3508.167	3308.943
42	3860.169	3658.635	3458.271	3258.112
43	3808.934	3606.891	3405.777	3204.611
44	3755.157	3552.544	3350.611	3148.360
45	3698.773	3495.522	3292.692	3089.267
46	3639.708	3435.740	3231.926	3027.233
47	3577.873	3373.102	3168.210	2962.145
48	3513.166	3307.500	3101.426	2893.877
49	3445.479	3238.814	3031.446	2822.291
50	3374.687	3166.908	2958.125	2747.233

P BRANCH LINE POSITIONS FOR DELTA V = 1

J	V0 TO V1	V1 TO V2	V2 TO V3	V3 TO V4
1	3920.471	3749.845	3583.937	3422.235
2	3877.863	3708.823	3544.456	3384.252
3	3833.812	3666.397	3503.604	3344.939
4	3788.372	3622.617	3461.433	3304.316
5	3741.596	3577.538	3417.993	3262.469
6	3693.539	3531.212	3373.335	3219.413
7	3644.259	3483.693	3327.514	3175.226
8	3593.812	3435.037	3280.581	3129.949
9	3542.254	3385.299	3232.589	3083.635
10	3489.644	3334.533	3183.593	3036.335
11	3436.038	3282.797	3133.647	2988.102
12	3381.496	3230.145	3082.803	2938.986
13	3326.075	3176.634	3031.117	2889.040
14	3269.833	3122.319	2978.640	2838.315
15	3212.828	3067.255	2925.427	2786.863
16	3155.116	3011.498	2871.531	2734.733
17	3096.755	2955.102	2817.003	2681.977
18	3037.802	2898.121	2761.896	2628.643
19	2978.310	2840.608	2706.260	2574.781
20	2918.337	2782.616	2650.146	2520.440
21	2857.934	2724.196	2593.602	2465.669
22	2797.157	2665.400	2536.679	2410.520
23	2736.058	2606.278	2479.423	2355.042
24	2674.688	2546.879	2421.881	2299.284
25	2613.097	2487.250	2364.100	2243.193
26	2551.335	2427.440	2306.124	2186.893
27	2489.451	2367.493	2247.998	2130.464
28	2427.493	2307.457	2189.763	2073.909
29	2365.507	2247.375	2131.464	2017.268
30	2303.539	2187.290	2073.140	1960.578
31	2241.633	2127.246	2014.833	1903.880
32	2179.835	2067.283	1956.582	1847.212
33	2118.188	2007.446	1898.427	1790.608
34	2056.733	1947.772	1840.408	1734.109
35	1995.516	1888.305	1782.561	1677.752
36	1934.577	1829.083	1724.927	1621.571
37	1873.960	1770.147	1667.544	1565.604
38	1813.707	1711.539	1610.451	1509.890
39	1753.859	1653.299	1553.686	1454.464
40	1694.462	1595.469	1497.292	1399.367
41	1635.559	1538.091	1441.307	1344.637
42	1577.196	1481.215	1385.777	1290.317
43	1519.420	1424.872	1330.743	1236.449
44	1462.279	1369.122	1276.252	1183.078
45	1405.827	1314.013	1222.355	1130.252
46	1350.114	1259.597	1169.103	1078.023
47	1295.198	1205.928	1116.549	1026.444
48	1241.141	1153.066	1064.751	975.572
49	1188.005	1101.077	1013.776	925.470
50	1135.860	1050.025	963.689	876.207

R BRANCH LINE POSITIONS FOR DELTA V = 2

J	V0 TO V2	V1 TO V3	V2 TO V4
0	7789.056	7448.003	7115.985
1	7824.018	7481.577	7148.194
2	7855.836	7512.087	7177.411
3	7884.466	7539.492	7203.594
4	7909.870	7563.751	7226.705
5	7932.011	7584.830	7246.709
6	7950.855	7602.694	7263.571
7	7966.373	7617.315	7277.261
8	7978.537	7628.663	7287.753
9	7987.324	7636.716	7295.020
10	7992.713	7641.452	7299.042
11	7994.687	7642.853	7299.797
12	7993.232	7640.902	7297.270
13	7988.337	7635.589	7291.446
14	7979.995	7626.903	7282.315
15	7968.200	7614.838	7269.867
16	7952.951	7599.389	7254.096
17	7934.248	7580.554	7234.997
18	7912.096	7558.336	7212.568
19	7886.501	7532.736	7186.808
20	7857.470	7503.759	7157.720
21	7825.015	7471.412	7125.305
22	7789.147	7435.703	7089.569
23	7749.881	7396.643	7050.515
24	7707.230	7354.240	7008.149
25	7661.213	7308.507	6962.480
26	7611.845	7259.456	6913.511
27	7559.144	7207.095	6861.249
28	7503.125	7151.438	6805.698
29	7443.806	7092.494	6746.863
30	7381.200	7030.272	6684.744
31	7315.323	6964.778	6619.342
32	7246.186	6896.017	6550.653
33	7173.796	6823.989	6478.672
34	7098.161	6748.692	6403.387
35	7019.282	6670.121	6324.785
36	6937.154	6588.263	6242.844
37	6851.773	6503.101	6157.539
38	6763.122	6414.614	6068.834
39	6671.181	6322.767	5976.693
40	6575.922	6227.526	5881.065
41	6477.308	6128.840	5781.893
42	6375.293	6026.654	5679.107
43	6269.822	5920.901	5572.630
44	6160.825	5811.500	5462.370
45	6048.224	5698.360	5348.223
46	5931.926	5581.376	5230.072
47	5811.823	5460.427	5107.781
48	5687.792	5335.377	4981.202
49	5559.693	5206.072	4850.168
50	5427.369	5072.339	4714.491

P BRANCH LINE POSITIONS FOR DELTA V = 2

J	V0 TO V2	V1 TO V3	V2 TO V4
1	7709.882	7371.843	7042.765
2	7665.769	7329.354	7001.849
3	7618.710	7283.993	6958.127
4	7568.760	7235.815	6911.654
5	7515.977	7184.876	6862.484
6	7460.423	7131.235	6810.672
7	7402.159	7074.952	6756.276
8	7341.253	7016.087	6699.357
9	7277.761	6954.706	6639.974
10	7211.760	6890.872	6578.190
11	7143.317	6824.651	6514.068
12	7072.501	6756.111	6447.671
13	6999.383	6685.319	6379.065
14	6924.036	6612.344	6308.316
15	6846.532	6537.256	6235.488
16	6766.945	6460.123	6160.647
17	6685.348	6381.017	6083.861
18	6601.815	6300.006	6005.195
19	6516.420	6217.160	5924.715
20	6429.237	6132.550	5842.487
21	6340.339	6046.243	5758.575
22	6249.799	5958.310	5673.043
23	6157.690	5868.818	5585.957
24	6064.083	5777.833	5497.377
25	5969.050	5685.424	5407.367
26	5872.659	5591.654	5315.986
27	5774.981	5496.587	5223.294
28	5676.083	5400.287	5129.349
29	5576.031	5302.814	5034.207
30	5474.869	5204.229	4937.923
31	5372.722	5104.591	4840.551
32	5269.593	5003.954	4742.143
33	5165.560	4902.377	4642.748
34	5060.684	4799.912	4542.416
35	4955.021	4696.612	4441.194
36	4848.628	4592.525	4339.126
37	4741.558	4487.703	4236.258
38	4633.865	4382.193	4132.629
39	4525.601	4276.038	4028.282
40	4416.814	4169.288	3923.255
41	4307.555	4061.979	3817.586
42	4197.869	3954.160	3711.312
43	4087.803	3845.867	3604.468
44	3977.403	3737.141	3497.088
45	3866.715	3628.023	3389.208
46	3755.783	3518.553	3280.861
47	3644.649	3408.766	3172.080
48	3533.358	3298.702	3062.897
49	3421.956	3188.402	2953.348
50	3310.486	3077.902	2843.465

R BRANCH LINE POSITIONS FOR DELTA V = 3

J	V0 TO V3	V1 TO V4	V2 TO V5
0	11409.587	10905.396	10413.888
1	11441.615	10936.100	10443.283
2	11469.034	10962.308	10468.281
3	11491.805	10983.983	10488.844
4	11509.894	11001.087	10504.936
5	11523.269	11013.592	10516.528
6	11531.905	11021.470	10523.592
7	11535.780	11024.699	10526.103
8	11534.875	11023.259	10524.043
9	11529.178	11017.137	10517.395
10	11518.679	11006.320	10506.145
11	11503.372	10990.801	10490.285
12	11483.257	10970.578	10469.808
13	11458.338	10945.649	10444.711
14	11428.620	10916.020	10414.995
15	11394.115	10881.696	10380.663
16	11354.835	10842.688	10341.722
17	11310.800	10799.010	10298.181
18	11262.030	10750.677	10250.050
19	11208.548	10697.708	10197.343
20	11150.380	10640.124	10140.074
21	11087.555	10577.946	10078.262
22	11020.102	10511.200	10011.922
23	10948.054	10439.910	9941.075
24	10871.444	10364.102	9865.738
25	10790.307	10283.804	9785.932
26	10704.675	10199.041	9701.674
27	10614.583	10109.838	9612.982
28	10520.064	10016.221	9519.871
29	10421.150	9918.213	9422.355
30	10317.871	9815.833	9320.445
31	10210.255	9709.099	9214.148
32	10098.326	9598.025	9103.468
33	9982.103	9482.622	8988.403
34	9861.603	9362.892	8868.945
35	9736.837	9238.835	8745.083
36	9607.808	9110.442	8616.794
37	9474.512	8977.697	8484.052
38	9336.940	8840.576	8346.816
39	9195.069	8699.046	8205.042
40	9048.871	8553.061	8058.668
41	8898.303	8402.565	7907.625
42	8743.313	8247.490	7751.829
43	8583.833	8087.754	7591.182
44	8419.781	7923.259	7425.570
45	8251.063	7753.892	7254.863
46	8077.562	7579.522	7078.913
47	7899.148	7399.999	6897.554
48	7715.669	7215.153	6710.596
49	7526.951	7024.794	6517.830
50	7332.800	6828.705	6319.020

P BRANCH LINE POSITIONS FOR DELTA V = 3

J	V0 TO V3	V1 TO V4	V2 TO V5
1	11331.881	10830.672	10342.077
2	11286.300	10786.746	10299.752
3	11236.306	10738.516	10253.217
4	11181.958	10686.036	10202.524
5	11123.316	10629.367	10147.733
6	11060.446	10568.571	10088.902
7	10993.417	10503.714	10026.096
8	10922.300	10434.863	9959.378
9	10847.168	10362.091	9888.816
10	10768.099	10285.468	9814.480
11	10685.171	10205.072	9736.442
12	10598.466	10120.979	9654.775
13	10508.068	10033.268	9569.553
14	10414.061	9942.020	9480.854
15	10316.532	9847.316	9388.752
16	10215.570	9749.240	9293.327
17	10111.263	9647.875	9194.657
18	10003.700	9543.305	9092.822
19	9892.972	9435.615	8987.899
20	9779.171	9324.891	8879.969
21	9662.386	9211.216	8769.109
22	9542.708	9094.675	8655.398
23	9420.229	8975.352	8538.913
24	9295.038	8853.330	8419.731
25	9167.223	8728.691	8297.928
26	9036.873	8601.516	8173.575
27	8904.075	8471.884	8046.747
28	8768.913	8339.872	7917.512
29	8631.470	8205.557	7785.940
30	8491.828	8069.012	7652.096
31	8350.067	7930.309	7516.044
32	8206.263	7789.516	7377.844
33	8060.491	7646.698	7237.554
34	7912.823	7501.921	7095.231
35	7763.328	7355.244	6950.925
36	7612.070	7206.725	6804.685
37	7459.114	7056.417	6656.556
38	7304.519	6904.371	6506.580
39	7148.341	6750.635	6354.796
40	6990.633	6595.250	6201.237
41	6831.443	6438.258	6045.935
42	6670.818	6279.695	5888.915
43	6508.798	6119.592	5730.200
44	6345.422	5957.977	5569.810
45	6180.726	5794.876	5407.760
46	6014.739	5630.312	5244.061
47	5847.487	5464.297	5078.720
48	5678.994	5296.848	4911.739
49	5509.281	5127.973	4743.121
50	5338.363	4957.678	4572.858

APPENDIX V
PARTITION FUNCTIONS FOR HYDROGEN FLUORIDE

TEMPERATURE DEG. K	PARTITION FUNCTION
273.30	2.0045778E-04
373.30	4.8666988E-03
500.00	4.7848360E-02
1000.00	1.8143566E 00
1500.00	7.4138553E 00
2000.00	1.6824128E 01
2500.00	2.9801752E 01
3000.00	4.6268908E 01
3500.00	6.6251993E 01
4000.00	8.9831955E 01
4500.00	1.1712043E 02
5000.00	1.4824751E 02

APPENDIX VI
ANHARMONIC OSCILLATOR LINE STRENGTHS AND CORRECTION FACTORS FOR HYDROGEN FLUORIDE

STRENGTHS AND F FACTORS OF THE V = 0 TO V = 1 TRANSITIONS OF HF

TEMPERATURE = 273.3 DEG. K

	R BRANCH		P BRANCH	
J	S(J)	F(J)	S(J)	F(J)
0	4.23261E 01	9.48990E-01		
1	6.52483E 01	8.99680E-01	3.70530E 01	1.05274E 00
2	6.06794E 01	8.52041E-01	5.00205E 01	1.10724E 00
3	4.03667E 01	8.06042E-01	4.07647E 01	1.16353E 00
4	2.02753E 01	7.61656E-01	2.37892E 01	1.22164E 00
5	7.88154E 00	7.18852E-01	1.04963E 01	1.28160E 00
6	2.40437E 00	6.77603E-01	3.59037E 00	1.34344E 00
7	5.80871E-01	6.37879E-01	9.65796E-01	1.40720E 00
8	1.11875E-01	5.99654E-01	2.06236E-01	1.47290E 00
9	1.72696E-02	5.62897E-01	3.52056E-02	1.54058E 00
10	2.14654E-03	5.27583E-01	4.83165E-03	1.61027E 00
11	2.15749E-04	4.93682E-01	5.35764E-04	1.68199E 00
12	1.76065E-05	4.61168E-01	4.82215E-05	1.75579E 00
13	1.17121E-06	4.30014E-01	3.53836E-06	1.83170E 00
14	6.37627E-08	4.00192E-01	2.12586E-07	1.90974E 00
15	2.85242E-09	3.71677E-01	1.05030E-08	1.98995E 00
16	1.05283E-10	3.44441E-01	4.28585E-10	2.07236E 00
17	3.21977E-12	3.18458E-01	1.45090E-11	2.15702E 00
18	8.19373E-14	2.93702E-01	4.09348E-13	2.24394E 00
19	1.74280E-15	2.70148E-01	9.67003E-15	2.33317E 00
20	3.11237E-17	2.47769E-01	1.92187E-16	2.42473E 00
21	4.68844E-19	2.26541E-01	3.22935E-18	2.51867E 00
22	5.98579E-21	2.06438E-01	4.61093E-20	2.61501E 00
23	6.50847E-23	1.87436E-01	5.62332E-22	2.71380E 00
24	6.05682E-25	1.69509E-01	5.88878E-24	2.81506E 00
25	4.84847E-27	1.52633E-01	5.32405E-26	2.91884E 00
26	3.35559E-29	1.36784E-01	4.17876E-28	3.02516E 00
27	2.01825E-31	1.21938E-01	2.86353E-30	3.13407E 00
28	1.06042E-33	1.08071E-01	1.72311E-32	3.24559E 00
29	4.89253E-36	9.51590E-02	9.15887E-35	3.35977E 00
30	.00000E 00	8.31793E-02	4.32610E-37	3.47664E 00
31	.00000E 00	7.21084E-02	.00000E 00	3.59623E 00
32	.00000E 00	6.19235E-02	.00000E 00	3.71859E 00
33	.00000E 00	5.26018E-02	.00000E 00	3.84376E 00
34	.00000E 00	4.41208E-02	.00000E 00	3.97175E 00
35	.00000E 00	3.64583E-02	.00000E 00	4.10263E 00
36	.00000E 00	2.95922E-02	.00000E 00	4.23642E 00
37	.00000E 00	2.35008E-02	.00000E 00	4.37315E 00
38	.00000E 00	1.81623E-02	.00000E 00	4.51288E 00
39	.00000E 00	1.35554E-02	.00000E 00	4.65564E 00
40	.00000E 00	9.65897E-03	.00000E 00	4.80145E 00
41	.00000E 00	6.45208E-03	.00000E 00	4.95038E 00
42	.00000E 00	3.91398E-03	.00000E 00	5.10244E 00
43	.00000E 00	2.02420E-03	.00000E 00	5.25769E 00
44	.00000E 00	7.62462E-04	.00000E 00	5.41616E 00
45	.00000E 00	1.08714E-04	.00000E 00	5.57789E 00
46	.00000E 00	4.31292E-05	.00000E 00	5.74293E 00
47	.00000E 00	5.46104E-04	.00000E 00	5.91130E 00
48	.00000E 00	1.59825E-03	.00000E 00	6.08305E 00
49	.00000E 00	3.18041E-03	.00000E 00	6.25823E 00
50	.00000E 00	5.27365E-03	.00000E 00	6.43687E 00

SUM S(J) FOR R = 2.39894176E 02 SUM S(J) FOR P = 1.66926862E 02

STRENGTHS AND F FACTORS OF THE V = 0 TO V = 1 TRANSITIONS OF HF

TEMPERATURE = 373.3 DEG. K

	R BRANCH		P BRANCH	
J	S(J)	F(J)	S(J)	F(J)
0	2.28924E 01	9.48990E-01		
1	3.73967E 01	8.99680E-01	2.12367E 01	1.05274E 00
2	3.90512E 01	8.52041E-01	3.21915E 01	1.10724E 00
3	3.09053E 01	8.06042E-01	3.12100E 01	1.16353E 00
4	1.95698E 01	7.61656E-01	2.29509E 01	1.22164E 00
5	1.01463E 01	7.18852E-01	1.35125E 01	1.28160E 00
6	4.37215E 00	6.77603E-01	6.52879E 00	1.34344E 00
7	1.57870E 00	6.37879E-01	2.62485E 00	1.40720E 00
8	4.80611E-01	5.99654E-01	8.85984E-01	1.47290E 00
9	1.23953E-01	5.62897E-01	2.52689E-01	1.54058E 00
10	2.71914E-02	5.27583E-01	6.12049E-02	1.61027E 00
11	5.09163E-03	4.93682E-01	1.26439E-02	1.68199E 00
12	8.16524E-04	4.61168E-01	2.23633E-03	1.75579E 00
13	1.12497E-04	4.30014E-01	3.39864E-04	1.83170E 00
14	1.33573E-05	4.00192E-01	4.45332E-05	1.90974E 00
15	1.37102E-06	3.71677E-01	5.04825E-06	1.98995E 00
16	1.22031E-07	3.44441E-01	4.96759E-07	2.07236E 00
17	9.44857E-09	3.18458E-01	4.25772E-08	2.15702E 00
18	6.38450E-10	2.93702E-01	3.18959E-09	2.24394E 00
19	3.77721E-11	2.70148E-01	2.09579E-10	2.33317E 00
20	1.96313E-12	2.47769E-01	1.21220E-11	2.42473E 00
21	8.99362E-14	2.26541E-01	6.19461E-13	2.51867E 00
22	3.64447E-15	2.06438E-01	2.80733E-14	2.61501E 00
23	1.31092E-16	1.87436E-01	1.13261E-15	2.71380E 00
24	4.20062E-18	1.69509E-01	4.08395E-17	2.81506E 00
25	1.20341E-19	1.52633E-01	1.32140E-18	2.91884E 00
26	3.09359E-21	1.36784E-01	3.85229E-20	3.02516E 00
27	7.16228E-23	1.21938E-01	1.01613E-21	3.13407E 00
28	1.49890E-24	1.08071E-01	2.43541E-23	3.24559E 00
29	2.84586E-26	9.51590E-02	5.32692E-25	3.35977E 00
30	4.91971E-28	8.31793E-02	1.06801E-26	3.47664E 00
31	7.77111E-30	7.21084E-02	1.97163E-28	3.59623E 00
32	1.12545E-31	6.19235E-02	3.36679E-30	3.71859E 00
33	1.49922E-33	5.26018E-02	5.34284E-32	3.84376E 00
34	1.84242E-35	4.41208E-02	7.91690E-34	3.97175E 00
35	.00000E 00	3.64583E-02	1.10069E-35	4.10263E 00
36	.00000E 00	2.95922E-02	.00000E 00	4.23642E 00
37	.00000E 00	2.35008E-02	.00000E 00	4.37315E 00
38	.00000E 00	1.81623E-02	.00000E 00	4.51288E 00
39	.00000E 00	1.35554E-02	.00000E 00	4.65564E 00
40	.00000E 00	9.65897E-03	.00000E 00	4.80145E 00
41	.00000E 00	6.45208E-03	.00000E 00	4.95038E 00
42	.00000E 00	3.91398E-03	.00000E 00	5.10244E 00
43	.00000E 00	2.02420E-03	.00000E 00	5.25769E 00
44	.00000E 00	7.62462E-04	.00000E 00	5.41616E 00
45	.00000E 00	1.08714E-04	.00000E 00	5.57789E 00
46	.00000E 00	4.31292E-05	.00000E 00	5.74293E 00
47	.00000E 00	5.46104E-04	.00000E 00	5.91130E 00
48	.00000E 00	1.59825E-03	.00000E 00	6.08305E 00
49	.00000E 00	3.18041E-03	.00000E 00	6.25823E 00
50	.00000E 00	5.27365E-03	.00000E 00	6.43687E 00

SUM S(J) FOR R = 1.66541359E 02 SUM S(J) FOR P = 1.31470364E 02

STRENGTHS AND F FACTORS OF THE V = 0 TO V = 1 TRANSITIONS OF HF

TEMPERATURE = 500.0 DEG. K

	R BRANCH		P BRANCH	
J	S(J)	F(J)	S(J)	F(J)
0	1.28349E 01	9.48990E-01		
1	2.18259E 01	8.99680E-01	1.23944E 01	1.05274E 00
2	2.46961E 01	8.52041E-01	2.03579E 01	1.10724E 00
3	2.20423E 01	8.06042E-01	2.22594E 01	1.16353E 00
4	1.63738E 01	7.61656E-01	1.92113E 01	1.22164E 00
5	1.03713E 01	7.18852E-01	1.38119E 01	1.28160E 00
6	5.67672E 00	6.77603E-01	8.47671E 00	1.34344E 00
7	2.70749E 00	6.37879E-01	4.50156E 00	1.40720E 00
8	1.13180E 00	5.99654E-01	2.08536E 00	1.47290E 00
9	4.16496E-01	5.62897E-01	8.49036E-01	1.54058E 00
10	1.35408E-01	5.27583E-01	3.04778E-01	1.61027E 00
11	3.90128E-02	4.93682E-01	9.68749E-02	1.68199E 00
12	9.98858E-03	4.61168E-01	2.73557E-02	1.75579E 00
13	2.27857E-03	4.30014E-01	6.88336E-03	1.83170E 00
14	4.64265E-04	4.00192E-01	1.54775E-03	1.90974E 00
15	8.46989E-05	3.71677E-01	3.11844E-04	1.98995E 00
16	1.38692E-05	3.44441E-01	5.64521E-05	2.07236E 00
17	2.04334E-06	3.18458E-01	9.20653E-06	2.15702E 00
18	2.71525E-07	2.93702E-01	1.35629E-06	2.24394E 00
19	3.26239E-08	2.70148E-01	1.80982E-07	2.33317E 00
20	3.55309E-09	2.47769E-01	2.19353E-08	2.42473E 00
21	3.51662E-10	2.26541E-01	2.42157E-09	2.51867E 00
22	3.17109E-11	2.06438E-01	2.44196E-10	2.61501E 00
23	2.61208E-12	1.87436E-01	2.25599E-11	2.71380E 00
24	1.97059E-13	1.69509E-01	1.91506E-12	2.81506E 00
25	1.36517E-14	1.52633E-01	1.49827E-13	2.91884E 00
26	8.70771E-16	1.36784E-01	1.08369E-14	3.02516E 00
27	5.12737E-17	1.21938E-01	7.26920E-16	3.13407E 00
28	2.79443E-18	1.08071E-01	4.53661E-17	3.24559E 00
29	1.41326E-19	9.51590E-02	2.64273E-18	3.35977E 00
30	6.64911E-21	8.31793E-02	1.44174E-19	3.47664E 00
31	2.91721E-22	7.21084E-02	7.39098E-21	3.59623E 00
32	1.19624E-23	6.19235E-02	3.57262E-22	3.71859E 00
33	4.59411E-25	5.26018E-02	1.63401E-23	3.84376E 00
34	1.65534E-26	4.41208E-02	7.09653E-25	3.97175E 00
35	5.60350E-28	3.64583E-02	2.93717E-26	4.10263E 00
36	1.78334E-29	2.95922E-02	1.16279E-27	4.23642E 00
37	5.33500E-31	2.35008E-02	4.41962E-29	4.37315E 00
38	1.49793E-32	1.81623E-02	1.61899E-30	4.51288E 00
39	3.93253E-34	1.35554E-02	5.73813E-32	4.65564E 00
40	9.58164E-36	9.65897E-03	1.97558E-33	4.80145E 00
41	.00000E 00	6.45208E-03	6.63429E-35	4.95038E 00
42	.00000E 00	3.91398E-03	2.18217E-36	5.10244E 00
43	.00000E 00	2.02420E-03	.00000E 00	5.25769E 00
44	.00000E 00	7.62462E-04	.00000E 00	5.41616E 00
45	.00000E 00	1.08714E-04	.00000E 00	5.57789E 00
46	.00000E 00	4.31292E-05	.00000E 00	5.74293E 00
47	.00000E 00	5.46104E-04	.00000E 00	5.91130E 00
48	.00000E 00	1.59825E-03	.00000E 00	6.08305E 00
49	.00000E 00	3.18041E-03	.00000E 00	6.25823E 00
50	.00000E 00	5.27365E-03	.00000E 00	6.43687E 00

SUM S(J) FOR R = 1.18264088E 02 SUM S(J) FOR P = 1.04386434E 02

STRENGTHS AND F FACTORS OF THE V = 0 TO V = 1 TRANSITIONS OF HF

TEMPERATURE = 1000.0 DEG. K

	R BRANCH		P BRANCH	
J	S(J)	F(J)	S(J)	F(J)
0	3.20782E 00	9.48990E-01		
1	5.78832E 00	8.99680E-01	3.28522E 00	1.05274E 00
2	7.37264E 00	8.52041E-01	6.07188E 00	1.10724E 00
3	7.85694E 00	8.06042E-01	7.92390E 00	1.16353E 00
4	7.38993E 00	7.61656E-01	8.65578E 00	1.22164E 00
5	6.28331E 00	7.18852E-01	8.34999E 00	1.28160E 00
6	4.89243E 00	6.77603E-01	7.28698E 00	1.34344E 00
7	3.51634E 00	6.37879E-01	5.82886E 00	1.40720E 00
8	2.34526E 00	5.99654E-01	4.30826E 00	1.47290E 00
9	1.45710E 00	5.62897E-01	2.95851E 00	1.54058E 00
10	8.45781E-01	5.27583E-01	1.89509E 00	1.61027E 00
11	4.59756E-01	4.93682E-01	1.13583E 00	1.68199E 00
12	2.34514E-01	4.61168E-01	6.38589E-01	1.75579E 00
13	1.12448E-01	4.30014E-01	3.37522E-01	1.83170E 00
14	5.07653E-02	4.00192E-01	1.68034E-01	1.90974E 00
15	2.16106E-02	3.71677E-01	7.89360E-02	1.98995E 00
16	8.68689E-03	3.44441E-01	3.50483E-02	2.07236E 00
17	3.30183E-03	3.18458E-01	1.47324E-02	2.15702E 00
18	1.18826E-03	2.93702E-01	5.87181E-03	2.24394E 00
19	4.05422E-04	2.70148E-01	2.22247E-03	2.33317E 00
20	1.31310E-04	2.47769E-01	8.00074E-04	2.42473E 00
21	4.04236E-05	2.26541E-01	2.74360E-04	2.51867E 00
22	1.18432E-05	2.06438E-01	8.97590E-05	2.61501E 00
23	3.30625E-06	1.87436E-01	2.80590E-05	2.71380E 00
24	8.80580E-07	1.69509E-01	8.39426E-06	2.81506E 00
25	2.24022E-07	1.52633E-01	2.40711E-06	2.91884E 00
26	5.45011E-08	1.36784E-01	6.62679E-07	3.02516E 00
27	1.26941E-08	1.21938E-01	1.75432E-07	3.13407E 00
28	2.83363E-09	1.08071E-01	4.47321E-08	3.24559E 00
29	6.06819E-10	9.51590E-02	1.10042E-08	3.35977E 00
30	1.24776E-10	8.31793E-02	2.61606E-09	3.47664E 00
31	2.46542E-11	7.21084E-02	6.02049E-10	3.59623E 00
32	4.68365E-12	6.19235E-02	1.34355E-10	3.71859E 00
33	8.55769E-13	5.26018E-02	2.91257E-11	3.84376E 00
34	1.50387E-13	4.41208E-02	6.14419E-12	3.97175E 00
35	2.54068E-14	3.64583E-02	1.26357E-12	4.10263E 00
36	4.12191E-15	2.95922E-02	2.53790E-13	4.23642E 00
37	6.40871E-16	2.35008E-02	4.98763E-14	4.37315E 00
38	9.51617E-17	1.81623E-02	9.60906E-15	4.51288E 00
39	1.34182E-17	1.35554E-02	1.81832E-15	4.65564E 00
40	1.77976E-18	9.65897E-03	3.38624E-16	4.80145E 00
41	2.18486E-19	6.45208E-03	6.21866E-17	4.95038E 00
42	2.40987E-20	3.91398E-03	1.12850E-17	5.10244E 00
43	2.24684E-21	2.02420E-03	2.02796E-18	5.25769E 00
44	1.51611E-22	7.62462E-04	3.61671E-19	5.41616E 00
45	3.85688E-24	1.08714E-04	6.41577E-20	5.57789E 00
46	2.72541E-25	4.31292E-05	1.13470E-20	5.74293E 00
47	6.15131E-25	5.46104E-04	2.00571E-21	5.91130E 00
48	3.21955E-25	1.59825E-03	3.55233E-22	6.08305E 00
49	1.15254E-25	3.18041E-03	6.32081E-23	6.25823E 00
50	3.46789E-26	5.27365E-03	1.13308E-23	6.43687E 00

SUM S(J) FOR R = 5.18487209E 01 SUM S(J) FOR P = 5.89824528E 01

STRENGTHS AND F FACTORS OF THE V = 0 TO V = 1 TRANSITIONS OF HF

TEMPERATURE = 1500.0 DEG. K

	R BRANCH		P BRANCH	
J	S(J)	F(J)	S(J)	F(J)
0	1.37112E 00	9.48990E-01		
1	2.52492E 00	8.99680E-01	1.43018E 00	1.05274E 00
2	3.34722E 00	8.52041E-01	2.74747E 00	1.10724E 00
3	3.78610E 00	8.06042E-01	3.80047E 00	1.16353E 00
4	3.85423E 00	7.61656E-01	4.48711E 00	1.22164E 00
5	3.61648E 00	7.18852E-01	4.77025E 00	1.28160E 00
6	3.16819E 00	6.77603E-01	4.67706E 00	1.34344E 00
7	2.61152E 00	6.37879E-01	4.28442E 00	1.40720E 00
8	2.03594E 00	5.99654E-01	3.69599E 00	1.47290E 00
9	1.50663E 00	5.62897E-01	3.01841E 00	1.54058E 00
10	1.06120E 00	5.27583E-01	2.34244E 00	1.61027E 00
11	7.12967E-01	4.93682E-01	1.73236E 00	1.68199E 00
12	4.57701E-01	4.61168E-01	1.22371E 00	1.75579E 00
13	2.81179E-01	4.30014E-01	8.27201E-01	1.83170E 00
14	1.65514E-01	4.00192E-01	5.35975E-01	1.90974E 00
15	9.34658E-02	3.71677E-01	3.33358E-01	1.98995E 00
16	5.06878E-02	3.44441E-01	1.99293E-01	2.07236E 00
17	2.64257E-02	3.18458E-01	1.14665E-01	2.15702E 00
18	1.32568E-02	2.93702E-01	6.35682E-02	2.24394E 00
19	6.40526E-03	2.70148E-01	3.39956E-02	2.33317E 00
20	2.98334E-03	2.47769E-01	1.75577E-02	2.42473E 00
21	1.34063E-03	2.26541E-01	8.76701E-03	2.51867E 00
22	5.81709E-04	2.06438E-01	4.23694E-03	2.61501E 00
23	2.43917E-04	1.87436E-01	1.98402E-03	2.71380E 00
24	9.89113E-05	1.69509E-01	9.01161E-04	2.81506E 00
25	3.88176E-05	1.52633E-01	3.97467E-04	2.91884E 00
26	1.47531E-05	1.36784E-01	1.70418E-04	3.02516E 00
27	5.43347E-06	1.21938E-01	7.11098E-05	3.13407E 00
28	1.94021E-06	1.08071E-01	2.89085E-05	3.24559E 00
29	6.72042E-07	9.51590E-02	1.14628E-05	3.35977E 00
30	2.25876E-07	8.31793E-02	4.43831E-06	3.47664E 00
31	7.36814E-08	7.21084E-02	1.67998E-06	3.59623E 00
32	2.33272E-08	6.19235E-02	6.22376E-07	3.71859E 00
33	7.16604E-09	5.26018E-02	2.25928E-07	3.84376E 00
34	2.13479E-09	4.41208E-02	8.04581E-08	3.97175E 00
35	6.16071E-10	3.64583E-02	2.81432E-08	4.10263E 00
36	1.71936E-10	2.95922E-02	9.68074E-09	4.23642E 00
37	4.62814E-11	2.35008E-02	3.27876E-09	4.37315E 00
38	1.19664E-11	1.81623E-02	1.09477E-09	4.51288E 00
39	2.95312E-12	1.35554E-02	3.60831E-10	4.65564E 00
40	6.88581E-13	9.65897E-03	1.17548E-10	4.80145E 00
41	1.49159E-13	6.45208E-03	3.79000E-11	4.95038E 00
42	2.91183E-14	3.91398E-03	1.21106E-11	5.10244E 00
43	4.81603E-15	2.02420E-03	3.84066E-12	5.25769E 00
44	5.77384E-16	7.62462E-04	1.21056E-12	5.41616E 00
45	2.61165E-17	1.08714E-04	3.79804E-13	5.57789E 00
46	3.28120E-18	4.31292E-05	1.18795E-13	5.74293E 00
47	1.31553E-17	5.46104E-04	3.71020E-14	5.91130E 00
48	1.22092E-17	1.59825E-03	1.15904E-14	6.08305E 00
49	7.72920E-18	3.18041E-03	3.62799E-15	6.25823E 00
50	4.09762E-18	5.27365E-03	1.14002E-15	6.43687E 00

SUM S(J) FOR R = 3.06964484E 01 SUM S(J) FOR P = 4.03520584E 01

STRENGTHS AND F FACTORS OF THE V = 0 TO V = 1 TRANSITIONS OF HF

TEMPERATURE = 2000.0 DEG. K

	R BRANCH		P BRANCH	
J	S(J)	F(J)	S(J)	F(J)
0	7.14089E-01	9.48990E-01		
1	1.32911E 00	8.99680E-01	7.50882E-01	1.05274E 00
2	1.79841E 00	8.52041E-01	1.46975E 00	1.10724E 00
3	2.09667E 00	8.06042E-01	2.09181E 00	1.16353E 00
4	2.22147E 00	7.61656E-01	2.56596E 00	1.22164E 00
5	2.19059E 00	7.18852E-01	2.86170E 00	1.28160E 00
6	2.03629E 00	6.77603E-01	2.97188E 00	1.34344E 00
7	1.79815E 00	6.37879E-01	2.91118E 00	1.40720E 00
8	1.51607E 00	5.99654E-01	2.71103E 00	1.47290E 00
9	1.22478E 00	5.62897E-01	2.41251E 00	1.54058E 00
10	9.50550E-01	5.27583E-01	2.05904E 00	1.61027E 00
11	7.10150E-01	4.93682E-01	1.69008E 00	1.68199E 00
12	5.11550E-01	4.61168E-01	1.33699E 00	1.75579E 00
13	3.55776E-01	4.30014E-01	1.02115E 00	1.83170E 00
14	2.39176E-01	4.00192E-01	7.54103E-01	1.90974E 00
15	1.55579E-01	3.71677E-01	5.39164E-01	1.98995E 00
16	9.80113E-02	3.44441E-01	3.73648E-01	2.07236E 00
17	5.98485E-02	3.18458E-01	2.51260E-01	2.15702E 00
18	3.54501E-02	2.93702E-01	1.64111E-01	2.24394E 00
19	2.03836E-02	2.70148E-01	1.04212E-01	2.33317E 00
20	1.13852E-02	2.47769E-01	6.43971E-02	2.42473E 00
21	6.18115E-03	2.26541E-01	3.87586E-02	2.51867E 00
22	3.26387E-03	2.06438E-01	2.27408E-02	2.61501E 00
23	1.67716E-03	1.87436E-01	1.30182E-02	2.71380E 00
24	8.39117E-04	1.69509E-01	7.27750E-03	2.81506E 00
25	4.08963E-04	1.52633E-01	3.97620E-03	2.91884E 00
26	1.94243E-04	1.36784E-01	2.12509E-03	3.02516E 00
27	8.99422E-05	1.21938E-01	1.11194E-03	3.13407E 00
28	4.06128E-05	1.08071E-01	5.70103E-04	3.24559E 00
29	1.78867E-05	9.51590E-02	2.86659E-04	3.35977E 00
30	7.68412E-06	8.31793E-02	1.41479E-04	3.47664E 00
31	3.21975E-06	7.21084E-02	6.85982E-05	3.59623E 00
32	1.31552E-06	6.19235E-02	3.27044E-05	3.71859E 00
33	5.23823E-07	5.26018E-02	1.53447E-05	3.84376E 00
34	2.03098E-07	4.41208E-02	7.09176E-06	3.97175E 00
35	7.65726E-08	3.64583E-02	3.23137E-06	4.10263E 00
36	2.80163E-08	2.95922E-02	1.45295E-06	4.23642E 00
37	9.91800E-09	2.35008E-02	6.45283E-07	4.37315E 00
38	3.38215E-09	1.81623E-02	2.83329E-07	4.51288E 00
39	1.10359E-09	1.35554E-02	1.23109E-07	4.65564E 00
40	3.40978E-10	9.65897E-03	5.29867E-08	4.80145E 00
41	9.80523E-11	6.45208E-03	2.26129E-08	4.95038E 00
42	2.54479E-11	3.91398E-03	9.57850E-09	5.10244E 00
43	5.60183E-12	2.02420E-03	4.03131E-09	5.25769E 00
44	8.94486E-13	7.62462E-04	1.68761E-09	5.41616E 00
45	5.39057E-14	1.08714E-04	7.03487E-10	5.57789E 00
46	9.02248E-15	4.31292E-05	2.92351E-10	5.74293E 00
47	4.81669E-14	5.46104E-04	1.21266E-10	5.91130E 00
48	5.94668E-14	1.59825E-03	5.02696E-11	6.08305E 00
49	5.00085E-14	3.18041E-03	2.08537E-11	6.25823E 00
50	3.51509E-14	5.27365E-03	8.66923E-12	6.43687E 00

SUM S(J) FOR R = 2.00862166E 01 SUM S(J) FOR P = 2.91950130E 01

STRENGTHS AND F FACTORS OF THE V = 0 TO V = 1 TRANSITIONS OF HF

TEMPERATURE = 2500.0 DEG. K

	R BRANCH		P BRANCH	
J	S(J)	F(J)	S(J)	F(J)
0	4.12877E-01	9.48990E-01		
1	7.73651E-01	8.99680E-01	4.35973E-01	1.05274E 00
2	1.06006E 00	8.52041E-01	8.62704E-01	1.10724E 00
3	1.25885E 00	8.06042E-01	1.24855E 00	1.16353E 00
4	1.36651E 00	7.61656E-01	1.56650E 00	1.22164E 00
5	1.38862E 00	7.18852E-01	1.79729E 00	1.28160E 00
6	1.33787E 00	6.77603E-01	1.93124E 00	1.34344E 00
7	1.23151E 00	6.37879E-01	1.96865E 00	1.40720E 00
8	1.08851E 00	5.99654E-01	1.91860E 00	1.47290E 00
9	9.27055E-01	5.62897E-01	1.79682E 00	1.54058E 00
10	7.62729E-01	5.27583E-01	1.62290E 00	1.61027E 00
11	6.07397E-01	4.93682E-01	1.41743E 00	1.68199E 00
12	4.68906E-01	4.61168E-01	1.19958E 00	1.75579E 00
13	3.51365E-01	4.30014E-01	9.85372E-01	1.83170E 00
14	2.55833E-01	4.00192E-01	7.86723E-01	1.90974E 00
15	1.81167E-01	3.71677E-01	6.11244E-01	1.98995E 00
16	1.24876E-01	3.44441E-01	4.62638E-01	2.07236E 00
17	8.38438E-02	3.18458E-01	3.41445E-01	2.15702E 00
18	5.48710E-02	2.93702E-01	2.45945E-01	2.24394E 00
19	3.50232E-02	2.70148E-01	1.73045E-01	2.33317E 00
20	2.18148E-02	2.47769E-01	1.19022E-01	2.42473E 00
21	1.32664E-02	2.26541E-01	8.00898E-02	2.51867E 00
22	7.88067E-03	2.06438E-01	5.27634E-02	2.61501E 00
23	4.57477E-03	1.87436E-01	3.40573E-02	2.71380E 00
24	2.59619E-03	1.69509E-01	2.15537E-02	2.81506E 00
25	1.44083E-03	1.52633E-01	1.33837E-02	2.91884E 00
26	7.82197E-04	1.36784E-01	8.15983E-03	3.02516E 00
27	4.15471E-04	1.21938E-01	4.88810E-03	3.13407E 00
28	2.15944E-04	1.08071E-01	2.87912E-03	3.24559E 00
29	1.09834E-04	9.51590E-02	1.66856E-03	3.35977E 00
30	5.46616E-05	8.31793E-02	9.52128E-04	3.47664E 00
31	2.66119E-05	7.21084E-02	5.35334E-04	3.59623E 00
32	1.26685E-05	6.19235E-02	2.96782E-04	3.71859E 00
33	5.89282E-06	5.26018E-02	1.62347E-04	3.84376E 00
34	2.67553E-06	4.41208E-02	8.76914E-05	3.97175E 00
35	1.18392E-06	3.64583E-02	4.68047E-05	4.10263E 00
36	5.09449E-07	2.95922E-02	2.47035E-05	4.23642E 00
37	2.12506E-07	2.35008E-02	1.29029E-05	4.37315E 00
38	8.55321E-08	1.81623E-02	6.67425E-06	4.51288E 00
39	3.29899E-08	1.35554E-02	3.42163E-06	4.65564E 00
40	1.20640E-08	9.65897E-03	1.73987E-06	4.80145E 00
41	4.11038E-09	6.45208E-03	8.78205E-07	4.95038E 00
42	1.26506E-09	3.91398E-03	4.40377E-07	5.10244E 00
43	3.30444E-10	2.02420E-03	2.19565E-07	5.25769E 00
44	6.26369E-11	7.62462E-04	1.08939E-07	5.41616E 00
45	4.48182E-12	1.08714E-04	5.38360E-08	5.57789E 00
46	8.90588E-13	4.31292E-05	2.65234E-08	5.74293E 00
47	5.64270E-12	5.46104E-04	1.30398E-08	5.91130E 00
48	8.26305E-12	1.59825E-03	6.40374E-09	6.08305E 00
49	8.23487E-12	3.18041E-03	3.14470E-09	6.25823E 00
50	6.85150E-12	5.27365E-03	1.54595E-09	6.43687E 00

SUM S(J) FOR R = 1.38247317E 01 SUM S(J) FOR P = 2.17132413E 01

STRENGTHS AND F FACTORS OF THE V = 0 TO V = 1 TRANSITIONS OF HF

TEMPERATURE = 3000.0 DEG. K

	R BRANCH		P BRANCH	
J	S(J)	F(J)	S(J)	F(J)
0	2.55673E-01	9.48990E-01		
1	4.81311E-01	8.99680E-01	2.70631E-01	1.05274E 00
2	6.65156E-01	8.52041E-01	5.39323E-01	1.10724E 00
3	7.99773E-01	8.06042E-01	7.89139E-01	1.16353E 00
4	8.82453E-01	7.61656E-01	1.00489E 00	1.22164E 00
5	9.15001E-01	7.18852E-01	1.17469E 00	1.28160E 00
6	9.02980E-01	6.77603E-01	1.29099E 00	1.34344E 00
7	8.54634E-01	6.37879E-01	1.35110E 00	1.40720E 00
8	7.79629E-01	5.99654E-01	1.35698E 00	1.47290E 00
9	6.87860E-01	5.62897E-01	1.31457E 00	1.54058E 00
10	5.88444E-01	5.27583E-01	1.23272E 00	1.61027E 00
11	4.89025E-01	4.93682E-01	1.12188E 00	1.68199E 00
12	3.95392E-01	4.61168E-01	9.92909E-01	1.75579E 00
13	3.11402E-01	4.30014E-01	8.55954E-01	1.83170E 00
14	2.39139E-01	4.00192E-01	7.19699E-01	1.90974E 00
15	1.79220E-01	3.71677E-01	5.90888E-01	1.98995E 00
16	1.31176E-01	3.44441E-01	4.74182E-01	2.07236E 00
17	9.38290E-02	3.18458E-01	3.72272E-01	2.15702E 00
18	6.56283E-02	2.93702E-01	2.86158E-01	2.24394E 00
19	4.49099E-02	2.70148E-01	2.15531E-01	2.33317E 00
20	3.00814E-02	2.47769E-01	1.59178E-01	2.42473E 00
21	1.97307E-02	2.26541E-01	1.15351E-01	2.51867E 00
22	1.26778E-02	2.06438E-01	8.20756E-02	2.61501E 00
23	7.98268E-03	1.87436E-01	5.73769E-02	2.71380E 00
24	4.92698E-03	1.69509E-01	3.94332E-02	2.81506E 00
25	2.98158E-03	1.52633E-01	2.66598E-02	2.91884E 00
26	1.76938E-03	1.36784E-01	1.77413E-02	3.02516E 00
27	1.02980E-03	1.21938E-01	1.16281E-02	3.13407E 00
28	5.87837E-04	1.08071E-01	7.51088E-03	3.24559E 00
29	3.29078E-04	9.51590E-02	4.78396E-03	3.35977E 00
30	1.80631E-04	8.31793E-02	3.00647E-03	3.47664E 00
31	9.71819E-05	7.21084E-02	1.86535E-03	3.59623E 00
32	5.12194E-05	6.19235E-02	1.14329E-03	3.71859E 00
33	2.64230E-05	5.26018E-02	6.92640E-04	3.84376E 00
34	1.33267E-05	4.41208E-02	4.15023E-04	3.97175E 00
35	6.56042E-06	3.64583E-02	2.46102E-04	4.10263E 00
36	3.14489E-06	2.95922E-02	1.44511E-04	4.23642E 00
37	1.46321E-06	2.35008E-02	8.40811E-05	4.37315E 00
38	6.57630E-07	1.81623E-02	4.85042E-05	4.51288E 00
39	2.83515E-07	1.35554E-02	2.77600E-05	4.65564E 00
40	1.15983E-07	9.65897E-03	1.57723E-05	4.80145E 00
41	4.42387E-08	6.45208E-03	8.90216E-06	4.95038E 00
42	1.52507E-08	3.91398E-03	4.99472E-06	5.10244E 00
43	4.46395E-09	2.02420E-03	2.78766E-06	5.25769E 00
44	9.48431E-10	7.62462E-04	1.54879E-06	5.41616E 00
45	7.60727E-11	1.08714E-04	8.57212E-07	5.57789E 00
46	1.69443E-11	4.31292E-05	4.72996E-07	5.74293E 00
47	1.20311E-10	5.46104E-04	2.60403E-07	5.91130E 00
48	1.97357E-10	1.59825E-03	1.43159E-07	6.08305E 00
49	2.20192E-10	3.18041E-03	7.86610E-08	6.25823E 00
50	2.04936E-10	5.27365E-03	4.32388E-08	6.43687E 00

SUM S(J) FOR R = 9.84511006E 00 SUM S(J) FOR P = 1.64839673E 01

STRENGTHS AND F FACTORS OF THE V = 0 TO V = 1 TRANSITIONS OF HF

TEMPERATURE = 3500.0 DEG. K

	R BRANCH		P BRANCH	
J	S(J)	F(J)	S(J)	F(J)
0	1.66538E-01	9.48990E-01		
1	3.14585E-01	8.99680E-01	1.76550E-01	1.05274E 00
2	4.37449E-01	8.52041E-01	3.53578E-01	1.10724E 00
3	5.30723E-01	8.06042E-01	5.21363E-01	1.16353E 00
4	5.92504E-01	7.61656E-01	6.70899E-01	1.22164E 00
5	6.23324E-01	7.18852E-01	7.94707E-01	1.28160E 00
6	6.25821E-01	6.77603E-01	8.87445E-01	1.34344E 00
7	6.04242E-01	6.37879E-01	9.46275E-01	1.40720E 00
8	5.63826E-01	5.99654E-01	9.70922E-01	1.47290E 00
9	5.10198E-01	5.62897E-01	9.63459E-01	1.54058E 00
10	4.48817E-01	5.27583E-01	9.27884E-01	1.61027E 00
11	3.84547E-01	4.93682E-01	8.69533E-01	1.68199E 00
12	3.21375E-01	4.61168E-01	7.94460E-01	1.75579E 00
13	2.62280E-01	4.30014E-01	7.08814E-01	1.83170E 00
14	2.09234E-01	4.00192E-01	6.18344E-01	1.90974E 00
15	1.63291E-01	3.71677E-01	5.28008E-01	1.98995E 00
16	1.24756E-01	3.44441E-01	4.41748E-01	2.07236E 00
17	9.33662E-02	3.18458E-01	3.62410E-01	2.15702E 00
18	6.84824E-02	2.93702E-01	2.91775E-01	2.24394E 00
19	4.92530E-02	2.70148E-01	2.30687E-01	2.33317E 00
20	3.47482E-02	2.47769E-01	1.79231E-01	2.42473E 00
21	2.40567E-02	2.26541E-01	1.36926E-01	2.51867E 00
22	1.63487E-02	2.06438E-01	1.02921E-01	2.61501E 00
23	1.09092E-02	1.87436E-01	7.61580E-02	2.71380E 00
24	7.14930E-03	1.69509E-01	5.55091E-02	2.81506E 00
25	4.60221E-03	1.52633E-01	3.98739E-02	2.91884E 00
26	2.91038E-03	1.36784E-01	2.82437E-02	3.02516E 00
27	1.80813E-03	1.21938E-01	1.97377E-02	3.13407E 00
28	1.10353E-03	1.08071E-01	1.36157E-02	3.24559E 00
29	6.61536E-04	9.51590E-02	9.27635E-03	3.35977E 00
30	3.89416E-04	8.31793E-02	6.24505E-03	3.47664E 00
31	2.24998E-04	7.21084E-02	4.15664E-03	3.59623E 00
32	1.27517E-04	6.19235E-02	2.73666E-03	3.71859E 00
33	7.08262E-05	5.26018E-02	1.78318E-03	3.84376E 00
34	3.85040E-05	4.41208E-02	1.15052E-03	3.97175E 00
35	2.04527E-05	3.64583E-02	7.35428E-04	4.10263E 00
36	1.05896E-05	2.95922E-02	4.65977E-04	4.23642E 00
37	5.32624E-06	2.35008E-02	2.92817E-04	4.37315E 00
38	2.58986E-06	1.81623E-02	1.82587E-04	4.51288E 00
39	1.20880E-06	1.35554E-02	1.13036E-04	4.65564E 00
40	5.35693E-07	9.65897E-03	6.95150E-05	4.80145E 00
41	2.21453E-07	6.45208E-03	4.24912E-05	4.95038E 00
42	8.27755E-08	3.91398E-03	2.58301E-05	5.10244E 00
43	2.62777E-08	2.02420E-03	1.56248E-05	5.25769E 00
44	6.05634E-09	7.62462E-04	9.41083E-06	5.41616E 00
45	5.26986E-10	1.08714E-04	5.64728E-06	5.57789E 00
46	1.27332E-10	4.31292E-05	3.37855E-06	5.74293E 00
47	9.80596E-10	5.46104E-04	2.01649E-06	5.91130E 00
48	1.74412E-09	1.59825E-03	1.20157E-06	6.08305E 00
49	2.10900E-09	3.18041E-03	7.15348E-07	6.25823E 00
50	2.12617E-09	5.27365E-03	4.25843E-07	6.43687E 00

SUM S(J) FOR R = 7.19980186E 00 SUM S(J) FOR P = 1.27383873E 01

STRENGTHS AND F FACTORS OF THE V = 0 TO V = 1 TRANSITIONS OF HF

TEMPERATURE = 4000.0 DEG. K

	R BRANCH		P BRANCH	
J	S(J)	F(J)	S(J)	F(J)
0	1.12871E-01	9.48990E-01		
1	2.13770E-01	8.99680E-01	1.19779E-01	1.05274E 00
2	2.98661E-01	8.52041E-01	2.40756E-01	1.10724E 00
3	3.64810E-01	8.06042E-01	3.57038E-01	1.16353E 00
4	4.10900E-01	7.61656E-01	4.63036E-01	1.22164E 00
5	4.37018E-01	7.18852E-01	5.53916E-01	1.28160E 00
6	4.44495E-01	6.77603E-01	6.25961E-01	1.34344E 00
7	4.35652E-01	6.37879E-01	6.76823E-01	1.40720E 00
8	4.13487E-01	5.99654E-01	7.05619E-01	1.47290E 00
9	3.81337E-01	5.62897E-01	7.12876E-01	1.54058E 00
10	3.42569E-01	5.27583E-01	7.00369E-01	1.61027E 00
11	3.00318E-01	4.93682E-01	6.70839E-01	1.68199E 00
12	2.57295E-01	4.61168E-01	6.27679E-01	1.75579E 00
13	2.15671E-01	4.30014E-01	5.74584E-01	1.83170E 00
14	1.77040E-01	4.00192E-01	5.15247E-01	1.90974E 00
15	1.42432E-01	3.71677E-01	4.53089E-01	1.98995E 00
16	1.12379E-01	3.44441E-01	3.91069E-01	2.07236E 00
17	8.70065E-02	3.18458E-01	3.31571E-01	2.15702E 00
18	6.61334E-02	2.93702E-01	2.76355E-01	2.24394E 00
19	4.93717E-02	2.70148E-01	2.26575E-01	2.33317E 00
20	3.62148E-02	2.47769E-01	1.82843E-01	2.42473E 00
21	2.61086E-02	2.26541E-01	1.45318E-01	2.51867E 00
22	1.85050E-02	2.06438E-01	1.13808E-01	2.61501E 00
23	1.28973E-02	1.87436E-01	8.78757E-02	2.71380E 00
24	8.84077E-03	1.69509E-01	6.69311E-02	2.81506E 00
25	5.96093E-03	1.52633E-01	5.03115E-02	2.91884E 00
26	3.95361E-03	1.36784E-01	3.73420E-02	3.02516E 00
27	2.57943E-03	1.21938E-01	2.73796E-02	3.13407E 00
28	1.65523E-03	1.08071E-01	1.98409E-02	3.24559E 00
29	1.04450E-03	9.51590E-02	1.42168E-02	3.35977E 00
30	6.47930E-04	8.31793E-02	1.00774E-02	3.47664E 00
31	3.94916E-04	7.21084E-02	7.06971E-03	3.59623E 00
32	2.36338E-04	6.19235E-02	4.91091E-03	3.71859E 00
33	1.38738E-04	5.26018E-02	3.37932E-03	3.84376E 00
34	7.97845E-05	4.41208E-02	2.30462E-03	3.97175E 00
35	4.48658E-05	3.64583E-02	1.55839E-03	4.10263E 00
36	2.46100E-05	2.95922E-02	1.04533E-03	4.23642E 00
37	1.31222E-05	2.35008E-02	6.95884E-04	4.37315E 00
38	6.76818E-06	1.81623E-02	4.59970E-04	4.51288E 00
39	3.35261E-06	1.35554E-02	3.02020E-04	4.65564E 00
40	1.57751E-06	9.65897E-03	1.97090E-04	4.80145E 00
41	6.92672E-07	6.45208E-03	1.27888E-04	4.95038E 00
42	2.75083E-07	3.91398E-03	8.25553E-05	5.10244E 00
43	9.28021E-08	2.02420E-03	5.30437E-05	5.25769E 00
44	2.27325E-08	7.62462E-04	3.39410E-05	5.41616E 00
45	2.10244E-09	1.08714E-04	2.16399E-05	5.57789E 00
46	5.39924E-10	4.31292E-05	1.37554E-05	5.74293E 00
47	4.41872E-09	5.46104E-04	8.72229E-06	5.91130E 00
48	8.35019E-09	1.59825E-03	5.52083E-06	6.08305E 00
49	1.07243E-08	3.18041E-03	3.49042E-06	6.25823E 00
50	1.14781E-08	5.27365E-03	2.20577E-06	6.43687E 00

SUM S(J) FOR R = 5.38256842E 00 SUM S(J) FOR P = 1.00013971E 01

STRENGTHS AND F FACTORS OF THE V = 0 TO V = 1 TRANSITIONS OF HF

TEMPERATURE = 4500.0 DEG. K

	R BRANCH		P BRANCH	
J	S(J)	F(J)	S(J)	F(J)
0	7.90126E-02	9.48990E-01		
1	1.49955E-01	8.99680E-01	8.39081E-02	1.05274E 00
2	2.10281E-01	8.52041E-01	1.69126E-01	1.10724E 00
3	2.58223E-01	8.06042E-01	2.51919E-01	1.16353E 00
4	2.92866E-01	7.61656E-01	3.28681E-01	1.22164E 00
5	3.14148E-01	7.18852E-01	3.96197E-01	1.28160E 00
6	3.22770E-01	6.77603E-01	4.51872E-01	1.34344E 00
7	3.20070E-01	6.37879E-01	4.93891E-01	1.40720E 00
8	3.07839E-01	5.99654E-01	5.21307E-01	1.47290E 00
9	2.88138E-01	5.62897E-01	5.34048E-01	1.54058E 00
10	2.63109E-01	5.27583E-01	5.32846E-01	1.61027E 00
11	2.34811E-01	4.93682E-01	5.19111E-01	1.68199E 00
12	2.05100E-01	4.61168E-01	4.94761E-01	1.75579E 00
13	1.75534E-01	4.30014E-01	4.62026E-01	1.83170E 00
14	1.47333E-01	4.00192E-01	4.23266E-01	1.90974E 00
15	1.21370E-01	3.71677E-01	3.80787E-01	1.98995E 00
16	9.81899E-02	3.44441E-01	3.36712E-01	2.07236E 00
17	7.80550E-02	3.18458E-01	2.92875E-01	2.15702E 00
18	6.09976E-02	2.93702E-01	2.50756E-01	2.24394E 00
19	4.68785E-02	2.70148E-01	2.11466E-01	2.33317E 00
20	3.54432E-02	2.47769E-01	1.75753E-01	2.42473E 00
21	2.63701E-02	2.26541E-01	1.44037E-01	2.51867E 00
22	1.93115E-02	2.06438E-01	1.16461E-01	2.61501E 00
23	1.39227E-02	1.87436E-01	9.29461E-02	2.71380E 00
24	9.88317E-03	1.69509E-01	7.32545E-02	2.81506E 00
25	6.90821E-03	1.52633E-01	5.70411E-02	2.91884E 00
26	4.75485E-03	1.36784E-01	4.39021E-02	3.02516E 00
27	3.22246E-03	1.21938E-01	3.34131E-02	3.13407E 00
28	2.15007E-03	1.08071E-01	2.51576E-02	3.24559E 00
29	1.41197E-03	9.51590E-02	1.87467E-02	3.35977E 00
30	9.12299E-04	8.31793E-02	1.38314E-02	3.47664E 00
31	5.79638E-04	7.21084E-02	1.01082E-02	3.59623E 00
32	3.61877E-04	6.19235E-02	7.32028E-03	3.71859E 00
33	2.21772E-04	5.26018E-02	5.25539E-03	3.84376E 00
34	1.33229E-04	4.41208E-02	3.74182E-03	3.97175E 00
35	7.83132E-05	3.64583E-02	2.64327E-03	4.10263E 00
36	4.49277E-05	2.95922E-02	1.85335E-03	4.23642E 00
37	2.50676E-05	2.35008E-02	1.29036E-03	4.37315E 00
38	1.35356E-05	1.81623E-02	8.92448E-04	4.51288E 00
39	7.02206E-06	1.35554E-02	6.13417E-04	4.65564E 00
40	3.46162E-06	9.65897E-03	4.19192E-04	4.80145E 00
41	1.59288E-06	6.45208E-03	2.84933E-04	4.95038E 00
42	6.63080E-07	3.91398E-03	1.92725E-04	5.10244E 00
43	2.34520E-07	2.02420E-03	1.29776E-04	5.25769E 00
44	6.02327E-08	7.62462E-04	8.70386E-05	5.41616E 00
45	5.84099E-09	1.08714E-04	5.81705E-05	5.57789E 00
46	1.57275E-09	4.31292E-05	3.87600E-05	5.74293E 00
47	1.34940E-08	5.46104E-04	2.57622E-05	5.91130E 00
48	2.67289E-08	1.59825E-03	1.70900E-05	6.08305E 00
49	3.59734E-08	3.18041E-03	1.13217E-05	6.25823E 00
50	4.03335E-08	5.27365E-03	7.49496E-06	6.43687E 00

SUM S(J) FOR R = 4.10044348E 00 SUM S(J) FOR P = 7.96508741E 00

STRENGTHS AND F FACTORS OF THE V = 0 TO V = 1 TRANSITIONS OF HF

TEMPERATURE = 5000.0 DEG. K

	R BRANCH		P BRANCH	
J	S(J)	F(J)	S(J)	F(J)
0	5.68247E-02	9.48990E-01		
1	1.08028E-01	8.99680E-01	6.03768E-02	1.05274E 00
2	1.51939E-01	8.52041E-01	1.21965E-01	1.10724E 00
3	1.87378E-01	8.06042E-01	1.82307E-01	1.16353E 00
4	2.13701E-01	7.61656E-01	2.38997E-01	1.22164E 00
5	2.30803E-01	7.18852E-01	2.89844E-01	1.28160E 00
6	2.39069E-01	6.77603E-01	3.33009E-01	1.34344E 00
7	2.39301E-01	6.37879E-01	3.67120E-01	1.40720E 00
8	2.32615E-01	5.99654E-01	3.91338E-01	1.47290E 00
9	2.20326E-01	5.62897E-01	4.05376E-01	1.54058E 00
10	2.03836E-01	5.27583E-01	4.09481E-01	1.61027E 00
11	1.84532E-01	4.93682E-01	4.04364E-01	1.68199E 00
12	1.63697E-01	4.61168E-01	3.91117E-01	1.75579E 00
13	1.42453E-01	4.30014E-01	3.71098E-01	1.83170E 00
14	1.21714E-01	4.00192E-01	3.45818E-01	1.90974E 00
15	1.02182E-01	3.71677E-01	3.16828E-01	1.98995E 00
16	8.43403E-02	3.44441E-01	2.85623E-01	2.07236E 00
17	6.84770E-02	3.18458E-01	2.53560E-01	2.15702E 00
18	5.47132E-02	2.93702E-01	2.21809E-01	2.24394E 00
19	4.30366E-02	2.70148E-01	1.91316E-01	2.33317E 00
20	3.33364E-02	2.47769E-01	1.62793E-01	2.42473E 00
21	2.54357E-02	2.26541E-01	1.36729E-01	2.51867E 00
22	1.91207E-02	2.06438E-01	1.13405E-01	2.61501E 00
23	1.41635E-02	1.87436E-01	9.29302E-02	2.71380E 00
24	1.03391E-02	1.69509E-01	7.52700E-02	2.81506E 00
25	7.43815E-03	1.52633E-01	6.02857E-02	2.91884E 00
26	5.27360E-03	1.36784E-01	4.77654E-02	3.02516E 00
27	3.68443E-03	1.21938E-01	3.74536E-02	3.13407E 00
28	2.53615E-03	1.08071E-01	2.90756E-02	3.24559E 00
29	1.71948E-03	9.51590E-02	2.23556E-02	3.35977E 00
30	1.14778E-03	8.31793E-02	1.70307E-02	3.47664E 00
31	7.53887E-04	7.21084E-02	1.28597E-02	3.59623E 00
32	4.86857E-04	6.19235E-02	9.62826E-03	3.71859E 00
33	3.08806E-04	5.26018E-02	7.15060E-03	3.84376E 00
34	1.92109E-04	4.41208E-02	5.26959E-03	3.97175E 00
35	1.16994E-04	3.64583E-02	3.85489E-03	4.10263E 00
36	6.95695E-05	2.95922E-02	2.80033E-03	4.23642E 00
37	4.02504E-05	2.35008E-02	2.02083E-03	4.37315E 00
38	2.25447E-05	1.81623E-02	1.44923E-03	4.51288E 00
39	1.21361E-05	1.35554E-02	1.03322E-03	4.65564E 00
40	6.20957E-06	9.65897E-03	7.32596E-04	4.80145E 00
41	2.96642E-06	6.45208E-03	5.16797E-04	4.95038E 00
42	1.28221E-06	3.91398E-03	3.62853E-04	5.10244E 00
43	4.70949E-07	2.02420E-03	2.53672E-04	5.25769E 00
44	1.25621E-07	7.62462E-04	1.76655E-04	5.41616E 00
45	1.26521E-08	1.08714E-04	1.22596E-04	5.57789E 00
46	3.53811E-09	4.31292E-05	8.48252E-05	5.74293E 00
47	3.15247E-08	5.46104E-04	5.85423E-05	5.91130E 00
48	6.48376E-08	1.59825E-03	4.03209E-05	6.08305E 00
49	9.05884E-08	3.18041E-03	2.77289E-05	6.25823E 00
50	1.05411E-07	5.27365E-03	1.90513E-05	6.43687E 00

SUM S(J) FOR R = 3.17517525E 00 SUM S(J) FOR P = 6.42490089E 00

STRENGTHS AND F FACTORS OF THE V = 1 TO V = 2 TRANSITIONS OF HF

TEMPERATURE = 273.3 DEG. K

	R BRANCH		P BRANCH	
J	S(J)	F(J)	S(J)	F(J)
0	7.10332E-08	9.50548E-01		
1	1.10593E-07	9.02715E-01	6.24843E-08	1.05110E 00
2	1.04731E-07	8.56472E-01	8.56027E-08	1.10388E 00
3	7.15318E-08	8.11792E-01	7.13787E-08	1.15836E 00
4	3.71913E-08	7.68646E-01	4.29686E-08	1.21458E 00
5	1.50881E-08	7.27006E-01	1.97161E-08	1.27257E 00
6	4.84298E-09	6.86843E-01	7.07046E-09	1.33235E 00
7	1.24109E-09	6.48132E-01	2.01005E-09	1.39396E 00
8	2.55607E-10	6.10844E-01	4.57263E-10	1.45743E 00
9	4.25330E-11	5.74952E-01	8.38169E-11	1.52278E 00
10	5.74449E-12	5.40429E-01	1.24493E-11	1.59005E 00
11	6.32370E-13	5.07250E-01	1.50569E-12	1.65927E 00
12	5.69663E-14	4.75386E-01	1.48956E-13	1.73047E 00
13	4.21593E-15	4.44812E-01	1.21055E-14	1.80368E 00
14	2.57333E-16	4.15502E-01	8.11619E-16	1.87894E 00
15	1.30059E-17	3.87430E-01	4.50813E-17	1.95627E 00
16	5.46492E-19	3.60571E-01	2.08340E-18	2.03572E 00
17	1.91696E-20	3.34899E-01	8.04575E-20	2.11730E 00
18	5.63729E-22	3.10390E-01	2.60802E-21	2.20105E 00
19	1.39586E-23	2.87017E-01	7.12824E-23	2.28701E 00
20	2.92324E-25	2.64758E-01	1.65049E-24	2.37521E 00
21	5.20151E-27	2.43586E-01	3.25300E-26	2.46569E 00
22	7.90083E-29	2.23478E-01	5.48447E-28	2.55846E 00
23	1.02939E-30	2.04410E-01	7.94982E-30	2.65358E 00
24	1.15607E-32	1.86359E-01	9.95863E-32	2.75107E 00
25	1.12474E-34	1.69299E-01	1.08383E-33	2.85098E 00
26	9.52797E-37	1.53209E-01	1.03038E-35	2.95332E 00
27	.00000E 00	1.38065E-01	.00000E 00	3.05814E 00
28	.00000E 00	1.23845E-01	.00000E 00	3.16547E 00
29	.00000E 00	1.10524E-01	.00000E 00	3.27535E 00
30	.00000E 00	9.80823E-02	.00000E 00	3.38781E 00
31	.00000E 00	8.64960E-02	.00000E 00	3.50289E 00
32	.00000E 00	7.57435E-02	.00000E 00	3.62062E 00
33	.00000E 00	6.58030E-02	.00000E 00	3.74105E 00
34	.00000E 00	5.66530E-02	.00000E 00	3.86420E 00
35	.00000E 00	4.82721E-02	.00000E 00	3.99011E 00
36	.00000E 00	4.06391E-02	.00000E 00	4.11882E 00
37	.00000E 00	3.37333E-02	.00000E 00	4.25037E 00
38	.00000E 00	2.75338E-02	.00000E 00	4.38478E 00
39	.00000E 00	2.20203E-02	.00000E 00	4.52211E 00
40	.00000E 00	1.71726E-02	.00000E 00	4.66239E 00
41	.00000E 00	1.29705E-02	.00000E 00	4.80566E 00
42	.00000E 00	9.39428E-03	.00000E 00	4.95194E 00
43	.00000E 00	6.42443E-03	.00000E 00	5.10129E 00
44	.00000E 00	4.04156E-03	.00000E 00	5.25374E 00
45	.00000E 00	2.22654E-03	.00000E 00	5.40933E 00
46	.00000E 00	9.60471E-04	.00000E 00	5.56809E 00
47	.00000E 00	2.24670E-04	.00000E 00	5.73008E 00
48	.00000E 00	6.74301E-07	.00000E 00	5.89531E 00
49	.00000E 00	2.70242E-04	.00000E 00	6.06385E 00
50	.00000E 00	1.01536E-03	.00000E 00	6.23572E 00

SUM S(J) FOR R = 4.16557407E-07 SUM S(J) FOR P = 2.91786036E-07

STRENGTHS AND F FACTORS OF THE V = 1 TO V = 2 TRANSITIONS OF HF

TEMPERATURE = 373.3 DEG. K

	R BRANCH		P BRANCH	
J	S(J)	F(J)	S(J)	F(J)
0	1.02544E-05	9.50548E-01		
1	1.68814E-05	9.02715E-01	9.53785E-06	1.05110E 00
2	1.78728E-05	8.56472E-01	1.46084E-05	1.10388E 00
3	1.44276E-05	8.11792E-01	1.43967E-05	1.15836E 00
4	9.37060E-06	7.68646E-01	1.08262E-05	1.21458E 00
5	5.01790E-06	7.27006E-01	6.55704E-06	1.27257E 00
6	2.24565E-06	6.86843E-01	3.27852E-06	1.33235E 00
7	8.47182E-07	6.48132E-01	1.37208E-06	1.39396E 00
8	2.71072E-07	6.10844E-01	4.84927E-07	1.45743E 00
9	7.39146E-08	5.74952E-01	1.45658E-07	1.52278E 00
10	1.72441E-08	5.40429E-01	3.73708E-08	1.59005E 00
11	3.45417E-09	5.07250E-01	8.22443E-09	1.65927E 00
12	5.96011E-10	4.75386E-01	1.55844E-09	1.73047E 00
13	8.88647E-11	4.44812E-01	2.55163E-10	1.80368E 00
14	1.14841E-11	4.15502E-01	3.62201E-11	1.87894E 00
15	1.29026E-12	3.87430E-01	4.47228E-12	1.95627E 00
16	1.26417E-13	3.60571E-01	4.81936E-13	2.03572E 00
17	1.08351E-14	3.34899E-01	4.54757E-14	2.11730E 00
18	8.14947E-16	3.10390E-01	3.77020E-15	2.20105E 00
19	5.39635E-17	2.87017E-01	2.75572E-16	2.28701E 00
20	3.15631E-18	2.64758E-01	1.78204E-17	2.37521E 00
21	1.63616E-19	2.43586E-01	1.02322E-18	2.46569E 00
22	7.54282E-21	2.23478E-01	5.23577E-20	2.55846E 00
23	3.10331E-22	2.04410E-01	2.39653E-21	2.65358E 00
24	1.14353E-23	1.86359E-01	9.85005E-23	2.75107E 00
25	3.78768E-25	1.69299E-01	3.64966E-24	2.85098E 00
26	1.13188E-26	1.53209E-01	1.22394E-25	2.95332E 00
27	3.06295E-28	1.38065E-01	3.73025E-27	3.05814E 00
28	7.53393E-30	1.23845E-01	1.03752E-28	3.16547E 00
29	1.69077E-31	1.10524E-01	2.64470E-30	3.27535E 00
30	3.47512E-33	9.80823E-02	6.20531E-32	3.38781E 00
31	6.56618E-35	8.64960E-02	1.34609E-33	3.50289E 00
32	1.14482E-36	7.57435E-02	2.71183E-35	3.62062E 00
33	.00000E 00	6.58030E-02	5.09706E-37	3.74105E 00
34	.00000E 00	5.66530E-02	.00000E 00	3.86420E 00
35	.00000E 00	4.82721E-02	.00000E 00	3.99011E 00
36	.00000E 00	4.06391E-02	.00000E 00	4.11882E 00
37	.00000E 00	3.37333E-02	.00000E 00	4.25037E 00
38	.00000E 00	2.75338E-02	.00000E 00	4.38478E 00
39	.00000E 00	2.20203E-02	.00000E 00	4.52211E 00
40	.00000E 00	1.71726E-02	.00000E 00	4.66239E 00
41	.00000E 00	1.29705E-02	.00000E 00	4.80566E 00
42	.00000E 00	9.39428E-03	.00000E 00	4.95194E 00
43	.00000E 00	6.42443E-03	.00000E 00	5.10129E 00
44	.00000E 00	4.04156E-03	.00000E 00	5.25374E 00
45	.00000E 00	2.22654E-03	.00000E 00	5.40933E 00
46	.00000E 00	9.60471E-04	.00000E 00	5.56809E 00
47	.00000E 00	2.24670E-04	.00000E 00	5.73008E 00
48	.00000E 00	6.74301E-07	.00000E 00	5.89531E 00
49	.00000E 00	2.70242E-04	.00000E 00	6.06385E 00
50	.00000E 00	1.01536E-03	.00000E 00	6.23572E 00

SUM S(J) FOR R = 7.72838807E-05 SUM S(J) FOR P = 6.12549007E-05

STRENGTHS AND F FACTORS OF THE V = 1 TO V = 2 TRANSITIONS OF HF

TEMPERATURE = 500.0 DEG. K

	R BRANCH		P BRANCH	
J	S(J)	F(J)	S(J)	F(J)
0	2.75401E-04	9.50548E-01		
1	4.71247E-04	9.02715E-01	2.66249E-04	1.05110E 00
2	5.38986E-04	8.56472E-01	4.40540E-04	1.10388E 00
3	4.88477E-04	8.11792E-01	4.87425E-04	1.15836E 00
4	3.70116E-04	7.68646E-01	4.27602E-04	1.21458E 00
5	2.40208E-04	7.27006E-01	3.13880E-04	1.27257E 00
6	1.35323E-04	6.86843E-01	1.97558E-04	1.33235E 00
7	6.67290E-05	6.48132E-01	1.08070E-04	1.39396E 00
8	2.89688E-05	6.10844E-01	5.18209E-05	1.45743E 00
9	1.11205E-05	5.74952E-01	2.19132E-05	1.52278E 00
10	3.78819E-06	5.40429E-01	8.20916E-06	1.59005E 00
11	1.14864E-06	5.07250E-01	2.73474E-06	1.65927E 00
12	3.10867E-07	4.75386E-01	8.12787E-07	1.73047E 00
13	7.52871E-08	4.44812E-01	2.16156E-07	1.80368E 00
14	1.63566E-08	4.15502E-01	5.15820E-08	1.87894E 00
15	3.19552E-09	3.87430E-01	1.10748E-08	1.95627E 00
16	5.62741E-10	3.60571E-01	2.14498E-09	2.03572E 00
17	8.95443E-11	3.34899E-01	3.75755E-10	2.11730E 00
18	1.29058E-11	3.10390E-01	5.96929E-11	2.20105E 00
19	1.68892E-12	2.87017E-01	8.62247E-12	2.28701E 00
20	2.01187E-13	2.64758E-01	1.13555E-12	2.37521E 00
21	2.18701E-14	2.43586E-01	1.36722E-13	2.46569E 00
22	2.17509E-15	2.23478E-01	1.50917E-14	2.55846E 00
23	1.98432E-16	2.04410E-01	1.53162E-15	2.65358E 00
24	1.66494E-17	1.86359E-01	1.43328E-16	2.75107E 00
25	1.28824E-18	1.69299E-01	1.24042E-17	2.85098E 00
26	9.21671E-20	1.53209E-01	9.95808E-19	2.95332E 00
27	6.11383E-21	1.38065E-01	7.43847E-20	3.05814E 00
28	3.77042E-22	1.23845E-01	5.18628E-21	3.16547E 00
29	2.16763E-23	1.10524E-01	3.38594E-22	3.27535E 00
30	1.16486E-24	9.80823E-02	2.07664E-23	3.38781E 00
31	5.86690E-26	8.64960E-02	1.20044E-24	3.50289E 00
32	2.77670E-27	7.57435E-02	6.56258E-26	3.62062E 00
33	1.23803E-28	6.58030E-02	3.40452E-27	3.74105E 00
34	5.21269E-30	5.66530E-02	1.68188E-28	3.86420E 00
35	2.07724E-31	4.82721E-02	7.94033E-30	3.99011E 00
36	7.84990E-33	4.06391E-02	3.59547E-31	4.11882E 00
37	2.81772E-34	3.37333E-02	1.56731E-32	4.25037E 00
38	9.61756E-36	2.75338E-02	6.60195E-34	4.38478E 00
39	.00000E 00	2.20203E-02	2.69764E-35	4.52211E 00
40	.00000E 00	1.71726E-02	1.07351E-36	4.66239E 00
41	.00000E 00	1.29705E-02	.00000E 00	4.80566E 00
42	.00000E 00	9.39428E-03	.00000E 00	4.95194E 00
43	.00000E 00	6.42443E-03	.00000E 00	5.10129E 00
44	.00000E 00	4.04156E-03	.00000E 00	5.25374E 00
45	.00000E 00	2.22654E-03	.00000E 00	5.40933E 00
46	.00000E 00	9.60471E-04	.00000E 00	5.56809E 00
47	.00000E 00	2.24670E-04	.00000E 00	5.73008E 00
48	.00000E 00	6.74301E-07	.00000E 00	5.89531E 00
49	.00000E 00	2.70242E-04	.00000E 00	6.06385E 00
50	.00000E 00	1.01536E-03	.00000E 00	6.23572E 00

SUM S(J) FOR R = 2.63191965E-03 SUM S(J) FOR P = 2.32709441E-03

STRENGTHS AND F FACTORS OF THE V = 1 TO V = 2 TRANSITIONS OF HF

TEMPERATURE = 1000.0 DEG. K

	R BRANCH		P BRANCH	
J	S(J)	F(J)	S(J)	F(J)
0	2.05514E-02	9.50548E-01		
1	3.72339E-02	9.02715E-01	2.10223E-02	1.05110E 00
2	4.77271E-02	8.56472E-01	3.89650E-02	1.10388E 00
3	5.13041E-02	8.11792E-01	5.11108E-02	1.15836E 00
4	4.87864E-02	7.68646E-01	5.62453E-02	1.21458E 00
5	4.20349E-02	7.27006E-01	5.47839E-02	1.27257E 00
6	3.32438E-02	6.86843E-01	4.83808E-02	1.33235E 00
7	2.43245E-02	6.48132E-01	3.92495E-02	1.39396E 00
8	1.65544E-02	6.10844E-01	2.94873E-02	1.45743E 00
9	1.05190E-02	5.74952E-01	2.06272E-02	1.52278E 00
10	6.25902E-03	5.40429E-01	1.34887E-02	1.59005E 00
11	3.49569E-03	5.07250E-01	8.27094E-03	1.65927E 00
12	1.83622E-03	4.75386E-01	4.76747E-03	1.73047E 00
13	9.08753E-04	4.44812E-01	2.58882E-03	1.80368E 00
14	4.24417E-04	4.15502E-01	1.32686E-03	1.87894E 00
15	1.87331E-04	3.87430E-01	6.43012E-04	1.95627E 00
16	7.82553E-05	3.60571E-01	2.95120E-04	2.03572E 00
17	3.09811E-05	3.34899E-01	1.28484E-04	2.11730E 00
18	1.16397E-05	3.10390E-01	5.31419E-05	2.20105E 00
19	4.15541E-06	2.87017E-01	2.09131E-05	2.28701E 00
20	1.41150E-06	2.64758E-01	7.84238E-06	2.37521E 00
21	4.56779E-07	2.43586E-01	2.80655E-06	2.46569E 00
22	1.41008E-07	2.23478E-01	9.59948E-07	2.55846E 00
23	4.15771E-08	2.04410E-01	3.14288E-07	2.65358E 00
24	1.17242E-08	1.86359E-01	9.86454E-08	2.75107E 00
25	3.16582E-09	1.69299E-01	2.97279E-08	2.85098E 00
26	8.19599E-10	1.53209E-01	8.61522E-09	2.95332E 00
27	2.03686E-10	1.38065E-01	2.40474E-09	3.05814E 00
28	4.86507E-11	1.23845E-01	6.47536E-10	3.16547E 00
29	1.11812E-11	1.10524E-01	1.68483E-10	3.27535E 00
30	2.47538E-12	9.80823E-02	4.24284E-11	3.38781E 00
31	5.28447E-13	8.64960E-02	1.03583E-11	3.50289E 00
32	1.08888E-13	7.57435E-02	2.45573E-12	3.62062E 00
33	2.16742E-14	6.58030E-02	5.66344E-13	3.74105E 00
34	4.17041E-15	5.66530E-02	1.27273E-13	3.86420E 00
35	7.76048E-16	4.82721E-02	2.79203E-14	3.99011E 00
36	1.39684E-16	4.06391E-02	5.98972E-15	4.11882E 00
37	2.43137E-17	3.37333E-02	1.25889E-15	4.25037E 00
38	4.08939E-18	2.75338E-02	2.59702E-16	4.38478E 00
39	6.63535E-19	2.20203E-02	5.26854E-17	4.52211E 00
40	1.03570E-19	1.71726E-02	1.05312E-17	4.66239E 00
41	1.54779E-20	1.29705E-02	2.07825E-18	4.80566E 00
42	2.19722E-21	9.39428E-03	4.05734E-19	4.95194E 00
43	2.92368E-22	6.42443E-03	7.85270E-20	5.10129E 00
44	3.56056E-23	4.04156E-03	1.50998E-20	5.25374E 00
45	3.78663E-24	2.22654E-03	2.89119E-21	5.40933E 00
46	3.15181E-25	9.60471E-04	5.52515E-22	5.56809E 00
47	1.42540E-26	2.24670E-04	1.05639E-22	5.73008E 00
48	8.30840E-30	6.74301E-07	2.02592E-23	5.89531E 00
49	6.51323E-28	2.70242E-04	3.90741E-24	6.06385E 00
50	4.83434E-28	1.01536E-03	7.60038E-25	6.23572E 00

SUM S(J) FOR R = 3.45518103E-01 SUM S(J) FOR P = 3.91467696E-01

STRENGTHS AND F FACTORS OF THE V = 1 TO V = 2 TRANSITIONS OF HF

TEMPERATURE = 1500.0 DEG. K

	R BRANCH		P BRANCH	
J	S(J)	F(J)	S(J)	F(J)
0	5.85477E-02	9.50548E-01		
1	1.08180E-01	9.02715E-01	6.09426E-02	1.05110E 00
2	1.44120E-01	8.56472E-01	1.17224E-01	1.10388E 00
3	1.64078E-01	8.11792E-01	1.62607E-01	1.15836E 00
4	1.68382E-01	7.68646E-01	1.92819E-01	1.21458E 00
5	1.59524E-01	7.27006E-01	2.06187E-01	1.27257E 00
6	1.41324E-01	6.86843E-01	2.03650E-01	1.33235E 00
7	1.17990E-01	6.48132E-01	1.88210E-01	1.39396E 00
8	9.33146E-02	6.10844E-01	1.64045E-01	1.45743E 00
9	7.01630E-02	5.74952E-01	1.35558E-01	1.52278E 00
10	5.02925E-02	5.40429E-01	1.06600E-01	1.59005E 00
11	3.44401E-02	5.07250E-01	8.00014E-02	1.65927E 00
12	2.25711E-02	4.75386E-01	5.74274E-02	1.73047E 00
13	1.41781E-02	4.44812E-01	3.95037E-02	1.80368E 00
14	8.54730E-03	4.15502E-01	2.60829E-02	1.87894E 00
15	4.95104E-03	3.87430E-01	1.65538E-02	1.95627E 00
16	2.75863E-03	3.60571E-01	1.01119E-02	2.03572E 00
17	1.48001E-03	3.34899E-01	5.95243E-03	2.11730E 00
18	7.65301E-04	3.10390E-01	3.38057E-03	2.20105E 00
19	3.81768E-04	2.87017E-01	1.85443E-03	2.28701E 00
20	1.83891E-04	2.64758E-01	9.83627E-04	2.37521E 00
21	8.56051E-05	2.43586E-01	5.05035E-04	2.46569E 00
22	3.85466E-05	2.23478E-01	2.51274E-04	2.55846E 00
23	1.68029E-05	2.04410E-01	1.21275E-04	2.65358E 00
24	7.09660E-06	1.86359E-01	5.68405E-05	2.75107E 00
25	2.90621E-06	1.69299E-01	2.58982E-05	2.85098E 00
26	1.15491E-06	1.53209E-01	1.14834E-05	2.95332E 00
27	4.45686E-07	1.38065E-01	4.96060E-06	3.05814E 00
28	1.67137E-07	1.23845E-01	2.08991E-06	3.16547E 00
29	6.09480E-08	1.10524E-01	8.59670E-07	3.27535E 00
30	2.16241E-08	9.80823E-02	3.45640E-07	3.38781E 00
31	7.46839E-09	8.64960E-02	1.35985E-07	3.50289E 00
32	2.51187E-09	7.57435E-02	5.24110E-08	3.62062E 00
33	8.22934E-10	6.58030E-02	1.98115E-08	3.74105E 00
34	2.62646E-10	5.66530E-02	7.35319E-09	3.86420E 00
35	8.16502E-11	4.82721E-02	2.68293E-09	3.99011E 00
36	2.47135E-11	4.06391E-02	9.63462E-10	4.11882E 00
37	7.27668E-12	3.37333E-02	3.40939E-10	4.25037E 00
38	2.08128E-12	2.75338E-02	1.19034E-10	4.38478E 00
39	5.76956E-13	2.20203E-02	4.10543E-11	4.52211E 00
40	1.54470E-13	1.71726E-02	1.40056E-11	4.66239E 00
41	3.97262E-14	1.29705E-02	4.73222E-12	4.80566E 00
42	9.72999E-15	9.39428E-03	1.58575E-12	4.95194E 00
43	2.23790E-15	6.42443E-03	5.27728E-13	5.10129E 00
44	4.71596E-16	4.04156E-03	1.74668E-13	5.25374E 00
45	8.68105E-17	2.22654E-03	5.75818E-14	5.40933E 00
46	1.25003E-17	9.60471E-04	1.89362E-14	5.56809E 00
47	9.76640E-19	2.24670E-04	6.22196E-15	5.73008E 00
48	9.81226E-22	6.74301E-07	2.04606E-15	5.89531E 00
49	1.32162E-19	2.70242E-04	6.74572E-16	6.06385E 00
50	1.67836E-19	1.01536E-03	2.23388E-16	6.23572E 00

SUM S(J) FOR R = 1.36632474E 00 SUM S(J) FOR P = 1.78067538E 00

STRENGTHS AND F FACTORS OF THE V = 1 TO V = 2 TRANSITIONS OF HF

TEMPERATURE = 2000.0 DEG. K

	R BRANCH		P BRANCH	
J	S(J)	F(J)	S(J)	F(J)
0	7.85310E-02	9.50548E-01		
1	1.46614E-01	9.02715E-01	8.23665E-02	1.05110E 00
2	1.99223E-01	8.56472E-01	1.61299E-01	1.10388E 00
3	2.33526E-01	8.11792E-01	2.29944E-01	1.15836E 00
4	2.49069E-01	7.68646E-01	2.82853E-01	1.21458E 00
5	2.47534E-01	7.27006E-01	3.16697E-01	1.27257E 00
6	2.32184E-01	6.86843E-01	3.30564E-01	1.33235E 00
7	2.07139E-01	6.48132E-01	3.25825E-01	1.39396E 00
8	1.76654E-01	6.10844E-01	3.05650E-01	1.45743E 00
9	1.44530E-01	5.74952E-01	2.74292E-01	1.52278E 00
10	1.13737E-01	5.40429E-01	2.36340E-01	1.59005E 00
11	8.62651E-02	5.07250E-01	1.96054E-01	1.65927E 00
12	6.31634E-02	4.75386E-01	1.56911E-01	1.73047E 00
13	4.47078E-02	4.44812E-01	1.21374E-01	1.80368E 00
14	3.06263E-02	4.15502E-01	9.08724E-02	1.87894E 00
15	2.03257E-02	3.87430E-01	6.59366E-02	1.95627E 00
16	1.30809E-02	3.60571E-01	4.64204E-02	2.03572E 00
17	8.17027E-03	3.34899E-01	3.17422E-02	2.11730E 00
18	4.95667E-03	3.10390E-01	2.11027E-02	2.20105E 00
19	2.92292E-03	2.87017E-01	1.36527E-02	2.28701E 00
20	1.67659E-03	2.64758E-01	8.60337E-03	2.37521E 00
21	9.36075E-04	2.43586E-01	5.28529E-03	2.46569E 00
22	5.09036E-04	2.23478E-01	3.16805E-03	2.55846E 00
23	2.69779E-04	2.04410E-01	1.85440E-03	2.65358E 00
24	1.39426E-04	1.86359E-01	1.06088E-03	2.75107E 00
25	7.03074E-05	1.69299E-01	5.93670E-04	2.85098E 00
26	3.46102E-05	1.53209E-01	3.25237E-04	2.95332E 00
27	1.66404E-05	1.38065E-01	1.74579E-04	3.05814E 00
28	7.81757E-06	1.23845E-01	9.18932E-05	3.16547E 00
29	3.58999E-06	1.10524E-01	4.74722E-05	3.27535E 00
30	1.61200E-06	9.80823E-02	2.40894E-05	3.38781E 00
31	7.07917E-07	8.64960E-02	1.20174E-05	3.50289E 00
32	3.04088E-07	7.57435E-02	5.89878E-06	3.62062E 00
33	1.27763E-07	6.58030E-02	2.85141E-06	3.74105E 00
34	5.24951E-08	5.66530E-02	1.35856E-06	3.86420E 00
35	2.10839E-08	4.82721E-02	6.38562E-07	3.99011E 00
36	8.27137E-09	4.06391E-02	2.96359E-07	4.11882E 00
37	3.16590E-09	3.37333E-02	1.35931E-07	4.25037E 00
38	1.18018E-09	2.75338E-02	6.16741E-08	4.38478E 00
39	4.27367E-10	2.20203E-02	2.77061E-08	4.52211E 00
40	1.49758E-10	1.71726E-02	1.23354E-08	4.66239E 00
41	5.04892E-11	1.29705E-02	5.44821E-09	4.80566E 00
42	1.62312E-11	9.39428E-03	2.38955E-09	4.95194E 00
43	4.90423E-12	6.42443E-03	1.04180E-09	5.10129E 00
44	1.35833E-12	4.04156E-03	4.51977E-10	5.25374E 00
45	3.28663E-13	2.22654E-03	1.95340E-10	5.40933E 00
46	6.21874E-14	9.60471E-04	8.41981E-11	5.56809E 00
47	6.37960E-15	2.24670E-04	3.62379E-11	5.73008E 00
48	8.40585E-18	6.74301E-07	1.55925E-11	5.89531E 00
49	1.48233E-15	2.70242E-04	6.71630E-12	6.06385E 00
50	2.45928E-15	1.01536E-03	2.90003E-12	6.23572E 00

SUM S(J) FOR R = 2.30662638E 00 SUM S(J) FOR P = 3.31114858E 00

STRENGTHS AND F FACTORS OF THE V = 1 TO V = 2 TRANSITIONS OF HF

TEMPERATURE = 2500.0 DEG. K

	R BRANCH		P BRANCH	
J	S(J)	F(J)	S(J)	F(J)
0	7.99852E-02	9.50548E-01		
1	1.50304E-01	9.02715E-01	8.42210E-02	1.05110E 00
2	2.06733E-01	8.56472E-01	1.66658E-01	1.10388E 00
3	2.46676E-01	8.11792E-01	2.41425E-01	1.15836E 00
4	2.69318E-01	7.68646E-01	3.03474E-01	1.21458E 00
5	2.75522E-01	7.27006E-01	3.49159E-01	1.27257E 00
6	2.67508E-01	6.86843E-01	3.76580E-01	1.33235E 00
7	2.48392E-01	6.48132E-01	3.85652E-01	1.39396E 00
8	2.21687E-01	6.10844E-01	3.77928E-01	1.45743E 00
9	1.90834E-01	5.74952E-01	3.56215E-01	1.52278E 00
10	1.58854E-01	5.40429E-01	3.24087E-01	1.59005E 00
11	1.28121E-01	5.07250E-01	2.85371E-01	1.65927E 00
12	1.00275E-01	4.75386E-01	2.43696E-01	1.73047E 00
13	7.62557E-02	4.44812E-01	2.02160E-01	1.80368E 00
14	5.64063E-02	4.15502E-01	1.63137E-01	1.87894E 00
15	4.06223E-02	3.87430E-01	1.28214E-01	1.95627E 00
16	2.85063E-02	3.60571E-01	9.82426E-02	2.03572E 00
17	1.95065E-02	3.34899E-01	7.34614E-02	2.11730E 00
18	1.30250E-02	3.10390E-01	5.36529E-02	2.20105E 00
19	8.49201E-03	2.87017E-01	3.83053E-02	2.28701E 00
20	5.40915E-03	2.64758E-01	2.67544E-02	2.37521E 00
21	3.36802E-03	2.43586E-01	1.82948E-02	2.46569E 00
22	2.05101E-03	2.23478E-01	1.22567E-02	2.55846E 00
23	1.22215E-03	2.04410E-01	8.05091E-03	2.65358E 00
24	7.12910E-04	1.86359E-01	5.18851E-03	2.75107E 00
25	4.07270E-04	1.69299E-01	3.28299E-03	2.85098E 00
26	2.27946E-04	1.53209E-01	2.04092E-03	2.95332E 00
27	1.25034E-04	1.38065E-01	1.24740E-03	3.05814E 00
28	6.72349E-05	1.23845E-01	7.50081E-04	3.16547E 00
29	3.54512E-05	1.10524E-01	4.44049E-04	3.27535E 00
30	1.83317E-05	9.80823E-02	2.58982E-04	3.38781E 00
31	9.29686E-06	8.64960E-02	1.48910E-04	3.50289E 00
32	4.62393E-06	7.57435E-02	8.44682E-05	3.62062E 00
33	2.25499E-06	6.58030E-02	4.73019E-05	3.74105E 00
34	1.07789E-06	5.66530E-02	2.61688E-05	3.86420E 00
35	5.04706E-07	4.82721E-02	1.43125E-05	3.99011E 00
36	2.31277E-07	4.06391E-02	7.74436E-06	4.11882E 00
37	1.03579E-07	3.37333E-02	4.14863E-06	4.25037E 00
38	4.52496E-08	2.75338E-02	2.20186E-06	4.38478E 00
39	1.92284E-08	2.20203E-02	1.15869E-06	4.52211E 00
40	7.91598E-09	1.71726E-02	6.05008E-07	4.66239E 00
41	3.13829E-09	1.29705E-02	3.13696E-07	4.80566E 00
42	1.18723E-09	9.39428E-03	1.61643E-07	4.95194E 00
43	4.22343E-10	6.42443E-03	8.28425E-08	5.10129E 00
44	1.37761E-10	4.04156E-03	4.22635E-08	5.25374E 00
45	3.92562E-11	2.22654E-03	2.14817E-08	5.40933E 00
46	8.74585E-12	9.60471E-04	1.08882E-08	5.56809E 00
47	1.05592E-12	2.24670E-04	5.50846E-09	5.73008E 00
48	1.63617E-15	6.74301E-07	2.78436E-09	5.89531E 00
49	3.38964E-13	2.70242E-04	1.40764E-09	6.06385E 00
50	6.59780E-13	1.01536E-03	7.12533E-10	6.23572E 00

SUM S(J) FOR R = 2.80068547E 00 SUM S(J) FOR P = 4.33054554E 00

STRENGTHS AND F FACTORS OF THE V = 1 TO V = 2 TRANSITIONS OF HF

TEMPERATURE = 3000.0 DEG. K

	R BRANCH		P BRANCH	
J	S(J)	F(J)	S(J)	F(J)
0	7.21884E-02	9.50548E-01		
1	1.36265E-01	9.02715E-01	7.61833E-02	1.05110E 00
2	1.88977E-01	8.56472E-01	1.51776E-01	1.10388E 00
3	2.28212E-01	8.11792E-01	2.22188E-01	1.15836E 00
4	2.53109E-01	7.68646E-01	2.83296E-01	1.21458E 00
5	2.64022E-01	7.27006E-01	3.31844E-01	1.27257E 00
6	2.62339E-01	6.86843E-01	3.65730E-01	1.33235E 00
7	2.50206E-01	6.48132E-01	3.84132E-01	1.39396E 00
8	2.30200E-01	6.10844E-01	3.87480E-01	1.45743E 00
9	2.05016E-01	5.74952E-01	3.77282E-01	1.52278E 00
10	1.77190E-01	5.40429E-01	3.55852E-01	1.59005E 00
11	1.48897E-01	5.07250E-01	3.25981E-01	1.65927E 00
12	1.21839E-01	4.75386E-01	2.90605E-01	1.73047E 00
13	9.72010E-02	4.44812E-01	2.52522E-01	1.80368E 00
14	7.56798E-02	4.15502E-01	2.14169E-01	1.87894E 00
15	5.75566E-02	3.87430E-01	1.77485E-01	1.95627E 00
16	4.27902E-02	3.60571E-01	1.43862E-01	2.03572E 00
17	3.11189E-02	3.34899E-01	1.14154E-01	2.11730E 00
18	2.21511E-02	3.10390E-01	8.87445E-02	2.20105E 00
19	1.54419E-02	2.87017E-01	6.76436E-02	2.28701E 00
20	1.05477E-02	2.64758E-01	5.05883E-02	2.37521E 00
21	7.06275E-03	2.43586E-01	3.71452E-02	2.46569E 00
22	4.63801E-03	2.23478E-01	2.67955E-02	2.55846E 00
23	2.98816E-03	2.04410E-01	1.90021E-02	2.65358E 00
24	1.88951E-03	1.86359E-01	1.32553E-02	2.75107E 00
25	1.17301E-03	1.69299E-01	9.10082E-03	2.85098E 00
26	7.15139E-04	1.53209E-01	6.15370E-03	2.95332E 00
27	4.28268E-04	1.38065E-01	4.10026E-03	3.05814E 00
28	2.51974E-04	1.23845E-01	2.69375E-03	3.16547E 00
29	1.45668E-04	1.10524E-01	1.74594E-03	3.27535E 00
30	8.27485E-05	9.80823E-02	1.11706E-03	3.38781E 00
31	4.61875E-05	8.64960E-02	7.05915E-04	3.50289E 00
32	2.53272E-05	7.57435E-02	4.40868E-04	3.62062E 00
33	1.36400E-05	6.58030E-02	2.72270E-04	3.74105E 00
34	7.21105E-06	5.66530E-02	1.66371E-04	3.86420E 00
35	3.73955E-06	4.82721E-02	1.00646E-04	3.99011E 00
36	1.90031E-06	4.06391E-02	6.03143E-05	4.11882E 00
37	9.44871E-07	3.37333E-02	3.58267E-05	4.25037E 00
38	4.58737E-07	2.75338E-02	2.11065E-05	4.38478E 00
39	2.16835E-07	2.20203E-02	1.23402E-05	4.52211E 00
40	9.93689E-08	1.71726E-02	7.16457E-06	4.66239E 00
41	4.38800E-08	1.29705E-02	4.13334E-06	4.80566E 00
42	1.84987E-08	9.39428E-03	2.37104E-06	4.95194E 00
43	7.33574E-09	6.42443E-03	1.35329E-06	5.10129E 00
44	2.66776E-09	4.04156E-03	7.69064E-07	5.25374E 00
45	8.47577E-10	2.22654E-03	4.35472E-07	5.40933E 00
46	2.10501E-10	9.60471E-04	2.45871E-07	5.56809E 00
47	2.83216E-11	2.24670E-04	1.38529E-07	5.73008E 00
48	4.88801E-14	6.74301E-07	7.79497E-08	5.89531E 00
49	1.12712E-11	2.70242E-04	4.38433E-08	6.06385E 00
50	2.43969E-11	1.01536E-03	2.46718E-08	6.23572E 00

SUM S(J) FOR R = 2.91042298E 00 SUM S(J) FOR P = 4.78445721E 00

STRENGTHS AND F FACTORS OF THE V = 1 TO V = 2 TRANSITIONS OF HF

TEMPERATURE = 3500.0 DEG. K

	R BRANCH		P BRANCH	
J	S(J)	F(J)	S(J)	F(J)
0	6.15112E-02	9.50548E-01		
1	1.16495E-01	9.02715E-01	6.50073E-02	1.05110E 00
2	1.62531E-01	8.56472E-01	1.30124E-01	1.10388E 00
3	1.97981E-01	8.11792E-01	1.91905E-01	1.15836E 00
4	2.22078E-01	7.68646E-01	2.47158E-01	1.21458E 00
5	2.34911E-01	7.27006E-01	2.93214E-01	1.27257E 00
6	2.37319E-01	6.86843E-01	3.28149E-01	1.33235E 00
7	2.30730E-01	6.48132E-01	3.50899E-01	1.39396E 00
8	2.16957E-01	6.10844E-01	3.61299E-01	1.45743E 00
9	1.97984E-01	5.74952E-01	3.60008E-01	1.52278E 00
10	1.75773E-01	5.40429E-01	3.48373E-01	1.59005E 00
11	1.52109E-01	5.07250E-01	3.28231E-01	1.65927E 00
12	1.28493E-01	4.75386E-01	3.01700E-01	1.73047E 00
13	1.06081E-01	4.44812E-01	2.70962E-01	1.80368E 00
14	8.56759E-02	4.15502E-01	2.38088E-01	1.87894E 00
15	6.77483E-02	3.87430E-01	2.04896E-01	1.95627E 00
16	5.24890E-02	3.60571E-01	1.72864E-01	2.03572E 00
17	3.98694E-02	3.34899E-01	1.43090E-01	2.11730E 00
18	2.97067E-02	3.10390E-01	1.16299E-01	2.20105E 00
19	2.17234E-02	2.87017E-01	9.28764E-02	2.28701E 00
20	1.55976E-02	2.64758E-01	7.29253E-02	2.37521E 00
21	1.10007E-02	2.43586E-01	5.63327E-02	2.46569E 00
22	7.62388E-03	2.23478E-01	4.28355E-02	2.55846E 00
23	5.19361E-03	2.04410E-01	3.20815E-02	2.65358E 00
24	3.47878E-03	1.86359E-01	2.36783E-02	2.75107E 00
25	2.29171E-03	1.69299E-01	1.72314E-02	2.85098E 00
26	1.48512E-03	1.53209E-01	1.23708E-02	2.95332E 00
27	9.46898E-04	1.38065E-01	8.76603E-03	3.05814E 00
28	5.94063E-04	1.23845E-01	6.13422E-03	3.16547E 00
29	3.66750E-04	1.10524E-01	4.24119E-03	3.27535E 00
30	2.22794E-04	9.80823E-02	2.89873E-03	3.38781E 00
31	1.33161E-04	8.64960E-02	1.95946E-03	3.50289E 00
32	7.82865E-05	7.57435E-02	1.31068E-03	3.62062E 00
33	4.52550E-05	6.58030E-02	8.67963E-04	3.74105E 00
34	2.57079E-05	5.66530E-02	5.69340E-04	3.86420E 00
35	1.43395E-05	4.82721E-02	3.70108E-04	3.99011E 00
36	7.84474E-06	4.06391E-02	2.38556E-04	4.11882E 00
37	4.20261E-06	3.37333E-02	1.52540E-04	4.25037E 00
38	2.19997E-06	2.75338E-02	9.68124E-05	4.38478E 00
39	1.12192E-06	2.20203E-02	6.10184E-05	4.52211E 00
40	5.54998E-07	1.71726E-02	3.82124E-05	4.66239E 00
41	2.64670E-07	1.29705E-02	2.37901E-05	4.80566E 00
42	1.20537E-07	9.39428E-03	1.47326E-05	4.95194E 00
43	5.16487E-08	6.42443E-03	9.08027E-06	5.10129E 00
44	2.02979E-08	4.04156E-03	5.57326E-06	5.25374E 00
45	6.96900E-09	2.22654E-03	3.40859E-06	5.40933E 00
46	1.87017E-09	9.60471E-04	2.07858E-06	5.56809E 00
47	2.71817E-10	2.24670E-04	1.26466E-06	5.73008E 00
48	5.06595E-13	6.74301E-07	7.68231E-07	5.89531E 00
49	1.26081E-10	2.70242E-04	4.66277E-07	6.06385E 00
50	2.94364E-10	1.01536E-03	2.82986E-07	6.23572E 00

SUM S(J) FOR R = 2.78728005E 00 SUM S(J) FOR P = 4.83036345E 00

STRENGTHS AND F FACTORS OF THE V = 1 TO V = 2 TRANSITIONS OF HF

TEMPERATURE = 4000.0 DEG. K

	R BRANCH		P BRANCH	
J	S(J)	F(J)	S(J)	F(J)
0	5.09800E-02	9.50548E-01		
1	9.67960E-02	9.02715E-01	5.39286E-02	1.05110E 00
2	1.35662E-01	8.56472E-01	1.08324E-01	1.10388E 00
3	1.66337E-01	8.11792E-01	1.60634E-01	1.15836E 00
4	1.88182E-01	7.68646E-01	2.08435E-01	1.21458E 00
5	2.01160E-01	7.27006E-01	2.49627E-01	1.27257E 00
6	2.05776E-01	6.86843E-01	2.82579E-01	1.33235E 00
7	2.02974E-01	6.48132E-01	3.06244E-01	1.39396E 00
8	1.94009E-01	6.10844E-01	3.20190E-01	1.45743E 00
9	1.80311E-01	5.74952E-01	3.24597E-01	1.52278E 00
10	1.63347E-01	5.40429E-01	3.20177E-01	1.59005E 00
11	1.44509E-01	5.07250E-01	3.08074E-01	1.65927E 00
12	1.25026E-01	4.75386E-01	2.89721E-01	1.73047E 00
13	1.05907E-01	4.44812E-01	2.66707E-01	1.80368E 00
14	8.79199E-02	4.15502E-01	2.40636E-01	1.87894E 00
15	7.15860E-02	3.87430E-01	2.13018E-01	1.95627E 00
16	5.72062E-02	3.60571E-01	1.85180E-01	2.03572E 00
17	4.48940E-02	3.34899E-01	1.58212E-01	2.11730E 00
18	3.46169E-02	3.10390E-01	1.32941E-01	2.20105E 00
19	2.62386E-02	2.87017E-01	1.09936E-01	2.28701E 00
20	1.95580E-02	2.64758E-01	8.95249E-02	2.37521E 00
21	1.43416E-02	2.43586E-01	7.18318E-02	2.46569E 00
22	1.03490E-02	2.23478E-01	5.68189E-02	2.55846E 00
23	7.35108E-03	2.04410E-01	4.43298E-02	2.65358E 00
24	5.14118E-03	1.86359E-01	3.41304E-02	2.75107E 00
25	3.54097E-03	1.69299E-01	2.59444E-02	2.85098E 00
26	2.40215E-03	1.53209E-01	1.94807E-02	2.95332E 00
27	1.60526E-03	1.38065E-01	1.44553E-02	3.05814E 00
28	1.05677E-03	1.23845E-01	1.06051E-02	3.16547E 00
29	6.85332E-04	1.10524E-01	7.69587E-03	3.27535E 00
30	4.37796E-04	9.80823E-02	5.52655E-03	3.38781E 00
31	2.75430E-04	8.64960E-02	3.92914E-03	3.50289E 00
32	1.70604E-04	7.57435E-02	2.76682E-03	3.62062E 00
33	1.03995E-04	6.58030E-02	1.93063E-03	3.74105E 00
34	6.23454E-05	5.66530E-02	1.33548E-03	3.86420E 00
35	3.67271E-05	4.82721E-02	9.16216E-04	3.99011E 00
36	2.12342E-05	4.06391E-02	6.23689E-04	4.11882E 00
37	1.20295E-05	3.37333E-02	4.21448E-04	4.25037E 00
38	6.66263E-06	2.75338E-02	2.82828E-04	4.38478E 00
39	3.59663E-06	2.20203E-02	1.88582E-04	4.52211E 00
40	1.88410E-06	1.71726E-02	1.24991E-04	4.66239E 00
41	9.51778E-07	1.29705E-02	8.23879E-05	4.80566E 00
42	4.59277E-07	9.39428E-03	5.40334E-05	4.95194E 00
43	2.08549E-07	6.42443E-03	3.52767E-05	5.10129E 00
44	8.68621E-08	4.04156E-03	2.29383E-05	5.25374E 00
45	3.16067E-08	2.22654E-03	1.48632E-05	5.40933E 00
46	8.98833E-09	9.60471E-04	9.60225E-06	5.56809E 00
47	1.38415E-09	2.24670E-04	6.18860E-06	5.73008E 00
48	2.73248E-12	6.74301E-07	3.98137E-06	5.89531E 00
49	7.20055E-10	2.70242E-04	2.55841E-06	6.06385E 00
50	1.77914E-09	1.01536E-03	1.64323E-06	6.23572E 00

SUM S(J) FOR R = 2.55060220E 00 SUM S(J) FOR P = 4.63225645E 00

STRENGTHS AND F FACTORS OF THE V = 1 TO V = 2 TRANSITIONS OF HF

TEMPERATURE = 4500.0 DEG. K

	R BRANCH		P BRANCH	
J	S(J)	F(J)	S(J)	F(J)
0	4.17253E-02	9.50548E-01		
1	7.93835E-02	9.02715E-01	4.41678E-02	1.05110E 00
2	1.11656E-01	8.56472E-01	8.89554E-02	1.10388E 00
3	1.37605E-01	8.11792E-01	1.32470E-01	1.15836E 00
4	1.56719E-01	7.68646E-01	1.72886E-01	1.21458E 00
5	1.68909E-01	7.27006E-01	2.08572E-01	1.27257E 00
6	1.74476E-01	6.86843E-01	2.38204E-01	1.33235E 00
7	1.74048E-01	6.48132E-01	2.60843E-01	1.39396E 00
8	1.68498E-01	6.10844E-01	2.75981E-01	1.45743E 00
9	1.58849E-01	5.74952E-01	2.83545E-01	1.52278E 00
10	1.46184E-01	5.40429E-01	2.83867E-01	1.59005E 00
11	1.31566E-01	5.07250E-01	2.77626E-01	1.65927E 00
12	1.15965E-01	4.75386E-01	2.65760E-01	1.73047E 00
13	1.00218E-01	4.44812E-01	2.49380E-01	1.80368E 00
14	8.49967E-02	4.15502E-01	2.29674E-01	1.87894E 00
15	7.07989E-02	3.87430E-01	2.07818E-01	1.95627E 00
16	5.79566E-02	3.60571E-01	1.84909E-01	2.03572E 00
17	4.66525E-02	3.34899E-01	1.61908E-01	2.11730E 00
18	3.69448E-02	3.10390E-01	1.39608E-01	2.20105E 00
19	2.87955E-02	2.87017E-01	1.18620E-01	2.28701E 00
20	2.20978E-02	2.64758E-01	9.93696E-02	2.37521E 00
21	1.67022E-02	2.43586E-01	8.21171E-02	2.46569E 00
22	1.24371E-02	2.23478E-01	6.69753E-02	2.55846E 00
23	9.12628E-03	2.04410E-01	5.39393E-02	2.65358E 00
24	6.60068E-03	1.86359E-01	4.29148E-02	2.75107E 00
25	4.70626E-03	1.69299E-01	3.37454E-02	2.85098E 00
26	3.30832E-03	1.53209E-01	2.62369E-02	2.95332E 00
27	2.29305E-03	1.38065E-01	2.01785E-02	3.05814E 00
28	1.56711E-03	1.23845E-01	1.53576E-02	3.16547E 00
29	1.05596E-03	1.10524E-01	1.15717E-02	3.27535E 00
30	7.01441E-04	9.80823E-02	8.63534E-03	3.38781E 00
31	4.59238E-04	8.64960E-02	6.38486E-03	3.50289E 00
32	2.96234E-04	7.57435E-02	4.67933E-03	3.62062E 00
33	1.88178E-04	6.58030E-02	3.40055E-03	3.74105E 00
34	1.17637E-04	5.66530E-02	2.45143E-03	3.86420E 00
35	7.23026E-05	4.82721E-02	1.75374E-03	3.99011E 00
36	4.36375E-05	4.06391E-02	1.24555E-03	4.11882E 00
37	2.58185E-05	3.37333E-02	8.78571E-04	4.25037E 00
38	1.49407E-05	2.75338E-02	6.15726E-04	4.38478E 00
39	8.42985E-06	2.20203E-02	4.28912E-04	4.52211E 00
40	4.61700E-06	1.71726E-02	2.97096E-04	4.66239E 00
41	2.43910E-06	1.29705E-02	2.04716E-04	4.80566E 00
42	1.23109E-06	9.39428E-03	1.40385E-04	4.95194E 00
43	5.84787E-07	6.42443E-03	9.58483E-05	5.10129E 00
44	2.54813E-07	4.04156E-03	6.51841E-05	5.25374E 00
45	9.69997E-08	2.22654E-03	4.41765E-05	5.40933E 00
46	2.88562E-08	9.60471E-04	2.98498E-05	5.56809E 00
47	4.64783E-09	2.24670E-04	2.01191E-05	5.73008E 00
48	9.59470E-12	6.74301E-07	1.35339E-05	5.89531E 00
49	2.64314E-09	2.70242E-04	9.09142E-06	6.06385E 00
50	6.82463E-09	1.01536E-03	6.10224E-06	6.23572E 00

SUM S(J) FOR R = 2.27377838E 00 SUM S(J) FOR P = 4.30859900E 00

STRENGTHS AND F FACTORS OF THE V = 1 TO V = 2 TRANSITIONS OF HF

TEMPERATURE = 5000.0 DEG. K

	R BRANCH		P BRANCH	
J	S(J)	F(J)	S(J)	F(J)
0	3.40018E-02	9.50548E-01		
1	6.47948E-02	9.02715E-01	3.60094E-02	1.05110E 00
2	9.13987E-02	8.56472E-01	7.26773E-02	1.10388E 00
3	1.13105E-01	8.11792E-01	1.08593E-01	1.15836E 00
4	1.29508E-01	7.68646E-01	1.42376E-01	1.21458E 00
5	1.40504E-01	7.27006E-01	1.72768E-01	1.27257E 00
6	1.46272E-01	6.86843E-01	1.98710E-01	1.33235E 00
7	1.47237E-01	6.48132E-01	2.19402E-01	1.39396E 00
8	1.44007E-01	6.10844E-01	2.34344E-01	1.45743E 00
9	1.37319E-01	5.74952E-01	2.43349E-01	1.52278E 00
10	1.27972E-01	5.40429E-01	2.46529E-01	1.59005E 00
11	1.16770E-01	5.07250E-01	2.44266E-01	1.65927E 00
12	1.04468E-01	4.75386E-01	2.37162E-01	1.73047E 00
13	9.17405E-02	4.44812E-01	2.25974E-01	1.80368E 00
14	7.91506E-02	4.15502E-01	2.11560E-01	1.87894E 00
15	6.71411E-02	3.87430E-01	1.94807E-01	1.95627E 00
16	5.60321E-02	3.60571E-01	1.76581E-01	2.03572E 00
17	4.60291E-02	3.34899E-01	1.57679E-01	2.11730E 00
18	3.72371E-02	3.10390E-01	1.38798E-01	2.20105E 00
19	2.96785E-02	2.87017E-01	1.20511E-01	2.28701E 00
20	2.33120E-02	2.64758E-01	1.03263E-01	2.37521E 00
21	1.80519E-02	2.43586E-01	8.73695E-02	2.46569E 00
22	1.37843E-02	2.23478E-01	7.30253E-02	2.55846E 00
23	1.03814E-02	2.04410E-01	6.03230E-02	2.65358E 00
24	7.71284E-03	1.86359E-01	4.92694E-02	2.75107E 00
25	5.65353E-03	1.69299E-01	3.98048E-02	2.85098E 00
26	4.08893E-03	1.53209E-01	3.18224E-02	2.95332E 00
27	2.91811E-03	1.38065E-01	2.51849E-02	3.05814E 00
28	2.05487E-03	1.23845E-01	1.97389E-02	3.16547E 00
29	1.42766E-03	1.10524E-01	1.53266E-02	3.27535E 00
30	9.78460E-04	9.80823E-02	1.17943E-02	3.38781E 00
31	6.61347E-04	8.64960E-02	8.99817E-03	3.50289E 00
32	4.40671E-04	7.57435E-02	6.80856E-03	3.62062E 00
33	2.89314E-04	6.58030E-02	5.11128E-03	3.74105E 00
34	1.87016E-04	5.66530E-02	3.80832E-03	3.86420E 00
35	1.18912E-04	4.82721E-02	2.81722E-03	3.99011E 00
36	7.42755E-05	4.06391E-02	2.06989E-03	4.11882E 00
37	4.54982E-05	3.37333E-02	1.51101E-03	4.25037E 00
38	2.72683E-05	2.75338E-02	1.09632E-03	4.38478E 00
39	1.59387E-05	2.20203E-02	7.90881E-04	4.52211E 00
40	9.04579E-06	1.71726E-02	5.67482E-04	4.66239E 00
41	4.95283E-06	1.29705E-02	4.05151E-04	4.80566E 00
42	2.59129E-06	9.39428E-03	2.87919E-04	4.95194E 00
43	1.27606E-06	6.42443E-03	2.03742E-04	5.10129E 00
44	5.76451E-07	4.04156E-03	1.43621E-04	5.25374E 00
45	2.27498E-07	2.22654E-03	1.00893E-04	5.40933E 00
46	7.01593E-08	9.60471E-04	7.06640E-05	5.56809E 00
47	1.17134E-08	2.24670E-04	4.93649E-05	5.73008E 00
48	2.50598E-11	6.74301E-07	3.44134E-05	5.89531E 00
49	7.15276E-09	2.70242E-04	2.39522E-05	6.06385E 00
50	1.91296E-08	1.01536E-03	1.66534E-05	6.23572E 00

SUM S(J) FOR R = 1.99660890E 00 SUM S(J) FOR P = 3.93393272E 00

STRENGTHS AND F FACTORS OF THE V = 0 TO V = 2 TRANSITIONS OF HF

TEMPERATURE = 273.3 DEG. K

	R BRANCH		P BRANCH	
J	S(J)	F(J)	S(J)	F(J)
0	1.08057E 00	9.71008E-01		
1	1.69328E 00	9.40425E-01	9.11370E-01	1.02731E 00
2	1.59820E 00	9.08349E-01	1.20509E 00	1.05285E 00
3	1.07726E 00	8.74883E-01	9.60671E-01	1.07655E 00
4	5.47264E-01	8.40138E-01	5.47678E-01	1.09833E 00
5	2.14760E-01	8.04232E-01	2.35769E-01	1.11814E 00
6	6.60250E-02	7.67288E-01	7.85887E-02	1.13590E 00
7	1.60303E-02	7.29435E-01	2.05754E-02	1.15157E 00
8	3.09636E-03	6.90811E-01	4.27119E-03	1.16510E 00
9	4.78123E-04	6.51558E-01	7.07945E-04	1.17645E 00
10	5.92805E-05	6.11826E-01	9.42266E-05	1.18559E 00
11	5.92494E-06	5.71770E-01	1.01212E-05	1.19250E 00
12	4.79150E-07	5.31553E-01	8.81377E-07	1.19715E 00
13	3.14648E-08	4.91344E-01	6.24985E-08	1.19953E 00
14	1.68370E-09	4.51319E-01	3.62432E-09	1.19964E 00
15	7.36701E-11	4.11658E-01	1.72624E-10	1.19747E 00
16	2.64472E-12	3.72551E-01	6.78235E-12	1.19303E 00
17	7.81601E-14	3.34193E-01	2.20795E-13	1.18633E 00
18	1.90773E-15	2.96784E-01	5.98258E-15	1.17739E 00
19	3.85759E-17	2.60532E-01	1.35548E-16	1.16624E 00
20	6.48065E-19	2.25653E-01	2.58026E-18	1.15291E 00
21	9.06751E-21	1.92366E-01	4.14682E-20	1.13744E 00
22	1.05858E-22	1.60898E-01	5.65476E-22	1.11988E 00
23	1.03210E-24	1.31484E-01	6.57635E-24	1.10026E 00
24	8.39896E-27	1.04364E-01	6.55686E-26	1.07866E 00
25	5.68735E-29	7.97850E-02	5.63472E-28	1.05514E 00
26	3.18138E-31	5.79992E-02	4.19648E-30	1.02976E 00
27	1.44798E-33	3.92668E-02	2.72367E-32	1.00261E 00
28	5.19621E-36	2.38540E-02	1.54935E-34	9.73774E-01
29	.00000E 00	1.20333E-02	7.76930E-37	9.43335E-01
30	.00000E 00	4.08396E-03	.00000E 00	9.11393E-01
31	.00000E 00	2.91582E-04	.00000E 00	8.78052E-01
32	.00000E 00	9.48264E-04	.00000E 00	8.43422E-01
33	.00000E 00	6.35259E-03	.00000E 00	8.07619E-01
34	.00000E 00	1.68097E-02	.00000E 00	7.70766E-01
35	.00000E 00	3.26310E-02	.00000E 00	7.32992E-01
36	.00000E 00	5.41347E-02	.00000E 00	6.94433E-01
37	.00000E 00	8.16452E-02	.00000E 00	6.55233E-01
38	.00000E 00	1.15494E-01	.00000E 00	6.15538E-01
39	.00000E 00	1.56017E-01	.00000E 00	5.75506E-01
40	.00000E 00	2.03560E-01	.00000E 00	5.35297E-01
41	.00000E 00	2.58473E-01	.00000E 00	4.95080E-01
42	.00000E 00	3.21113E-01	.00000E 00	4.55030E-01
43	.00000E 00	3.91843E-01	.00000E 00	4.15328E-01
44	.00000E 00	4.71033E-01	.00000E 00	3.76161E-01
45	.00000E 00	5.59060E-01	.00000E 00	3.37724E-01
46	.00000E 00	6.56305E-01	.00000E 00	3.00219E-01
47	.00000E 00	7.63160E-01	.00000E 00	2.63850E-01
48	.00000E 00	8.80020E-01	.00000E 00	2.28834E-01
49	.00000E 00	1.00729E 00	.00000E 00	1.95389E-01
50	.00000E 00	1.14537E 00	.00000E 00	1.63743E-01

SUM S(J) FOR R = 6.29700780E 00 SUM S(J) FOR P = 3.96482709E 00

STRENGTHS AND F FACTORS OF THE V = 0 TO V = 2 TRANSITIONS OF HF

TEMPERATURE = 373.3 DEG. K

	R BRANCH		P BRANCH	
J	S(J)	F(J)	S(J)	F(J)
0	5.84433E-01	9.71008E-01		
1	9.70495E-01	9.40425E-01	5.22346E-01	1.02731E 00
2	1.02855E 00	9.08349E-01	7.75555E-01	1.05285E 00
3	8.24761E-01	8.74883E-01	7.35502E-01	1.07655E 00
4	5.27978E-01	8.40138E-01	5.26378E-01	1.09833E 00
5	2.76473E-01	8.04232E-01	3.03519E-01	1.11814E 00
6	1.20025E-01	7.67288E-01	1.42907E-01	1.13590E 00
7	4.35672E-02	7.29435E-01	5.59201E-02	1.15157E 00
8	1.33019E-02	6.90811E-01	1.83489E-02	1.16510E 00
9	3.43175E-03	6.51558E-01	5.08130E-03	1.17645E 00
10	7.50937E-04	6.11826E-01	1.19362E-03	1.18559E 00
11	1.39827E-04	5.71770E-01	2.38857E-04	1.19250E 00
12	2.22212E-05	5.31553E-01	4.08750E-05	1.19715E 00
13	3.02224E-06	4.91344E-01	6.00308E-06	1.19953E 00
14	3.52709E-07	4.51319E-01	7.59237E-07	1.19964E 00
15	3.54096E-08	4.11658E-01	8.29716E-08	1.19747E 00
16	3.06543E-09	3.72551E-01	7.86123E-09	1.19303E 00
17	2.29365E-10	3.34193E-01	6.47933E-10	1.18633E 00
18	1.48649E-11	2.96784E-01	4.66159E-11	1.17739E 00
19	8.36064E-13	2.60532E-01	2.93776E-12	1.16624E 00
20	4.08767E-14	2.25653E-01	1.62750E-13	1.15291E 00
21	1.73938E-15	1.92366E-01	7.95466E-15	1.13744E 00
22	6.44523E-17	1.60898E-01	3.44292E-16	1.11988E 00
23	2.07885E-18	1.31484E-01	1.32460E-17	1.10026E 00
24	5.82498E-20	1.04364E-01	4.54741E-19	1.07866E 00
25	1.41163E-21	7.97850E-02	1.39856E-20	1.05514E 00
26	2.93298E-23	5.79992E-02	3.86883E-22	1.02976E 00
27	5.13855E-25	3.92668E-02	9.66567E-24	1.00261E 00
28	7.34485E-27	2.38540E-02	2.19001E-25	9.73774E-01
29	7.96112E-29	1.20333E-02	4.51921E-27	9.43335E-01
30	5.32489E-31	4.08396E-03	8.52988E-29	9.11393E-01
31	6.90325E-34	2.91582E-04	1.47906E-30	8.78052E-01
32	3.77307E-35	9.48264E-04	2.36654E-32	8.43422E-01
33	3.95023E-36	6.35259E-03	3.50979E-34	8.07619E-01
34	.00000E 00	1.68097E-02	4.84690E-36	7.70766E-01
35	.00000E 00	3.26310E-02	.00000E 00	7.32992E-01
36	.00000E 00	5.41347E-02	.00000E 00	6.94433E-01
37	.00000E 00	8.16452E-02	.00000E 00	6.55233E-01
38	.00000E 00	1.15494E-01	.00000E 00	6.15538E-01
39	.00000E 00	1.56017E-01	.00000E 00	5.75506E-01
40	.00000E 00	2.03560E-01	.00000E 00	5.35297E-01
41	.00000E 00	2.58473E-01	.00000E 00	4.95080E-01
42	.00000E 00	3.21113E-01	.00000E 00	4.55030E-01
43	.00000E 00	3.91843E-01	.00000E 00	4.15326E-01
44	.00000E 00	4.71033E-01	.00000E 00	3.76161E-01
45	.00000E 00	5.59060E-01	.00000E 00	3.37724E-01
46	.00000E 00	6.56305E-01	.00000E 00	3.00219E-01
47	.00000E 00	7.63160E-01	.00000E 00	2.63850E-01
48	.00000E 00	8.80020E-01	.00000E 00	2.28834E-01
49	.00000E 00	1.00729E 00	.00000E 00	1.95389E-01
50	.00000E 00	1.14537E 00	.00000E 00	1.63743E-01

SUM S(J) FOR R = 4.39393139E 00 SUM S(J) FOR P = 3.08903828E 00

STRENGTHS AND F FACTORS OF THE V = 0 TO V = 2 TRANSITIONS OF HF

TEMPERATURE = 500.0 DEG. K

	R BRANCH		P BRANCH	
J	S(J)	F(J)	S(J)	F(J)
0	3.27672E-01	9.71008E-01		
1	5.66417E-01	9.40425E-01	3.04861E-01	1.02731E 00
2	6.50464E-01	9.08349E-01	4.90468E-01	1.05285E 00
3	5.88241E-01	8.74883E-01	5.24579E-01	1.07655E 00
4	4.41959E-01	8.40138E-01	4.42293E-01	1.09833E 00
5	2.82605E-01	8.04232E-01	3.10251E-01	1.11814E 00
6	1.55839E-01	7.67288E-01	1.85549E-01	1.13590E 00
7	7.47189E-02	7.29435E-01	9.59044E-02	1.15157E 00
8	3.13249E-02	6.90811E-01	4.32103E-02	1.16510E 00
9	1.15311E-02	6.51558E-01	1.70738E-02	1.17645E 00
10	3.73955E-03	6.11826E-01	5.94403E-03	1.18559E 00
11	1.07138E-03	5.71770E-01	1.83017E-03	1.19250E 00
12	2.71834E-04	5.31553E-01	5.00028E-04	1.19715E 00
13	6.12144E-05	4.91344E-01	1.21590E-04	1.19953E 00
14	1.22593E-05	4.51319E-01	2.63893E-05	1.19964E 00
15	2.18754E-06	4.11658E-01	5.12585E-06	1.19747E 00
16	3.48396E-07	3.72551E-01	8.93456E-07	1.19303E 00
17	4.96023E-08	3.34193E-01	1.40122E-07	1.18633E 00
18	6.32188E-09	2.96784E-01	1.98252E-08	1.17739E 00
19	7.22114E-10	2.60532E-01	2.53736E-09	1.16624E 00
20	7.39836E-11	2.25653E-01	2.94564E-10	1.15291E 00
21	6.80121E-12	1.92366E-01	3.11038E-11	1.13744E 00
22	5.60808E-13	1.60898E-01	2.99573E-12	1.11988E 00
23	4.14222E-14	1.31484E-01	2.63933E-13	1.10026E 00
24	2.73262E-15	1.04364E-01	2.13329E-14	1.07866E 00
25	1.60138E-16	7.97850E-02	1.58656E-15	1.05514E 00
26	8.25567E-18	5.79992E-02	1.08899E-16	1.02976E 00
27	3.67862E-19	3.92668E-02	6.91953E-18	1.00261E 00
28	1.36932E-20	2.38540E-02	4.08291E-19	9.73774E-01
29	3.95351E-22	1.20333E-02	2.24425E-20	9.43335E-01
30	7.19675E-24	4.08396E-03	1.15284E-21	9.11393E-01
31	2.59143E-26	2.91582E-04	5.55229E-23	8.78052E-01
32	4.01041E-27	9.48264E-04	2.51540E-24	8.43422E-01
33	1.21049E-27	6.35259E-03	1.07552E-25	8.07619E-01
34	1.37129E-28	1.68097E-02	4.35479E-27	7.70766E-01
35	1.08679E-29	3.26310E-02	1.67545E-28	7.32992E-01
36	7.04557E-31	5.41347E-02	6.14624E-30	6.94433E-01
37	3.98940E-32	8.16452E-02	2.15729E-31	6.55233E-01
38	2.04337E-33	1.15494E-01	7.27041E-33	6.15538E-01
39	9.67721E-35	1.56017E-01	2.36104E-34	5.75506E-01
40	4.30299E-36	2.03560E-01	7.41480E-36	5.35297E-01
41	.00000E 00	2.58473E-01	.00000E 00	4.95080E-01
42	.00000E 00	3.21113E-01	.00000E 00	4.55030E-01
43	.00000E 00	3.91843E-01	.00000E 00	4.15328E-01
44	.00000E 00	4.71033E-01	.00000E 00	3.76161E-01
45	.00000E 00	5.59060E-01	.00000E 00	3.37724E-01
46	.00000E 00	6.56305E-01	.00000E 00	3.00219E-01
47	.00000E 00	7.63160E-01	.00000E 00	2.63850E-01
48	.00000E 00	8.80020E-01	.00000E 00	2.28834E-01
49	.00000E 00	1.00729E 00	.00000E 00	1.95389E-01
50	.00000E 00	1.14537E 00	.00000E 00	1.63743E-01

SUM S(J) FOR R = 3.13592982E 00 SUM S(J) FOR P = 2.42261845E 00

STRENGTHS AND F FACTORS OF THE V = 0 TO V = 2 TRANSITIONS OF HF

TEMPERATURE = 1000.0 DEG. K

	R BRANCH		P BRANCH	
J	S(J)	F(J)	S(J)	F(J)
0	8.21528E-02	9.71008E-01		
1	1.50664E-01	9.40425E-01	8.10911E-02	1.02731E 00
2	1.94735E-01	9.08349E-01	1.46835E-01	1.05285E 00
3	2.10241E-01	8.74883E-01	1.87487E-01	1.07655E 00
4	1.99980E-01	8.40138E-01	2.00130E-01	1.09833E 00
5	1.71632E-01	8.04232E-01	1.88420E-01	1.11814E 00
6	1.34624E-01	7.67288E-01	1.60288E-01	1.13590E 00
7	9.72600E-02	7.29435E-01	1.24835E-01	1.15157E 00
8	6.50516E-02	6.90811E-01	8.97321E-02	1.16510E 00
9	4.04262E-02	6.51558E-01	5.98569E-02	1.17645E 00
10	2.34055E-02	6.11826E-01	3.72023E-02	1.18559E 00
11	1.26510E-02	5.71770E-01	2.16103E-02	1.19250E 00
12	6.39453E-03	5.31553E-01	1.17622E-02	1.19715E 00
13	3.02665E-03	4.91344E-01	6.01164E-03	1.19953E 00
14	1.34299E-03	4.51319E-01	2.89079E-03	1.19964E 00
15	5.59161E-04	4.11658E-01	1.31017E-03	1.19747E 00
16	2.18609E-04	3.72551E-01	5.60592E-04	1.19303E 00
17	8.02950E-05	3.34193E-01	2.26813E-04	1.18633E 00
18	2.77150E-05	2.96784E-01	8.69081E-05	1.17739E 00
19	8.98960E-06	2.60532E-01	3.15853E-05	1.16624E 00
20	2.73998E-06	2.25653E-01	1.09043E-05	1.15291E 00
21	7.83176E-07	1.92366E-01	3.58133E-06	1.13744E 00
22	2.09817E-07	1.60898E-01	1.12068E-06	1.11988E 00
23	5.25237E-08	1.31484E-01	3.34627E-07	1.10026E 00
24	1.22330E-08	1.04364E-01	9.54859E-08	1.07866E 00
25	2.63263E-09	7.97850E-02	2.60783E-08	1.05514E 00
26	5.17680E-10	5.79992E-02	6.82724E-09	1.02976E 00
27	9.12466E-11	3.92668E-02	1.71597E-09	1.00261E 00
28	1.39123E-11	2.38540E-02	4.14714E-10	9.73774E-01
29	1.70093E-12	1.20333E-02	9.65256E-11	9.43335E-01
30	1.35331E-13	4.08396E-03	2.16708E-11	9.11393E-01
31	2.19475E-15	2.91582E-04	4.70044E-12	8.78052E-01
32	1.57366E-15	9.48264E-04	9.86559E-13	8.43422E-01
33	2.26001E-15	6.35259E-03	2.00690E-13	8.07619E-01
34	1.24879E-15	1.68097E-02	3.96319E-14	7.70766E-01
35	4.93995E-16	3.26310E-02	7.60991E-15	7.32992E-01
36	1.63276E-16	5.41347E-02	1.42308E-15	6.94433E-01
37	4.80557E-17	8.16452E-02	2.59594E-16	6.55233E-01
38	1.30193E-17	1.15494E-01	4.62672E-17	6.15538E-01
39	3.31221E-18	1.56017E-01	8.06969E-18	5.75506E-01
40	8.01906E-19	2.03560E-01	1.37953E-18	5.35297E-01
41	1.86548E-19	2.58473E-01	2.31513E-19	4.95080E-01
42	4.20095E-20	3.21113E-01	3.81987E-20	4.55030E-01
43	9.21349E-21	3.91843E-01	6.20573E-21	4.15328E-01
44	1.97813E-21	4.71033E-01	9.94070E-22	3.76161E-01
45	4.17653E-22	5.59060E-01	1.57215E-22	3.37724E-01
46	8.70776E-23	6.56305E-01	2.45770E-23	3.00219E-01
47	1.79973E-23	7.63160E-01	3.80147E-24	2.63850E-01
48	3.70107E-24	8.80020E-01	5.82191E-25	2.28834E-01
49	7.60025E-25	1.00729E 00	8.83081E-26	1.95389E-01
50	1.56406E-25	1.14537E 00	1.32625E-26	1.63743E-01

SUM S(J) FOR R = 1.39448543E 00 SUM S(J) FOR P = 1.32038485E 00

STRENGTHS AND F FACTORS OF THE V = 0 TO V = 2 TRANSITIONS OF HF

TEMPERATURE = 1500.0 DEG. K

	R BRANCH		P BRANCH	
J	S(J)	F(J)	S(J)	F(J)
0	3.57541E-02	9.71008E-01		
1	6.68782E-02	9.40425E-01	3.59933E-02	1.02731E 00
2	8.99170E-02	9.08349E-01	6.77927E-02	1.05285E 00
3	1.02984E-01	8.74883E-01	9.18248E-02	1.07655E 00
4	1.05972E-01	8.40138E-01	1.06031E-01	1.09833E 00
5	1.00325E-01	8.04232E-01	1.10113E-01	1.11814E 00
6	8.85011E-02	7.67288E-01	1.05343E-01	1.13590E 00
7	7.33019E-02	7.29435E-01	9.40531E-02	1.15157E 00
8	5.72878E-02	6.90811E-01	7.89924E-02	1.16510E 00
9	4.23913E-02	6.51558E-01	6.27390E-02	1.17645E 00
10	2.97738E-02	6.11826E-01	4.73010E-02	1.18559E 00
11	1.98855E-02	5.71770E-01	3.39490E-02	1.19250E 00
12	1.26472E-02	5.31553E-01	2.32486E-02	1.19715E 00
13	7.66800E-03	4.91344E-01	1.52196E-02	1.19953E 00
14	4.43564E-03	4.51319E-01	9.54017E-03	1.19964E 00
15	2.44950E-03	4.11658E-01	5.73435E-03	1.19747E 00
16	1.29185E-03	3.72551E-01	3.30950E-03	1.19303E 00
17	6.50765E-04	3.34193E-01	1.83624E-03	1.18633E 00
18	3.13094E-04	2.96784E-01	9.80605E-04	1.17739E 00
19	1.43808E-04	2.60532E-01	5.04598E-04	1.16624E 00
20	6.30082E-05	2.25653E-01	2.50473E-04	1.15291E 00
21	2.62988E-05	1.92366E-01	1.20063E-04	1.13744E 00
22	1.04350E-05	1.60898E-01	5.56346E-05	1.11988E 00
23	3.92371E-06	1.31484E-01	2.49477E-05	1.10026E 00
24	1.39147E-06	1.04364E-01	1.08372E-05	1.07866E 00
25	4.61993E-07	7.97850E-02	4.56518E-06	1.05514E 00
26	1.41937E-07	5.79992E-02	1.86682E-06	1.02976E 00
27	3.95652E-08	3.92668E-02	7.41827E-07	1.00261E 00
28	9.65159E-09	2.38540E-02	2.86753E-07	9.73774E-01
29	1.90900E-09	1.20333E-02	1.07937E-07	9.43335E-01
30	2.48322E-10	4.08396E-03	3.96033E-08	9.11393E-01
31	6.65031E-12	2.91582E-04	1.41790E-08	8.78052E-01
32	7.94884E-12	9.48264E-04	4.95861E-09	8.43422E-01
33	1.91992E-11	6.35259E-03	1.69556E-09	8.07619E-01
34	1.79901E-11	1.68097E-02	5.67483E-10	7.70766E-01
35	1.21610E-11	3.26310E-02	1.86085E-10	7.32992E-01
36	6.91735E-12	5.41347E-02	5.98445E-11	6.94433E-01
37	3.52637E-12	8.16452E-02	1.88936E-11	6.55233E-01
38	1.66439E-12	1.15494E-01	5.86140E-12	6.15538E-01
39	7.41492E-13	1.56017E-01	1.78851E-12	5.75506E-01
40	3.15774E-13	2.03560E-01	5.37247E-13	5.35297E-01
41	1.29704E-13	2.58473E-01	1.59011E-13	4.95080E-01
42	5.17324E-14	3.21113E-01	4.64086E-14	4.55030E-01
43	2.01425E-14	3.91843E-01	1.33663E-14	4.15328E-01
44	7.68984E-15	4.71033E-01	3.80140E-15	3.76161E-01
45	2.88942E-15	5.59060E-01	1.06813E-15	3.37724E-01
46	1.07212E-15	6.56305E-01	2.96626E-16	3.00219E-01
47	3.94032E-16	7.63160E-01	8.14238E-17	2.63850E-01
48	1.43848E-16	8.80020E-01	2.20889E-17	2.28834E-01
49	5.23026E-17	1.00729E 00	5.91842E-18	1.95389E-01
50	1.89897E-17	1.14537E 00	1.56420E-18	1.63743E-01

SUM S(J) FOR R = 8.42677212E-01 SUM S(J) FOR P = 8.94975281E-01

STRENGTHS AND F FACTORS OF THE V = 0 TO V = 2 TRANSITIONS OF HF

TEMPERATURE = 2000.0 DEG. K

	R BRANCH		P BRANCH	
J	S(J)	F(J)	S(J)	F(J)
0	1.92452E-02	9.71008E-01		
1	3.63575E-02	9.40425E-01	1.95625E-02	1.02731E 00
2	4.98583E-02	9.08349E-01	3.75751E-02	1.05285E 00
3	5.88185E-02	8.74883E-01	5.24147E-02	1.07655E 00
4	6.29547E-02	8.40138E-01	6.29430E-02	1.09833E 00
5	6.25994E-02	8.04232E-01	6.86434E-02	1.11814E 00
6	5.85636E-02	7.67288E-01	6.96318E-02	1.13590E 00
7	5.19379E-02	7.29435E-01	6.65555E-02	1.15157E 00
8	4.38786E-02	6.90811E-01	6.04134E-02	1.16510E 00
9	3.54306E-02	6.51558E-01	5.23492E-02	1.17645E 00
10	2.74089E-02	6.11826E-01	4.34617E-02	1.18559E 00
11	2.03489E-02	5.71770E-01	3.46670E-02	1.19250E 00
12	1.45173E-02	5.31553E-01	2.66240E-02	1.19715E 00
13	9.96178E-03	4.91344E-01	1.97214E-02	1.19953E 00
14	6.57942E-03	4.51319E-01	1.41108E-02	1.19964E 00
15	4.18434E-03	4.11658E-01	9.76521E-03	1.19747E 00
16	2.56301E-03	3.72551E-01	6.54370E-03	1.19303E 00
17	1.51199E-03	3.34193E-01	4.25050E-03	1.18633E 00
18	8.58802E-04	2.96784E-01	2.67890E-03	1.17739E 00
19	4.69379E-04	2.60532E-01	1.63975E-03	1.16624E 00
20	2.46604E-04	2.25653E-01	9.75646E-04	1.15291E 00
21	1.24350E-04	1.92366E-01	5.64771E-04	1.13744E 00
22	6.00430E-05	1.60898E-01	3.18335E-04	1.11988E 00
23	2.76681E-05	1.31484E-01	1.74857E-04	1.10026E 00
24	1.21066E-05	1.04364E-01	9.36746E-05	1.07866E 00
25	4.99222E-06	7.97850E-02	4.89831E-05	1.05514E 00
26	1.91694E-06	5.79992E-02	2.50207E-05	1.02976E 00
27	6.71902E-07	3.92668E-02	1.24945E-05	1.00261E 00
28	2.07296E-07	2.38540E-02	6.10443E-06	9.73774E-01
29	5.21435E-08	1.20333E-02	2.92017E-06	9.43335E-01
30	8.67152E-09	4.08396E-03	1.36879E-06	9.11393E-01
31	2.98382E-10	2.91582E-04	6.29160E-07	8.78052E-01
32	4.60389E-10	9.48264E-04	2.83792E-07	8.43422E-01
33	1.44182E-09	6.35259E-03	1.25710E-07	8.07619E-01
34	1.75897E-09	1.68097E-02	5.47254E-08	7.70766E-01
35	1.55399E-09	3.26310E-02	2.34292E-08	7.32992E-01
36	1.15929E-09	5.41347E-02	9.87126E-09	6.94433E-01
37	7.77583E-10	8.16452E-02	4.09567E-09	6.55233E-01
38	4.84271E-10	1.15494E-01	1.67452E-09	6.15539E-01
39	2.85402E-10	1.56017E-01	6.75040E-10	5.75506E-01
40	1.61141E-10	2.03560E-01	2.68465E-10	5.35297E-01
41	8.79164E-11	2.58473E-01	1.05388E-10	4.95080E-01
42	4.66465E-11	3.21113E-01	4.08535E-11	4.55030E-01
43	2.41883E-11	3.91843E-01	1.56446E-11	4.15328E-01
44	1.23076E-11	4.71033E-01	5.91989E-12	3.76161E-01
45	6.16578E-12	5.59060E-01	2.21376E-12	3.37724E-01
46	3.05016E-12	6.56305E-01	8.18078E-13	3.00219E-01
47	1.49386E-12	7.63160E-01	2.98660E-13	2.63850E-01
48	7.26072E-13	8.80020E-01	1.07648E-13	2.28834E-01
49	3.50994E-13	1.00729E 00	3.82661E-14	1.95389E-01
50	1.69116E-13	1.14537E 00	1.33917E-14	1.63743E-01

SUM S(J) FOR R = 5.68526751E-01 SUM S(J) FOR P = 6.35776817E-01

STRENGTHS AND F FACTORS OF THE V = 0 TO V = 2 TRANSITIONS OF HF

TEMPERATURE = 2500.0 DEG. K

	R BRANCH		P BRANCH	
J	S(J)	F(J)	S(J)	F(J)
0	1.15792E-02	9.71008E-01		
1	2.20078E-02	9.40425E-01	1.18362E-02	1.02731E 00
2	3.05427E-02	9.08349E-01	2.30008E-02	1.05285E 00
3	3.66796E-02	8.74883E-01	3.26516E-02	1.07655E 00
4	4.01999E-02	8.40138E-01	4.01374E-02	1.09833E 00
5	4.11703E-02	8.04232E-01	4.50693E-02	1.11814E 00
6	3.99002E-02	7.67288E-01	4.73460E-02	1.13596E 00
7	3.68689E-02	7.29435E-01	4.71354E-02	1.15157E 00
8	3.26388E-02	6.90811E-01	4.48184E-02	1.16510E 00
9	2.77725E-02	6.51558E-01	4.09108E-02	1.17645E 00
10	2.27671E-02	6.11826E-01	3.59799E-02	1.18559E 00
11	1.80106E-02	5.71770E-01	3.05690E-02	1.19250E 00
12	1.37659E-02	5.31553E-01	2.51422E-02	1.19715E 00
13	1.01744E-02	4.91344E-01	2.00516E-02	1.19953E 00
14	7.27604E-03	4.51319E-01	1.55283E-02	1.19964E 00
15	5.03633E-03	4.11658E-01	1.16909E-02	1.19747E 00
16	3.37454E-03	3.72551E-01	8.56592E-03	1.19303E 00
17	2.18847E-03	3.34193E-01	6.11390E-03	1.18633E 00
18	1.37316E-03	2.96784E-01	4.25459E-03	1.17739E 00
19	8.32982E-04	2.60532E-01	2.88899E-03	1.16624E 00
20	4.87973E-04	2.25653E-01	1.91564E-03	1.15291E 00
21	2.75594E-04	1.92366E-01	1.24132E-03	1.13744E 00
22	1.49693E-04	1.60898E-01	7.86606E-04	1.11988E 00
23	7.79222E-05	1.31484E-01	4.87792E-04	1.10026E 00
24	3.86734E-05	1.04364E-01	2.96214E-04	1.07866E 00
25	1.81592E-05	7.97850E-02	1.76260E-04	1.05514E 00
26	7.97005E-06	5.79992E-02	1.02838E-04	1.02976E 00
27	3.20466E-06	3.92668E-02	5.88681E-05	1.00261E 00
28	1.13814E-06	2.38540E-02	3.30827E-05	9.73774E-01
29	3.30649E-07	1.20333E-02	1.82633E-05	9.43335E-01
30	6.37076E-08	4.08396E-03	9.90996E-06	9.11393E-01
31	2.54735E-09	2.91582E-04	5.28851E-06	8.78052E-01
32	4.58014E-09	9.48264E-04	2.77724E-06	8.43422E-01
33	1.67589E-08	6.35259E-03	1.43598E-06	8.07619E-01
34	2.39462E-08	1.68097E-02	7.31438E-07	7.70766E-01
35	2.48346E-08	3.26310E-02	3.67219E-07	7.32992E-01
36	2.17942E-08	5.41347E-02	1.81806E-07	6.94433E-01
37	1.72288E-08	8.16452E-02	8.88038E-08	6.55233E-01
38	1.26676E-08	1.15494E-01	4.28142E-08	6.15538E-01
39	8.82706E-09	1.56017E-01	2.03824E-08	5.75506E-01
40	5.90038E-09	2.03560E-01	9.58487E-09	5.35297E-01
41	3.81535E-09	2.58473E-01	4.45365E-09	4.95080E-01
42	2.40134E-09	3.21113E-01	2.04525E-09	4.55030E-01
43	1.47806E-09	3.91843E-01	9.28412E-10	4.15328E-01
44	8.93085E-10	4.71033E-01	4.16596E-10	3.76161E-01
45	5.31400E-10	5.59060E-01	1.84767E-10	3.37724E-01
46	3.12205E-10	6.56305E-01	8.09730E-11	3.00219E-01
47	1.81539E-10	7.63160E-01	3.50450E-11	2.63850E-01
48	1.04695E-10	8.80020E-01	1.49657E-11	2.28834E-01
49	6.00002E-11	1.00729E 00	6.29738E-12	1.95389E-01
50	3.42318E-11	1.14537E 00	2.60574E-12	1.63743E-01

SUM S(J) FOR R = 4.05220377E-01 SUM S(J) FOR P = 4.98828763E-01

STRENGTHS AND F FACTORS OF THE V = 0 TO V = 2 TRANSITIONS OF HF

TEMPERATURE = 3000.0 DEG. K

	R BRANCH		P BRANCH	
J	S(J)	F(J)	S(J)	F(J)
0	7.46740E-03	9.71008E-01		
1	1.42515E-02	9.40425E-01	7.66014E-03	1.02731E 00
2	1.99381E-02	9.08349E-01	1.49999E-02	1.05285E 00
3	2.42322E-02	8.74883E-01	2.15411E-02	1.07655E 00
4	2.69821E-02	8.40138E-01	2.68920E-02	1.09833E 00
5	2.81840E-02	8.04232E-01	3.07855E-02	1.11814E 00
6	2.79664E-02	7.67288E-01	3.30988E-02	1.13590E 00
7	2.65597E-02	7.29435E-01	3.38531E-02	1.15157E 00
8	2.42575E-02	6.90811E-01	3.31949E-02	1.16510E 00
9	2.13751E-02	6.51558E-01	3.13651E-02	1.17645E 00
10	1.82134E-02	6.11826E-01	2.86595E-02	1.18559E 00
11	1.50313E-02	5.71770E-01	2.53908E-02	1.19250E 00
12	1.20288E-02	5.31553E-01	2.18550E-02	1.19715E 00
13	9.34165E-03	4.91344E-01	1.83057E-02	1.19953E 00
14	7.04412E-03	4.51319E-01	1.49406E-02	1.19964E 00
15	5.15885E-03	4.11658E-01	1.18954E-02	1.19747E 00
16	3.66964E-03	3.72551E-01	9.24812E-03	1.19303E 00
17	2.53483E-03	3.34193E-01	7.02697E-03	1.18633E 00
18	1.69952E-03	2.96784E-01	5.22240E-03	1.17739E 00
19	1.10511E-03	2.60532E-01	3.79906E-03	1.16624E 00
20	6.96076E-04	2.25653E-01	2.70698E-03	1.15291E 00
21	4.23950E-04	1.92366E-01	1.89050E-03	1.13744E 00
22	2.49048E-04	1.60898E-01	1.29485E-03	1.11988E 00
23	1.40603E-04	1.31484E-01	8.70310E-04	1.10026E 00
24	7.58875E-05	1.04364E-01	5.74360E-04	1.07866E 00
25	3.88518E-05	7.97850E-02	3.72385E-04	1.05514E 00
26	1.86389E-05	5.79992E-02	2.37319E-04	1.02976E 00
27	8.21161E-06	3.92668E-02	1.48742E-04	1.00261E 00
28	3.20279E-06	2.38540E-02	9.17311E-05	9.73774E-01
29	1.02409E-06	1.20333E-02	5.56929E-05	9.43335E-01
30	2.17623E-07	4.08396E-03	3.33036E-05	9.11393E-01
31	9.61615E-09	2.91582E-04	1.96245E-05	8.78052E-01
32	1.91424E-08	9.48264E-04	1.14004E-05	8.43422E-01
33	7.76827E-08	6.35259E-03	6.53194E-06	8.07619E-01
34	1.23305E-07	1.68097E-02	3.69277E-06	7.70766E-01
35	1.42272E-07	3.26310E-02	2.06074E-06	7.32992E-01
36	1.39097E-07	5.41347E-02	1.13558E-06	6.94433E-01
37	1.22656E-07	8.16452E-02	6.18140E-07	6.55233E-01
38	1.00710E-07	1.15494E-01	3.32481E-07	6.15538E-01
39	7.84451E-08	1.56017E-01	1.76757E-07	5.75506E-01
40	5.86637E-08	2.03560E-01	9.28995E-08	5.35297E-01
41	4.24690E-08	2.58473E-01	4.82781E-08	4.95080E-01
42	2.99422E-08	3.21113E-01	2.48100E-08	4.55030E-01
43	2.06535E-08	3.91843E-01	1.26080E-08	4.15328E-01
44	1.39889E-08	4.71033E-01	6.33511E-09	3.76161E-01
45	9.33126E-09	5.59060E-01	3.14660E-09	3.37724E-01
46	6.14554E-09	6.56305E-01	1.54422E-09	3.00219E-01
47	4.00486E-09	7.63160E-01	7.48250E-10	2.63850E-01
48	2.58737E-09	8.80020E-01	3.57597E-10	2.28834E-01
49	1.66009E-09	1.00729E 00	1.68299E-10	1.95389E-01
50	1.05952E-09	1.14537E 00	7.78287E-11	1.63743E-01

SUM S(J) FOR R = 2.98697951E-01 SUM S(J) FOR P = 3.88055980E-01

STRENGTHS AND F FACTORS OF THE V = 0 TO V = 2 TRANSITIONS OF HF

TEMPERATURE = 3500.0 DEG. K

	R BRANCH		P BRANCH	
J	S(J)	F(J)	S(J)	F(J)
0	5.05441E-03	9.71008E-01		
1	9.67543E-03	9.40425E-01	5.19712E-03	1.02731E 00
2	1.36150E-02	9.08349E-01	1.02317E-02	1.05285E 00
3	1.66901E-02	8.74883E-01	1.48139E-02	1.07655E 00
4	1.87967E-02	8.40138E-01	1.86969E-02	1.09833E 00
5	1.99135E-02	8.04232E-01	2.16990E-02	1.11814E 00
6	2.00962E-02	7.67288E-01	2.37160E-02	1.13590E 00
7	1.94633E-02	7.29435E-01	2.47255E-02	1.15157E 00
8	1.81773E-02	6.90811E-01	2.47804E-02	1.16510E 00
9	1.64225E-02	6.51558E-01	2.39956E-02	1.17645E 00
10	1.43854E-02	6.11826E-01	2.25292E-02	1.18559E 00
11	1.22365E-02	5.71770E-01	2.05627E-02	1.19250E 00
12	1.01190E-02	5.31553E-01	1.82807E-02	1.19715E 00
13	8.14118E-03	4.91344E-01	1.58549E-02	1.19953E 00
14	6.37563E-03	4.51319E-01	1.34326E-02	1.19964E 00
15	4.86121E-03	4.11658E-01	1.11287E-02	1.19747E 00
16	3.60870E-03	3.72551E-01	9.02455E-03	1.19303E 00
17	2.60755E-03	3.34193E-01	7.16909E-03	1.18633E 00
18	1.83299E-03	2.96784E-01	5.58316E-03	1.17739E 00
19	1.25245E-03	2.60532E-01	4.26548E-03	1.16624E 00
20	8.30772E-04	2.25653E-01	3.19889E-03	1.15291E 00
21	5.33984E-04	1.92366E-01	2.35629E-03	1.13744E 00
22	3.31725E-04	1.60898E-01	1.70567E-03	1.11988E 00
23	1.98442E-04	1.31484E-01	1.21403E-03	1.10026E 00
24	1.13707E-04	1.04364E-01	8.50063E-04	1.07866E 00
25	6.19175E-05	7.97850E-02	5.85828E-04	1.05514E 00
26	3.16505E-05	5.79992E-02	3.97547E-04	1.02976E 00
27	1.48830E-05	3.92668E-02	2.65769E-04	1.00261E 00
28	6.20583E-06	2.38540E-02	1.75108E-04	9.73774E-01
29	2.12470E-06	1.20333E-02	1.13757E-04	9.43335E-01
30	4.84163E-07	4.08396E-03	7.28952E-05	9.11393E-01
31	2.29734E-08	2.91582E-04	4.60931E-05	8.78052E-01
32	4.91734E-08	9.48264E-04	2.87709E-05	8.43422E-01
33	2.14834E-07	6.35259E-03	1.77339E-05	8.07619E-01
34	3.67540E-07	1.68097E-02	1.07979E-05	7.70766E-01
35	4.57560E-07	3.26310E-02	6.49664E-06	7.32992E-01
36	4.83143E-07	5.41347E-02	3.86352E-06	6.94433E-01
37	4.60531E-07	8.16452E-02	2.27160E-06	6.55233E-01
38	4.09069E-07	1.15494E-01	1.32078E-06	6.15538E-01
39	3.44942E-07	1.56017E-01	7.59558E-07	5.75506E-01
40	2.79426E-07	2.03560E-01	4.32092E-07	5.35297E-01
41	2.19230E-07	2.58473E-01	2.43168E-07	4.95080E-01
42	1.67576E-07	3.21113E-01	1.35378E-07	4.55030E-01
43	1.25356E-07	3.91843E-01	7.45517E-08	4.15328E-01
44	9.20947E-08	4.71033E-01	4.06011E-08	3.76161E-01
45	6.66376E-08	5.59060E-01	2.18589E-08	3.37724E-01
46	4.76036E-08	6.56305E-01	1.16274E-08	3.00219E-01
47	3.36425E-08	7.63160E-01	6.10569E-09	2.63650E-01
48	2.35637E-08	8.80020E-01	3.16136E-09	2.28834E-01
49	1.63835E-08	1.00729E 00	1.61129E-09	1.95389E-01
50	1.13244E-08	1.14537E 00	8.06500E-10	1.63743E-01

SUM S(J) FOR R = 2.25454855E-01 SUM S(J) FOR P = 3.06741941E-01

STRENGTHS AND F FACTORS OF THE V = 0 TO V = 2 TRANSITIONS OF HF

TEMPERATURE = 4000.0 DEG. K

	R BRANCH		P BRANCH	
J	S(J)	F(J)	S(J)	F(J)
0	3.54787E-03	9.71008E-01		
1	6.80726E-03	9.40425E-01	3.65405E-03	1.02731E 00
2	9.62127E-03	9.08349E-01	7.22237E-03	1.05285E 00
3	1.18712E-02	8.74883E-01	1.05202E-02	1.07655E 00
4	1.34846E-02	8.40138E-01	1.33861E-02	1.09833E 00
5	1.44385E-02	8.04232E-01	1.56944E-02	1.11814E 00
6	1.47570E-02	7.67288E-01	1.73645E-02	1.13590E 00
7	1.45044E-02	7.29435E-01	1.83639E-02	1.15157E 00
8	1.37748E-02	6.90811E-01	1.87069E-02	1.16510E 00
9	1.26806E-02	6.51558E-01	1.84488E-02	1.17645E 00
10	1.13403E-02	6.11826E-01	1.76759E-02	1.18559E 00
11	9.86761E-03	5.71770E-01	1.64953E-02	1.19250E 00
12	8.36326E-03	5.31553E-01	1.50228E-02	1.19715E 00
13	6.90934E-03	4.91344E-01	1.33729E-02	1.19953E 00
14	5.56661E-03	4.51319E-01	1.16500E-02	1.19964E 00
15	4.37447E-03	4.11658E-01	9.94281E-03	1.19747E 00
16	3.35293E-03	3.72551E-01	8.32082E-03	1.19303E 00
17	2.50588E-03	3.34193E-01	6.83343E-03	1.18633E 00
18	1.82510E-03	2.96784E-01	5.51099E-03	1.17739E 00
19	1.29424E-03	2.60532E-01	4.36733E-03	1.16624E 00
20	8.92415E-04	2.25653E-01	3.40291E-03	1.15291E 00
21	5.97218E-04	1.92366E-01	2.60836E-03	1.13744E 00
22	3.86874E-04	1.60898E-01	1.96782E-03	1.11988E 00
23	2.41689E-04	1.31484E-01	1.46189E-03	1.10026E 00
24	1.44833E-04	1.04364E-01	1.06991E-03	1.07866E 00
25	8.25943E-05	7.97850E-02	7.71756E-04	1.05514E 00
26	4.42744E-05	5.79992E-02	5.48891E-04	1.02976E 00
27	2.18601E-05	3.92668E-02	3.85071E-04	1.00261E 00
28	9.58256E-06	2.38540E-02	2.66569E-04	9.73774E-01
29	3.45305E-06	1.20333E-02	1.82159E-04	9.43335E-01
30	8.29090E-07	4.08396E-03	1.22918E-04	9.11393E-01
31	4.14946E-08	2.91582E-04	8.19309E-05	8.78052E-01
32	9.37736E-08	9.48264E-04	5.39617E-05	8.43422E-01
33	4.32949E-07	6.35259E-03	3.51283E-05	8.07619E-01
34	7.83420E-07	1.68097E-02	2.26089E-05	7.70766E-01
35	1.03237E-06	3.26310E-02	1.43901E-05	7.32992E-01
36	1.15472E-06	5.41347E-02	9.05950E-06	6.94433E-01
37	1.16670E-06	8.16452E-02	5.64267E-06	6.55233E-01
38	1.09913E-06	1.15494E-01	3.47754E-06	6.15538E-01
39	9.83500E-07	1.56017E-01	2.12087E-06	5.75506E-01
40	8.45788E-07	2.03560E-01	1.28007E-06	5.35297E-01
41	7.04726E-07	2.58473E-01	7.64597E-07	4.95080E-01
42	5.72247E-07	3.21113E-01	4.51931E-07	4.55030E-01
43	4.54841E-07	3.91843E-01	2.64286E-07	4.15328E-01
44	3.55094E-07	4.71033E-01	1.52865E-07	3.76161E-01
45	2.73048E-07	5.59060E-01	8.74131E-08	3.37724E-01
46	2.07276E-07	6.56305E-01	4.93849E-08	3.00219E-01
47	1.55641E-07	7.63160E-01	2.75398E-08	2.63850E-01
48	1.15798E-07	8.80020E-01	1.51399E-08	2.28834E-01
49	8.54943E-08	1.00729E 00	8.19049E-09	1.95389E-01
50	6.27224E-08	1.14537E 00	4.34964E-09	1.63743E-01

SUM S(J) FOR R = 1.73323338E-01 SUM S(J) FOR P = 2.45573097E-01

STRENGTHS AND F FACTORS OF THE V = 0 TO V = 2 TRANSITIONS OF HF

TEMPERATURE = 4500.0 DEG. K

	R BRANCH		P BRANCH	
J	S(J)	F(J)	S(J)	F(J)
0	2.56312E-03	9.71008E-01		
1	4.92690E-03	9.40425E-01	2.64299E-03	1.02731E 00
2	6.98775E-03	9.08349E-01	5.23981E-03	1.05285E 00
3	8.66571E-03	8.74883E-01	7.66796E-03	1.07655E 00
4	9.90957E-03	8.40138E-01	9.81806E-03	1.09833E 00
5	1.06990E-02	8.04232E-01	1.16020E-02	1.11814E 00
6	1.10437E-02	7.67288E-01	1.29585E-02	1.13590E 00
7	1.09799E-02	7.29435E-01	1.38563E-02	1.15157E 00
8	1.05645E-02	6.90811E-01	1.42942E-02	1.16510E 00
9	9.86827E-03	6.51558E-01	1.42978E-02	1.17645E 00
10	8.96871E-03	6.11826E-01	1.39154E-02	1.18559E 00
11	7.94291E-03	5.71770E-01	1.32112E-02	1.19250E 00
12	6.86206E-03	5.31553E-01	1.22588E-02	1.19715E 00
13	5.78716E-03	4.91344E-01	1.11346E-02	1.19953E 00
14	4.76648E-03	4.51319E-01	9.91181E-03	1.19964E 00
15	3.83465E-03	4.11658E-01	8.65625E-03	1.19747E 00
16	3.01316E-03	3.72551E-01	7.42305E-03	1.19303E 00
17	2.31178E-03	3.34193E-01	6.25518E-03	1.18633E 00
18	1.73077E-03	2.96784E-01	5.18314E-03	1.17739E 00
19	1.26327E-03	2.60532E-01	4.22573E-03	1.16624E 00
20	8.97690E-04	2.25653E-01	3.39160E-03	1.15291E 00
21	6.19874E-04	1.92366E-01	2.68116E-03	1.13744E 00
22	4.14827E-04	1.60898E-01	2.08861E-03	1.11988E 00
23	2.68030E-04	1.31484E-01	1.60398E-03	1.10026E 00
24	1.66306E-04	1.04364E-01	1.21488E-03	1.07866E 00
25	9.83028E-05	7.97850E-02	9.07875E-04	1.05514E 00
26	5.46756E-05	5.79992E-02	6.69639E-04	1.02976E 00
27	2.80380E-05	3.92668E-02	4.87677E-04	1.00261E 00
28	1.27774E-05	2.38540E-02	3.50789E-04	9.73774E-01
29	4.79093E-06	1.20333E-02	2.49301E-04	9.43335E-01
30	1.19797E-06	4.08396E-03	1.75104E-04	9.11393E-01
31	6.24906E-08	2.91582E-04	1.21587E-04	8.78052E-01
32	1.47303E-07	9.48264E-04	8.34860E-05	8.43422E-01
33	7.09881E-07	6.35259E-03	5.66999E-05	8.07619E-01
34	1.34168E-06	1.68097E-02	3.80970E-05	7.70766E-01
35	1.84783E-06	3.26310E-02	2.53295E-05	7.32992E-01
36	2.16130E-06	5.41347E-02	1.66673E-05	6.94433E-01
37	2.28470E-06	8.16452E-02	1.08559E-05	6.55233E-01
38	2.25294E-06	1.15494E-01	6.99953E-06	6.15538E-01
39	2.11095E-06	1.56017E-01	4.46790E-06	5.75506E-01
40	1.90157E-06	2.03560E-01	2.82338E-06	5.35297E-01
41	1.66013E-06	2.58473E-01	1.76619E-06	4.95080E-01
42	1.41277E-06	3.21113E-01	1.09357E-06	4.55030E-01
43	1.17701E-06	3.91843E-01	6.70032E-07	4.15328E-01
44	9.63251E-07	4.71033E-01	4.06090E-07	3.76161E-01
45	7.76464E-07	5.59060E-01	2.43335E-07	3.37724E-01
46	6.17871E-07	6.56305E-01	1.44055E-07	3.00219E-01
47	4.86282E-07	7.63160E-01	8.41705E-08	2.63850E-01
48	3.79139E-07	8.80020E-01	4.84748E-08	2.28834E-01
49	2.93258E-07	1.00729E 00	2.74660E-08	1.95389E-01
50	2.25318E-07	1.14537E 00	1.52719E-08	1.63743E-01

SUM S(J) FOR R = 1.35278556E-01 SUM S(J) FOR P = 1.98744835E-01

STRENGTHS AND F FACTORS OF THE V = 0 TO V = 2 TRANSITIONS OF HF

TEMPERATURE = 5000.0 DEG. K

	R BRANCH		P BRANCH	
J	S(J)	F(J)	S(J)	F(J)
0	1.89600E-03	9.71008E-01		
1	3.65001E-03	9.40425E-01	1.95682E-03	1.02731E 00
2	5.19126E-03	9.08349E-01	3.88873E-03	1.05285E 00
3	6.46419E-03	8.74883E-01	5.71176E-03	1.07655E 00
4	7.43189E-03	8.40138E-01	7.34975E-03	1.09833E 00
5	8.07751E-03	8.04232E-01	8.73958E-03	1.11814E 00
6	8.40413E-03	7.67288E-01	9.83507E-03	1.13590E 00
7	8.43271E-03	7.29435E-01	1.06093E-02	1.15157E 00
8	8.19884E-03	6.90811E-01	1.10548E-02	1.16510E 00
9	7.74853E-03	6.51558E-01	1.11830E-02	1.17645E 00
10	7.13369E-03	6.11826E-01	1.10206E-02	1.18559E 00
11	6.40759E-03	5.71770E-01	1.06073E-02	1.19250E 00
12	5.62106E-03	5.31553E-01	9.99024E-03	1.19715E 00
13	4.81933E-03	4.91344E-01	9.22098E-03	1.19953E 00
14	4.03997E-03	4.51319E-01	8.35088E-03	1.19964E 00
15	3.31174E-03	4.11658E-01	7.42807E-03	1.19747E 00
16	2.65452E-03	3.72551E-01	6.49496E-03	1.19303E 00
17	2.07977E-03	3.34193E-01	5.58667E-03	1.18633E 00
18	1.59174E-03	2.96784E-01	4.73026E-03	1.17739E 00
19	1.18889E-03	2.60532E-01	3.94477E-03	1.16624E 00
20	8.65418E-04	2.25653E-01	3.24183E-03	1.15291E 00
21	6.12745E-04	1.92366E-01	2.62662E-03	1.13744E 00
22	4.20856E-04	1.60898E-01	2.09909E-03	1.11988E 00
23	2.79343E-04	1.31484E-01	1.65529E-03	1.10026E 00
24	1.78211E-04	1.04364E-01	1.28853E-03	1.07866E 00
25	1.08403E-04	7.97850E-02	9.90472E-04	1.05514E 00
26	6.20970E-05	5.79992E-02	7.52091E-04	1.02976E 00
27	3.28223E-05	3.92668E-02	5.64309E-04	1.00261E 00
28	1.54289E-05	2.38540E-02	4.18519E-04	9.73774E-01
29	5.97169E-06	1.20333E-02	3.06894E-04	9.43335E-01
30	1.54242E-06	4.08396E-03	2.22562E-04	9.11393E-01
31	8.31631E-08	2.91582E-04	1.59667E-04	8.78052E-01
32	2.02745E-07	9.48264E-04	1.13339E-04	8.43422E-01
33	1.01110E-06	6.35259E-03	7.96214E-05	8.07619E-01
34	1.97857E-06	1.68097E-02	5.53674E-05	7.70766E-01
35	2.82275E-06	3.26310E-02	3.81169E-05	7.32992E-01
36	3.42159E-06	5.41347E-02	2.59823E-05	6.94433E-01
37	3.74989E-06	8.16452E-02	1.75380E-05	6.55233E-01
38	3.83505E-06	1.15494E-01	1.17232E-05	6.15538E-01
39	3.72792E-06	1.56017E-01	7.76032E-06	5.75506E-01
40	3.48487E-06	2.03560E-01	5.08706E-06	5.35297E-01
41	3.15790E-06	2.58473E-01	3.30186E-06	4.95080E-01
42	2.78987E-06	3.21113E-01	2.12165E-06	4.55030E-01
43	2.41326E-06	3.91843E-01	1.34923E-06	4.15328E-01
44	2.05071E-06	4.71033E-01	8.48825E-07	3.76161E-01
45	1.71646E-06	5.59060E-01	5.27983E-07	3.37724E-01
46	1.41822E-06	6.56305E-01	3.24456E-07	3.00219E-01
47	1.15884E-06	7.63160E-01	1.96775E-07	2.63850E-01
48	9.37905E-07	8.80020E-01	1.17613E-07	2.28834E-01
49	7.52902E-07	1.00729E 00	6.91478E-08	1.95389E-01
50	6.00190E-07	1.14537E 00	3.98852E-08	1.63743E-01

SUM S(J) FOR R = 1.06967513E-01 SUM S(J) FOR P = 1.62392755E-01

APPENDIX VII
MORSE OSCILLATOR LINE STRENGTHS AND CORRECTION FACTORS FOR HYDROGEN FLUORIDE

STRENGTHS AND F FACTORS OF THE V = 0 TO V = 1 TRANSITIONS OF HF

TEMPERATURE = 273.3 DEG. K

	R BRANCH		P BRANCH	
J	S(J)	F(J)	S(J)	F(J)
0	4.31094E 01	9.46725E-01		
1	6.62841E 01	8.95215E-01	3.79126E 01	1.05507E 00
2	6.14706E 01	8.45445E-01	5.12855E 01	1.11195E 00
3	4.07697E 01	7.97389E-01	4.18744E 01	1.17069E 00
4	2.04108E 01	7.51021E-01	2.44793E 01	1.23129E 00
5	7.90625E 00	7.06315E-01	1.08180E 01	1.29379E 00
6	2.40270E 00	6.63245E-01	3.70587E 00	1.35822E 00
7	5.78073E-01	6.21786E-01	9.98214E-01	1.42460E 00
8	1.10839E-01	5.81913E-01	2.13423E-01	1.49297E 00
9	1.70269E-02	5.43602E-01	3.64738E-02	1.56334E 00
10	2.10527E-03	5.06826E-01	5.01088E-03	1.63575E 00
11	2.10398E-04	4.71561E-01	5.56163E-04	1.71022E 00
12	1.70637E-05	4.37783E-01	5.01003E-05	1.78678E 00
13	1.12748E-06	4.05467E-01	3.67907E-06	1.86547E 00
14	6.09331E-08	3.74588E-01	2.21194E-07	1.94631E 00
15	2.70411E-09	3.45124E-01	1.09351E-08	2.02932E 00
16	9.89400E-11	3.17050E-01	4.46465E-10	2.11454E 00
17	2.99696E-12	2.90341E-01	1.51217E-11	2.20199E 00
18	7.54709E-14	2.64975E-01	4.26817E-13	2.29171E 00
19	1.58684E-15	2.40927E-01	1.00864E-14	2.38372E 00
20	2.79801E-17	2.18176E-01	2.00526E-16	2.47805E 00
21	4.15602E-19	1.96696E-01	3.37037E-18	2.57474E 00
22	5.22388E-21	1.76466E-01	4.81333E-20	2.67381E 00
23	5.58218E-23	1.57462E-01	5.87116E-22	2.77529E 00
24	5.09488E-25	1.39663E-01	6.14909E-24	2.87921E 00
25	3.99042E-27	1.23044E-01	5.55987E-26	2.98560E 00
26	2.69454E-29	1.07585E-01	4.36406E-28	3.09450E 00
27	1.57595E-31	9.32621E-02	2.99052E-30	3.20593E 00
28	8.01958E-34	8.00539E-02	1.79948E-32	3.31992E 00
29	3.56616E-36	6.79386E-02	9.56423E-35	3.43650E 00
30	.00000E 00	5.68942E-02	4.51715E-37	3.55571E 00
31	.00000E 00	4.68993E-02	.00000E 00	3.67758E 00
32	.00000E 00	3.79324E-02	.00000E 00	3.80213E 00
33	.00000E 00	2.99722E-02	.00000E 00	3.92941E 00
34	.00000E 00	2.29977E-02	.00000E 00	4.05943E 00
35	.00000E 00	1.69879E-02	.00000E 00	4.19223E 00
36	.00000E 00	1.19220E-02	.00000E 00	4.32785E 00
37	.00000E 00	7.77933E-03	.00000E 00	4.46632E 00
38	.00000E 00	4.53950E-03	.00000E 00	4.60766E 00
39	.00000E 00	2.18217E-03	.00000E 00	4.75191E 00
40	.00000E 00	6.87182E-04	.00000E 00	4.89911E 00
41	.00000E 00	3.45416E-05	.00000E 00	5.04928E 00
42	.00000E 00	2.04410E-04	.00000E 00	5.20246E 00
43	.00000E 00	1.17711E-03	.00000E 00	5.35868E 00
44	.00000E 00	2.93312E-03	.00000E 00	5.51798E 00
45	.00000E 00	5.45309E-03	.00000E 00	5.68039E 00
46	.00000E 00	8.71780E-03	.00000E 00	5.84593E 00
47	.00000E 00	1.27082E-02	.00000E 00	6.01465E 00
48	.00000E 00	1.74055E-02	.00000E 00	6.18658E 00
49	.00000E 00	2.27908E-02	.00000E 00	6.36176E 00
50	.00000E 00	2.88456E-02	.00000E 00	6.54021E 00

SUM S(J) FOR R = 2.43061814E 02 SUM S(J) FOR P = 1.71329392E 02

STRENGTHS AND F FACTORS OF THE V = 0 TO V = 1 TRANSITIONS OF HF

TEMPERATURE = 373.3 DEG. K

	R BRANCH		P BRANCH	
J	S(J)	F(J)	S(J)	F(J)
0	2.33161E 01	9.46725E-01		
1	3.79903E 01	8.95215E-01	2.17294E 01	1.05507E 00
2	3.95604E 01	8.45445E-01	3.30056E 01	1.11195E 00
3	3.12138E 01	7.97389E-01	3.20596E 01	1.17069E 00
4	1.96916E 01	7.51021E-01	2.36166E 01	1.23129E 00
5	1.01782E 01	7.06315E-01	1.39266E 01	1.29379E 00
6	4.36912E 00	6.63245E-01	6.73883E 00	1.35822E 00
7	1.57109E 00	6.21786E-01	2.71295E 00	1.42460E 00
8	4.76159E-01	5.81913E-01	9.16858E-01	1.49297E 00
9	1.22211E-01	5.43602E-01	2.61792E-01	1.56334E 00
10	2.66686E-02	5.06826E-01	6.34753E-02	1.63575E 00
11	4.96533E-03	4.71561E-01	1.31253E-02	1.71022E 00
12	7.91350E-04	4.37783E-01	2.32346E-03	1.78678E 00
13	1.08296E-04	4.05467E-01	3.53380E-04	1.86547E 00
14	1.27645E-05	3.74588E-01	4.63364E-05	1.94631E 00
15	1.29973E-06	3.45124E-01	5.25594E-06	2.02932E 00
16	1.14679E-07	3.17050E-01	5.17482E-07	2.11454E 00
17	8.79474E-09	2.90341E-01	4.43751E-08	2.20199E 00
18	5.88065E-10	2.64975E-01	3.32570E-09	2.29171E 00
19	3.43919E-11	2.40927E-01	2.18604E-10	2.38372E 00
20	1.76485E-12	2.18176E-01	1.26480E-11	2.47805E 00
21	7.97231E-14	1.96696E-01	6.46512E-13	2.57474E 00
22	3.18058E-15	1.76466E-01	2.93055E-14	2.67381E 00
23	1.12435E-16	1.57462E-01	1.18253E-15	2.77529E 00
24	3.53348E-18	1.39663E-01	4.26448E-17	2.87921E 00
25	9.90440E-20	1.23044E-01	1.37993E-18	2.98560E 00
26	2.48416E-21	1.07585E-01	4.02311E-20	3.09450E 00
27	5.59266E-23	9.32621E-02	1.06119E-21	3.20593E 00
28	1.13357E-24	8.00539E-02	2.54336E-23	3.31992E 00
29	2.07435E-26	6.79386E-02	5.56268E-25	3.43650E 00
30	3.43553E-28	5.68942E-02	1.11517E-26	3.55571E 00
31	5.16017E-30	4.68993E-02	2.05845E-28	3.67758E 00
32	7.03851E-32	3.79324E-02	3.51452E-30	3.80213E 00
33	8.72137E-34	2.99722E-02	5.57627E-32	3.92941E 00
34	9.80458E-36	2.29977E-02	8.26112E-34	4.05943E 00
35	.00000E 00	1.69879E-02	1.14828E-35	4.19223E 00
36	.00000E 00	1.19220E-02	.00000E 00	4.32785E 00
37	.00000E 00	7.77933E-03	.00000E 00	4.46632E 00
38	.00000E 00	4.53950E-03	.00000E 00	4.60766E 00
39	.00000E 00	2.18217E-03	.00000E 00	4.75191E 00
40	.00000E 00	6.87182E-04	.00000E 00	4.89911E 00
41	.00000E 00	3.45416E-05	.00000E 00	5.04928E 00
42	.00000E 00	2.04410E-04	.00000E 00	5.20246E 00
43	.00000E 00	1.17711E-03	.00000E 00	5.35868E 00
44	.00000E 00	2.93312E-03	.00000E 00	5.51798E 00
45	.00000E 00	5.45309E-03	.00000E 00	5.68039E 00
46	.00000E 00	8.71780E-03	.00000E 00	5.84593E 00
47	.00000E 00	1.27082E-02	.00000E 00	6.01465E 00
48	.00000E 00	1.74055E-02	.00000E 00	6.18658E 00
49	.00000E 00	2.27908E-02	.00000E 00	6.36176E 00
50	.00000E 00	2.88456E-02	.00000E 00	6.54021E 00

SUM S(J) FOR R = 1.68521407E 02 SUM S(J) FOR P = 1.35047543E 02

STRENGTHS AND F FACTORS OF THE V = 0 TO V = 1 TRANSITIONS OF HF

TEMPERATURE = 500.0 DEG. K

	R BRANCH		P BRANCH	
J	S(J)	F(J)	S(J)	F(J)
0	1.30724E 01	9.46725E-01		
1	2.21724E 01	8.95215E-01	1.26819E 01	1.05507E 00
2	2.50182E 01	8.45445E-01	2.08727E 01	1.11195E 00
3	2.22624E 01	7.97389E-01	2.28654E 01	1.17069E 00
4	1.64833E 01	7.51021E-01	1.97686E 01	1.23129E 00
5	1.04038E 01	7.06315E-01	1.42352E 01	1.29379E 00
6	5.67279E 00	6.63245E-01	8.74941E 00	1.35822E 00
7	2.69445E 00	6.21786E-01	4.65266E 00	1.42460E 00
8	1.12132E 00	5.81913E-01	2.15907E 00	1.49297E 00
9	4.10642E-01	5.43602E-01	8.79620E-01	1.56334E 00
10	1.32805E-01	5.06826E-01	3.16084E-01	1.63575E 00
11	3.80451E-02	4.71561E-01	1.00563E-01	1.71022E 00
12	9.68063E-03	4.37783E-01	2.84215E-02	1.78678E 00
13	2.19349E-03	4.05467E-01	7.15709E-03	1.86547E 00
14	4.43662E-04	3.74588E-01	1.61042E-03	1.94631E 00
15	8.02950E-05	3.45124E-01	3.24673E-04	2.02932E 00
16	1.30336E-05	3.17050E-01	5.88072E-05	2.11454E 00
17	1.90194E-06	2.90341E-01	9.59531E-06	2.20199E 00
18	2.50097E-07	2.64975E-01	1.41417E-06	2.29171E 00
19	2.97044E-08	2.40927E-01	1.88775E-07	2.38372E 00
20	3.19423E-09	2.18176E-01	2.28871E-08	2.47805E 00
21	3.11727E-10	1.96696E-01	2.52731E-09	2.57474E 00
22	2.76745E-11	1.76466E-01	2.54915E-10	2.67381E 00
23	2.24033E-12	1.57462E-01	2.35542E-11	2.77529E 00
24	1.65762E-13	1.39663E-01	1.99971E-12	2.87921E 00
25	1.12357E-14	1.23044E-01	1.56464E-13	2.98560E 00
26	6.99231E-16	1.07585E-01	1.13174E-14	3.09450E 00
27	4.00370E-17	9.32621E-02	7.59159E-16	3.20593E 00
28	2.11334E-18	8.00539E-02	4.73768E-17	3.31992E 00
29	1.03012E-19	6.79386E-02	2.75969E-18	3.43650E 00
30	4.64320E-21	5.68942E-02	1.50541E-19	3.55571E 00
31	1.93709E-22	4.68993E-02	7.71644E-21	3.67758E 00
32	7.48121E-24	3.79324E-02	3.72937E-22	3.80213E 00
33	2.67252E-25	2.99722E-02	1.70540E-23	3.92941E 00
34	8.80907E-27	2.29977E-02	7.40507E-25	4.05943E 00
35	2.66565E-28	1.69879E-02	3.06417E-26	4.19223E 00
36	7.33506E-30	1.19220E-02	1.21276E-27	4.32785E 00
37	1.80300E-31	7.77933E-03	4.60830E-29	4.46632E 00
38	3.82235E-33	4.53950E-03	1.68761E-30	4.60766E 00
39	6.46323E-35	2.18217E-03	5.97944E-32	4.75191E 00
40	6.95956E-37	6.87182E-04	2.05798E-33	4.89911E 00
41	.00000E 00	3.45416E-05	6.90855E-35	5.04928E 00
42	.00000E 00	2.04410E-04	2.27153E-36	5.20246E 00
43	.00000E 00	1.17711E-03	.00000E 00	5.35868E 00
44	.00000E 00	2.93312E-03	.00000E 00	5.51798E 00
45	.00000E 00	5.45309E-03	.00000E 00	5.68039E 00
46	.00000E 00	8.71780E-03	.00000E 00	5.84593E 00
47	.00000E 00	1.27082E-02	.00000E 00	6.01465E 00
48	.00000E 00	1.74055E-02	.00000E 00	6.18658E 00
49	.00000E 00	2.27908E-02	.00000E 00	6.36176E 00
50	.00000E 00	2.88456E-02	.00000E 00	6.54021E 00

SUM S(J) FOR R = 1.19494811E 02 SUM S(J) FOR P = 1.07318822E 02

STRENGTHS AND F FACTORS OF THE V = 0 TO V = 1 TRANSITIONS OF HF

TEMPERATURE = 1000.0 DEG. K

	R BRANCH		P BRANCH	
J	S(J)	F(J)	S(J)	F(J)
0	3.26718E 00	9.46725E-01		
1	5.88021E 00	8.95215E-01	3.36143E 00	1.05507E 00
2	7.46878E 00	8.45445E-01	6.22543E 00	1.11195E 00
3	7.93536E 00	7.97389E-01	8.13960E 00	1.17069E 00
4	7.43934E 00	7.51021E-01	8.90685E 00	1.23129E 00
5	6.30300E 00	7.06315E-01	8.60593E 00	1.29379E 00
6	4.88904E 00	6.63245E-01	7.52140E 00	1.35822E 00
7	3.49940E 00	6.21786E-01	6.02451E 00	1.42460E 00
8	2.32354E 00	5.81913E-01	4.45839E 00	1.49297E 00
9	1.43662E 00	5.43602E-01	3.06509E 00	1.56334E 00
10	8.29519E-01	5.06826E-01	1.96539E 00	1.63575E 00
11	4.48351E-01	4.71561E-01	1.17907E 00	1.71022E 00
12	2.27284E-01	4.37783E-01	6.63470E-01	1.78678E 00
13	1.08249E-01	4.05467E-01	3.50944E-01	1.86547E 00
14	4.85125E-02	3.74588E-01	1.74837E-01	1.94631E 00
15	2.04870E-02	3.45124E-01	8.21834E-02	2.02932E 00
16	8.16353E-03	3.17050E-01	3.65104E-02	2.11454E 00
17	3.07335E-03	2.90341E-01	1.53545E-02	2.20199E 00
18	1.09449E-03	2.64975E-01	6.12239E-03	2.29171E 00
19	3.69141E-04	2.40927E-01	2.31817E-03	2.38372E 00
20	1.18047E-04	2.18176E-01	8.34791E-04	2.47805E 00
21	3.58331E-05	1.96696E-01	2.86341E-04	2.57474E 00
22	1.03357E-05	1.76466E-01	9.36989E-05	2.67381E 00
23	2.83570E-06	1.57462E-01	2.92957E-05	2.77529E 00
24	7.40727E-07	1.39663E-01	8.76533E-06	2.87921E 00
25	1.84376E-07	1.23044E-01	2.51373E-06	2.98560E 00
26	4.37645E-08	1.07585E-01	6.92064E-07	3.09450E 00
27	9.91719E-09	9.32621E-02	1.83212E-07	3.20593E 00
28	2.14299E-09	8.00539E-02	4.67148E-08	3.31992E 00
29	4.42309E-10	6.79386E-02	1.14912E-08	3.43650E 00
30	8.71337E-11	5.68942E-02	2.73160E-09	3.55571E 00
31	1.63709E-11	4.68993E-02	6.28560E-10	3.67758E 00
32	2.92913E-12	3.79324E-02	1.40251E-10	3.80213E 00
33	4.97824E-13	2.99722E-02	3.03982E-11	3.92941E 00
34	8.00299E-14	2.29977E-02	6.41133E-12	4.05943E 00
35	1.20863E-14	1.69879E-02	1.31821E-12	4.19223E 00
36	1.69539E-15	1.19220E-02	2.64697E-13	4.32785E 00
37	2.16587E-16	7.77933E-03	5.20056E-14	4.46632E 00
38	2.42829E-17	4.53950E-03	1.00163E-14	4.60766E 00
39	2.20533E-18	2.18217E-03	1.89479E-15	4.75191E 00
40	1.29272E-19	6.87182E-04	3.52747E-16	4.89911E 00
41	1.19417E-21	3.45416E-05	6.47573E-17	5.04928E 00
42	1.28493E-21	2.04410E-04	1.17472E-17	5.20246E 00
43	1.33394E-21	1.17711E-03	2.11020E-18	5.35868E 00
44	5.95448E-22	2.93312E-03	3.76186E-19	5.51798E 00
45	1.97513E-22	5.45309E-03	6.67048E-20	5.68039E 00
46	5.62429E-23	8.71780E-03	1.17924E-20	5.84593E 00
47	1.46143E-23	1.27082E-02	2.08351E-21	6.01465E 00
48	3.57961E-24	1.74055E-02	3.68845E-22	6.18658E 00
49	8.43206E-25	2.27908E-02	6.55993E-23	6.36176E 00
50	1.93658E-25	2.88456E-02	1.17538E-23	6.54021E 00

SUM S(J) FOR R = 5.21377420E 01 SUM S(J) FOR P = 6.07860881E 01

STRENGTHS AND F FACTORS OF THE V = 0 TO V = 1 TRANSITIONS OF HF

TEMPERATURE = 1500.0 DEG. K

	R BRANCH		P BRANCH	
J	S(J)	F(J)	S(J)	F(J)
0	1.39649E 00	9.46725E-01		
1	2.56501E 00	8.95215E-01	1.46336E 00	1.05507E 00
2	3.39086E 00	8.45445E-01	2.81694E 00	1.11195E 00
3	3.82389E 00	7.97389E-01	3.90392E 00	1.17069E 00
4	3.88000E 00	7.51021E-01	4.61727E 00	1.23129E 00
5	3.62782E 00	7.06315E-01	4.91647E 00	1.29379E 00
6	3.16600E 00	6.63245E-01	4.82752E 00	1.35822E 00
7	2.59894E 00	6.21786E-01	4.42823E 00	1.42460E 00
8	2.01708E 00	5.81913E-01	3.82479E 00	1.49297E 00
9	1.48545E 00	5.43602E-01	3.12714E 00	1.56334E 00
10	1.04080E 00	5.06826E-01	2.42933E 00	1.63575E 00
11	6.95281E-01	4.71561E-01	1.79832E 00	1.71022E 00
12	4.43590E-01	4.37783E-01	1.27139E 00	1.78678E 00
13	2.70679E-01	4.05467E-01	8.60097E-01	1.86547E 00
14	1.58169E-01	3.74588E-01	5.57677E-01	1.94631E 00
15	8.86060E-02	3.45124E-01	3.47073E-01	2.02932E 00
16	4.76340E-02	3.17050E-01	2.07607E-01	2.11454E 00
17	2.45971E-02	2.90341E-01	1.19507E-01	2.20199E 00
18	1.22106E-02	2.64975E-01	6.62810E-02	2.29171E 00
19	5.83206E-03	2.40927E-01	3.54595E-02	2.38372E 00
20	2.68202E-03	2.18176E-01	1.83195E-02	2.47805E 00
21	1.18838E-03	1.96696E-01	9.14986E-03	2.57474E 00
22	5.07665E-04	1.76466E-01	4.42292E-03	2.67381E 00
23	2.09203E-04	1.57462E-01	2.07146E-03	2.77529E 00
24	8.32022E-05	1.39663E-01	9.40997E-04	2.87921E 00
25	3.19479E-05	1.23044E-01	4.15072E-04	2.98560E 00
26	1.18467E-05	1.07585E-01	1.77975E-04	3.09450E 00
27	4.24272E-06	9.32621E-02	7.42635E-05	3.20593E 00
28	1.46732E-06	8.00539E-02	3.01898E-05	3.31992E 00
29	4.89851E-07	6.79386E-02	1.19701E-05	3.43650E 00
30	1.57734E-07	5.68942E-02	4.63432E-06	3.55571E 00
31	4.89259E-08	4.68993E-02	1.75396E-06	3.67758E 00
32	1.45888E-08	3.79324E-02	6.49684E-07	3.80213E 00
33	4.16868E-09	2.99722E-02	2.35799E-07	3.92941E 00
34	1.13605E-09	2.29977E-02	8.39563E-08	4.05943E 00
35	2.93072E-10	1.69879E-02	2.93601E-08	4.19223E 00
36	7.07194E-11	1.19220E-02	1.00968E-08	4.32785E 00
37	1.56411E-11	7.77933E-03	3.41874E-09	4.46632E 00
38	3.05354E-12	4.53950E-03	1.14117E-09	4.60766E 00
39	4.85354E-13	2.18217E-03	3.76006E-10	4.75191E 00
40	5.00146E-14	6.87182E-04	1.22451E-10	4.89911E 00
41	8.15253E-16	3.45416E-05	3.94667E-11	5.04928E 00
42	1.55257E-15	2.04410E-04	1.26066E-11	5.20246E 00
43	2.85926E-15	1.17711E-03	3.99641E-12	5.35868E 00
44	2.26765E-15	2.93312E-03	1.25915E-12	5.51798E 00
45	1.33744E-15	5.45309E-03	3.94882E-13	5.68039E 00
46	6.77124E-16	8.71780E-03	1.23458E-13	5.84593E 00
47	3.12544E-16	1.27082E-02	3.85413E-14	6.01465E 00
48	1.35746E-16	1.74055E-02	1.20345E-14	6.18658E 00
49	5.65472E-17	2.27908E-02	3.76524E-15	6.36176E 00
50	2.28824E-17	2.88456E-02	1.18258E-15	6.54021E 00

SUM S(J) FOR R = 3.07436502E 01 SUM S(J) FOR P = 4.16540027E 01

STRENGTHS AND F FACTORS OF THE V = 0 TO V = 1 TRANSITIONS OF HF

TEMPERATURE = 2000.0 DEG. K

	R BRANCH		P BRANCH	
J	S(J)	F(J)	S(J)	F(J)
0	7.27302E-01	9.46725E-01		
1	1.35021E 00	8.95215E-01	7.68301E-01	1.05507E 00
2	1.82186E 00	8.45445E-01	1.50692E 00	1.11195E 00
3	2.11760E 00	7.97389E-01	2.14876E 00	1.17069E 00
4	2.23632E 00	7.51021E-01	2.64039E 00	1.23129E 00
5	2.19745E 00	7.06315E-01	2.94942E 00	1.29379E 00
6	2.03488E 00	6.63245E-01	3.06749E 00	1.35822E 00
7	1.78950E 00	6.21786E-01	3.00890E 00	1.42460E 00
8	1.50203E 00	5.81913E-01	2.80550E 00	1.49297E 00
9	1.20756E 00	5.43602E-01	2.49942E 00	1.56334E 00
10	9.32274E-01	5.06826E-01	2.13542E 00	1.63575E 00
11	6.92534E-01	4.71561E-01	1.75443E 00	1.71022E 00
12	4.95779E-01	4.37783E-01	1.38908E 00	1.78678E 00
13	3.42492E-01	4.05467E-01	1.06175E 00	1.86547E 00
14	2.28562E-01	3.74588E-01	7.84638E-01	1.94631E 00
15	1.47490E-01	3.45124E-01	5.61344E-01	2.02932E 00
16	9.21063E-02	3.17050E-01	3.89236E-01	2.11454E 00
17	5.57071E-02	2.90341E-01	2.61871E-01	2.20199E 00
18	3.26524E-02	2.64975E-01	1.71114E-01	2.29171E 00
19	1.85595E-02	2.40927E-01	1.08700E-01	2.38372E 00
20	1.02353E-02	2.18176E-01	6.71915E-02	2.47805E 00
21	5.47922E-03	1.96696E-01	4.04511E-02	2.57474E 00
22	2.84842E-03	1.76466E-01	2.37389E-02	2.67381E 00
23	1.43847E-03	1.57462E-01	1.35920E-02	2.77529E 00
24	7.05849E-04	1.39663E-01	7.59921E-03	2.87921E 00
25	3.36588E-04	1.23044E-01	4.15231E-03	2.98560E 00
26	1.55977E-04	1.07585E-01	2.21932E-03	3.09450E 00
27	7.02312E-05	9.32621E-02	1.16125E-03	3.20593E 00
28	3.07142E-05	8.00539E-02	5.95371E-04	3.31992E 00
29	1.30376E-05	6.79386E-02	2.99346E-04	3.43650E 00
30	5.36597E-06	5.68942E-02	1.47727E-04	3.55571E 00
31	2.13798E-06	4.68993E-02	7.16189E-05	3.67758E 00
32	8.22719E-07	3.79324E-02	3.41394E-05	3.80213E 00
33	3.04722E-07	2.99722E-02	1.60151E-05	3.92941E 00
34	1.08081E-07	2.29977E-02	7.40010E-06	4.05943E 00
35	3.64264E-08	1.69879E-02	3.37109E-06	4.19223E 00
36	1.15234E-08	1.19220E-02	1.51539E-06	4.32785E 00
37	3.35185E-09	7.77933E-03	6.72831E-07	4.46632E 00
38	8.63041E-10	4.53950E-03	2.95338E-07	4.60766E 00
39	1.81379E-10	2.18217E-03	1.28286E-07	4.75191E 00
40	2.47667E-11	6.87182E-04	5.51966E-08	4.89911E 00
41	5.35922E-13	3.45416E-05	2.35476E-08	5.04928E 00
42	1.35686E-12	2.04410E-04	9.97077E-09	5.20246E 00
43	3.32579E-12	1.17711E-03	4.19479E-09	5.35868E 00
44	3.51306E-12	2.93312E-03	1.75534E-09	5.51798E 00
45	2.76053E-12	5.45309E-03	7.31416E-10	5.68039E 00
46	1.86192E-12	8.71780E-03	3.03826E-10	5.84593E 00
47	1.14435E-12	1.27082E-02	1.25970E-10	6.01465E 00
48	6.61173E-13	1.74055E-02	5.21958E-11	6.18658E 00
49	3.65865E-13	2.27908E-02	2.16426E-11	6.36176E 00
50	1.96294E-13	2.88456E-02	8.99288E-12	6.54021E 00

SUM S(J) FOR R = 2.00441957E 01 SUM S(J) FOR P = 3.01739714E 01

STRENGTHS AND F FACTORS OF THE V = 0 TO V = 1 TRANSITIONS OF HF

TEMPERATURE = 2500.0 DEG. K

	R BRANCH		P BRANCH	
J	S(J)	F(J)	S(J)	F(J)
0	4.20517E-01	9.46725E-01		
1	7.85933E-01	8.95215E-01	4.46087E-01	1.05507E 00
2	1.07388E 00	8.45445E-01	8.84520E-01	1.11195E 00
3	1.27141E 00	7.97389E-01	1.28254E 00	1.17069E 00
4	1.37565E 00	7.51021E-01	1.61194E 00	1.23129E 00
5	1.39297E 00	7.06315E-01	1.85238E 00	1.29379E 00
6	1.33695E 00	6.63245E-01	1.99337E 00	1.35822E 00
7	1.22558E 00	6.21786E-01	2.03473E 00	1.42460E 00
8	1.07843E 00	5.81913E-01	1.98546E 00	1.49297E 00
9	9.14024E-01	5.43602E-01	1.86155E 00	1.56334E 00
10	7.48064E-01	5.06826E-01	1.68310E 00	1.63575E 00
11	5.92330E-01	4.71561E-01	1.47139E 00	1.71022E 00
12	4.54449E-01	4.37783E-01	1.24632E 00	1.78678E 00
13	3.38246E-01	4.05467E-01	1.02456E 00	1.86547E 00
14	2.44480E-01	3.74588E-01	8.18579E-01	1.94631E 00
15	1.71747E-01	3.45124E-01	6.36391E-01	2.02932E 00
16	1.17352E-01	3.17050E-01	4.81938E-01	2.11454E 00
17	7.80419E-02	2.90341E-01	3.55863E-01	2.20199E 00
18	5.05406E-02	2.64975E-01	2.56441E-01	2.29171E 00
19	3.18890E-02	2.40927E-01	1.80496E-01	2.38372E 00
20	1.96115E-02	2.18176E-01	1.24187E-01	2.47805E 00
21	1.17599E-02	1.96696E-01	8.35873E-02	2.57474E 00
22	6.87757E-03	1.76466E-01	5.50794E-02	2.67381E 00
23	3.92368E-03	1.57462E-01	3.55583E-02	2.77529E 00
24	2.18387E-03	1.39663E-01	2.25065E-02	2.87921E 00
25	1.18584E-03	1.23044E-01	1.39765E-02	2.98560E 00
26	6.28106E-04	1.07585E-01	8.52165E-03	3.09450E 00
27	3.24420E-04	9.32621E-02	5.10488E-03	3.20593E 00
28	1.63312E-04	8.00539E-02	3.00673E-03	3.31992E 00
29	8.00576E-05	6.79386E-02	1.74241E-03	3.43650E 00
30	3.81712E-05	5.68942E-02	9.94176E-04	3.55571E 00
31	1.76709E-05	4.68993E-02	5.58907E-04	3.67758E 00
32	7.92285E-06	3.79324E-02	3.09804E-04	3.80213E 00
33	3.42801E-06	2.99722E-02	1.69440E-04	3.92941E 00
34	1.42381E-06	2.29977E-02	9.15041E-05	4.05943E 00
35	5.63202E-07	1.69879E-02	4.88285E-05	4.19223E 00
36	2.09542E-07	1.19220E-02	2.57652E-05	4.32785E 00
37	7.18179E-08	7.77933E-03	1.34538E-05	4.46632E 00
38	2.18257E-08	4.53950E-03	6.95712E-06	4.60766E 00
39	5.42198E-09	2.18217E-03	3.56552E-06	4.75191E 00
40	8.76260E-10	6.87182E-04	1.81243E-06	4.89911E 00
41	2.24660E-11	3.45416E-05	9.14509E-07	5.04928E 00
42	6.74518E-11	2.04410E-04	4.58412E-07	5.20246E 00
43	1.96184E-10	1.17711E-03	2.28469E-07	5.35868E 00
44	2.46004E-10	2.93312E-03	1.13311E-07	5.51798E 00
45	2.29516E-10	5.45309E-03	5.59733E-08	5.68039E 00
46	1.83786E-10	8.71780E-03	2.75645E-08	5.84593E 00
47	1.34059E-10	1.27082E-02	1.35456E-08	6.01465E 00
48	9.18716E-11	1.74055E-02	6.64911E-09	6.18658E 00
49	6.02466E-11	2.27908E-02	3.26367E-09	6.36176E 00
50	3.82609E-11	2.88456E-02	1.60366E-09	6.54021E 00

SUM S(J) FOR R = 1.37492979E 01 SUM S(J) FOR P = 2.24631393E 01

STRENGTHS AND F FACTORS OF THE V = 0 TO V = 1 TRANSITIONS OF HF

TEMPERATURE = 3000.0 DEG. K

	R BRANCH		P BRANCH	
J	S(J)	F(J)	S(J)	F(J)
0	2.60404E-01	9.46725E-01		
1	4.88952E-01	8.95215E-01	2.76909E-01	1.05507E 00
2	6.73829E-01	8.45445E-01	5.52962E-01	1.11195E 00
3	8.07756E-01	7.97389E-01	8.10621E-01	1.17069E 00
4	8.88354E-01	7.51021E-01	1.03404E 00	1.23129E 00
5	9.17869E-01	7.06315E-01	1.21070E 00	1.29379E 00
6	9.02355E-01	6.63245E-01	1.33253E 00	1.35822E 00
7	8.50518E-01	6.21786E-01	1.39645E 00	1.42460E 00
8	7.72408E-01	5.81913E-01	1.40427E 00	1.49297E 00
9	6.78192E-01	5.43602E-01	1.36193E 00	1.56334E 00
10	5.77130E-01	5.06826E-01	1.27845E 00	1.63575E 00
11	4.76894E-01	4.71561E-01	1.16460E 00	1.71022E 00
12	3.83202E-01	4.37783E-01	1.03160E 00	1.78678E 00
13	2.99774E-01	4.05467E-01	8.89992E-01	1.86547E 00
14	2.28526E-01	3.74588E-01	7.48840E-01	1.94631E 00
15	1.69902E-01	3.45124E-01	6.15197E-01	2.02932E 00
16	1.23273E-01	3.17050E-01	4.93964E-01	2.11454E 00
17	8.73362E-02	2.90341E-01	3.87993E-01	2.20199E 00
18	6.04490E-02	2.64975E-01	2.98370E-01	2.29171E 00
19	4.08910E-02	2.40927E-01	2.24812E-01	2.38372E 00
20	2.70431E-02	2.18176E-01	1.66085E-01	2.47805E 00
21	1.74901E-02	1.96696E-01	1.20388E-01	2.57474E 00
22	1.10641E-02	1.76466E-01	8.56783E-02	2.67381E 00
23	6.84658E-03	1.57462E-01	5.99056E-02	2.77529E 00
24	4.14448E-03	1.39663E-01	4.11763E-02	2.87921E 00
25	2.45392E-03	1.23044E-01	2.78407E-02	2.98560E 00
26	1.42081E-03	1.07585E-01	1.85280E-02	3.09450E 00
27	8.04121E-04	9.32621E-02	1.21438E-02	3.20593E 00
28	4.44562E-04	8.00539E-02	7.84378E-03	3.31992E 00
29	2.39865E-04	6.79386E-02	4.99569E-03	3.43650E 00
30	1.26138E-04	5.68942E-02	3.13925E-03	3.55571E 00
31	6.45307E-05	4.68993E-02	1.94749E-03	3.67758E 00
32	3.20324E-05	3.79324E-02	1.19346E-03	3.80213E 00
33	1.53710E-05	2.99722E-02	7.22902E-04	3.92941E 00
34	7.09191E-06	2.29977E-02	4.33067E-04	4.05943E 00
35	3.12087E-06	1.69879E-02	2.56743E-04	4.19223E 00
36	1.29353E-06	1.19220E-02	1.50722E-04	4.32785E 00
37	4.94503E-07	7.77933E-03	8.76707E-05	4.46632E 00
38	1.67811E-07	4.53950E-03	5.05600E-05	4.60766E 00
39	4.65965E-08	2.18217E-03	2.89274E-05	4.75191E 00
40	8.42437E-09	6.87162E-04	1.64301E-05	4.89911E 00
41	2.41795E-10	3.45416E-05	9.27017E-06	5.04928E 00
42	8.13157E-10	2.04410E-04	5.19927E-06	5.20246E 00
43	2.65023E-09	1.17711E-03	2.90071E-06	5.35868E 00
44	3.72493E-09	2.93312E-03	1.61095E-06	5.51798E 00
45	3.89572E-09	5.45309E-03	8.91244E-07	5.68039E 00
46	3.49671E-09	8.71780E-03	4.91562E-07	5.84593E 00
47	2.85835E-09	1.27082E-02	2.70505E-07	6.01465E 00
48	2.19428E-09	1.74055E-02	1.48645E-07	6.18658E 00
49	1.61093E-09	2.27908E-02	8.16369E-08	6.36176E 00
50	1.14443E-09	2.88456E-02	4.48530E-08	6.54021E 00

SUM S(J) FOR R = 9.76021349E 00 SUM S(J) FOR P = 1.70668420E 01

STRENGTHS AND F FACTORS OF THE V = 0 TO V = 1 TRANSITIONS OF HF

TEMPERATURE = 3500.0 DEG. K

	R BRANCH		P BRANCH	
J	S(J)	F(J)	S(J)	F(J)
0	1.69620E-01	9.46725E-01		
1	3.19579E-01	8.95215E-01	1.80646E-01	1.05507E 00
2	4.43153E-01	8.45445E-01	3.62519E-01	1.11195E 00
3	5.36021E-01	7.97389E-01	5.35555E-01	1.17069E 00
4	5.96466E-01	7.51021E-01	6.90359E-01	1.23129E 00
5	6.25278E-01	7.06315E-01	8.19066E-01	1.29379E 00
6	6.25388E-01	6.63245E-01	9.15994E-01	1.35822E 00
7	6.01332E-01	6.21786E-01	9.78038E-01	1.42460E 00
8	5.58604E-01	5.81913E-01	1.00476E 00	1.49297E 00
9	5.03027E-01	5.43602E-01	9.98165E-01	1.56334E 00
10	4.40188E-01	5.06826E-01	9.62303E-01	1.63575E 00
11	3.75008E-01	4.71561E-01	9.02639E-01	1.71022E 00
12	3.11466E-01	4.37783E-01	8.25413E-01	1.78678E 00
13	2.52487E-01	4.05467E-01	7.37002E-01	1.86547E 00
14	1.99949E-01	3.74588E-01	6.43382E-01	1.94631E 00
15	1.54801E-01	3.45124E-01	5.49730E-01	2.02932E 00
16	1.17240E-01	3.17050E-01	4.60177E-01	2.11454E 00
17	8.69054E-02	2.90341E-01	3.77714E-01	2.20199E 00
18	6.30779E-02	2.64975E-01	3.04226E-01	2.29171E 00
19	4.48454E-02	2.40927E-01	2.40621E-01	2.38372E 00
20	3.12386E-02	2.18176E-01	1.87008E-01	2.47805E 00
21	2.13248E-02	1.96696E-01	1.42905E-01	2.57474E 00
22	1.42677E-02	1.76466E-01	1.07439E-01	2.67381E 00
23	9.35663E-03	1.57462E-01	7.95145E-02	2.77529E 00
24	6.01385E-03	1.39663E-01	5.79629E-02	2.87921E 00
25	3.78774E-03	1.23044E-01	4.16400E-02	2.98560E 00
26	2.33704E-03	1.07585E-01	2.94961E-02	3.09450E 00
27	1.41187E-03	9.32621E-02	2.06130E-02	3.20593E 00
28	8.34565E-04	8.00539E-02	1.42191E-02	3.31992E 00
29	4.82193E-04	6.79386E-02	9.68691E-03	3.43650E 00
30	2.71936E-04	5.68942E-02	6.52084E-03	3.55571E 00
31	1.49403E-04	4.68993E-02	4.33968E-03	3.67758E 00
32	7.97488E-05	3.79324E-02	2.85673E-03	3.80213E 00
33	4.12015E-05	2.99722E-02	1.86109E-03	3.92941E 00
34	2.04903E-05	2.29977E-02	1.20054E-03	4.05943E 00
35	9.72956E-06	1.69879E-02	7.67228E-04	4.19223E 00
36	4.35562E-06	1.19220E-02	4.86003E-04	4.32785E 00
37	1.80004E-06	7.77933E-03	3.05318E-04	4.46632E 00
38	6.60869E-07	4.53950E-03	1.90325E-04	4.60766E 00
39	1.98669E-07	2.18217E-03	1.17790E-04	4.75191E 00
40	3.89097E-08	6.87182E-04	7.24143E-05	4.89911E 00
41	1.21039E-09	3.45416E-05	4.42477E-05	5.04928E 00
42	4.41352E-09	2.04410E-04	2.68879E-05	5.20246E 00
43	1.56010E-08	1.17711E-03	1.62584E-05	5.35868E 00
44	2.37861E-08	2.93312E-03	9.78852E-06	5.51798E 00
45	2.69872E-08	5.45309E-03	5.87148E-06	5.68039E 00
46	2.62770E-08	8.71780E-03	3.51117E-06	5.84593E 00
47	2.32970E-08	1.27082E-02	2.09472E-06	6.01465E 00
48	1.93918E-08	1.74055E-02	1.24761E-06	6.18658E 00
49	1.54296E-08	2.27908E-02	7.42411E-07	6.36176E 00
50	1.18732E-08	2.88456E-02	4.41741E-07	6.54021E 00

SUM S(J) FOR R = 7.11606830E 00 SUM S(J) FOR P = 1.31976172E 01

STRENGTHS AND F FACTORS OF THE V = 0 TO V = 1 TRANSITIONS OF HF

TEMPERATURE = 4000.0 DEG. K

	R BRANCH		P BRANCH	
J	S(J)	F(J)	S(J)	F(J)
0	1.14960E-01	9.46725E-01		
1	2.17163E-01	8.95215E-01	1.22558E-01	1.05507E 00
2	3.02556E-01	8.45445E-01	2.46844E-01	1.11195E 00
3	3.68451E-01	7.97389E-01	3.66757E-01	1.17069E 00
4	4.13647E-01	7.51021E-01	4.76467E-01	1.23129E 00
5	4.38388E-01	7.06315E-01	5.70894E-01	1.29379E 00
6	4.44187E-01	6.63245E-01	6.46098E-01	1.35822E 00
7	4.33554E-01	6.21786E-01	6.99542E-01	1.42460E 00
8	4.09657E-01	5.81913E-01	7.30208E-01	1.49297E 00
9	3.75977E-01	5.43602E-01	7.38556E-01	1.56334E 00
10	3.35983E-01	5.06826E-01	7.26349E-01	1.63575E 00
11	2.92869E-01	4.71561E-01	6.96380E-01	1.71022E 00
12	2.49362E-01	4.37783E-01	6.52134E-01	1.78678E 00
13	2.07618E-01	4.05467E-01	5.97433E-01	1.86547E 00
14	1.69183E-01	3.74588E-01	5.36110E-01	1.94631E 00
15	1.35026E-01	3.45124E-01	4.71728E-01	2.02932E 00
16	1.05608E-01	3.17050E-01	4.07383E-01	2.11454E 00
17	8.09858E-02	2.90341E-01	3.45573E-01	2.20199E 00
18	6.09143E-02	2.64975E-01	2.88148E-01	2.29171E 00
19	4.49535E-02	2.40927E-01	2.36332E-01	2.38372E 00
20	3.25570E-02	2.18176E-01	1.90777E-01	2.47805E 00
21	2.31437E-02	1.96696E-01	1.51664E-01	2.57474E 00
22	1.61495E-02	1.76466E-01	1.18804E-01	2.67381E 00
23	1.10618E-02	1.57462E-01	9.17486E-02	2.77529E 00
24	7.43669E-03	1.39663E-01	6.98898E-02	2.87921E 00
25	4.90600E-03	1.23044E-01	5.25399E-02	2.98560E 00
26	3.17476E-03	1.07585E-01	3.89978E-02	3.09450E 00
27	2.01414E-03	9.32621E-02	2.85939E-02	3.20593E 00
28	1.25179E-03	8.00539E-02	2.07203E-02	3.31992E 00
29	7.61333E-04	6.79386E-02	1.48460E-02	3.43650E 00
30	4.52462E-04	5.68942E-02	1.05224E-02	3.55571E 00
31	2.62232E-04	4.68993E-02	7.38103E-03	3.67758E 00
32	1.47805E-04	3.79324E-02	5.12639E-03	3.80213E 00
33	8.07077E-05	2.99722E-02	3.52696E-03	3.92941E 00
34	4.24580E-05	2.29977E-02	2.40483E-03	4.05943E 00
35	2.13431E-05	1.69879E-02	1.62577E-03	4.19223E 00
36	1.01224E-05	1.19220E-02	1.09025E-03	4.32785E 00
37	4.43474E-06	7.77933E-03	7.25592E-04	4.46632E 00
38	1.72707E-06	4.53950E-03	4.79465E-04	4.60766E 00
39	5.51011E-07	2.18217E-03	3.14722E-04	4.75191E 00
40	1.14582E-07	6.87182E-04	2.05310E-04	4.89911E 00
41	3.78592E-09	3.45416E-05	1.33175E-04	5.04928E 00
42	1.46672E-08	2.04410E-04	8.59363E-05	5.20246E 00
43	5.50963E-08	1.17711E-03	5.51947E-05	5.35868E 00
44	8.92812E-08	2.93312E-03	3.53032E-05	5.51798E 00
45	1.07667E-07	5.45309E-03	2.24990E-05	5.68039E 00
46	1.11421E-07	8.71780E-03	1.42953E-05	5.84593E 00
47	1.04980E-07	1.27082E-02	9.06064E-06	6.01465E 00
48	9.28404E-08	1.74055E-02	5.73237E-06	6.18658E 00
49	7.84592E-08	2.27908E-02	3.62247E-06	6.36176E 00
50	6.40975E-08	2.88456E-02	2.28812E-06	6.54021E 00

SUM S(J) FOR R = 5.30452394E 00 SUM S(J) FOR P = 1.03678441E 01

STRENGTHS AND F FACTORS OF THE V = 0 TO V = 1 TRANSITIONS OF HF

TEMPERATURE = 4500.0 DEG. K

	R BRANCH		P BRANCH	
J	S(J)	F(J)	S(J)	F(J)
0	8.04747E-02	9.46725E-01		
1	1.52336E-01	8.95215E-01	8.58547E-02	1.05507E 00
2	2.13023E-01	8.45445E-01	1.73403E-01	1.11195E 00
3	2.60800E-01	7.97389E-01	2.58777E-01	1.17069E 00
4	2.94825E-01	7.51021E-01	3.38215E-01	1.23129E 00
5	3.15133E-01	7.06315E-01	4.08341E-01	1.29379E 00
6	3.22547E-01	6.63245E-01	4.66409E-01	1.35822E 00
7	3.18528E-01	6.21786E-01	5.10469E-01	1.42460E 00
8	3.04988E-01	5.81913E-01	5.39474E-01	1.49297E 00
9	2.84088E-01	5.43602E-01	5.53286E-01	1.56334E 00
10	2.58050E-01	5.06826E-01	5.52612E-01	1.63575E 00
11	2.28987E-01	4.71561E-01	5.38875E-01	1.71022E 00
12	1.98777E-01	4.37783E-01	5.14038E-01	1.78678E 00
13	1.68980E-01	4.05467E-01	4.80400E-01	1.86547E 00
14	1.40795E-01	3.74588E-01	4.40404E-01	1.94631E 00
15	1.15060E-01	3.45124E-01	3.96452E-01	2.02932E 00
16	9.22742E-02	3.17050E-01	3.50759E-01	2.11454E 00
17	7.26536E-02	2.90341E-01	3.05242E-01	2.20199E 00
18	5.61837E-02	2.64975E-01	2.61457E-01	2.29171E 00
19	4.26834E-02	2.40927E-01	2.20572E-01	2.38372E 00
20	3.18634E-02	2.18176E-01	1.83379E-01	2.47805E 00
21	2.33756E-02	1.96696E-01	1.50327E-01	2.57474E 00
22	1.68534E-02	1.76466E-01	1.21573E-01	2.67381E 00
23	1.19412E-02	1.57462E-01	9.70425E-02	2.77529E 00
24	8.31353E-03	1.39663E-01	7.64927E-02	2.87921E 00
25	5.68564E-03	1.23044E-01	5.95676E-02	2.98560E 00
26	3.81816E-03	1.07585E-01	4.58488E-02	3.09450E 00
27	2.51626E-03	9.32621E-02	3.48949E-02	3.20593E 00
28	1.62603E-03	8.00539E-02	2.62726E-02	3.31992E 00
29	1.02918E-03	6.79386E-02	1.95764E-02	3.43650E 00
30	6.37075E-04	5.68942E-02	1.44422E-02	3.55571E 00
31	3.84892E-04	4.68993E-02	1.05533E-02	3.67758E 00
32	2.26316E-04	3.79324E-02	7.64147E-03	3.80213E 00
33	1.29011E-04	2.99722E-02	5.48499E-03	3.92941E 00
34	7.08993E-05	2.29977E-02	3.90451E-03	4.05943E 00
35	3.72545E-05	1.69879E-02	2.75756E-03	4.19223E 00
36	1.84793E-05	1.19220E-02	1.93300E-03	4.32785E 00
37	8.47177E-06	7.77933E-03	1.34545E-03	4.46632E 00
38	3.45396E-06	4.53950E-03	9.30273E-04	4.60766E 00
39	1.15410E-06	2.18217E-03	6.39214E-04	4.75191E 00
40	2.51433E-07	6.87182E-04	4.36675E-04	4.89911E 00
41	8.70617E-09	3.45416E-05	2.96712E-04	5.04928E 00
42	3.53549E-08	2.04410E-04	2.00618E-04	5.20246E 00
43	1.39234E-07	1.17711E-03	1.35038E-04	5.35868E 00
44	2.36562E-07	2.93312E-03	9.05318E-05	5.51798E 00
45	2.99120E-07	5.45309E-03	6.04799E-05	5.68039E 00
46	3.24560E-07	8.71780E-03	4.02815E-05	5.84593E 00
47	3.20591E-07	1.27082E-02	2.67616E-05	6.01465E 00
48	2.97181E-07	1.74055E-02	1.77448E-05	6.18658E 00
49	2.63183E-07	2.27908E-02	1.17500E-05	6.36176E 00
50	2.25235E-07	2.88456E-02	7.77476E-06	6.54021E 00

SUM S(J) FOR R = 4.02972639E 00 SUM S(J) FOR P = 8.26096773E 00

STRENGTHS AND F FACTORS OF THE V = 0 TO V = 1 TRANSITIONS OF HF

TEMPERATURE = 5000.0 DEG. K

	R BRANCH		P BRANCH	
J	S(J)	F(J)	S(J)	F(J)
0	5.78763E-02	9.46725E-01		
1	1.09743E-01	8.95215E-01	6.17775E-02	1.05507E 00
2	1.53920E-01	8.45445E-01	1.25049E-01	1.11195E 00
3	1.89248E-01	7.97389E-01	1.87269E-01	1.17069E 00
4	2.15130E-01	7.51021E-01	2.45930E-01	1.23129E 00
5	2.31527E-01	7.06315E-01	2.98728E-01	1.29379E 00
6	2.38904E-01	6.63245E-01	3.43722E-01	1.35822E 00
7	2.38149E-01	6.21786E-01	3.79443E-01	1.42460E 00
8	2.30460E-01	5.81913E-01	4.04975E-01	1.49297E 00
9	2.17229E-01	5.43602E-01	4.19979E-01	1.56334E 00
10	1.99917E-01	5.06826E-01	4.24671E-01	1.63575E 00
11	1.79955E-01	4.71561E-01	4.19759E-01	1.71022E 00
12	1.58651E-01	4.37783E-01	4.06355E-01	1.78678E 00
13	1.37133E-01	4.05467E-01	3.85855E-01	1.86547E 00
14	1.16313E-01	3.74588E-01	3.59821E-01	1.94631E 00
15	9.68694E-02	3.45124E-01	3.29862E-01	2.02932E 00
16	7.92590E-02	3.17050E-01	2.97538E-01	2.11454E 00
17	6.37385E-02	2.90341E-01	2.64268E-01	2.20199E 00
18	5.03953E-02	2.64975E-01	2.31275E-01	2.29171E 00
19	3.91853E-02	2.40927E-01	1.99554E-01	2.38372E 00
20	2.99693E-02	2.18176E-01	1.69857E-01	2.47805E 00
21	2.25472E-02	1.96696E-01	1.42700E-01	2.57474E 00
22	1.66869E-02	1.76466E-01	1.18383E-01	2.67381E 00
23	1.21477E-02	1.57462E-01	9.70259E-02	2.77529E 00
24	8.69705E-03	1.39663E-01	7.85973E-02	2.87921E 00
25	6.12179E-03	1.23044E-01	6.29559E-02	2.98560E 00
26	4.23471E-03	1.07585E-01	4.98833E-02	3.09450E 00
27	2.87698E-03	9.32521E-02	3.91147E-02	3.20593E 00
28	1.91801E-03	8.00539E-02	3.03643E-02	3.31992E 00
29	1.25333E-03	6.79386E-02	2.33450E-02	3.43650E 00
30	8.01516E-04	5.68942E-02	1.77828E-02	3.55571E 00
31	5.00596E-04	4.68993E-02	1.34260E-02	3.67758E 00
32	3.04479E-04	3.79324E-02	1.00507E-02	3.80213E 00
33	1.79641E-04	2.99722E-02	7.46302E-03	3.92941E 00
34	1.02233E-04	2.29977E-02	5.49871E-03	4.05943E 00
35	5.56555E-05	1.69879E-02	4.02158E-03	4.19223E 00
36	2.86147E-05	1.19220E-02	2.92068E-03	4.32785E 00
37	1.36029E-05	7.77933E-03	2.10710E-03	4.46632E 00
38	5.75286E-06	4.53950E-03	1.51065E-03	4.60766E 00
39	1.99461E-06	2.18217E-03	1.07667E-03	4.75191E 00
40	4.51028E-07	6.87182E-04	7.63149E-04	4.89911E 00
41	1.62135E-08	3.45416E-05	5.38160E-04	5.04928E 00
42	6.83664E-08	2.04410E-04	3.77713E-04	5.20246E 00
43	2.79601E-07	1.17711E-03	2.63958E-04	5.35868E 00
44	4.93372E-07	2.93312E-03	1.83745E-04	5.51798E 00
45	6.47921E-07	5.45309E-03	1.27464E-04	5.68039E 00
46	7.30142E-07	8.71780E-03	8.81548E-05	5.84593E 00
47	7.48965E-07	1.27082E-02	6.08133E-05	6.01465E 00
48	7.20888E-07	1.74055E-02	4.18659E-05	6.18658E 00
49	6.62749E-07	2.27908E-02	2.87779E-05	6.36176E 00
50	5.88646E-07	2.88456E-02	1.97626E-05	6.54021E 00

SUM S(J) FOR R = 3.11205363E 00 SUM S(J) FOR P = 6.66640741E 00

STRENGTHS AND F FACTORS OF THE V = 1 TO V = 2 TRANSITIONS OF HF

TEMPERATURE = 273.3 DEG. K

	R BRANCH		P BRANCH	
J	S(J)	F(J)	S(J)	F(J)
0	7.37524E-08	9.46014E-01		
1	1.14243E-07	8.93840E-01	6.54801E-08	1.05582E 00
2	1.07600E-07	8.43452E-01	9.00854E-08	1.11352E 00
3	7.30658E-08	7.94821E-01	7.54139E-08	1.17310E 00
4	3.77539E-08	7.47921E-01	4.55664E-08	1.23461E 00
5	1.52151E-08	7.02726E-01	2.09811E-08	1.29807E 00
6	4.84919E-09	6.59209E-01	7.54877E-09	1.36351E 00
7	1.23327E-09	6.17343E-01	2.15264E-09	1.43095E 00
8	2.51935E-10	5.77104E-01	4.91117E-10	1.50043E 00
9	4.15568E-11	5.38464E-01	9.02670E-11	1.57197E 00
10	5.56015E-12	5.01398E-01	1.34416E-11	1.64560E 00
11	6.05921E-13	4.65881E-01	1.62959E-12	1.72135E 00
12	5.39924E-14	4.31886E-01	1.61576E-13	1.79926E 00
13	3.94916E-15	3.99389E-01	1.31589E-14	1.87934E 00
14	2.38008E-16	3.68365E-01	8.83992E-16	1.96164E 00
15	1.18650E-17	3.38788E-01	4.91925E-17	2.04617E 00
16	4.91171E-19	3.10634E-01	2.27735E-18	2.13297E 00
17	1.69520E-20	2.83878E-01	8.80913E-20	2.22207E 00
18	4.89787E-22	2.58495E-01	2.85983E-21	2.31349E 00
19	1.18959E-23	2.34462E-01	7.82765E-23	2.40728E 00
20	2.43916E-25	2.11754E-01	1.81485E-24	2.50345E 00
21	4.24049E-27	1.90348E-01	3.58139E-26	2.60205E 00
22	6.27822E-29	1.70219E-01	6.04514E-28	2.70309E 00
23	7.95122E-31	1.51343E-01	8.77200E-30	2.80661E 00
24	8.65273E-33	1.33699E-01	1.09996E-31	2.91265E 00
25	8.12723E-35	1.17261E-01	1.19824E-33	3.02123E 00
26	6.61813E-37	1.02007E-01	1.14013E-35	3.13239E 00
27	.00000E 00	8.79137E-02	.00000E 00	3.24615E 00
28	.00000E 00	7.49589E-02	.00000E 00	3.36255E 00
29	.00000E 00	6.31194E-02	.00000E 00	3.48162E 00
30	.00000E 00	5.23731E-02	.00000E 00	3.60340E 00
31	.00000E 00	4.26975E-02	.00000E 00	3.72790E 00
32	.00000E 00	3.40704E-02	.00000E 00	3.85518E 00
33	.00000E 00	2.64700E-02	.00000E 00	3.98525E 00
34	.00000E 00	1.98743E-02	.00000E 00	4.11816E 00
35	.00000E 00	1.42618E-02	.00000E 00	4.25393E 00
36	.00000E 00	9.61089E-03	.00000E 00	4.39260E 00
37	.00000E 00	5.90036E-03	.00000E 00	4.53420E 00
38	.00000E 00	3.10901E-03	.00000E 00	4.67877E 00
39	.00000E 00	1.21587E-03	.00000E 00	4.82633E 00
40	.00000E 00	2.00117E-04	.00000E 00	4.97693E 00
41	.00000E 00	4.10965E-05	.00000E 00	5.13059E 00
42	.00000E 00	7.18319E-04	.00000E 00	5.28735E 00
43	.00000E 00	2.21147E-03	.00000E 00	5.44725E 00
44	.00000E 00	4.50038E-03	.00000E 00	5.61032E 00
45	.00000E 00	7.56506E-03	.00000E 00	5.77659E 00
46	.00000E 00	1.13857E-02	.00000E 00	5.94609E 00
47	.00000E 00	1.59426E-02	.00000E 00	6.11887E 00
48	.00000E 00	2.12163E-02	.00000E 00	6.29496E 00
49	.00000E 00	2.71875E-02	.00000E 00	6.47439E 00
50	.00000E 00	3.38370E-02	.00000E 00	6.65720E 00

SUM S(J) FOR R = 4.28012598E-07 SUM S(J) FOR P = 3.07824871E-07

STRENGTHS AND F FACTORS OF THE V = 1 TO V = 2 TRANSITIONS OF HF

TEMPERATURE = 373.3 DEG. K

	R BRANCH		P BRANCH	
J	S(J)	F(J)	S(J)	F(J)
0	1.06469E-05	9.46014E-01		
1	1.74385E-05	8.93840E-01	9.99516E-06	1.05582E 00
2	1.83624E-05	8.43452E-01	1.53734E-05	1.11352E 00
3	1.47370E-05	7.94821E-01	1.52106E-05	1.17310E 00
4	9.51235E-06	7.47921E-01	1.14808E-05	1.23461E 00
5	5.06013E-06	7.02726E-01	6.97774E-06	1.29807E 00
6	2.24853E-06	6.59209E-01	3.50031E-06	1.36351E 00
7	8.41843E-07	6.17343E-01	1.46942E-06	1.43095E 00
8	2.67177E-07	5.77104E-01	5.20829E-07	1.50043E 00
9	7.22182E-08	5.38464E-01	1.56867E-07	1.57197E 00
10	1.66907E-08	5.01398E-01	4.03494E-08	1.64560E 00
11	3.30970E-09	4.65881E-01	8.90122E-09	1.72135E 00
12	5.64896E-10	4.31886E-01	1.69049E-09	1.79926E 00
13	8.32416E-11	3.99389E-01	2.77367E-10	1.87934E 00
14	1.06216E-11	3.68365E-01	3.94499E-11	1.96164E 00
15	1.17707E-12	3.38788E-01	4.88013E-12	2.04617E 00
16	1.13620E-13	3.10634E-01	5.26803E-13	2.13297E 00
17	9.58163E-15	2.83878E-01	4.97905E-14	2.22207E 00
18	7.08053E-16	2.58495E-01	4.13421E-15	2.31349E 00
19	4.59893E-17	2.34462E-01	3.02610E-16	2.40728E 00
20	2.63363E-18	2.11754E-01	1.95950E-17	2.50345E 00
21	1.33387E-19	1.90348E-01	1.12652E-18	2.60205E 00
22	5.99374E-21	1.70219E-01	5.77102E-20	2.70309E 00
23	2.39705E-22	1.51343E-01	2.64438E-21	2.80661E 00
24	8.55884E-24	1.33699E-01	1.08797E-22	2.91265E 00
25	2.73692E-25	1.17261E-01	4.03492E-24	3.02123E 00
26	7.86201E-27	1.02007E-01	1.35431E-25	3.13239E 00
27	2.03471E-28	8.79137E-02	4.13086E-27	3.24615E 00
28	4.75728E-30	7.49588E-02	1.14978E-28	3.36255E 00
29	1.00735E-31	6.31194E-02	2.93286E-30	3.48162E 00
30	1.93588E-33	5.23731E-02	6.88570E-32	3.60340E 00
31	3.38150E-35	4.26975E-02	1.49453E-33	3.72790E 00
32	5.37230E-37	3.40704E-02	3.01241E-35	3.85518E 00
33	.00000E 00	2.64700E-02	5.66465E-37	3.98525E 00
34	.00000E 00	1.98743E-02	.00000E 00	4.11816E 00
35	.00000E 00	1.42618E-02	.00000E 00	4.25393E 00
36	.00000E 00	9.61089E-03	.00000E 00	4.39260E 00
37	.00000E 00	5.90036E-03	.00000E 00	4.53420E 00
38	.00000E 00	3.10901E-03	.00000E 00	4.67877E 00
39	.00000E 00	1.21587E-03	.00000E 00	4.82633E 00
40	.00000E 00	2.00117E-04	.00000E 00	4.97693E 00
41	.00000E 00	4.10965E-05	.00000E 00	5.13059E 00
42	.00000E 00	7.18319E-04	.00000E 00	5.28735E 00
43	.00000E 00	2.21147E-03	.00000E 00	5.44725E 00
44	.00000E 00	4.50038E-03	.00000E 00	5.61032E 00
45	.00000E 00	7.56506E-03	.00000E 00	5.77659E 00
46	.00000E 00	1.13857E-02	.00000E 00	5.94609E 00
47	.00000E 00	1.59426E-02	.00000E 00	6.11887E 00
48	.00000E 00	2.12163E-02	.00000E 00	6.29496E 00
49	.00000E 00	2.71875E-02	.00000E 00	6.47439E 00
50	.00000E 00	3.38370E-02	.00000E 00	6.65720E 00

SUM S(J) FOR R = 7.92077625E-05 SUM S(J) FOR P = 6.47363454E-05

STRENGTHS AND F FACTORS OF THE V = 1 TO V = 2 TRANSITIONS OF HF

TEMPERATURE = 500.0 DEG. K

	R BRANCH		P BRANCH	
J	S(J)	F(J)	S(J)	F(J)
0	2.85944E-04	9.46014E-01		
1	4.86799E-04	8.93840E-01	2.79015E-04	1.05582E 00
2	5.53752E-04	8.43452E-01	4.63609E-04	1.11352E 00
3	4.98953E-04	7.94821E-01	5.14980E-04	1.17310E 00
4	3.75715E-04	7.47921E-01	4.53454E-04	1.23461E 00
5	2.42229E-04	7.02726E-01	3.34018E-04	1.29807E 00
6	1.35496E-04	6.59209E-01	2.10922E-04	1.36351E 00
7	6.63084E-05	6.17343E-01	1.15736E-04	1.43095E 00
8	2.85526E-05	5.77104E-01	5.56575E-05	1.50043E 00
9	1.08652E-05	5.38464E-01	2.35995E-05	1.57197E 00
10	3.66663E-06	5.01398E-01	8.86346E-06	1.64560E 00
11	1.10060E-06	4.65881E-01	2.95979E-06	1.72135E 00
12	2.94639E-07	4.31886E-01	8.81652E-07	1.79926E 00
13	7.05232E-08	3.99389E-01	2.34965E-07	1.87934E 00
14	1.51283E-08	3.68365E-01	5.61817E-08	1.96164E 00
15	2.91519E-09	3.38788E-01	1.20847E-08	2.04617E 00
16	5.05775E-10	3.10634E-01	2.34467E-09	2.13297E 00
17	7.91856E-11	2.83878E-01	4.11407E-10	2.22207E 00
18	1.12129E-11	2.58495E-01	6.54563E-11	2.31349E 00
19	1.43935E-12	2.34462E-01	9.46849E-12	2.40728E 00
20	1.67871E-13	2.11754E-01	1.24863E-12	2.50345E 00
21	1.78295E-14	1.90348E-01	1.50524E-13	2.60205E 00
22	1.72839E-15	1.70219E-01	1.66346E-14	2.70309E 00
23	1.53273E-16	1.51343E-01	1.69002E-15	2.80661E 00
24	1.24614E-17	1.33699E-01	1.58310E-16	2.91265E 00
25	9.30862E-19	1.17261E-01	1.37136E-17	3.02123E 00
26	6.40192E-20	1.02007E-01	1.10187E-18	3.13239E 00
27	4.06140E-21	8.79137E-02	8.23733E-20	3.24615E 00
28	2.38082E-22	7.49588E-02	5.74749E-21	3.36255E 00
29	1.29146E-23	6.31194E-02	3.75486E-22	3.48162E 00
30	6.48904E-25	5.23731E-02	2.30433E-23	3.60340E 00
31	3.02138E-26	4.26975E-02	1.33281E-24	3.72790E 00
32	1.30302E-27	3.40704E-02	7.28998E-26	3.85518E 00
33	5.19555E-29	2.64700E-02	3.78363E-27	3.98525E 00
34	1.90775E-30	1.98743E-02	1.86995E-28	4.11816E 00
35	6.40258E-32	1.42618E-02	8.83151E-30	4.25393E 00
36	1.93675E-33	9.61089E-03	4.00033E-31	4.39260E 00
37	5.14173E-35	5.90036E-03	1.74430E-32	4.53420E 00
38	1.13295E-36	3.10901E-03	7.34932E-34	4.67877E 00
39	.00000E 00	1.21587E-03	3.00366E-35	4.82633E 00
40	.00000E 00	2.00117E-04	1.19551E-36	4.97693E 00
41	.00000E 00	4.10965E-05	.00000E 00	5.13059E 00
42	.00000E 00	7.18319E-04	.00000E 00	5.28735E 00
43	.00000E 00	2.21147E-03	.00000E 00	5.44725E 00
44	.00000E 00	4.50038E-03	.00000E 00	5.61032E 00
45	.00000E 00	7.56506E-03	.00000E 00	5.77659E 00
46	.00000E 00	1.13857E-02	.00000E 00	5.94609E 00
47	.00000E 00	1.59426E-02	.00000E 00	6.11887E 00
48	.00000E 00	2.12163E-02	.00000E 00	6.29496E 00
49	.00000E 00	2.71875E-02	.00000E 00	6.47439E 00
50	.00000E 00	3.38370E-02	.00000E 00	6.65720E 00

SUM S(J) FOR R = 2.68976486E-03 SUM S(J) FOR P = 2.46400177E-03

STRENGTHS AND F FACTORS OF THE V = 1 TO V = 2 TRANSITIONS OF HF

TEMPERATURE = 1000.0 DEG. K

	R BRANCH		P BRANCH	
J	S(J)	F(J)	S(J)	F(J)
0	2.13381E-02	9.46014E-01		
1	3.84627E-02	8.93840E-01	2.20303E-02	1.05582E 00
2	4.90346E-02	8.43452E-01	4.10054E-02	1.11352E 00
3	5.24044E-02	7.94821E-01	5.40002E-02	1.17310E 00
4	4.95244E-02	7.47921E-01	5.96459E-02	1.23461E 00
5	4.23886E-02	7.02726E-01	5.82989E-02	1.29807E 00
6	3.32864E-02	6.59209E-01	5.16538E-02	1.36351E 00
7	2.41712E-02	6.17343E-01	4.20338E-02	1.43095E 00
8	1.63165E-02	5.77104E-01	3.16705E-02	1.50043E 00
9	1.02776E-02	5.38464E-01	2.22146E-02	1.57197E 00
10	6.05817E-03	5.01398E-01	1.45638E-02	1.64560E 00
11	3.34948E-03	4.65881E-01	8.95156E-03	1.72135E 00
12	1.74036E-03	4.31886E-01	5.17141E-03	1.79926E 00
13	8.51250E-04	3.99389E-01	2.81409E-03	1.87934E 00
14	3.92544E-04	3.68365E-01	1.44518E-03	1.96164E 00
15	1.70897E-04	3.38788E-01	7.01652E-04	2.04617E 00
16	7.03335E-05	3.10634E-01	3.22594E-04	2.13297E 00
17	2.73972E-05	2.83878E-01	1.40675E-04	2.22207E 00
18	1.01129E-05	2.58495E-01	5.82728E-05	2.31349E 00
19	3.54136E-06	2.34462E-01	2.29651E-05	2.40728E 00
20	1.17776E-06	2.11754E-01	8.62335E-06	2.50345E 00
21	3.72386E-07	1.90348E-01	3.08988E-06	2.60205E 00
22	1.12049E-07	1.70219E-01	1.05808E-06	2.70309E 00
23	3.21149E-08	1.51343E-01	3.46792E-07	2.80661E 00
24	8.77512E-09	1.33699E-01	1.08957E-07	2.91265E 00
25	2.28757E-09	1.17261E-01	3.28659E-08	3.02123E 00
26	5.69293E-10	1.02007E-01	9.53285E-09	3.13239E 00
27	1.35308E-10	8.79137E-02	2.66300E-09	3.24615E 00
28	3.07203E-11	7.49588E-02	7.17605E-10	3.36255E 00
29	6.66169E-12	6.31194E-02	1.86840E-10	3.48162E 00
30	1.37896E-12	5.23731E-02	4.70804E-11	3.60340E 00
31	2.72144E-13	4.26975E-02	1.15005E-11	3.72790E 00
32	5.10980E-14	3.40704E-02	2.72793E-12	3.85518E 00
33	9.09582E-15	2.64700E-02	6.29410E-13	3.98525E 00
34	1.52630E-15	1.98743E-02	1.41505E-13	4.11816E 00
35	2.39198E-16	1.42618E-02	3.10540E-14	4.25393E 00
36	3.44633E-17	9.61089E-03	6.66418E-15	4.39260E 00
37	4.43673E-18	5.90036E-03	1.40105E-15	4.53420E 00
38	4.81732E-19	3.10901E-03	2.89101E-16	4.67877E 00
39	3.82225E-20	1.21587E-03	5.86620E-17	4.82633E 00
40	1.25915E-21	2.00117E-04	1.17279E-17	4.97693E 00
41	5.11624E-23	4.10965E-05	2.31475E-18	5.13059E 00
42	1.75274E-22	7.18319E-04	4.51955E-19	5.28735E 00
43	1.04995E-22	2.21147E-03	8.74797E-20	5.44725E 00
44	4.13628E-23	4.50038E-03	1.68222E-20	5.61032E 00
45	1.34223E-23	7.56506E-03	3.22104E-21	5.77659E 00
46	3.89787E-24	1.13857E-02	6.15546E-22	5.94609E 00
47	1.05521E-24	1.59426E-02	1.17687E-22	6.11887E 00
48	2.72725E-25	2.12163E-02	2.25683E-23	6.29496E 00
49	6.83601E-26	2.71875E-02	4.35241E-24	6.47439E 00
50	1.68074E-26	3.38370E-02	8.46509E-25	6.65720E 00

SUM S(J) FOR R = 3.49880368E-01 SUM S(J) FOR P = 4.16758579E-01

STRENGTHS AND F FACTORS OF THE V = 1 TO V = 2 TRANSITIONS OF HF

TEMPERATURE = 1500.0 DEG. K

	R BRANCH		P BRANCH	
J	S(J)	F(J)	S(J)	F(J)
0	6.07889E-02	9.46014E-01		
1	1.11750E-01	8.93840E-01	6.38646E-02	1.05582E 00
2	1.48068E-01	8.43452E-01	1.23362E-01	1.11352E 00
3	1.67597E-01	7.94821E-01	1.71799E-01	1.17310E 00
4	1.70929E-01	7.47921E-01	2.04477E-01	1.23461E 00
5	1.60866E-01	7.02726E-01	2.19416E-01	1.29807E 00
6	1.41505E-01	6.59209E-01	2.17427E-01	1.36351E 00
7	1.17247E-01	6.17343E-01	2.01561E-01	1.43095E 00
8	9.19739E-02	5.77104E-01	1.76190E-01	1.50043E 00
9	6.85526E-02	5.38464E-01	1.45990E-01	1.57197E 00
10	4.86786E-02	5.01398E-01	1.15097E-01	1.64560E 00
11	3.29996E-02	4.65881E-01	8.65847E-02	1.72135E 00
12	2.13928E-02	4.31886E-01	6.22930E-02	1.79926E 00
13	1.32810E-02	3.99389E-01	4.29412E-02	1.87934E 00
14	7.90542E-03	3.68365E-01	2.84088E-02	1.96164E 00
15	4.51670E-03	3.38788E-01	1.80634E-02	2.04617E 00
16	2.47938E-03	3.10634E-01	1.10533E-02	2.13297E 00
17	1.30880E-03	2.83879E-01	6.51720E-03	2.22207E 00
18	6.64919E-04	2.58495E-01	3.70697E-03	2.31349E 00
19	3.25354E-04	2.34462E-01	2.03638E-03	2.40728E 00
20	1.53439E-04	2.11754E-01	1.08158E-03	2.50345E 00
21	6.97890E-05	1.90348E-01	5.56019E-04	2.60205E 00
22	3.06302E-05	1.70219E-01	2.76962E-04	2.70309E 00
23	1.29789E-05	1.51343E-01	1.33818E-04	2.80661E 00
24	5.31152E-06	1.33699E-01	6.27820E-05	2.91265E 00
25	2.09998E-06	1.17261E-01	2.86320E-05	3.02123E 00
26	8.02198E-07	1.02007E-01	1.27066E-05	3.13239E 00
27	2.96068E-07	8.79137E-02	5.49334E-06	3.24615E 00
28	1.05538E-07	7.49588E-02	2.31606E-06	3.36255E 00
29	3.63124E-08	6.31194E-02	9.53337E-07	3.48162E 00
30	1.20461E-08	5.23731E-02	3.83537E-07	3.60340E 00
31	3.84613E-09	4.26975E-02	1.50980E-07	3.72790E 00
32	1.17875E-09	3.40704E-02	5.82203E-08	3.85518E 00
33	3.45354E-10	2.64700E-02	2.20176E-08	3.98525E 00
34	9.61237E-11	1.98743E-02	8.17543E-09	4.11816E 00
35	2.51667E-11	1.42618E-02	2.98405E-09	4.25393E 00
36	6.09740E-12	9.61089E-03	1.07195E-09	4.39260E 00
37	1.32784E-12	5.90036E-03	3.79439E-10	4.53420E 00
38	2.45176E-13	3.10901E-03	1.32509E-10	4.67877E 00
39	3.32351E-14	1.21587E-03	4.57115E-11	4.82633E 00
40	1.87796E-15	2.00117E-04	1.55971E-11	4.97693E 00
41	1.31316E-16	4.10965E-05	5.27073E-12	5.13059E 00
42	7.76171E-16	7.18319E-04	1.76640E-12	5.28735E 00
43	8.03669E-16	2.21147E-03	5.87893E-13	5.44725E 00
44	5.47850E-16	4.50038E-03	1.94591E-13	5.61032E 00
45	3.07713E-16	7.56506E-03	6.41511E-14	5.77659E 00
46	1.54592E-16	1.13857E-02	2.10964E-14	5.94609E 00
47	7.23002E-17	1.59426E-02	6.93153E-15	6.11887E 00
48	3.22090E-17	2.12163E-02	2.27927E-15	6.29496E 00
49	1.38712E-17	2.71875E-02	7.51398E-16	6.47439E 00
50	5.83511E-18	3.38370E-02	2.48804E-16	6.65720E 00

SUM S(J) FOR R = 1.37310451E 00 SUM S(J) FOR P = 1.90295105E 00

STRENGTHS AND F FACTORS OF THE V = 1 TO V = 2 TRANSITIONS OF HF

TEMPERATURE = 2000.0 DEG. K

	R BRANCH		P BRANCH	
J	S(J)	F(J)	S(J)	F(J)
0	8.15372E-02	9.46014E-01		
1	1.51452E-01	8.93840E-01	8.63156E-02	1.05582E 00
2	2.04680E-01	8.43452E-01	1.69746E-01	1.11352E 00
3	2.38534E-01	7.94821E-01	2.42943E-01	1.17310E 00
4	2.52837E-01	7.47921E-01	2.99954E-01	1.23461E 00
5	2.49617E-01	7.02726E-01	3.37017E-01	1.29807E 00
6	2.32481E-01	6.59209E-01	3.52926E-01	1.36351E 00
7	2.05834E-01	6.17343E-01	3.48938E-01	1.43095E 00
8	1.74116E-01	5.77104E-01	3.28279E-01	1.50043E 00
9	1.41213E-01	5.38464E-01	2.95401E-01	1.57197E 00
10	1.10087E-01	5.01398E-01	2.55177E-01	1.64560E 00
11	8.26570E-02	4.65881E-01	2.12187E-01	1.72135E 00
12	5.98660E-02	4.31886E-01	1.70206E-01	1.79926E 00
13	4.18788E-02	3.99389E-01	1.31936E-01	1.87934E 00
14	2.83264E-02	3.68365E-01	9.89757E-02	1.96164E 00
15	1.85426E-02	3.38788E-01	7.19497E-02	2.04617E 00
16	1.17567E-02	3.10634E-01	5.07420E-02	2.13297E 00
17	7.22512E-03	2.83878E-01	3.47539E-02	2.22207E 00
18	4.30652E-03	2.58495E-01	2.31402E-02	2.31349E 00
19	2.49100E-03	2.34462E-01	1.49923E-02	2.40728E 00
20	1.39895E-03	2.11754E-01	9.46012E-03	2.50345E 00
21	7.63128E-04	1.90348E-01	5.81885E-03	2.60205E 00
22	4.04494E-04	1.70219E-01	3.49191E-03	2.70309E 00
23	2.08382E-04	1.51343E-01	2.04618E-03	2.80661E 00
24	1.04355E-04	1.33699E-01	1.17177E-03	2.91265E 00
25	5.08030E-05	1.17261E-01	6.56337E-04	3.02123E 00
26	2.40402E-05	1.02007E-01	3.59879E-04	3.13239E 00
27	1.10542E-05	8.79137E-02	1.93328E-04	3.24615E 00
28	4.93638E-06	7.49588E-02	1.01837E-04	3.36255E 00
29	2.13889E-06	6.31194E-02	5.26447E-05	3.48162E 00
30	8.97993E-07	5.23731E-02	2.67306E-05	3.60340E 00
31	3.64569E-07	4.26975E-02	1.33425E-05	3.72790E 00
32	1.42699E-07	3.40704E-02	6.55261E-06	3.85518E 00
33	5.36174E-08	2.64700E-02	3.16894E-06	3.98525E 00
34	1.92123E-08	1.98743E-02	1.51048E-06	4.11816E 00
35	6.49858E-09	1.42618E-02	7.10231E-07	4.25393E 00
36	2.04074E-09	9.61089E-03	3.29730E-07	4.39260E 00
37	5.77708E-10	5.90036E-03	1.51281E-07	4.53420E 00
38	1.39025E-10	3.10901E-03	6.86558E-08	4.67877E 00
39	2.46182E-11	1.21587E-03	3.08491E-08	4.82633E 00
40	1.82066E-12	2.00117E-04	1.37371E-08	4.97693E 00
41	1.66893E-13	4.10965E-05	6.06820E-09	5.13059E 00
42	1.29478E-12	7.18319E-04	2.66176E-09	5.28735E 00
43	1.76120E-12	2.21147E-03	1.16057E-09	5.44725E 00
44	1.57796E-12	4.50038E-03	5.03531E-10	5.61032E 00
45	1.16500E-12	7.56506E-03	2.17626E-10	5.77659E 00
46	7.69075E-13	1.13857E-02	9.38034E-11	5.94609E 00
47	4.72279E-13	1.59426E-02	4.03706E-11	6.11887E 00
48	2.75924E-13	2.12163E-02	1.73697E-11	6.29496E 00
49	1.55579E-13	2.71875E-02	7.48121E-12	6.47439E 00
50	8.55011E-14	3.38370E-02	3.22997E-12	6.65720E 00

SUM S(J) FOR R = 2.30241281E 00 SUM S(J) FOR P = 3.54898366E 00

STRENGTHS AND F FACTORS OF THE V = 1 TO V = 2 TRANSITIONS OF HF

TEMPERATURE = 2500.0 DEG. K

	R BRANCH		P BRANCH	
J	S(J)	F(J)	S(J)	F(J)
0	8.30471E-02	9.46014E-01		
1	1.55264E-01	8.93840E-01	8.82590E-02	1.05582E 00
2	2.12397E-01	8.43452E-01	1.75385E-01	1.11352E 00
3	2.51967E-01	7.94821E-01	2.55073E-01	1.17310E 00
4	2.73392E-01	7.47921E-01	3.21821E-01	1.23461E 00
5	2.77840E-01	7.02726E-01	3.71562E-01	1.29807E 00
6	2.67850E-01	6.59209E-01	4.02056E-01	1.36351E 00
7	2.46827E-01	6.17343E-01	4.13010E-01	1.43095E 00
8	2.18501E-01	5.77104E-01	4.05908E-01	1.50043E 00
9	1.86454E-01	5.38464E-01	3.83628E-01	1.57197E 00
10	1.53757E-01	5.01398E-01	3.49918E-01	1.64560E 00
11	1.22762E-01	4.65881E-01	3.08854E-01	1.72135E 00
12	9.50401E-02	4.31886E-01	2.64343E-01	1.79926E 00
13	7.14305E-02	3.99389E-01	2.19752E-01	1.87934E 00
14	5.21703E-02	3.68365E-01	1.77684E-01	1.96164E 00
15	3.70586E-02	3.38788E-01	1.39906E-01	2.04617E 00
16	2.56206E-02	3.10634E-01	1.07389E-01	2.13297E 00
17	1.72500E-02	2.83878E-01	8.04315E-02	2.22207E 00
18	1.13166E-02	2.58495E-01	5.88332E-02	2.31349E 00
19	7.23713E-03	2.34462E-01	4.20637E-02	2.40726E 00
20	4.51341E-03	2.11754E-01	2.94187E-02	2.50345E 00
21	2.74575E-03	1.90348E-01	2.01417E-02	2.60205E 00
22	1.62979E-03	1.70219E-01	1.35097E-02	2.70309E 00
23	9.44008E-04	1.51343E-01	8.88355E-03	2.80661E 00
24	5.33584E-04	1.33699E-01	5.73086E-03	2.91265E 00
25	2.94287E-04	1.17261E-01	3.62954E-03	3.02123E 00
26	1.58331E-04	1.02007E-01	2.25830E-03	3.13239E 00
27	8.30597E-05	8.79137E-02	1.38136E-03	3.24615E 00
28	4.24552E-05	7.49588E-02	8.31247E-04	3.36255E 00
29	2.11216E-05	6.31194E-02	4.92431E-04	3.48162E 00
30	1.02120E-05	5.23731E-02	2.87378E-04	3.60340E 00
31	4.78777E-06	4.26975E-02	1.65330E-04	3.72790E 00
32	2.16987E-06	3.40704E-02	9.38307E-05	3.85518E 00
33	9.46331E-07	2.64709E-02	5.25693E-05	3.98525E 00
34	3.94489E-07	1.98743E-02	2.90951E-05	4.11816E 00
35	1.55563E-07	1.42618E-02	1.59189E-05	4.25393E 00
36	5.70616E-08	9.61089E-03	8.61640E-06	4.39260E 00
37	1.89010E-08	5.90036E-03	4.61711E-06	4.53420E 00
38	5.33042E-09	3.10901E-03	2.45112E-06	4.67877E 00
39	1.10764E-09	1.21587E-03	1.29013E-06	4.82633E 00
40	9.62378E-11	2.00117E-04	6.73760E-07	4.97693E 00
41	1.03737E-11	4.10965E-05	3.49394E-07	5.13059E 00
42	9.47067E-11	7.18319E-04	1.80057E-07	5.28735E 00
43	1.51671E-10	2.21147E-03	9.22872E-08	5.44725E 00
44	1.60035E-10	4.50038E-03	4.70842E-08	5.61032E 00
45	1.39149E-10	7.56506E-03	2.39324E-08	5.77659E 00
46	1.08160E-10	1.13857E-02	1.21303E-08	5.94609E 00
47	7.81690E-11	1.59426E-02	6.13666E-09	6.11887E 00
48	5.37076E-11	2.12163E-02	3.10172E-09	6.29496E 00
49	3.55762E-11	2.71875E-02	1.56795E-09	6.47439E 00
50	2.29384E-11	3.38370E-02	7.93600E-10	6.65720E 00

SUM S(J) FOR R = 2.77816644E 00 SUM S(J) FOR P = 4.65281475E 00

STRENGTHS AND F FACTORS OF THE V = 1 TO V = 2 TRANSITIONS OF HF

TEMPERATURE = 3000.0 DEG. K

	R BRANCH		P BRANCH	
J	S(J)	F(J)	S(J)	F(J)
0	7.49518E-02	9.46014E-01		
1	1.40762E-01	8.93840E-01	7.98360E-02	1.05582E 00
2	1.94155E-01	8.43452E-01	1.59724E-01	1.11352E 00
3	2.33106E-01	7.94821E-01	2.34748E-01	1.17310E 00
4	2.56937E-01	7.47921E-01	3.00424E-01	1.23461E 00
5	2.66243E-01	7.02726E-01	3.53136E-01	1.29807E 00
6	2.62676E-01	6.59209E-01	3.90472E-01	1.36351E 00
7	2.48629E-01	6.17343E-01	4.11381E-01	1.43095E 00
8	2.26893E-01	5.77104E-01	4.16167E-01	1.50043E 00
9	2.00311E-01	5.38464E-01	4.06316E-01	1.57197E 00
10	1.71504E-01	5.01398E-01	3.84215E-01	1.64560E 00
11	1.42670E-01	4.65881E-01	3.52806E-01	1.72135E 00
12	1.15479E-01	4.31886E-01	3.15227E-01	1.79926E 00
13	9.10504E-02	3.99389E-01	2.74496E-01	1.87934E 00
14	6.99965E-02	3.68365E-01	2.33266E-01	1.96164E 00
15	5.25074E-02	3.38788E-01	1.93671E-01	2.04617E 00
16	3.84586E-02	3.10634E-01	1.57255E-01	2.13297E 00
17	2.75189E-02	2.83878E-01	1.24984E-01	2.22207E 00
18	1.92456E-02	2.58495E-01	9.73129E-02	2.31349E 00
19	1.31600E-02	2.34462E-01	7.42806E-02	2.40728E 00
20	8.80103E-03	2.11754E-01	5.56260E-02	2.50345E 00
21	5.75785E-03	1.90348E-01	4.08950E-02	2.60205E 00
22	3.68549E-03	1.70219E-01	2.95348E-02	2.70309E 00
23	2.30811E-03	1.51343E-01	2.09674E-02	2.80661E 00
24	1.41422E-03	1.33699E-01	1.46408E-02	2.91265E 00
25	8.47600E-04	1.17261E-01	1.00615E-02	3.02123E 00
26	4.96735E-04	1.02007E-01	6.80915E-03	3.13239E 00
27	2.84497E-04	8.79137E-02	4.54060E-03	3.24615E 00
28	1.59108E-04	7.49588E-02	2.98524E-03	3.36255E 00
29	8.67879E-05	6.31194E-02	1.93617E-03	3.48162E 00
30	4.60965E-05	5.23731E-02	1.23954E-03	3.60340E 00
31	2.37860E-05	4.26975E-02	7.83757E-04	3.72790E 00
32	1.18853E-05	3.40704E-02	4.89735E-04	3.85518E 00
33	5.72420E-06	2.64700E-02	3.02589E-04	3.98525E 00
34	2.63912E-06	1.98743E-02	1.84974E-04	4.11816E 00
35	1.15263E-06	1.42618E-02	1.11942E-04	4.25393E 00
36	4.68851E-07	9.61089E-03	6.71059E-05	4.39260E 00
37	1.72419E-07	5.90036E-03	3.98724E-05	4.53420E 00
38	5.40394E-08	3.10901E-03	2.34959E-05	4.67877E 00
39	1.24906E-08	1.21587E-03	1.37400E-05	4.82633E 00
40	1.20807E-09	2.00117E-04	7.97874E-06	4.97693E 00
41	1.45046E-10	4.10965E-05	4.60370E-06	5.13059E 00
42	1.47566E-09	7.18319E-04	2.64115E-06	5.28735E 00
43	2.63439E-09	2.21147E-03	1.50758E-06	5.44725E 00
44	3.09912E-09	4.50038E-03	8.56786E-07	5.61032E 00
45	3.00437E-09	7.56506E-03	4.85153E-07	5.77659E 00
46	2.60328E-09	1.13857E-02	2.73920E-07	5.94609E 00
47	2.09663E-09	1.59426E-02	1.54327E-07	6.11887E 00
48	1.60450E-09	2.12163E-02	8.68344E-08	6.29496E 00
49	1.18297E-09	2.71875E-02	4.88365E-08	6.47439E 00
50	8.48202E-10	3.38370E-02	2.74787E-08	6.65720E 00

SUM S(J) FOR R = 2.87018606E 00 SUM S(J) FOR P = 5.15098810E 00

STRENGTHS AND F FACTORS OF THE V = 1 TO V = 2 TRANSITIONS OF HF

TEMPERATURE = 3500.0 DEG. K

	R BRANCH		P BRANCH	
J	S(J)	F(J)	S(J)	F(J)
0	6.38659E-02	9.46014E-01		
1	1.20340E-01	8.93840E-01	6.81242E-02	1.05582E 00
2	1.66983E-01	8.43452E-01	1.36938E-01	1.11352E 00
3	2.02227E-01	7.94821E-01	2.02754E-01	1.17310E 00
4	2.25438E-01	7.47921E-01	2.62101E-01	1.23461E 00
5	2.36887E-01	7.02726E-01	3.12027E-01	1.29807E 00
6	2.37623E-01	6.59209E-01	3.50348E-01	1.36351E 00
7	2.29276E-01	6.17343E-01	3.75792E-01	1.43095E 00
8	2.13840E-01	5.77104E-01	3.88048E-01	1.50043E 00
9	1.93440E-01	5.38464E-01	3.87713E-01	1.57197E 00
10	1.70132E-01	5.01399E-01	3.76139E-01	1.64560E 00
11	1.45747E-01	4.65881E-01	3.55242E-01	1.72135E 00
12	1.21785E-01	4.31886E-01	3.27262E-01	1.79926E 00
13	9.93688E-02	3.99389E-01	2.94540E-01	1.87934E 00
14	7.92419E-02	3.68365E-01	2.59319E-01	1.96164E 00
15	6.18050E-02	3.38788E-01	2.23582E-01	2.04617E 00
16	4.71755E-02	3.10634E-01	1.88956E-01	2.13297E 00
17	3.52572E-02	2.83878E-01	1.56666E-01	2.22207E 00
18	2.58101E-02	2.58495E-01	1.27528E-01	2.31349E 00
19	1.85133E-02	2.34462E-01	1.01989E-01	2.40728E 00
20	1.30147E-02	2.11754E-01	8.01874E-02	2.50345E 00
21	8.96825E-03	1.90348E-01	6.20195E-02	2.60205E 00
22	6.05815E-03	1.70219E-01	4.72146E-02	2.70309E 00
23	4.01163E-03	1.51343E-01	3.53994E-02	2.80661E 00
24	2.60372E-03	1.33699E-01	2.61533E-02	2.91265E 00
25	1.65595E-03	1.17261E-01	1.90504E-02	3.02123E 00
26	1.03156E-03	1.02007E-01	1.36884E-02	3.13239E 00
27	6.29022E-04	8.79137E-02	9.70746E-03	3.24615E 00
28	3.75119E-04	7.49588E-02	6.79800E-03	3.36255E 00
29	2.18507E-04	6.31194E-02	4.70330E-03	3.48162E 00
30	1.24111E-04	5.23731E-02	3.21656E-03	3.60340E 00
31	6.85763E-05	4.26975E-02	2.17554E-03	3.72790E 00
32	3.67375E-05	3.40704E-02	1.45595E-03	3.85518E 00
33	1.89918E-05	2.64700E-02	9.64616E-04	3.98525E 00
34	9.40864E-06	1.98743E-02	6.33004E-04	4.11816E 00
35	4.41981E-06	1.42618E-02	4.11647E-04	4.25393E 00
36	1.93548E-06	9.61089E-03	2.65418E-04	4.39260E 00
37	7.66886E-07	5.90036E-03	1.69766E-04	4.53420E 00
38	2.59157E-07	3.10901E-03	1.07772E-04	4.67877E 00
39	6.46271E-08	1.21587E-03	6.79403E-05	4.82633E 00
40	6.74734E-09	2.00117E-04	4.25548E-05	4.97693E 00
41	8.74873E-10	4.10965E-05	2.64974E-05	5.13059E 00
42	9.61536E-09	7.18319E-04	1.64109E-05	5.28735E 00
43	1.85480E-08	2.21147E-03	1.01155E-05	5.44725E 00
44	2.35799E-08	4.50038E-03	6.20896E-06	5.61032E 00
45	2.47027E-08	7.56506E-03	3.79746E-05	5.77659E 00
46	2.31285E-08	1.13857E-02	2.31571E-06	5.94609E 00
47	2.01225E-08	1.59426E-02	1.40888E-06	6.11887E 00
48	1.66291E-08	2.12163E-02	8.55794E-07	6.29496E 00
49	1.32329E-08	2.71875E-02	5.19381E-07	6.47439E 00
50	1.02341E-08	3.38370E-02	3.15182E-07	6.65720E 00

SUM S(J) FOR R = 2.73358691E 00 SUM S(J) FOR P = 5.20956725E 00

STRENGTHS AND F FACTORS OF THE V = 1 TO V = 2 TRANSITIONS OF HF

TEMPERATURE = 4000.0 DEG. K

	R BRANCH		P BRANCH	
J	S(J)	F(J)	S(J)	F(J)
0	5.29316E-02	9.46014E-01		
1	9.99903E-02	8.93840E-01	5.65142E-02	1.05582E 00
2	1.39378E-01	8.43452E-01	1.13997E-01	1.11352E 00
3	1.69904E-01	7.94821E-01	1.69715E-01	1.17310E 00
4	1.91029E-01	7.47921E-01	2.21037E-01	1.23461E 00
5	2.02853E-01	7.02726E-01	2.65643E-01	1.29807E 00
6	2.06040E-01	6.59209E-01	3.01696E-01	1.36351E 00
7	2.01694E-01	6.17343E-01	3.27968E-01	1.43095E 00
8	1.91222E-01	5.77104E-01	3.43896E-01	1.50043E 00
9	1.76173E-01	5.38464E-01	3.49576E-01	1.57197E 00
10	1.58105E-01	5.01398E-01	3.45696E-01	1.64560E 00
11	1.38465E-01	4.65881E-01	3.33425E-01	1.72135E 00
12	1.18499E-01	4.31886E-01	3.14268E-01	1.79926E 00
13	9.92058E-02	3.99389E-01	2.89915E-01	1.87934E 00
14	8.13174E-02	3.68365E-01	2.62094E-01	1.96164E 00
15	6.53061E-02	3.38788E-01	2.32445E-01	2.04617E 00
16	5.14153E-02	3.10634E-01	2.02420E-01	2.13297E 00
17	3.97005E-02	2.83878E-01	1.73223E-01	2.22207E 00
18	3.00763E-02	2.58495E-01	1.45777E-01	2.31349E 00
19	2.23613E-02	2.34462E-01	1.20723E-01	2.40728E 00
20	1.63192E-02	2.11754E-01	9.84400E-02	2.50345E 00
21	1.16919E-02	1.90348E-01	7.90833E-02	2.60205E 00
22	8.22359E-03	1.70219E-01	6.26274E-02	2.70309E 00
23	5.67810E-03	1.51343E-01	4.89144E-02	2.80661E 00
24	3.84797E-03	1.33699E-01	3.76981E-02	2.91265E 00
25	2.55865E-03	1.17261E-01	2.86830E-02	3.02123E 00
26	1.66853E-03	1.02007E-01	2.15557E-02	3.13239E 00
27	1.06637E-03	8.79137E-02	1.60078E-02	3.24615E 00
28	6.67292E-04	7.49588E-02	1.17527E-02	3.36255E 00
29	4.08316E-04	6.31194E-02	8.53439E-03	3.48162E 00
30	2.43882E-04	5.23731E-02	6.13251E-03	3.60340E 00
31	1.41843E-04	4.26975E-02	4.36241E-03	3.72790E 00
32	8.00594E-05	3.40704E-02	3.07350E-03	3.85518E 00
33	4.36427E-05	2.64700E-02	2.14561E-03	3.98525E 00
34	2.28173E-05	1.98743E-02	1.48482E-03	4.11816E 00
35	1.13202E-05	1.42618E-02	1.01905E-03	4.25393E 00
36	5.23898E-06	9.61089E-03	6.93918E-04	4.39260E 00
37	2.19511E-06	5.90036E-03	4.69040E-04	4.53420E 00
38	7.84861E-07	3.10901E-03	3.14845E-04	4.67877E 00
39	2.07181E-07	1.21587E-03	2.09975E-04	4.82633E 00
40	2.29058E-08	2.00117E-04	1.39195E-04	4.97693E 00
41	3.14612E-09	4.10965E-05	9.17634E-05	5.13059E 00
42	3.66370E-08	7.18319E-04	6.01888E-05	5.28735E 00
43	7.48937E-08	2.21147E-03	3.92985E-05	5.44725E 00
44	1.00907E-07	4.50038E-03	2.55547E-05	5.61032E 00
45	1.12035E-07	7.56506E-03	1.65588E-05	5.77659E 00
46	1.11159E-07	1.13857E-02	1.06977E-05	5.94609E 00
47	1.02468E-07	1.59426E-02	6.89437E-06	6.11887E 00
48	8.96941E-08	2.12163E-02	4.43517E-06	6.29496E 00
49	7.55740E-08	2.71875E-02	2.84978E-06	6.47439E 00
50	6.18550E-08	3.38370E-02	1.83018E-06	6.65720E 00

SUM S(J) FOR R = 2.48834804E 00 SUM S(J) FOR P = 5.00362706E 00

STRENGTHS AND F FACTORS OF THE V = 1 TO V = 2 TRANSITIONS OF HF

TEMPERATURE = 4500.0 DEG. K

	R BRANCH		P BRANCH	
J	S(J)	F(J)	S(J)	F(J)
0	4.33226E-02	9.46014E-01		
1	8.20032E-02	8.93840E-01	4.62855E-02	1.05582E 00
2	1.14714E-01	8.43452E-01	9.36136E-02	1.11352E 00
3	1.40556E-01	7.94821E-01	1.39959E-01	1.17310E 00
4	1.59090E-01	7.47921E-01	1.83339E-01	1.23461E 00
5	1.70330E-01	7.02726E-01	2.21955E-01	1.29807E 00
6	1.74699E-01	6.59209E-01	2.54319E-01	1.36351E 00
7	1.72951E-01	6.17343E-01	2.79347E-01	1.43095E 00
8	1.66077E-01	5.77104E-01	2.96413E-01	1.50043E 00
9	1.55203E-01	5.38464E-01	3.05365E-01	1.57197E 00
10	1.41493E-01	5.01398E-01	3.06492E-01	1.64560E 00
11	1.26063E-01	4.65881E-01	3.00472E-01	1.72135E 00
12	1.09911E-01	4.31886E-01	2.88277E-01	1.79926E 00
13	9.38768E-02	3.99389E-01	2.71081E-01	1.87934E 00
14	7.86137E-02	3.68365E-01	2.50154E-01	1.96164E 00
15	6.45880E-02	3.38788E-01	2.26770E-01	2.04617E 00
16	5.20896E-02	3.10634E-01	2.02123E-01	2.13297E 00
17	4.12556E-02	2.83878E-01	1.77270E-01	2.22207E 00
18	3.20989E-02	2.58495E-01	1.53087E-01	2.31349E 00
19	2.45403E-02	2.34462E-01	1.30258E-01	2.40728E 00
20	1.84385E-02	2.11754E-01	1.09265E-01	2.50345E 00
21	1.36163E-02	1.90348E-01	9.04069E-02	2.60205E 00
22	9.88285E-03	1.70219E-01	7.38222E-02	2.70309E 00
23	7.04930E-03	1.51343E-01	5.95178E-02	2.80661E 00
24	4.94035E-03	1.33699E-01	4.74007E-02	2.91265E 00
25	3.40067E-03	1.17261E-01	3.73074E-02	3.02123E 00
26	2.29796E-03	1.02007E-01	2.90315E-02	3.13239E 00
27	1.52327E-03	8.79137E-02	2.23456E-02	3.24615E 00
28	9.89549E-04	7.49588E-02	1.70195E-02	3.36255E 00
29	6.29131E-04	6.31194E-02	1.28325E-02	3.48162E 00
30	3.90750E-04	5.23731E-02	9.58217E-03	3.60340E 00
31	2.36502E-04	4.26975E-02	7.08893E-03	3.72790E 00
32	1.39014E-04	3.40704E-02	5.19799E-03	3.85518E 00
33	7.89711E-05	2.64700E-02	3.77922E-03	3.98525E 00
34	4.30530E-05	1.98743E-02	2.72555E-03	4.11816E 00
35	2.22855E-05	1.42618E-02	1.95057E-03	4.25393E 00
36	1.07664E-05	9.61089E-03	1.38580E-03	4.39260E 00
37	4.71131E-06	5.90036E-03	9.77783E-04	4.53420E 00
38	1.76003E-06	3.10901E-03	6.85428E-04	4.67877E 00
39	4.85595E-07	1.21587E-03	4.77568E-04	4.82633E 00
40	5.61308E-08	2.00117E-04	3.30858E-04	4.97693E 00
41	8.06250E-09	4.10965E-05	2.28012E-04	5.13059E 00
42	9.82050E-08	7.18319E-04	1.56377E-04	5.28735E 00
43	2.10007E-07	2.21147E-03	1.06776E-04	5.44725E 00
44	2.96014E-07	4.50038E-03	7.26192E-05	5.61032E 00
45	3.43830E-07	7.56506E-03	4.92165E-05	5.77659E 00
46	3.56866E-07	1.13857E-02	3.32551E-05	5.94609E 00
47	3.44076E-07	1.59426E-02	2.24136E-05	6.11887E 00
48	3.14948E-07	2.12163E-02	1.50765E-05	6.29496E 00
49	2.77413E-07	2.71875E-02	1.01268E-05	6.47439E 00
50	2.37270E-07	3.38370E-02	6.79650E-06	6.65720E 00

SUM S(J) FOR R = 2.20717597E 00 SUM S(J) FOR P = 4.66040945E 00

STRENGTHS AND F FACTORS OF THE V = 1 TO V = 2 TRANSITIONS OF HF

TEMPERATURE = 5000.0 DEG. K

	R BRANCH		P BRANCH	
J	S(J)	F(J)	S(J)	F(J)
0	3.53034E-02	9.46014E-01		
1	6.69331E-02	8.93840E-01	3.77359E-02	1.05582E 00
2	9.39026E-02	8.43452E-01	7.64831E-02	1.11352E 00
3	1.15531E-01	7.94821E-01	1.14732E-01	1.17310E 00
4	1.31467E-01	7.47921E-01	1.50984E-01	1.23461E 00
5	1.41686E-01	7.02726E-01	1.83853E-01	1.29807E 00
6	1.46460E-01	6.59209E-01	2.12152E-01	1.36351E 00
7	1.46309E-01	6.17343E-01	2.34966E-01	1.43095E 00
8	1.41938E-01	5.77104E-01	2.51694E-01	1.50043E 00
9	1.34167E-01	5.38464E-01	2.62075E-01	1.57197E 00
10	1.23865E-01	5.01398E-01	2.66178E-01	1.64560E 00
11	1.11886E-01	4.65881E-01	2.64367E-01	1.72135E 00
12	9.90145E-02	4.31886E-01	2.57256E-01	1.79926E 00
13	8.59355E-02	3.99389E-01	2.45638E-01	1.87934E 00
14	7.32066E-02	3.68365E-01	2.30425E-01	1.96164E 00
15	6.12511E-02	3.38788E-01	2.12573E-01	2.04617E 00
16	5.03600E-02	3.10634E-01	1.93020E-01	2.13297E 00
17	4.07043E-02	2.83878E-01	1.72640E-01	2.22207E 00
18	3.23528E-02	2.58495E-01	1.52199E-01	2.31349E 00
19	2.52928E-02	2.34462E-01	1.32336E-01	2.40728E 00
20	1.94516E-02	2.11754E-01	1.13547E-01	2.50345E 00
21	1.47167E-02	1.90348E-01	9.61895E-02	2.60205E 00
22	1.09534E-02	1.70219E-01	8.04906E-02	2.70309E 00
23	8.01875E-03	1.51343E-01	6.65617E-02	2.80661E 00
24	5.77275E-03	1.33699E-01	5.44194E-02	2.91265E 00
25	4.08515E-03	1.17261E-01	4.40065E-02	3.02123E 00
26	2.84017E-03	1.02007E-01	3.52119E-02	3.13239E 00
27	1.93849E-03	8.79137E-02	2.78896E-02	3.24615E 00
28	1.29754E-03	7.49588E-02	2.18749E-02	3.36255E 00
29	8.50588E-04	6.31194E-02	1.69966E-02	3.48162E 00
30	5.45069E-04	5.23731E-02	1.30874E-02	3.60340E 00
31	3.40586E-04	4.26975E-02	9.99041E-03	3.72790E 00
32	2.06794E-04	3.40704E-02	7.56323E-03	3.85518E 00
33	1.21414E-04	2.64700E-02	5.68046E-03	3.98525E 00
34	6.84446E-05	1.98743E-02	4.23417E-03	4.11816E 00
35	3.66516E-05	1.42618E-02	3.13341E-03	4.25393E 00
36	1.83255E-05	9.61089E-03	2.30296E-03	4.39260E 00
37	8.30243E-06	5.90036E-03	1.68164E-03	4.53420E 00
38	3.21221E-06	3.10901E-03	1.22042E-03	4.67877E 00
39	9.18137E-07	1.21587E-03	8.80599E-04	4.82633E 00
40	1.09973E-07	2.00117E-04	6.31969E-04	4.97693E 00
41	1.63717E-08	4.10965E-05	4.51255E-04	5.13059E 00
42	2.06710E-07	7.18319E-04	3.20719E-04	5.28735E 00
43	4.58256E-07	2.21147E-03	2.26970E-04	5.44725E 00
44	6.69659E-07	4.50038E-03	1.60003E-04	5.61032E 00
45	8.06400E-07	7.56506E-03	1.12404E-04	5.77659E 00
46	8.67664E-07	1.13857E-02	7.87254E-05	5.94609E 00
47	8.67140E-07	1.59426E-02	5.49946E-05	6.11887E 00
48	8.22594E-07	2.12163E-02	3.83359E-05	6.29496E 00
49	7.50724E-07	2.71875E-02	2.66801E-05	6.47439E 00
50	6.65075E-07	3.38370E-02	1.85481E-05	6.65720E 00

SUM S(J) FOR R = 1.92884642E 00 SUM S(J) FOR P = 4.26038778E 00

STRENGTHS AND F FACTORS OF THE V = 0 TO V = 2 TRANSITIONS OF HF

TEMPERATURE = 273.3 DEG. K

	R BRANCH		P BRANCH	
J	S(J)	F(J)	S(J)	F(J)
0	9.43092E-01	9.73018E-01		
1	1.48519E 00	9.47044E-01	7.94325E-01	1.02802E 00
2	1.41299E 00	9.22053E-01	1.05383E 00	1.05709E 00
3	9.63072E-01	8.98017E-01	8.45044E-01	1.08726E 00
4	4.96381E-01	8.74913E-01	4.85793E-01	1.11855E 00
5	1.98327E-01	8.52716E-01	2.11382E-01	1.15099E 00
6	6.22924E-02	8.31403E-01	7.13836E-02	1.18460E 00
7	1.55222E-02	8.10952E-01	1.89766E-02	1.21942E 00
8	3.08930E-03	7.91339E-01	4.00870E-03	1.25549E 00
9	4.93758E-04	7.72543E-01	6.77594E-04	1.29282E 00
10	6.36756E-05	7.54543E-01	9.21662E-05	1.33146E 00
11	6.65462E-06	7.37319E-01	1.01380E-05	1.37144E 00
12	5.65946E-07	7.20851E-01	9.05930E-07	1.41279E 00
13	3.93285E-08	7.05121E-01	6.60522E-08	1.45554E 00
14	2.24236E-09	6.90110E-01	3.94636E-09	1.49974E 00
15	1.05336E-10	6.75800E-01	1.94038E-10	1.54541E 00
16	4.09422E-12	6.62174E-01	7.88573E-12	1.59260E 00
17	1.32246E-13	6.49216E-01	2.66064E-13	1.64134E 00
18	3.56582E-15	6.36910E-01	7.48664E-15	1.69167E 00
19	8.06318E-17	6.25240E-01	1.76506E-16	1.74362E 00
20	1.53634E-18	6.14193E-01	3.50330E-18	1.79724E 00
21	2.47872E-20	6.03755E-01	5.88252E-20	1.85257E 00
22	3.40331E-22	5.93912E-01	8.39849E-22	1.90964E 00
23	3.99716E-24	5.84652E-01	1.02477E-23	1.96850E 00
24	4.03713E-26	5.75963E-01	1.07433E-25	2.02918E 00
25	3.52546E-28	5.67834E-01	9.72919E-28	2.09174E 00
26	2.67660E-30	5.60254E-01	7.65323E-30	2.15622E 00
27	1.77679E-32	5.53214E-01	5.25893E-32	2.22264E 00
28	1.03725E-34	5.46703E-01	3.17495E-34	2.29108E 00
29	5.35650E-37	5.40713E-01	1.69402E-36	2.36155E 00
30	.00000E 00	5.35237E-01	.00000E 00	2.43412E 00
31	.00000E 00	5.30267E-01	.00000E 00	2.50883E 00
32	.00000E 00	5.25796E-01	.00000E 00	2.58573E 00
33	.00000E 00	5.21818E-01	.00000E 00	2.66485E 00
34	.00000E 00	5.18328E-01	.00000E 00	2.74626E 00
35	.00000E 00	5.15321E-01	.00000E 00	2.82999E 00
36	.00000E 00	5.12793E-01	.00000E 00	2.91611E 00
37	.00000E 00	5.10740E-01	.00000E 00	3.00465E 00
38	.00000E 00	5.09160E-01	.00000E 00	3.09567E 00
39	.00000E 00	5.08050E-01	.00000E 00	3.18923E 00
40	.00000E 00	5.07409E-01	.00000E 00	3.28536E 00
41	.00000E 00	5.07236E-01	.00000E 00	3.38414E 00
42	.00000E 00	5.07531E-01	.00000E 00	3.48560E 00
43	.00000E 00	5.08294E-01	.00000E 00	3.58980E 00
44	.00000E 00	5.09526E-01	.00000E 00	3.69680E 00
45	.00000E 00	5.11229E-01	.00000E 00	3.80665E 00
46	.00000E 00	5.13405E-01	.00000E 00	3.91941E 00
47	.00000E 00	5.16057E-01	.00000E 00	4.03514E 00
48	.00000E 00	5.19190E-01	.00000E 00	4.15389E 00
49	.00000E 00	5.22806E-01	.00000E 00	4.27572E 00
50	.00000E 00	5.26912E-01	.00000E 00	4.40068E 00

SUM S(J) FOR R = 5.58052021E 00 SUM S(J) FOR P = 3.48552349E 00

STRENGTHS AND F FACTORS OF THE V = 0 TO V = 2 TRANSITIONS OF HF

TEMPERATURE = 373.3 DEG. K

	R BRANCH		P BRANCH	
J	S(J)	F(J)	S(J)	F(J)
0	5.10079E-01	9.73018E-01		
1	8.51226E-01	9.47044E-01	4.55263E-01	1.02802E 00
2	9.09354E-01	9.22053E-01	6.78209E-01	1.05709E 00
3	7.37340E-01	8.98017E-01	6.46977E-01	1.08726E 00
4	4.78889E-01	8.74913E-01	4.68674E-01	1.11855E 00
5	2.55317E-01	8.52716E-01	2.72124E-01	1.15099E 00
6	1.13274E-01	8.31403E-01	1.29805E-01	1.18460E 00
7	4.21864E-02	8.10952E-01	5.15749E-02	1.21942E 00
8	1.32715E-02	7.91339E-01	1.72212E-02	1.25549E 00
9	3.54397E-03	7.72543E-01	4.86346E-03	1.29282E 00
10	8.06611E-04	7.54543E-01	1.16752E-03	1.33146E 00
11	1.57047E-04	7.37319E-01	2.39255E-04	1.37144E 00
12	2.62465E-05	7.20851E-01	4.20137E-05	1.41279E 00
13	3.77757E-06	7.05121E-01	6.34442E-06	1.45554E 00
14	4.69739E-07	6.90110E-01	8.26699E-07	1.49974E 00
15	5.06299E-08	6.75800E-01	9.32642E-08	1.54541E 00
16	4.74550E-09	6.62174E-01	9.14013E-09	1.59260E 00
17	3.88082E-10	6.49216E-01	7.80778E-10	1.64134E 00
18	2.77846E-11	6.36910E-01	5.83354E-11	1.69167E 00
19	1.74755E-12	6.25240E-01	3.82546E-12	1.74362E 00
20	9.69049E-14	6.14193E-01	2.20971E-13	1.79724E 00
21	4.75481E-15	6.03755E-01	1.12842E-14	1.85257E 00
22	2.07212E-16	5.93912E-01	5.11345E-16	1.90964E 00
23	8.05101E-18	5.84652E-01	2.06408E-17	1.96850E 00
24	2.79989E-19	5.75963E-01	7.45085E-19	2.02918E 00
25	8.75034E-21	5.67834E-01	2.41483E-20	2.09174E 00
26	2.46762E-22	5.60254E-01	7.05568E-22	2.15622E 00
27	6.30540E-24	5.53214E-01	1.86627E-23	2.22264E 00
28	1.46615E-25	5.46703E-01	4.48780E-25	2.29108E 00
29	3.11575E-27	5.40713E-01	9.85370E-27	2.36155E 00
30	6.07828E-29	5.35237E-01	1.98420E-28	2.43412E 00
31	1.09343E-30	5.30267E-01	3.68079E-30	2.50883E 00
32	1.82217E-32	5.25796E-01	6.31912E-32	2.58573E 00
33	2.82615E-34	5.21818E-01	1.00868E-33	2.66485E 00
34	4.09899E-36	5.18328E-01	1.50414E-35	2.74626E 00
35	.00000E 00	5.15321E-01	.00000E 00	2.82999E 00
36	.00000E 00	5.12793E-01	.00000E 00	2.91611E 00
37	.00000E 00	5.10740E-01	.00000E 00	3.00465E 00
38	.00000E 00	5.09160E-01	.00000E 00	3.09567E 00
39	.00000E 00	5.08050E-01	.00000E 00	3.18923E 00
40	.00000E 00	5.07409E-01	.00000E 00	3.28536E 00
41	.00000E 00	5.07236E-01	.00000E 00	3.38414E 00
42	.00000E 00	5.07531E-01	.00000E 00	3.48560E 00
43	.00000E 00	5.08294E-01	.00000E 00	3.58980E 00
44	.00000E 00	5.09526E-01	.00000E 00	3.69680E 00
45	.00000E 00	5.11229E-01	.00000E 00	3.80665E 00
46	.00000E 00	5.13405E-01	.00000E 00	3.91941E 00
47	.00000E 00	5.16057E-01	.00000E 00	4.03514E 00
48	.00000E 00	5.19190E-01	.00000E 00	4.15389E 00
49	.00000E 00	5.22806E-01	.00000E 00	4.27572E 00
50	.00000E 00	5.26912E-01	.00000E 00	4.40068E 00

SUM S(J) FOR R = 3.91547558E 00 SUM S(J) FOR P = 2.72616690E 00

STRENGTHS AND F FACTORS OF THE V = 0 TO V = 2 TRANSITIONS OF HF

TEMPERATURE = 500.0 DEG. K

	R BRANCH		P BRANCH	
J	S(J)	F(J)	S(J)	F(J)
0	2.85984E-01	9.73018E-01		
1	4.96807E-01	9.47044E-01	2.65708E-01	1.02802E 00
2	5.75084E-01	9.22053E-01	4.28905E-01	1.05709E 00
3	5.25891E-01	8.98017E-01	4.61441E-01	1.08726E 00
4	4.03867E-01	8.74913E-01	3.92317E-01	1.11855E 00
5	2.60980E-01	8.52716E-01	2.78160E-01	1.15099E 00
6	1.47073E-01	8.31403E-01	1.68538E-01	1.18460E 00
7	7.23509E-02	8.10952E-01	8.84523E-02	1.21942E 00
8	3.12535E-02	7.91339E-01	4.05548E-02	1.25549E 00
9	1.19082E-02	7.72543E-01	1.63418E-02	1.29282E 00
10	4.01680E-03	7.54543E-01	5.81405E-03	1.33146E 00
11	1.20332E-03	7.37319E-01	1.83321E-03	1.37144E 00
12	3.21076E-04	7.20851E-01	5.13958E-04	1.41279E 00
13	7.65131E-05	7.05121E-01	1.28504E-04	1.45554E 00
14	1.63270E-05	6.90110E-01	2.87341E-05	1.49974E 00
15	3.12783E-06	6.75800E-01	5.76170E-06	1.54541E 00
16	5.39342E-07	6.62174E-01	1.03881E-06	1.59260E 00
17	8.39265E-08	6.49216E-01	1.68851E-07	1.64134E 00
18	1.18165E-08	6.36910E-01	2.48094E-08	1.69167E 00
19	1.50937E-09	6.25240E-01	3.30407E-09	1.74362E 00
20	1.75390E-10	6.14193E-01	3.99939E-10	1.79724E 00
21	1.85919E-11	6.03755E-01	4.41227E-11	1.85257E 00
22	1.80298E-12	5.93912E-01	4.44928E-12	1.90964E 00
23	1.60421E-13	5.84652E-01	4.11280E-13	1.96850E 00
24	1.31349E-14	5.75963E-01	3.49535E-14	2.02918E 00
25	9.92656E-16	5.67834E-01	2.73943E-15	2.09174E 00
26	6.94578E-17	5.60254E-01	1.98601E-16	2.15622E 00
27	4.51396E-18	5.53214E-01	1.33604E-17	2.22264E 00
28	2.73339E-19	5.46703E-01	8.36674E-19	2.29108E 00
29	1.54729E-20	5.40713E-01	4.89337E-20	2.36155E 00
30	8.21498E-22	5.35237E-01	2.68170E-21	2.43412E 00
31	4.10467E-23	5.30267E-01	1.38175E-22	2.50883E 00
32	1.93678E-24	5.25796E-01	6.71661E-24	2.58573E 00
33	8.66030E-26	5.21818E-01	3.09094E-25	2.66485E 00
34	3.68282E-27	5.18328E-01	1.35142E-26	2.74626E 00
35	1.49485E-28	5.15321E-01	5.63409E-28	2.82999E 00
36	5.81283E-30	5.12793E-01	2.24795E-29	2.91611E 00
37	2.17361E-31	5.10740E-01	8.61613E-31	3.00465E 00
38	7.84600E-33	5.09160E-01	3.18467E-32	3.09567E 00
39	2.74466E-34	5.08050E-01	1.13958E-33	3.18923E 00
40	9.34201E-36	5.07409E-01	3.96363E-35	3.28536E 00
41	.00000E 00	5.07236E-01	1.34554E-36	3.38414E 00
42	.00000E 00	5.07531E-01	.00000E 00	3.48560E 00
43	.00000E 00	5.08294E-01	.00000E 00	3.58980E 00
44	.00000E 00	5.09526E-01	.00000E 00	3.69680E 00
45	.00000E 00	5.11229E-01	.00000E 00	3.80665E 00
46	.00000E 00	5.13405E-01	.00000E 00	3.91941E 00
47	.00000E 00	5.16057E-01	.00000E 00	4.03514E 00
48	.00000E 00	5.19190E-01	.00000E 00	4.15389E 00
49	.00000E 00	5.22806E-01	.00000E 00	4.27572E 00
50	.00000E 00	5.26912E-01	.00000E 00	4.40068E 00

SUM S(J) FOR R = 2.81383610E 00 SUM S(J) FOR P = 2.14874214E 00

STRENGTHS AND F FACTORS OF THE V = 0 TO V = 2 TRANSITIONS OF HF

TEMPERATURE = 1000.0 DEG. K

	R BRANCH		P BRANCH	
J	S(J)	F(J)	S(J)	F(J)
0	7.17010E-02	9.73018E-01		
1	1.32148E-01	9.47044E-01	7.06768E-02	1.02802E 00
2	1.72168E-01	9.22053E-01	1.28405E-01	1.05709E 00
3	1.87957E-01	8.98017E-01	1.64921E-01	1.08726E 00
4	1.81386E-01	8.74913E-01	1.77516E-01	1.11855E 00
5	1.58499E-01	8.52716E-01	1.68931E-01	1.15099E 00
6	1.27052E-01	8.31403E-01	1.45593E-01	1.18460E 00
7	9.41775E-02	8.10952E-01	1.15135E-01	1.21942E 00
8	6.49032E-02	7.91339E-01	8.42176E-02	1.25549E 00
9	4.17481E-02	7.72543E-01	5.72908E-02	1.29282E 00
10	2.51408E-02	7.54543E-01	3.63888E-02	1.33146E 00
11	1.42090E-02	7.37319E-01	2.16463E-02	1.37144E 00
12	7.55288E-03	7.20851E-01	1.20898E-02	1.41279E 00
13	3.78307E-03	7.05121E-01	6.35346E-03	1.45554E 00
14	1.78860E-03	6.90110E-01	3.14766E-03	1.49974E 00
15	7.99509E-04	6.75800E-01	1.47270E-03	1.54541E 00
16	3.38422E-04	6.62174E-01	6.51791E-04	1.59260E 00
17	1.35858E-04	6.49216E-01	2.73316E-04	1.64134E 00
18	5.18034E-05	6.36910E-01	1.08757E-04	1.69167E 00
19	1.87902E-05	6.25240E-01	4.11294E-05	1.74362E 00
20	6.49319E-06	6.14193E-01	1.48051E-05	1.79724E 00
21	2.14091E-06	6.03755E-01	5.08035E-06	1.85257E 00
22	6.74554E-07	5.93912E-01	1.66444E-06	1.90964E 00
23	2.03415E-07	5.84652E-01	5.21440E-07	1.96850E 00
24	5.88004E-08	5.75963E-01	1.56452E-07	2.02918E 00
25	1.63191E-08	5.67834E-01	4.50281E-08	2.09174E 00
26	4.35541E-09	5.60254E-01	1.24510E-08	2.15622E 00
27	1.11967E-09	5.53214E-01	3.31323E-09	2.22264E 00
28	2.77712E-10	5.46703E-01	8.49837E-10	2.29108E 00
29	6.65694E-11	5.40713E-01	2.10465E-10	2.36155E 00
30	1.54478E-11	5.35237E-01	5.04101E-11	2.43412E 00
31	3.47635E-12	5.30267E-01	1.16975E-11	2.50883E 00
32	7.59985E-13	5.25796E-01	2.63430E-12	2.58573E 00
33	1.61690E-13	5.21818E-01	5.76763E-13	2.66485E 00
34	3.35383E-14	5.18328E-01	1.22990E-13	2.74626E 00
35	6.79478E-15	5.15321E-01	2.55900E-14	2.82999E 00
36	1.34708E-15	5.12793E-01	5.20485E-15	2.91611E 00
37	2.61830E-16	5.10740E-01	1.03681E-15	3.00465E 00
38	4.99906E-17	5.09160E-01	2.02665E-16	3.09567E 00
39	9.39413E-18	5.08050E-01	3.89491E-17	3.18923E 00
40	1.74098E-18	5.07409E-01	7.37438E-18	3.28536E 00
41	3.18852E-19	5.07236E-01	1.37833E-18	3.38414E 00
42	5.78305E-20	5.07531E-01	2.54854E-19	3.48560E 00
43	1.04095E-20	5.08294E-01	4.67172E-20	3.58980E 00
44	1.86370E-21	5.09526E-01	8.50892E-21	3.69680E 00
45	3.32643E-22	5.11229E-01	1.54340E-21	3.80665E 00
46	5.93288E-23	5.13405E-01	2.79459E-22	3.91941E 00
47	1.05997E-23	5.16057E-01	5.06358E-23	4.03514E 00
48	1.90180E-24	5.19190E-01	9.20460E-24	4.15389E 00
49	3.43574E-25	5.22806E-01	1.68312E-24	4.27572E 00
50	6.26689E-26	5.26912E-01	3.10448E-25	4.40068E 00

SUM S(J) FOR R = 1.28556763E 00 SUM S(J) FOR P = 1.19488102E 00

STRENGTHS AND F FACTORS OF THE V = 0 TO V = 2 TRANSITIONS OF HF

TEMPERATURE = 1500.0 DEG. K

	R BRANCH		P BRANCH	
J	S(J)	F(J)	S(J)	F(J)
0	3.12054E-02	9.73018E-01		
1	5.86591E-02	9.47044E-01	3.13708E-02	1.02802E 00
2	7.94969E-02	9.22053E-01	5.92835E-02	1.05709E 00
3	9.20682E-02	8.98017E-01	8.07727E-02	1.08726E 00
4	9.61187E-02	8.74913E-01	9.40501E-02	1.11855E 00
5	9.26486E-02	8.52716E-01	9.87232E-02	1.15099E 00
6	8.35232E-02	8.31403E-01	9.56848E-02	1.18460E 00
7	7.09787E-02	8.10952E-01	8.67449E-02	1.21942E 00
8	5.71571E-02	7.91339E-01	7.41379E-02	1.25549E 00
9	4.37775E-02	7.72543E-01	6.00492E-02	1.29282E 00
10	3.19813E-02	7.54543E-01	4.62666E-02	1.33146E 00
11	2.23345E-02	7.37319E-01	3.40055E-02	1.37144E 00
12	1.49382E-02	7.20851E-01	2.38963E-02	1.41279E 00
13	9.58440E-03	7.05121E-01	1.60850E-02	1.45554E 00
14	5.90740E-03	6.90110E-01	1.03879E-02	1.49974E 00
15	3.50238E-03	6.75800E-01	6.44569E-03	1.54541E 00
16	1.99987E-03	6.62174E-01	3.84790E-03	1.59260E 00
17	1.10109E-03	6.49216E-01	2.21272E-03	1.64134E 00
18	5.85218E-04	6.36910E-01	1.22713E-03	1.69167E 00
19	3.00589E-04	6.25240E-01	6.57072E-04	1.74362E 00
20	1.49371E-04	6.14193E-01	3.40076E-04	1.79724E 00
21	7.18909E-05	6.03755E-01	1.70316E-04	1.85257E 00
22	3.35481E-05	5.93912E-01	8.26288E-05	1.90964E 00
23	1.51958E-05	5.84652E-01	3.88754E-05	1.96850E 00
24	6.68839E-06	5.75963E-01	1.77566E-05	2.02918E 00
25	2.86379E-06	5.67834E-01	7.88247E-06	2.09174E 00
26	1.19417E-06	5.60254E-01	3.40457E-06	2.15622E 00
27	4.85496E-07	5.53214E-01	1.43234E-06	2.22264E 00
28	1.92661E-07	5.46703E-01	5.87618E-07	2.29108E 00
29	7.47126E-08	5.40713E-01	2.35345E-07	2.36155E 00
30	2.83456E-08	5.35237E-01	9.21242E-08	2.43412E 00
31	1.05337E-08	5.30267E-01	3.52860E-08	2.50883E 00
32	3.83881E-09	5.25796E-01	1.32404E-08	2.58573E 00
33	1.37358E-09	5.21818E-01	4.87289E-09	2.66485E 00
34	4.83153E-10	5.18328E-01	1.76107E-09	2.74626E 00
35	1.67272E-10	5.15321E-01	6.25753E-10	2.82999E 00
36	5.70705E-11	5.12793E-01	2.18878E-10	2.91611E 00
37	1.92133E-11	5.10740E-01	7.54603E-11	3.00465E 00
38	6.39082E-12	5.09160E-01	2.56748E-11	3.09567E 00
39	2.10302E-12	5.08050E-01	8.63240E-12	3.18923E 00
40	6.85560E-13	5.07409E-01	2.87189E-12	3.28536E 00
41	2.21694E-13	5.07236E-01	9.46681E-13	3.38414E 00
42	7.12151E-14	5.07531E-01	3.09629E-13	3.48560E 00
43	2.27573E-14	5.08294E-01	1.00623E-13	3.58980E 00
44	7.24498E-15	5.09526E-01	3.25388E-14	3.69680E 00
45	2.30130E-15	5.11229E-01	1.04860E-14	3.80665E 00
46	7.30469E-16	5.13405E-01	3.37285E-15	3.91941E 00
47	2.32070E-16	5.16057E-01	1.08457E-15	4.03514E 00
48	7.39165E-17	5.19190E-01	3.49232E-16	4.15389E 00
49	2.36437E-17	5.22806E-01	1.12803E-16	4.27572E 00
50	7.60881E-18	5.26912E-01	3.66148E-17	4.40068E 00

SUM S(J) FOR R = 7.98149890E-01 SUM S(J) FOR P = 8.26512194E-01

STRENGTHS AND F FACTORS OF THE V = 0 TO V = 2 TRANSITIONS OF HF

TEMPERATURE = 2000.0 DEG. K

	R BRANCH		P BRANCH	
J	S(J)	F(J)	S(J)	F(J)
0	1.67967E-02	9.73018E-01		
1	3.18893E-02	9.47044E-01	1.70501E-02	1.02802E 00
2	4.40804E-02	9.22053E-01	3.28588E-02	1.05709E 00
3	5.25840E-02	8.98017E-01	4.61960E-02	1.08726E 00
4	5.71014E-02	8.74913E-01	5.58308E-02	1.11855E 00
5	5.78094E-02	8.52716E-01	6.15431E-02	1.15099E 00
6	5.52698E-02	8.31403E-01	6.32478E-02	1.18460E 00
7	5.02919E-02	8.10952E-01	6.13840E-02	1.21942E 00
8	4.37785E-02	7.91339E-01	5.67007E-02	1.25549E 00
9	3.65892E-02	7.72543E-01	5.01049E-02	1.29282E 00
10	2.94410E-02	7.54543E-01	4.25113E-02	1.33146E 00
11	2.28550E-02	7.37319E-01	3.47248E-02	1.37144E 00
12	1.71471E-02	7.20851E-01	2.73656E-02	1.41279E 00
13	1.24514E-02	7.05121E-01	2.08427E-02	1.45554E 00
14	8.76248E-03	6.90110E-01	1.53647E-02	1.49974E 00
15	5.98293E-03	6.75800E-01	1.09766E-02	1.54541E 00
16	3.96773E-03	6.62174E-01	7.60826E-03	1.59260E 00
17	2.55826E-03	6.49216E-01	5.12198E-03	1.64134E 00
18	1.60522E-03	6.36910E-01	3.35239E-03	1.69167E 00
19	9.81102E-04	6.25240E-01	2.13523E-03	1.74362E 00
20	5.84614E-04	6.14193E-01	1.32467E-03	1.79724E 00
21	3.39926E-04	6.03755E-01	8.01164E-04	1.85257E 00
22	1.93036E-04	5.93912E-01	4.72792E-04	1.90964E 00
23	1.07154E-04	5.84652E-01	2.72475E-04	1.96850E 00
24	5.81928E-05	5.75963E-01	1.53484E-04	2.02918E 00
25	3.09456E-05	5.67834E-01	8.45767E-05	2.09174E 00
26	1.61278E-05	5.60254E-01	4.56309E-05	2.15622E 00
27	8.24476E-06	5.53214E-01	2.41247E-05	2.22264E 00
28	4.13797E-06	5.46703E-01	1.25093E-05	2.29108E 00
29	2.04074E-06	5.40713E-01	6.36715E-06	2.36155E 00
30	9.89840E-07	5.35237E-01	3.18405E-06	2.43412E 00
31	4.72619E-07	5.30267E-01	1.56573E-06	2.50883E 00
32	2.22340E-07	5.25796E-01	7.57778E-07	2.58573E 00
33	1.03153E-07	5.21818E-01	3.61279E-07	2.66485E 00
34	4.72399E-08	5.18328E-01	1.69829E-07	2.74626E 00
35	2.13747E-08	5.15321E-01	7.87858E-08	2.82999E 00
36	9.56457E-09	5.12793E-01	3.61036E-08	2.91611E 00
37	4.23664E-09	5.10740E-01	1.63579E-08	3.00465E 00
38	1.85947E-09	5.09160E-01	7.33491E-09	3.09567E 00
39	8.09460E-10	5.08050E-01	3.25814E-09	3.18923E 00
40	3.49844E-10	5.07409E-01	1.43510E-09	3.28536E 00
41	1.50269E-10	5.07236E-01	6.27433E-10	3.38414E 00
42	6.42138E-11	5.07531E-01	2.72566E-10	3.48560E 00
43	2.73283E-11	5.08294E-01	1.17774E-10	3.58980E 00
44	1.15956E-11	5.09526E-01	5.06723E-11	3.69680E 00
45	4.91078E-12	5.11229E-01	2.17329E-11	3.80665E 00
46	2.07817E-12	5.13405E-01	9.30216E-12	3.91941E 00
47	8.79823E-13	5.16057E-01	3.97817E-12	4.03514E 00
48	3.73094E-13	5.19190E-01	1.70195E-12	4.15389E 00
49	1.58669E-13	5.22806E-01	7.29336E-13	4.27572E 00
50	6.77613E-14	5.26912E-01	3.13472E-13	4.40068E 00

SUM S(J) FOR R = 5.53288865E-01 SUM S(J) FOR P = 6.18033606E-01

STRENGTHS AND F FACTORS OF THE V = 0 TO V = 2 TRANSITIONS OF HF

TEMPERATURE = 2500.0 DEG. K

	R BRANCH		P BRANCH	
J	S(J)	F(J)	S(J)	F(J)
0	1.01060E-02	9.73018E-01		
1	1.93031E-02	9.47044E-01	1.03161E-02	1.02802E 00
2	2.70033E-02	9.22053E-01	2.01138E-02	1.05709E 00
3	3.27918E-02	8.98017E-01	2.87216E-02	1.08726E 00
4	3.64623E-02	8.74913E-01	3.56021E-02	1.11855E 00
5	3.80200E-02	8.52716E-01	4.04074E-02	1.15099E 00
6	3.76560E-02	8.31403E-01	4.30052E-02	1.18460E 00
7	3.57005E-02	8.10952E-01	4.34729E-02	1.21942E 00
8	3.25643E-02	7.91339E-01	4.20641E-02	1.25549E 00
9	2.86807E-02	7.72543E-01	3.91569E-02	1.29282E 00
10	2.44551E-02	7.54543E-01	3.51931E-02	1.33146E 00
11	2.02287E-02	7.37319E-01	3.06199E-02	1.37144E 00
12	1.62595E-02	7.20851E-01	2.58426E-02	1.41279E 00
13	1.27172E-02	7.05121E-01	2.11918E-02	1.45554E 00
14	9.69024E-03	6.90110E-01	1.69081E-02	1.49974E 00
15	7.20113E-03	6.75800E-01	1.31411E-02	1.54541E 00
16	5.22403E-03	6.62174E-01	9.95946E-03	1.59260E 00
17	3.70287E-03	6.49216E-01	7.36744E-03	1.64134E 00
18	2.56663E-03	6.36910E-01	5.32422E-03	1.69167E 00
19	1.74111E-03	6.25240E-01	3.76195E-03	1.74362E 00
20	1.15682E-03	6.14193E-01	2.60093E-03	1.79724E 00
21	7.53371E-04	6.03755E-01	1.76089E-03	1.85257E 00
22	4.81258E-04	5.93912E-01	1.16827E-03	1.90964E 00
23	3.01779E-04	5.84652E-01	7.60114E-04	1.96850E 00
24	1.85891E-04	5.75963E-01	4.85341E-04	2.02918E 00
25	1.12565E-04	5.67834E-01	3.04339E-04	2.09174E 00
26	6.70547E-05	5.60254E-01	1.87548E-04	2.15622E 00
27	3.93237E-05	5.53214E-01	1.13664E-04	2.22264E 00
28	2.27191E-05	5.46703E-01	6.77934E-05	2.29108E 00
29	1.29406E-05	5.40713E-01	3.98213E-05	2.36155E 00
30	7.27211E-06	5.35237E-01	2.30523E-05	2.43412E 00
31	4.03484E-06	5.30267E-01	1.31610E-05	2.50883E 00
32	2.21193E-06	5.25796E-01	7.41575E-06	2.58573E 00
33	1.19899E-06	5.21818E-01	4.12687E-06	2.66485E 00
34	6.43113E-07	5.18328E-01	2.26987E-06	2.74626E 00
35	3.41593E-07	5.15321E-01	1.23485E-06	2.82999E 00
36	1.79809E-07	5.12793E-01	6.64945E-07	2.91611E 00
37	9.38704E-08	5.10740E-01	3.54679E-07	3.00465E 00
38	4.86402E-08	5.09160E-01	1.87540E-07	3.09567E 00
39	2.50354E-08	5.08050E-01	9.83775E-08	3.18923E 00
40	1.28100E-08	5.07409E-01	5.12366E-08	3.28536E 00
41	6.52130E-09	5.07236E-01	2.65151E-08	3.38414E 00
42	3.30569E-09	5.07531E-01	1.36455E-08	3.48560E 00
43	1.66993E-09	5.08294E-01	6.98916E-09	3.58980E 00
44	8.41419E-10	5.09526E-01	3.56592E-09	3.69680E 00
45	4.23237E-10	5.11229E-01	1.81389E-09	3.80665E 00
46	2.12716E-10	5.13405E-01	9.20723E-10	3.91941E 00
47	1.06920E-10	5.16057E-01	4.66801E-10	4.03514E 00
48	5.37980E-11	5.19190E-01	2.36611E-10	4.15389E 00
49	2.71235E-11	5.22806E-01	1.20025E-10	4.27572E 00
50	1.37160E-11	5.26912E-01	6.09949E-11	4.40068E 00

SUM S(J) FOR R = 4.05224150E-01 SUM S(J) FOR P = 4.79710966E-01

STRENGTHS AND F FACTORS OF THE V = 0 TO V = 2 TRANSITIONS OF HF

TEMPERATURE = 3000.0 DEG. K

	R BRANCH		P BRANCH	
J	S(J)	F(J)	S(J)	F(J)
0	6.51737E-03	9.73018E-01		
1	1.25000E-02	9.47044E-01	6.67637E-03	1.02802E 00
2	1.76275E-02	9.22053E-01	1.31172E-02	1.05709E 00
3	2.16637E-02	8.98017E-01	1.89484E-02	1.08726E 00
4	2.44734E-02	8.74913E-01	2.38534E-02	1.11855E 00
5	2.60274E-02	8.52716E-01	2.76011E-02	1.15099E 00
6	2.63933E-02	8.31403E-01	3.00642E-02	1.18460E 00
7	2.57180E-02	8.10952E-01	3.12226E-02	1.21942E 00
8	2.42022E-02	7.91339E-01	3.11549E-02	1.25549E 00
9	2.20741E-02	7.72543E-01	3.00204E-02	1.29282E 00
10	1.95638E-02	7.54543E-01	2.80328E-02	1.33146E 00
11	1.68824E-02	7.37319E-01	2.54331E-02	1.37144E 00
12	1.42078E-02	7.20851E-01	2.24638E-02	1.41279E 00
13	1.16763E-02	7.05121E-01	1.93466E-02	1.45554E 00
14	9.38138E-03	6.90110E-01	1.62681E-02	1.49974E 00
15	7.37632E-03	6.75800E-01	1.33711E-02	1.54541E 00
16	5.68086E-03	6.62174E-01	1.07526E-02	1.59260E 00
17	4.28891E-03	6.49216E-01	8.46771E-03	1.64134E 00
18	3.17665E-03	6.36910E-01	6.53534E-03	1.69167E 00
19	2.30991E-03	6.25240E-01	4.94702E-03	1.74362E 00
20	1.65016E-03	6.14193E-01	3.67535E-03	1.79724E 00
21	1.15892E-03	6.03755E-01	2.68180E-03	1.85257E 00
22	8.00682E-04	5.93912E-01	1.92313E-03	1.90964E 00
23	5.44531E-04	5.84652E-01	1.35618E-03	1.96850E 00
24	3.64769E-04	5.75963E-01	9.41077E-04	2.02918E 00
25	2.40833E-04	5.67834E-01	6.42979E-04	2.09174E 00
26	1.56815E-04	5.60254E-01	4.32805E-04	2.15622E 00
27	1.00763E-04	5.53214E-01	2.87194E-04	2.22264E 00
28	6.39329E-05	5.46703E-01	1.87976E-04	2.29108E 00
29	4.00799E-05	5.40713E-01	1.21433E-04	2.36155E 00
30	2.48413E-05	5.35237E-01	7.74699E-05	2.43412E 00
31	1.52314E-05	5.30267E-01	4.88377E-05	2.50883E 00
32	9.24464E-06	5.25796E-01	3.04412E-05	2.58573E 00
33	5.55772E-06	5.21818E-01	1.87721E-05	2.66485E 00
34	3.31156E-06	5.18328E-01	1.14598E-05	2.74626E 00
35	1.95692E-06	5.15321E-01	6.92971E-06	2.82999E 00
36	1.14760E-06	5.12793E-01	4.15333E-06	2.91611E 00
37	6.68287E-07	5.10740E-01	2.46883E-06	3.00465E 00
38	3.86699E-07	5.09160E-01	1.45637E-06	3.09567E 00
39	2.22487E-07	5.08050E-01	8.53135E-07	3.18923E 00
40	1.27362E-07	5.07409E-01	4.96600E-07	3.28536E 00
41	7.25891E-08	5.07236E-01	2.87427E-07	3.38414E 00
42	4.12185E-08	5.07531E-01	1.65527E-07	3.48560E 00
43	2.33347E-08	5.08294E-01	9.49138E-08	3.58980E 00
44	1.31796E-08	5.09526E-01	5.42264E-08	3.69680E 00
45	7.43195E-09	5.11229E-01	3.08907E-08	3.80665E 00
46	4.18716E-09	5.13405E-01	1.75589E-08	3.91941E 00
47	2.35871E-09	5.16057E-01	9.96673E-09	4.03514E 00
48	1.32953E-09	5.19190E-01	5.65371E-09	4.15389E 00
49	7.50456E-10	5.22806E-01	3.20771E-09	4.27572E 00
50	4.24527E-10	5.26912E-01	1.82181E-09	4.40068E 00

SUM S(J) FOR R = 3.06925753E-01 SUM S(J) FOR P = 3.80730620E-01

STRENGTHS AND F FACTORS OF THE V = 0 TO V = 2 TRANSITIONS OF HF

TEMPERATURE = 3500.0 DEG. K

	R BRANCH		P BRANCH	
J	S(J)	F(J)	S(J)	F(J)
0	4.41137E-03	9.73018E-01		
1	8.48636E-03	9.47044E-01	4.52967E-03	1.02802E 00
2	1.20372E-02	9.22053E-01	8.94744E-03	1.05709E 00
3	1.49210E-02	8.98017E-01	1.30309E-02	1.08726E 00
4	1.70491E-02	8.74913E-01	1.65843E-02	1.11855E 00
5	1.83898E-02	8.52716E-01	1.94545E-02	1.15099E 00
6	1.89658E-02	8.31403E-01	2.15416E-02	1.18460E 00
7	1.88465E-02	8.10952E-01	2.28043E-02	1.21942E 00
8	1.81358E-02	7.91339E-01	2.32575E-02	1.25549E 00
9	1.69596E-02	7.72543E-01	2.29668E-02	1.29282E 00
10	1.54519E-02	7.54543E-01	2.20366E-02	1.33146E 00
11	1.37435E-02	7.37319E-01	2.05969E-02	1.37144E 00
12	1.19520E-02	7.20851E-01	1.87899E-02	1.41279E 00
13	1.01758E-02	7.05121E-01	1.67565E-02	1.45554E 00
14	8.49108E-03	6.90110E-01	1.46261E-02	1.49974E 00
15	6.95073E-03	6.75800E-01	1.25092E-02	1.54541E 00
16	5.58652E-03	6.62174E-01	1.04927E-02	1.59260E 00
17	4.41194E-03	6.49216E-01	8.63897E-03	1.64134E 00
18	3.42612E-03	6.36910E-01	6.98681E-03	1.69167E 00
19	2.61789E-03	6.25240E-01	5.55438E-03	1.74362E 00
20	1.96948E-03	6.14193E-01	4.34323E-03	1.79724E 00
21	1.45971E-03	6.03755E-01	3.34254E-03	1.85257E 00
22	1.06648E-03	5.93912E-01	2.53327E-03	1.90964E 00
23	7.68532E-04	5.84652E-01	1.89179E-03	1.96850E 00
24	5.46558E-04	5.75963E-01	1.39281E-03	2.02918E 00
25	3.83812E-04	5.67834E-01	1.01152E-03	2.09174E 00
26	2.66286E-04	5.60254E-01	7.25018E-04	2.15622E 00
27	1.82626E-04	5.53214E-01	5.13152E-04	2.22264E 00
28	1.23878E-04	5.46703E-01	3.58834E-04	2.29108E 00
29	8.31542E-05	5.40713E-01	2.48037E-04	2.36155E 00
30	5.52665E-05	5.35237E-01	1.69567E-04	2.43412E 00
31	3.63884E-05	5.30267E-01	1.14708E-04	2.50883E 00
32	2.37478E-05	5.25796E-01	7.68237E-05	2.58573E 00
33	1.53701E-05	5.21818E-01	5.09655E-05	2.66485E 00
34	9.87088E-06	5.18328E-01	3.35090E-05	2.74626E 00
35	6.29363E-06	5.15321E-01	2.18464E-05	2.82999E 00
36	3.98609E-06	5.12793E-01	1.41306E-05	2.91611E 00
37	2.50919E-06	5.10740E-01	9.07268E-06	3.00465E 00
38	1.57072E-06	5.09160E-01	5.78544E-06	3.09567E 00
39	9.78328E-07	5.08050E-01	3.66608E-06	3.18923E 00
40	6.06647E-07	5.07409E-01	2.30978E-06	3.28536E 00
41	3.74713E-07	5.07236E-01	1.44772E-06	3.38414E 00
42	2.30686E-07	5.07531E-01	9.03214E-07	3.48560E 00
43	1.41630E-07	5.08294E-01	5.61231E-07	3.58980E 00
44	8.67669E-08	5.09526E-01	3.47532E-07	3.69680E 00
45	5.30740E-08	5.11229E-01	2.14593E-07	3.80665E 00
46	3.24339E-08	5.13405E-01	1.32212E-07	3.91941E 00
47	1.98141E-08	5.16057E-01	8.13281E-08	4.03514E 00
48	1.21083E-08	5.19190E-01	4.99819E-08	4.15389E 00
49	7.40629E-09	5.22806E-01	3.07104E-08	4.27572E 00
50	4.53748E-09	5.26912E-01	1.88785E-08	4.40068E 00

SUM S(J) FOR R = 2.38018066E-01 SUM S(J) FOR P = 3.06971365E-01

STRENGTHS AND F FACTORS OF THE V = 0 TO V = 2 TRANSITIONS OF HF

TEMPERATURE = 4000.0 DEG. K

	R BRANCH		P BRANCH	
J	S(J)	F(J)	S(J)	F(J)
0	3.09650E-03	9.73018E-01		
1	5.97067E-03	9.47044E-01	3.18477E-03	1.02802E 00
2	8.50629E-03	9.22053E-01	6.31583E-03	1.05709E 00
3	1.06129E-02	8.98017E-01	9.25402E-03	1.08726E 00
4	1.22308E-02	8.74913E-01	1.18735E-02	1.11855E 00
5	1.33337E-02	8.52716E-01	1.40710E-02	1.15099E 00
6	1.39270E-02	8.31403E-01	1.57725E-02	1.18460E 00
7	1.40447E-02	8.10952E-01	1.69369E-02	1.21942E 00
8	1.37433E-02	7.91339E-01	1.75573E-02	1.25549E 00
9	1.30953E-02	7.72543E-01	1.76578E-02	1.29282E 00
10	1.21811E-02	7.54543E-01	1.72894E-02	1.33146E 00
11	1.10828E-02	7.37319E-01	1.65228E-02	1.37144E 00
12	9.87824E-03	7.20851E-01	1.54413E-02	1.41279E 00
13	8.63613E-03	7.05121E-01	1.41333E-02	1.45554E 00
14	7.41363E-03	6.90110E-01	1.26851E-02	1.49974E 00
15	6.25478E-03	6.75800E-01	1.11762E-02	1.54541E 00
16	5.19057E-03	6.62174E-01	9.67448E-03	1.59260E 00
17	4.23992E-03	6.49216E-01	8.23448E-03	1.64134E 00
18	3.41138E-03	6.36910E-01	6.89649E-03	1.69167E 00
19	2.70523E-03	6.25240E-01	5.68701E-03	1.74362E 00
20	2.11561E-03	6.14193E-01	4.62024E-03	1.79724E 00
21	1.63257E-03	6.03755E-01	3.70012E-03	1.85257E 00
22	1.24379E-03	5.93912E-01	2.92262E-03	1.90964E 00
23	9.36020E-04	5.84652E-01	2.27802E-03	1.96850E 00
24	6.96171E-04	5.75963E-01	1.75303E-03	2.02918E 00
25	5.11983E-04	5.67834E-01	1.33255E-03	2.09174E 00
26	3.72495E-04	5.60254E-01	1.00103E-03	2.15622E 00
27	2.68240E-04	5.53214E-01	7.43502E-04	2.22264E 00
28	1.91283E-04	5.46703E-01	5.46255E-04	2.29108E 00
29	1.35142E-04	5.40713E-01	3.97180E-04	2.36155E 00
30	9.46393E-05	5.35237E-01	2.85928E-04	2.43412E 00
31	6.57249E-05	5.30267E-01	2.03894E-04	2.50883E 00
32	4.52870E-05	5.25796E-01	1.44088E-04	2.58573E 00
33	3.09748E-05	5.21818E-01	1.00955E-04	2.66485E 00
34	2.10400E-05	5.18328E-01	7.01623E-05	2.74626E 00
35	1.42000E-05	5.15321E-01	4.83899E-05	2.82999E 00
36	9.52683E-06	5.12793E-01	3.31347E-05	2.91611E 00
37	6.35670E-06	5.10740E-01	2.25366E-05	3.00465E 00
38	4.22036E-06	5.09160E-01	1.52327E-05	3.09567E 00
39	2.78941E-06	5.08050E-01	1.02366E-05	3.18923E 00
40	1.83625E-06	5.07409E-01	6.84272E-06	3.28536E 00
41	1.20454E-06	5.07236E-01	4.55208E-06	3.38414E 00
42	7.87758E-07	5.07531E-01	3.01519E-06	3.48560E 00
43	5.13886E-07	5.08294E-01	1.98957E-06	3.58980E 00
44	3.34551E-07	5.09526E-01	1.30847E-06	3.69680E 00
45	2.17471E-07	5.11229E-01	8.58148E-07	3.80665E 00
46	1.41224E-07	5.13405E-01	5.61543E-07	3.91941E 00
47	9.16664E-08	5.16057E-01	3.66832E-07	4.03514E 00
48	5.95031E-08	5.19190E-01	2.39366E-07	4.15389E 00
49	3.86483E-08	5.22806E-01	1.56107E-07	4.27572E 00
50	2.51316E-08	5.26912E-01	1.01816E-07	4.40068E 00

SUM S(J) FOR R = 1.87958188E-01 SUM S(J) FOR P = 2.50613302E-01

STRENGTHS AND F FACTORS OF THE V = 0 TO V = 2 TRANSITIONS OF HF

TEMPERATURE = 4500.0 DEG. K

	R BRANCH		P BRANCH	
J	S(J)	F(J)	S(J)	F(J)
0	2.23703E-03	9.73018E-01		
1	4.32140E-03	9.47044E-01	2.30356E-03	1.02802E 00
2	6.17796E-03	9.22053E-01	4.58212E-03	1.05709E 00
3	7.74719E-03	8.98017E-01	6.74504E-03	1.08726E 00
4	8.98821E-03	8.74913E-01	8.70867E-03	1.11855E 00
5	9.88032E-03	8.52716E-01	1.04019E-02	1.15099E 00
6	1.04225E-02	8.31403E-01	1.17704E-02	1.18460E 00
7	1.06319E-02	8.10952E-01	1.27797E-02	1.21942E 00
8	1.05404E-02	7.91339E-01	1.34157E-02	1.25549E 00
9	1.01910E-02	7.72543E-01	1.36849E-02	1.29282E 00
10	9.63365E-03	7.54543E-01	1.36111E-02	1.33146E 00
11	8.92110E-03	7.37319E-01	1.32332E-02	1.37144E 00
12	8.10510E-03	7.20851E-01	1.26003E-02	1.41279E 00
13	7.23349E-03	7.05121E-01	1.17677E-02	1.45554E 00
14	6.34801E-03	6.90110E-01	1.07925E-02	1.49974E 00
15	5.48292E-03	6.75800E-01	9.73005E-03	1.54541E 00
16	4.66458E-03	6.62174E-01	8.63066E-03	1.59260E 00
17	3.91150E-03	6.49216E-01	7.53768E-03	1.64134E 00
18	3.23506E-03	6.36910E-01	6.48621E-03	1.69167E 00
19	2.64050E-03	6.25240E-01	5.50261E-03	1.74362E 00
20	2.12812E-03	6.14193E-01	4.60489E-03	1.79724E 00
21	1.69450E-03	6.03755E-01	3.80339E-03	1.85257E 00
22	1.33366E-03	5.93912E-01	3.10201E-03	1.90964E 00
23	1.03803E-03	5.84652E-01	2.49945E-03	1.96850E 00
24	7.99382E-04	5.75963E-01	1.99056E-03	2.02918E 00
25	6.09356E-04	5.67834E-01	1.56758E-03	2.09174E 00
26	4.60004E-04	5.60254E-01	1.22124E-03	2.15622E 00
27	3.44049E-04	5.53214E-01	9.41615E-04	2.22264E 00
28	2.55058E-04	5.46703E-01	7.18842E-04	2.29108E 00
29	1.87503E-04	5.40713E-01	5.43577E-04	2.36155E 00
30	1.36746E-04	5.35237E-01	4.07322E-04	2.43412E 00
31	9.89813E-05	5.30267E-01	3.02582E-04	2.50883E 00
32	7.11386E-05	5.25796E-01	2.22924E-04	2.58573E 00
33	5.07877E-05	5.21818E-01	1.62950E-04	2.66485E 00
34	3.60329E-05	5.18328E-01	1.18227E-04	2.74626E 00
35	2.54164E-05	5.15321E-01	8.51762E-05	2.82999E 00
36	1.78314E-05	5.12793E-01	6.09597E-05	2.91611E 00
37	1.24481E-05	5.10740E-01	4.33579E-05	3.00465E 00
38	8.65069E-06	5.09160E-01	3.06601E-05	3.09567E 00
39	5.98708E-06	5.08050E-01	2.15648E-05	3.18923E 00
40	4.12841E-06	5.07409E-01	1.50925E-05	3.28536E 00
41	2.83754E-06	5.07236E-01	1.05151E-05	3.38414E 00
42	1.94482E-06	5.07531E-01	7.29608E-06	3.48560E 00
43	1.32981E-06	5.08294E-01	5.04406E-06	3.58980E 00
44	9.07526E-07	5.09526E-01	3.47600E-06	3.69680E 00
45	6.18420E-07	5.11229E-01	2.38886E-06	3.80665E 00
46	4.20975E-07	5.13405E-01	1.63801E-06	3.91941E 00
47	2.86401E-07	5.16057E-01	1.12115E-06	4.03514E 00
48	1.94822E-07	5.19190E-01	7.66400E-07	4.15389E 00
49	1.32569E-07	5.22806E-01	5.23491E-07	4.27572E 00
50	9.02805E-08	5.26912E-01	3.57483E-07	4.40068E 00

SUM S(J) FOR R = 1.50640316E-01 SUM S(J) FOR P = 2.06781045E-01

STRENGTHS AND F FACTORS OF THE V = 0 TO V = 2 TRANSITIONS OF HF

TEMPERATURE = 5000.0 DEG. K

	R BRANCH		P BRANCH	
J	S(J)	F(J)	S(J)	F(J)
0	1.65479E-03	9.73018E-01		
1	3.20144E-03	9.47044E-01	1.70551E-03	1.02802E 00
2	4.58966E-03	9.22053E-01	3.40062E-03	1.05709E 00
3	5.77902E-03	8.98017E-01	5.02429E-03	1.08726E 00
4	6.74090E-03	8.74913E-01	6.51926E-03	1.11855E 00
5	7.45944E-03	8.52716E-01	7.83558E-03	1.15099E 00
6	7.93142E-03	8.31403E-01	8.93337E-03	1.18460E 00
7	8.16546E-03	8.10952E-01	9.78490E-03	1.21942E 00
8	8.18014E-03	7.91339E-01	1.03755E-02	1.25549E 00
9	8.00191E-03	7.72543E-01	1.07035E-02	1.29282E 00
10	7.66258E-03	7.54543E-01	1.07797E-02	1.33146E 00
11	7.19670E-03	7.37319E-01	1.06249E-02	1.37144E 00
12	6.63929E-03	7.20851E-01	1.02685E-02	1.41279E 00
13	6.02378E-03	7.05121E-01	9.74529E-03	1.45554E 00
14	5.38044E-03	6.90110E-01	9.09290E-03	1.49974E 00
15	4.73525E-03	6.75800E-01	8.34951E-03	1.54541E 00
16	4.10938E-03	6.62174E-01	7.55159E-03	1.59260E 00
17	3.51894E-03	6.49216E-01	6.73211E-03	1.64134E 00
18	2.97520E-03	6.36910E-01	5.91948E-03	1.69167E 00
19	2.48504E-03	6.25240E-01	5.13676E-03	1.74362E 00
20	2.05161E-03	6.14193E-01	4.40154E-03	1.79724E 00
21	1.67501E-03	6.03755E-01	3.72602E-03	1.85257E 00
22	1.35304E-03	5.93912E-01	3.11759E-03	1.90964E 00
23	1.08185E-03	5.84652E-01	2.57940E-03	1.96850E 00
24	8.56609E-04	5.75963E-01	2.11123E-03	2.02918E 00
25	6.71963E-04	5.67834E-01	1.71020E-03	2.09174E 00
26	5.22443E-04	5.60254E-01	1.37161E-03	2.15622E 00
27	4.02756E-04	5.53214E-01	1.08958E-03	2.22264E 00
28	3.07987E-04	5.46703E-01	8.57634E-04	2.29108E 00
29	2.33714E-04	5.40713E-01	6.69153E-04	2.36155E 00
30	1.76065E-04	5.35237E-01	5.17718E-04	2.43412E 00
31	1.31725E-04	5.30267E-01	3.97348E-04	2.50883E 00
32	9.79136E-05	5.25796E-01	3.02636E-04	2.58573E 00
33	7.23377E-05	5.21818E-01	2.28824E-04	2.66485E 00
34	5.31377E-05	5.18328E-01	1.71822E-04	2.74626E 00
35	3.88262E-05	5.15321E-01	1.28177E-04	2.82999E 00
36	2.82292E-05	5.12793E-01	9.50291E-05	2.91611E 00
37	2.04311E-05	5.10740E-01	7.00460E-05	3.00465E 00
38	1.47256E-05	5.09160E-01	5.13510E-05	3.09567E 00
39	1.05731E-05	5.08050E-01	3.74559E-05	3.18923E 00
40	7.56583E-06	5.07409E-01	2.71932E-05	3.28536E 00
41	5.39756E-06	5.07236E-01	1.96579E-05	3.38414E 00
42	3.84055E-06	5.07531E-01	1.41552E-05	3.48560E 00
43	2.72654E-06	5.08294E-01	1.01571E-05	3.58980E 00
44	1.93207E-06	5.09526E-01	7.26566E-06	3.69680E 00
45	1.36709E-06	5.11229E-01	5.18330E-06	3.80665E 00
46	9.66278E-07	5.13405E-01	3.68930E-06	3.91941E 00
47	6.82515E-07	5.16057E-01	2.62106E-06	4.03514E 00
48	4.81945E-07	5.19190E-01	1.85949E-06	4.15389E 00
49	3.40354E-07	5.22806E-01	1.31793E-06	4.27572E 00
50	2.40484E-07	5.26912E-01	9.33630E-07	4.40068E 00

SUM S(J) FOR R = 1.22257257E-01 SUM S(J) FOR P = 1.72211607E-01

STRENGTHS AND F FACTORS OF THE V = 0 TO V = 3 TRANSITIONS OF HF

TEMPERATURE = 273.3 DEG. K

	R BRANCH		P BRANCH	
J	S(J)	F(J)	S(J)	F(J)
0	4.17074E-02	9.86606E-01		
1	6.65281E-02	9.74285E-01	3.43044E-02	1.01449E 00
2	6.41510E-02	9.63017E-01	4.50169E-02	1.03008E 00
3	4.43441E-02	9.52785E-01	3.57280E-02	1.04682E 00
4	2.31942E-02	9.43574E-01	2.03411E-02	1.06472E 00
5	9.41029E-03	9.35369E-01	8.77095E-03	1.08380E 00
6	3.00319E-03	9.28158E-01	2.93693E-03	1.10410E 00
7	7.60842E-04	9.21931E-01	7.74620E-04	1.12564E 00
8	1.54047E-04	9.16676E-01	1.62443E-04	1.14846E 00
9	2.50621E-05	9.12386E-01	2.72736E-05	1.17258E 00
10	3.29184E-06	9.09055E-01	3.68691E-06	1.19804E 00
11	3.50586E-07	9.06676E-01	4.03274E-07	1.22487E 00
12	3.04011E-08	9.05247E-01	3.58534E-08	1.25312E 00
13	2.15524E-09	9.04765E-01	2.60219E-09	1.28281E 00
14	1.25426E-10	9.05229E-01	1.54841E-10	1.31399E 00
15	6.01680E-12	9.06640E-01	7.58625E-12	1.34670E 00
16	2.38928E-13	9.09001E-01	3.07358E-13	1.38098E 00
17	7.88816E-15	9.12315E-01	1.03432E-14	1.41688E 00
18	2.17486E-16	9.16586E-01	2.90412E-16	1.45444E 00
19	5.03063E-18	9.21823E-01	6.83500E-18	1.49370E 00
20	9.80853E-20	9.28032E-01	1.35485E-19	1.53471E 00
21	1.61988E-21	9.35225E-01	2.27296E-21	1.57754E 00
22	2.27733E-23	9.43410E-01	3.24351E-23	1.62222E 00
23	2.73942E-25	9.52603E-01	3.95724E-25	1.66880E 00
24	2.83439E-27	9.62815E-01	4.14965E-27	1.71735E 00
25	2.53611E-29	9.74064E-01	3.76023E-29	1.76792E 00
26	1.97320E-31	9.86365E-01	2.96069E-31	1.82056E 00
27	1.34249E-33	9.99738E-01	2.03703E-33	1.87534E 00
28	8.03309E-36	1.01420E 00	1.23175E-35	1.93231E 00
29	.00000E 00	1.02978E 00	.00000E 00	1.99154E 00
30	.00000E 00	1.04650E 00	.00000E 00	2.05309E 00
31	.00000E 00	1.06437E 00	.00000E 00	2.11702E 00
32	.00000E 00	1.08343E 00	.00000E 00	2.18341E 00
33	.00000E 00	1.10371E 00	.00000E 00	2.25230E 00
34	.00000E 00	1.12522E 00	.00000E 00	2.32379E 00
35	.00000E 00	1.14802E 00	.00000E 00	2.39793E 00
36	.00000E 00	1.17211E 00	.00000E 00	2.47480E 00
37	.00000E 00	1.19755E 00	.00000E 00	2.55448E 00
38	.00000E 00	1.22436E 00	.00000E 00	2.63703E 00
39	.00000E 00	1.25257E 00	.00000E 00	2.72253E 00
40	.00000E 00	1.28224E 00	.00000E 00	2.81107E 00
41	.00000E 00	1.31339E 00	.00000E 00	2.90272E 00
42	.00000E 00	1.34607E 00	.00000E 00	2.99756E 00
43	.00000E 00	1.38033E 00	.00000E 00	3.09567E 00
44	.00000E 00	1.41619E 00	.00000E 00	3.19715E 00
45	.00000E 00	1.45371E 00	.00000E 00	3.30206E 00
46	.00000E 00	1.49294E 00	.00000E 00	3.41051E 00
47	.00000E 00	1.53393E 00	.00000E 00	3.52258E 00
48	.00000E 00	1.57672E 00	.00000E 00	3.63835E 00
49	.00000E 00	1.62136E 00	.00000E 00	3.75793E 00
50	.00000E 00	1.66791E 00	.00000E 00	3.88140E 00

SUM S(J) FOR R = 2.53281850E-01 SUM S(J) FOR P = 1.48066749E-01

STRENGTHS AND F FACTORS OF THE V = 0 TO V = 3 TRANSITIONS OF HF

TEMPERATURE = 373.3 DEG. K

	R BRANCH		P BRANCH	
J	S(J)	F(J)	S(J)	F(J)
0	2.25578E-02	9.86606E-01		
1	3.81302E-02	9.74285E-01	1.96613E-02	1.01449E 00
2	4.12854E-02	9.63017E-01	2.89714E-02	1.03008E 00
3	3.39504E-02	9.52785E-01	2.73539E-02	1.04682E 00
4	2.23768E-02	9.43574E-01	1.96242E-02	1.06472E 00
5	1.21144E-02	9.35369E-01	1.12913E-02	1.08380E 00
6	5.46106E-03	9.28158E-01	5.34057E-03	1.10410E 00
7	2.06782E-03	9.21931E-01	2.10527E-03	1.12564E 00
8	6.61781E-04	9.16676E-01	6.97849E-04	1.14846E 00
9	1.79885E-04	9.12386E-01	1.95757E-04	1.17258E 00
10	4.16994E-05	9.09055E-01	4.67039E-05	1.19804E 00
11	8.27374E-06	9.06676E-01	9.51717E-06	1.22487E 00
12	1.40989E-06	9.05247E-01	1.66275E-06	1.25312E 00
13	2.07014E-07	9.04765E-01	2.49945E-07	1.28281E 00
14	2.62747E-08	9.05229E-01	3.24367E-08	1.31399E 00
15	2.89198E-09	9.06640E-01	3.64633E-09	1.34670E 00
16	2.76935E-10	9.09001E-01	3.56250E-10	1.38098E 00
17	2.31482E-11	9.12315E-01	3.03525E-11	1.41688E 00
18	1.69463E-12	9.16586E-01	2.26287E-12	1.45444E 00
19	1.09030E-13	9.21823E-01	1.48137E-13	1.49370E 00
20	6.18673E-15	9.28032E-01	8.54572E-15	1.53471E 00
21	3.10735E-16	9.35225E-01	4.36012E-16	1.57754E 00
22	1.38656E-17	9.43410E-01	1.97482E-17	1.62222E 00
23	5.51769E-19	9.52603E-01	7.97061E-19	1.66880E 00
24	1.96575E-20	9.62815E-01	2.87793E-20	1.71735E 00
25	6.29474E-22	9.74064E-01	9.33306E-22	1.76792E 00
26	1.81914E-23	9.86365E-01	2.72953E-23	1.82056E 00
27	4.76417E-25	9.99738E-01	7.22892E-25	1.87534E 00
28	1.13548E-26	1.01420E 00	1.74108E-26	1.93231E 00
29	2.47349E-28	1.02978E 00	3.83002E-28	1.99154E 00
30	4.94636E-30	1.04650E 00	7.72906E-30	2.05309E 00
31	9.12102E-32	1.06437E 00	1.43728E-31	2.11702E 00
32	1.55798E-33	1.08343E 00	2.47416E-33	2.18341E 00
33	2.47658E-35	1.10371E 00	3.96097E-35	2.25230E 00
34	.00000E 00	1.12522E 00	5.92538E-37	2.32379E 00
35	.00000E 00	1.14802E 00	.00000E 00	2.39793E 00
36	.00000E 00	1.17211E 00	.00000E 00	2.47480E 00
37	.00000E 00	1.19755E 00	.00000E 00	2.55448E 00
38	.00000E 00	1.22436E 00	.00000E 00	2.63703E 00
39	.00000E 00	1.25257E 00	.00000E 00	2.72253E 00
40	.00000E 00	1.28224E 00	.00000E 00	2.81107E 00
41	.00000E 00	1.31339E 00	.00000E 00	2.90272E 00
42	.00000E 00	1.34607E 00	.00000E 00	2.99756E 00
43	.00000E 00	1.38033E 00	.00000E 00	3.09567E 00
44	.00000E 00	1.41619E 00	.00000E 00	3.19715E 00
45	.00000E 00	1.45371E 00	.00000E 00	3.30206E 00
46	.00000E 00	1.49294E 00	.00000E 00	3.41051E 00
47	.00000E 00	1.53393E 00	.00000E 00	3.52258E 00
48	.00000E 00	1.57672E 00	.00000E 00	3.63835E 00
49	.00000E 00	1.62136E 00	.00000E 00	3.75793E 00
50	.00000E 00	1.66791E 00	.00000E 00	3.88140E 00

SUM S(J) FOR R = 1.78837167E-01 SUM S(J) FOR P = 1.15299766E-01

STRENGTHS AND F FACTORS OF THE V = 0 TO V = 3 TRANSITIONS OF HF

TEMPERATURE = 500.0 DEG. K

	R BRANCH		P BRANCH	
J	S(J)	F(J)	S(J)	F(J)
0	1.26474E-02	9.86606E-01		
1	2.22542E-02	9.74285E-01	1.14751E-02	1.01449E 00
2	2.61093E-02	9.63017E-01	1.83218E-02	1.03008E 00
3	2.42143E-02	9.52785E-01	1.95095E-02	1.04682E 00
4	1.87311E-02	9.43574E-01	1.64270E-02	1.06472E 00
5	1.23831E-02	9.35369E-01	1.15418E-02	1.08380E 00
6	7.09058E-03	9.28158E-01	6.93413E-03	1.10410E 00
7	3.54637E-03	9.21931E-01	3.61060E-03	1.12564E 00
8	1.55845E-03	9.16676E-01	1.64338E-03	1.14846E 00
9	6.04435E-04	9.12386E-01	6.57768E-04	1.17258E 00
10	2.07656E-04	9.09055E-01	2.32578E-04	1.19804E 00
11	6.33948E-05	9.06676E-01	7.29222E-05	1.22487E 00
12	1.72474E-05	9.05247E-01	2.03406E-05	1.25312E 00
13	4.19300E-06	9.04765E-01	5.06253E-06	1.28281E 00
14	9.13248E-07	9.05229E-01	1.12742E-06	1.31399E 00
15	1.78661E-07	9.06640E-01	2.25264E-07	1.34670E 00
16	3.14746E-08	9.09001E-01	4.04890E-08	1.38098E 00
17	5.00602E-09	9.12315E-01	6.56402E-09	1.41688E 00
18	7.20710E-10	9.16586E-01	9.62376E-10	1.45444E 00
19	9.41699E-11	9.21823E-01	1.27946E-10	1.49370E 00
20	1.11975E-11	9.28032E-01	1.54671E-11	1.53471E 00
21	1.21501E-12	9.35225E-01	1.70486E-12	1.57754E 00
22	1.20646E-13	9.43410E-01	1.71832E-13	1.62222E 00
23	1.09943E-14	9.52603E-01	1.58819E-14	1.66880E 00
24	9.22175E-16	9.62815E-01	1.35010E-15	1.71735E 00
25	7.14088E-17	9.74064E-01	1.05876E-16	1.76792E 00
26	5.12045E-18	9.86365E-01	7.68299E-18	1.82056E 00
27	3.41061E-19	9.99738E-01	5.17509E-19	1.87534E 00
28	2.11691E-20	1.01420E 00	3.24595E-20	1.93231E 00
29	1.22834E-21	1.02978E 00	1.90200E-21	1.99154E 00
30	6.68515E-23	1.04650E 00	1.04461E-22	2.05309E 00
31	3.42397E-24	1.06437E 00	5.39546E-24	2.11702E 00
32	1.65598E-25	1.08343E 00	2.62979E-25	2.18341E 00
33	7.58911E-27	1.10371E 00	1.21378E-26	2.25230E 00
34	3.30725E-28	1.12522E 00	5.32378E-28	2.32379E 00
35	1.37545E-29	1.14802E 00	2.22704E-29	2.39793E 00
36	5.47909E-31	1.17211E 00	8.91782E-31	2.47480E 00
37	2.09836E-32	1.19755E 00	3.43113E-32	2.55448E 00
38	7.75550E-34	1.22436E 00	1.27328E-33	2.63703E 00
39	2.77708E-35	1.25257E 00	4.57523E-35	2.72253E 00
40	9.67254E-37	1.28224E 00	1.59824E-36	2.81107E 00
41	.00000E 00	1.31339E 00	.00000E 00	2.90272E 00
42	.00000E 00	1.34607E 00	.00000E 00	2.99756E 00
43	.00000E 00	1.38033E 00	.00000E 00	3.09567E 00
44	.00000E 00	1.41619E 00	.00000E 00	3.19715E 00
45	.00000E 00	1.45371E 00	.00000E 00	3.30206E 00
46	.00000E 00	1.49294E 00	.00000E 00	3.41051E 00
47	.00000E 00	1.53393E 00	.00000E 00	3.52258E 00
48	.00000E 00	1.57672E 00	.00000E 00	3.63835E 00
49	.00000E 00	1.62136E 00	.00000E 00	3.75793E 00
50	.00000E 00	1.66791E 00	.00000E 00	3.88140E 00

SUM S(J) FOR R = 1.29432827E-01 SUM S(J) FOR P = 9.04533017E-02

STRENGTHS AND F FACTORS OF THE V = 0 TO V = 3 TRANSITIONS OF HF

TEMPERATURE = 1000.0 DEG. K

	R BRANCH		P BRANCH	
J	S(J)	F(J)	S(J)	F(J)
0	3.17095E-03	9.86606E-01		
1	5.91957E-03	9.74285E-01	3.05235E-03	1.01449E 00
2	7.81666E-03	9.63017E-01	5.48521E-03	1.03008E 00
3	8.65446E-03	9.52785E-01	6.97291E-03	1.04682E 00
4	8.47565E-03	9.43574E-01	7.43306E-03	1.06472E 00
5	7.52059E-03	9.35369E-01	7.00963E-03	1.08380E 00
6	6.12539E-03	9.28158E-01	5.99024E-03	1.10410E 00
7	4.61628E-03	9.21931E-01	4.69988E-03	1.12564E 00
8	3.23641E-03	9.16676E-01	3.41280E-03	1.14846E 00
9	2.11907E-03	9.12386E-01	2.30605E-03	1.17258E 00
10	1.29971E-03	9.09055E-01	1.45570E-03	1.19804E 00
11	7.48581E-04	9.06676E-01	8.61083E-04	1.22487E 00
12	4.05725E-04	9.05247E-01	4.78489E-04	1.25312E 00
13	2.07318E-04	9.04765E-01	2.50312E-04	1.28281E 00
14	1.00046E-04	9.05229E-01	1.23508E-04	1.31399E 00
15	4.56684E-05	9.06640E-01	5.75807E-05	1.34670E 00
16	1.97497E-05	9.09001E-01	2.54060E-05	1.38098E 00
17	8.10371E-06	9.12315E-01	1.06258E-05	1.41688E 00
18	3.15962E-06	9.16586E-01	4.21909E-06	1.45444E 00
19	1.17234E-06	9.21823E-01	1.59282E-06	1.49370E 00
20	4.14552E-07	9.28032E-01	5.72620E-07	1.53471E 00
21	1.39914E-07	9.35225E-01	1.96322E-07	1.57754E 00
22	4.51385E-08	9.43410E-01	6.42888E-08	1.62222E 00
23	1.39411E-08	9.52603E-01	2.01386E-08	1.66880E 00
24	4.12833E-09	9.62815E-01	6.04401E-09	1.71735E 00
25	1.17397E-09	9.74064E-01	1.74061E-09	1.76792E 00
26	3.21088E-10	9.86365E-01	4.81776E-10	1.82056E 00
27	8.46003E-11	9.99738E-01	1.28368E-10	1.87534E 00
28	2.15082E-11	1.01420E 00	3.29794E-11	1.93231E 00
29	5.28485E-12	1.02978E 00	8.18318E-12	1.99154E 00
30	1.25714E-12	1.04650E 00	1.96437E-12	2.05309E 00
31	2.89993E-13	1.06437E 00	4.56965E-13	2.11702E 00
32	6.49819E-14	1.08343E 00	1.03194E-13	2.18341E 00
33	1.41695E-14	1.10371E 00	2.26621E-14	2.25230E 00
34	3.01192E-15	1.12522E 00	4.84832E-15	2.32379E 00
35	6.25228E-16	1.14802E 00	1.01232E-15	2.39793E 00
36	1.26980E-16	1.17211E 00	2.06670E-16	2.47480E 00
37	2.52778E-17	1.19755E 00	4.13321E-17	2.55448E 00
38	4.94169E-18	1.22436E 00	8.11293E-18	2.63703E 00
39	9.50573E-19	1.25257E 00	1.56602E-18	2.72253E 00
40	1.80271E-19	1.28224E 00	2.97858E-19	2.81107E 00
41	3.37735E-20	1.31339E 00	5.59375E-20	2.90272E 00
42	6.26374E-21	1.34607E 00	1.03941E-20	2.99756E 00
43	1.15246E-21	1.38033E 00	1.91514E-21	3.09567E 00
44	2.10815E-22	1.41619E 00	3.50670E-22	3.19715E 00
45	3.84277E-23	1.45371E 00	6.39555E-23	3.30206E 00
46	6.99626E-24	1.49294E 00	1.16457E-23	3.41051E 00
47	1.27531E-24	1.53393E 00	2.12240E-24	3.52258E 00
48	2.33340E-25	1.57672E 00	3.88120E-25	3.63835E 00
49	4.29650E-26	1.62136E 00	7.14066E-26	3.75793E 00
50	7.98330E-27	1.66791E 00	1.32540E-26	3.88140E 00

SUM S(J) FOR R = 6.04948992E-02 SUM S(J) FOR P = 4.96315145E-02

STRENGTHS AND F FACTORS OF THE V = 0 TO V = 3 TRANSITIONS OF HF

TEMPERATURE = 1500.0 DEG. K

	R BRANCH		P BRANCH	
J	S(J)	F(J)	S(J)	F(J)
0	1.38079E-03	9.86606E-01		
1	2.62900E-03	9.74285E-01	1.35561E-03	1.01449E 00
2	3.61109E-03	9.63017E-01	2.53402E-03	1.03008E 00
3	4.24136E-03	9.52785E-01	3.41725E-03	1.04682E 00
4	4.49350E-03	9.43574E-01	3.94073E-03	1.06472E 00
5	4.39814E-03	9.35369E-01	4.09929E-03	1.08380E 00
6	4.02866E-03	9.28158E-01	3.93973E-03	1.10410E 00
7	3.48073E-03	9.21931E-01	3.54373E-03	1.12564E 00
8	2.85144E-03	9.16676E-01	3.00680E-03	1.14846E 00
9	2.22307E-03	9.12386E-01	2.41919E-03	1.17258E 00
10	1.65408E-03	9.09055E-01	1.85257E-03	1.19804E 00
11	1.17718E-03	9.06676E-01	1.35407E-03	1.22487E 00
12	8.02805E-04	9.05247E-01	9.46763E-04	1.25312E 00
13	5.25473E-04	9.04765E-01	6.34429E-04	1.28281E 00
14	3.30580E-04	9.05229E-01	4.08096E-04	1.31399E 00
15	2.00148E-04	9.06640E-01	2.52348E-04	1.34670E 00
16	1.16762E-04	9.09001E-01	1.50197E-04	1.38098E 00
17	6.57085E-05	9.12315E-01	8.61551E-05	1.41688E 00
18	3.57108E-05	9.16586E-01	4.76830E-05	1.45444E 00
19	1.87631E-05	9.21823E-01	2.54916E-05	1.49370E 00
20	9.54123E-06	9.28032E-01	1.31785E-05	1.53471E 00
21	4.70066E-06	9.35225E-01	6.59534E-06	1.57754E 00
22	2.24610E-06	9.43410E-01	3.19877E-06	1.62222E 00
23	1.04202E-06	9.52603E-01	1.50512E-06	1.66880E 00
24	4.69855E-07	9.62815E-01	6.87813E-07	1.71735E 00
25	2.06138E-07	9.74064E-01	3.05600E-07	1.76792E 00
26	8.80907E-08	9.86365E-01	1.32158E-07	1.82056E 00
27	3.67072E-08	9.99738E-01	5.56890E-08	1.87534E 00
28	1.49315E-08	1.01420E 00	2.28910E-08	1.93231E 00
29	5.93563E-09	1.02978E 00	9.18898E-09	1.99154E 00
30	2.30852E-09	1.04650E 00	3.60638E-09	2.05309E 00
31	8.79422E-10	1.06437E 00	1.38540E-09	2.11702E 00
32	3.28519E-10	1.08343E 00	5.21539E-10	2.18341E 00
33	1.20484E-10	1.10371E 00	1.92627E-10	2.25230E 00
34	4.34328E-11	1.12522E 00	6.98851E-11	2.32379E 00
35	1.54080E-11	1.14802E 00	2.49354E-11	2.39793E 00
36	5.38579E-12	1.17211E 00	8.76092E-12	2.47480E 00
37	1.85720E-12	1.19755E 00	3.03477E-12	2.55448E 00
38	6.32593E-13	1.22436E 00	1.03777E-12	2.63703E 00
39	2.13110E-13	1.25257E 00	3.50780E-13	2.72253E 00
40	7.10991E-14	1.28224E 00	1.17356E-13	2.81107E 00
41	2.35227E-14	1.31339E 00	3.89136E-14	2.90272E 00
42	7.72798E-15	1.34607E 00	1.28063E-14	2.99756E 00
43	2.52472E-15	1.38033E 00	4.18882E-15	3.09567E 00
44	8.21392E-16	1.41619E 00	1.36376E-15	3.19715E 00
45	2.66518E-16	1.45371E 00	4.42606E-16	3.30206E 00
46	8.63781E-17	1.49294E 00	1.43419E-16	3.41051E 00
47	2.80073E-17	1.53393E 00	4.64730E-17	3.52258E 00
48	9.10004E-18	1.57672E 00	1.50844E-17	3.63835E 00
49	2.96796E-18	1.62136E 00	4.91293E-18	3.75793E 00
50	9.73391E-19	1.66791E 00	1.60851E-18	3.88140E 00

SUM S(J) FOR R = 3.82833424E-02 SUM S(J) FOR P = 3.40398502E-02

STRENGTHS AND F FACTORS OF THE V = 0 TO V = 3 TRANSITIONS OF HF

TEMPERATURE = 2000.0 DEG. K

	R BRANCH		P BRANCH	
J	S(J)	F(J)	S(J)	F(J)
0	7.45365E-04	9.86606E-01		
1	1.43323E-03	9.74285E-01	7.39012E-04	1.01449E 00
2	2.00781E-03	9.63017E-01	1.40890E-03	1.03008E 00
3	2.42893E-03	9.52785E-01	1.95589E-03	1.04682E 00
4	2.67652E-03	9.43574E-01	2.34712E-03	1.06472E 00
5	2.75142E-03	9.35369E-01	2.56427E-03	1.08380E 00
6	2.67273E-03	9.28158E-01	2.61349E-03	1.10410E 00
7	2.47253E-03	9.21931E-01	2.51701E-03	1.12564E 00
8	2.18950E-03	9.16676E-01	2.30851E-03	1.14846E 00
9	1.86268E-03	9.12386E-01	2.02672E-03	1.17258E 00
10	1.52649E-03	9.09055E-01	1.70938E-03	1.19804E 00
11	1.20760E-03	9.06676E-01	1.38880E-03	1.22487E 00
12	9.23797E-04	9.05247E-01	1.08922E-03	1.25312E 00
13	6.84357E-04	9.04765E-01	8.26065E-04	1.28281E 00
14	4.91575E-04	9.05229E-01	6.06683E-04	1.31399E 00
15	3.42761E-04	9.06640E-01	4.32029E-04	1.34670E 00
16	2.32241E-04	9.09001E-01	2.98648E-04	1.38098E 00
17	1.53058E-04	9.12315E-01	2.00613E-04	1.41688E 00
18	9.82071E-05	9.16586E-01	1.31079E-04	1.45444E 00
19	6.14028E-05	9.21823E-01	8.33851E-05	1.49370E 00
20	3.74428E-05	9.28032E-01	5.16911E-05	1.53471E 00
21	2.22871E-05	9.35225E-01	3.12532E-05	1.57754E 00
22	1.29601E-05	9.43410E-01	1.84460E-05	1.62222E 00
23	7.36883E-06	9.52603E-01	1.06366E-05	1.66880E 00
24	4.09999E-06	9.62815E-01	5.99746E-06	1.71735E 00
25	2.23422E-06	9.74064E-01	3.30950E-06	1.76792E 00
26	1.19341E-06	9.86365E-01	1.78877E-06	1.82056E 00
27	6.25367E-07	9.99738E-01	9.47791E-07	1.87534E 00
28	3.21761E-07	1.01420E 00	4.92727E-07	1.93231E 00
29	1.62687E-07	1.02978E 00	2.51541E-07	1.99154E 00
30	8.09025E-08	1.04650E 00	1.26211E-07	2.05309E 00
31	3.96039E-08	1.06437E 00	6.22941E-08	2.11702E 00
32	1.91012E-08	1.08343E 00	3.02720E-08	2.18341E 00
33	9.08468E-09	1.10371E 00	1.44967E-08	2.25230E 00
34	4.26456E-09	1.12522E 00	6.84732E-09	2.32379E 00
35	1.97763E-09	1.14802E 00	3.19293E-09	2.39793E 00
36	9.06812E-10	1.17211E 00	1.47123E-09	2.47480E 00
37	4.11524E-10	1.19755E 00	6.70495E-10	2.55448E 00
38	1.85006E-10	1.22436E 00	3.02518E-10	2.63703E 00
39	8.24717E-11	1.25257E 00	1.35259E-10	2.72253E 00
40	3.64901E-11	1.28224E 00	5.99889E-11	2.81107E 00
41	1.60409E-11	1.31339E 00	2.64180E-11	2.90272E 00
42	7.01299E-12	1.34607E 00	1.15638E-11	2.99756E 00
43	3.05248E-12	1.38033E 00	5.03648E-12	3.09567E 00
44	1.32415E-12	1.41619E 00	2.18500E-12	3.19715E 00
45	5.73104E-13	1.45371E 00	9.45263E-13	3.30206E 00
46	2.47759E-13	1.49294E 00	4.08253E-13	3.41051E 00
47	1.07110E-13	1.53393E 00	1.76235E-13	3.52258E 00
48	4.63611E-14	1.57672E 00	7.61331E-14	3.63835E 00
49	2.01161E-14	1.62136E 00	3.29551E-14	3.75793E 00
50	8.76114E-15	1.66791E 00	1.43123E-14	3.88140E 00

SUM S(J) FOR R = 2.70510542E-02 SUM S(J) FOR P = 2.53728893E-02

STRENGTHS AND F FACTORS OF THE V = 0 TO V = 3 TRANSITIONS OF HF

TEMPERATURE = 2500.0 DEG. K

	R BRANCH		P BRANCH	
J	S(J)	F(J)	S(J)	F(J)
0	4.51402E-04	9.86606E-01		
1	8.73150E-04	9.74285E-01	4.50189E-04	1.01449E 00
2	1.23777E-03	9.63017E-01	8.68450E-04	1.03008E 00
3	1.52416E-03	9.52785E-01	1.22775E-03	1.04682E 00
4	1.71962E-03	9.43574E-01	1.50768E-03	1.06472E 00
5	1.82056E-03	9.35369E-01	1.69629E-03	1.08380E 00
6	1.83192E-03	9.28158E-01	1.79077E-03	1.10410E 00
7	1.76564E-03	9.21931E-01	1.79675E-03	1.12564E 00
8	1.63829E-03	9.16676E-01	1.72662E-03	1.14846E 00
9	1.46867E-03	9.12386E-01	1.59725E-03	1.17258E 00
10	1.27540E-03	9.09055E-01	1.42745E-03	1.19804E 00
11	1.07508E-03	9.06676E-01	1.23566E-03	1.22487E 00
12	8.81096E-04	9.05247E-01	1.03818E-03	1.25312E 00
13	7.03045E-04	9.04765E-01	8.47996E-04	1.28281E 00
14	5.46804E-04	9.05229E-01	6.74295E-04	1.31399E 00
15	4.14975E-04	9.06640E-01	5.22580E-04	1.34670E 00
16	3.07582E-04	9.09001E-01	3.95141E-04	1.38098E 00
17	2.22856E-04	9.12315E-01	2.91780E-04	1.41688E 00
18	1.57967E-04	9.16586E-01	2.10591E-04	1.45444E 00
19	1.09628E-04	9.21823E-01	1.48682E-04	1.49370E 00
20	7.45446E-05	9.28032E-01	1.02766E-04	1.53471E 00
21	4.97009E-05	9.35225E-01	6.95882E-05	1.57754E 00
22	3.25142E-05	9.43410E-01	4.61992E-05	1.62222E 00
23	2.08856E-05	9.52603E-01	3.00923E-05	1.66880E 00
24	1.31822E-05	9.62815E-01	1.92445E-05	1.71735E 00
25	8.18081E-06	9.74064E-01	1.20918E-05	1.76792E 00
26	4.99538E-06	9.86365E-01	7.46978E-06	1.82056E 00
27	3.00332E-06	9.99738E-01	4.54007E-06	1.87534E 00
28	1.77909E-06	1.01420E 00	2.71679E-06	1.93231E 00
29	1.03909E-06	1.02978E 00	1.60174E-06	1.99154E 00
30	5.98785E-07	1.04650E 00	9.31046E-07	2.05309E 00
31	3.40685E-07	1.06437E 00	5.33953E-07	2.11702E 00
32	1.91516E-07	1.08343E 00	3.02339E-07	2.18341E 00
33	1.06447E-07	1.10371E 00	1.69143E-07	2.25230E 00
34	5.85396E-08	1.12522E 00	9.35619E-08	2.32379E 00
35	3.18760E-08	1.14802E 00	5.12085E-08	2.39793E 00
36	1.71987E-08	1.17211E 00	2.77526E-08	2.47480E 00
37	9.20157E-09	1.19755E 00	1.49042E-08	2.55448E 00
38	4.88527E-09	1.22436E 00	7.93752E-09	2.63703E 00
39	2.57576E-09	1.25257E 00	4.19532E-09	2.72253E 00
40	1.34973E-09	1.28224E 00	2.20236E-09	2.81107E 00
41	7.03481E-10	1.31339E 00	1.14921E-09	2.90272E 00
42	3.64981E-10	1.34607E 00	5.96557E-10	2.99756E 00
43	1.88649E-10	1.38033E 00	3.08320E-10	3.09567E 00
44	9.72224E-11	1.41619E 00	1.58789E-10	3.19715E 00
45	5.00011E-11	1.45371E 00	8.15610E-11	3.30206E 00
46	2.56847E-11	1.49294E 00	4.18194E-11	3.41051E 00
47	1.31900E-11	1.53393E 00	2.14243E-11	3.52258E 00
48	6.77786E-12	1.57672E 00	1.09769E-11	3.63835E 00
49	3.48848E-12	1.62136E 00	5.63029E-12	3.75793E 00
50	1.80014E-12	1.66791E 00	2.89398E-12	3.88140E 00

SUM S(J) FOR R = 2.02368084E-02 SUM S(J) FOR P = 1.97525629E-02

STRENGTHS AND F FACTORS OF THE V = 0 TO V = 3 TRANSITIONS OF HF

TEMPERATURE = 3000.0 DEG. K

	R BRANCH		P BRANCH	
J	S(J)	F(J)	S(J)	F(J)
0	2.94028E-04	9.86606E-01		
1	5.71010E-04	9.74285E-01	2.94368E-04	1.01449E 00
2	8.15888E-04	9.63017E-01	5.72321E-04	1.03008E 00
3	1.01663E-03	9.52785E-01	8.18667E-04	1.04682E 00
4	1.16521E-03	9.43574E-01	1.02118E-03	1.06472E 00
5	1.25807E-03	9.35369E-01	1.17160E-03	1.08380E 00
6	1.29602E-03	9.28158E-01	1.26615E-03	1.10410E 00
7	1.28375E-03	9.21931E-01	1.30545E-03	1.12564E 00
8	1.22883E-03	9.16676E-01	1.29405E-03	1.14846E 00
9	1.14074E-03	9.12386E-01	1.23948E-03	1.17258E 00
10	1.02964E-03	9.09055E-01	1.15121E-03	1.19804E 00
11	9.05418E-04	9.06676E-01	1.03947E-03	1.22487E 00
12	7.76917E-04	9.05247E-01	9.14281E-04	1.25312E 00
13	6.51372E-04	9.04765E-01	7.84581E-04	1.28281E 00
14	5.34189E-04	9.05229E-01	6.57739E-04	1.31399E 00
15	4.28942E-04	9.06640E-01	5.39274E-04	1.34670E 00
16	3.37534E-04	9.09001E-01	4.32837E-04	1.38098E 00
17	2.60493E-04	9.12315E-01	3.40389E-04	1.41688E 00
18	1.97313E-04	9.16586E-01	2.62486E-04	1.45444E 00
19	1.46791E-04	9.21823E-01	1.98626E-04	1.49370E 00
20	1.07329E-04	9.28032E-01	1.47593E-04	1.53471E 00
21	7.71756E-05	9.35225E-01	1.07767E-04	1.57754E 00
22	5.46092E-05	9.43410E-01	7.73692E-05	1.62222E 00
23	3.80482E-05	9.52603E-01	5.46496E-05	1.66880E 00
24	2.61185E-05	9.62815E-01	3.80021E-05	1.71735E 00
25	1.76752E-05	9.74064E-01	2.60310E-05	1.76792E 00
26	1.17988E-05	9.86365E-01	1.75749E-05	1.82056E 00
27	7.77357E-06	9.99738E-01	1.17024E-05	1.87534E 00
28	5.05789E-06	1.01420E 00	7.66935E-06	1.93231E 00
29	3.25189E-06	1.02978E 00	4.98880E-06	1.99154E 00
30	2.06716E-06	1.04650E 00	3.19777E-06	2.05309E 00
31	1.29998E-06	1.06437E 00	2.02629E-06	2.11702E 00
32	8.09251E-07	1.08343E 00	1.27004E-06	2.18341E 00
33	4.98960E-07	1.10371E 00	7.87871E-07	2.25230E 00
34	3.04891E-07	1.12522E 00	4.84031E-07	2.32379E 00
35	1.84748E-07	1.14802E 00	2.94671E-07	2.39793E 00
36	1.11080E-07	1.17211E 00	1.77873E-07	2.47480E 00
37	6.63090E-08	1.19755E 00	1.06527E-07	2.55448E 00
38	3.93244E-08	1.22436E 00	6.33378E-08	2.63703E 00
39	2.31833E-08	1.25257E 00	3.74101E-08	2.72253E 00
40	1.35952E-08	1.28224E 00	2.19644E-08	2.81107E 00
41	7.93553E-09	1.31339E 00	1.28273E-08	2.90272E 00
42	4.61346E-09	1.34607E 00	7.45640E-09	2.99756E 00
43	2.67319E-09	1.38033E 00	4.31711E-09	3.09567E 00
44	1.54482E-09	1.41619E 00	2.49131E-09	3.19715E 00
45	8.90999E-10	1.45371E 00	1.43398E-09	3.30206E 00
46	5.13255E-10	1.49294E 00	8.23859E-10	3.41051E 00
47	2.95504E-10	1.53393E 00	4.72807E-10	3.52258E 00
48	1.70174E-10	1.57672E 00	2.71250E-10	3.63835E 00
49	9.80968E-11	1.62136E 00	1.55690E-10	3.75793E 00
50	5.66492E-11	1.66791E 00	8.94762E-11	3.88140E 00

SUM S(J) FOR R = 1.56930538E-02 SUM S(J) FOR P = 1.58060165E-02

STRENGTHS AND F FACTORS OF THE V = 0 TO V = 3 TRANSITIONS OF HF

TEMPERATURE = 3500.0 DEG. K

	R BRANCH		P BRANCH	
J	S(J)	F(J)	S(J)	F(J)
0	2.01495E-04	9.86606E-01		
1	3.92433E-04	9.74285E-01	2.02268E-04	1.01449E 00
2	5.63921E-04	9.63017E-01	3.95443E-04	1.03008E 00
3	7.08651E-04	9.52785E-01	5.70395E-04	1.04682E 00
4	8.21422E-04	9.43574E-01	7.19454E-04	1.06472E 00
5	8.99420E-04	9.35369E-01	8.36988E-04	1.08380E 00
6	9.42245E-04	9.28158E-01	9.19720E-04	1.10410E 00
7	9.51726E-04	9.21931E-01	9.66832E-04	1.12564E 00
8	9.31504E-04	9.16676E-01	9.79796E-04	1.14846E 00
9	8.86549E-04	9.12386E-01	9.62022E-04	1.17258E 00
10	8.22582E-04	9.09055E-01	9.18354E-04	1.19804E 00
11	7.45524E-04	9.06676E-01	8.54510E-04	1.22487E 00
12	6.61036E-04	9.05247E-01	7.76515E-04	1.25312E 00
13	5.74146E-04	9.04765E-01	6.90203E-04	1.28281E 00
14	4.89011E-04	9.05229E-01	6.00820E-04	1.31399E 00
15	4.08806E-04	9.06640E-01	5.12761E-04	1.34670E 00
16	3.35720E-04	9.09001E-01	4.29426E-04	1.38098E 00
17	2.71032E-04	9.12315E-01	3.53197E-04	1.41688E 00
18	2.15251E-04	9.16586E-01	2.85510E-04	1.45444E 00
19	1.68279E-04	9.21823E-01	2.26984E-04	1.49370E 00
20	1.29579E-04	9.28032E-01	1.77588E-04	1.53471E 00
21	9.83362E-05	9.35225E-01	1.36817E-04	1.57754E 00
22	7.35883E-05	9.43410E-01	1.03855E-04	1.62222E 00
23	5.43321E-05	9.52603E-01	7.77156E-05	1.66880E 00
24	3.95992E-05	9.62815E-01	5.73620E-05	1.71735E 00
25	2.85055E-05	9.74064E-01	4.17836E-05	1.76792E 00
26	2.02770E-05	9.86365E-01	3.00524E-05	1.82056E 00
27	1.42606E-05	9.99738E-01	2.13536E-05	1.87534E 00
28	9.92086E-06	1.01420E 00	1.49970E-05	1.93231E 00
29	6.83059E-06	1.02978E 00	1.04160E-05	1.99154E 00
30	4.65678E-06	1.04650E 00	7.15780E-06	2.05309E 00
31	3.14521E-06	1.06437E 00	4.86932E-06	2.11702E 00
32	2.10558E-06	1.08343E 00	3.28084E-06	2.18341E 00
33	1.39789E-06	1.10371E 00	2.19056E-06	2.25230E 00
34	9.20808E-07	1.12522E 00	1.45011E-06	2.32379E 00
35	6.02126E-07	1.14802E 00	9.52239E-07	2.39793E 00
36	3.91067E-07	1.17211E 00	6.20611E-07	2.47480E 00
37	2.52397E-07	1.19755E 00	4.01651E-07	2.55448E 00
38	1.61963E-07	1.22436E 00	2.58265E-07	2.63703E 00
39	1.03389E-07	1.25257E 00	1.65083E-07	2.72253E 00
40	6.56889E-08	1.28224E 00	1.04953E-07	2.81107E 00
41	4.15628E-08	1.31339E 00	6.64028E-08	2.90272E 00
42	2.62031E-08	1.34607E 00	4.18327E-08	2.99756E 00
43	1.64694E-08	1.38033E 00	2.62564E-08	3.09567E 00
44	1.03258E-08	1.41619E 00	1.64283E-08	3.19715E 00
45	6.46171E-09	1.45371E 00	1.02531E-08	3.30206E 00
46	4.03833E-09	1.49294E 00	6.38672E-09	3.41051E 00
47	2.52203E-09	1.53393E 00	3.97319E-09	3.52258E 00
48	1.57493E-09	1.57672E 00	2.47011E-09	3.63835E 00
49	9.84033E-10	1.62136E 00	1.53567E-09	3.75793E 00
50	6.15565E-10	1.66791E 00	9.55393E-10	3.88140E 00

SUM S(J) FOR R = 1.24798945E-02 SUM S(J) FOR P = 1.28947629E-02

STRENGTHS AND F FACTORS OF THE V = 0 TO V = 3 TRANSITIONS OF HF

TEMPERATURE = 4000.0 DEG. K

	R BRANCH		P BRANCH	
J	S(J)	F(J)	S(J)	F(J)
0	1.43384E-04	9.86606E-01		
1	2.79866E-04	9.74285E-01	1.44213E-04	1.01449E 00
2	4.03889E-04	9.63017E-01	2.83107E-04	1.03008E 00
3	5.10795E-04	9.52785E-01	4.10903E-04	1.04682E 00
4	5.97112E-04	9.43574E-01	5.22600E-04	1.06472E 00
5	6.60738E-04	9.35369E-01	6.14313E-04	1.08380E 00
6	7.00978E-04	9.28158E-01	6.83478E-04	1.10410E 00
7	7.18480E-04	9.21931E-01	7.28966E-04	1.12564E 00
8	7.15042E-04	9.16676E-01	7.51033E-04	1.14846E 00
9	6.93373E-04	9.12386E-01	7.51184E-04	1.17258E 00
10	6.56785E-04	9.09055E-01	7.31932E-04	1.19804E 00
11	6.08887E-04	9.06676E-01	6.96509E-04	1.22487E 00
12	5.53314E-04	9.05247E-01	6.48553E-04	1.25312E 00
13	4.93477E-04	9.04765E-01	5.91811E-04	1.28281E 00
14	4.32388E-04	9.05229E-01	5.29873E-04	1.31399E 00
15	3.72547E-04	9.06640E-01	4.65970E-04	1.34670E 00
16	3.15887E-04	9.09001E-01	4.02834E-04	1.38098E 00
17	2.63774E-04	9.12315E-01	3.42620E-04	1.41688E 00
18	2.17050E-04	9.16586E-01	2.86892E-04	1.45444E 00
19	1.76107E-04	9.21823E-01	2.36657E-04	1.49370E 00
20	1.40970E-04	9.28032E-01	1.92431E-04	1.53471E 00
21	1.11389E-04	9.35225E-01	1.54320E-04	1.57754E 00
22	8.69243E-05	9.43410E-01	1.22122E-04	1.62222E 00
23	6.70258E-05	9.52603E-01	9.54130E-05	1.66880E 00
24	5.10920E-05	9.62815E-01	7.36339E-05	1.71735E 00
25	3.85193E-05	9.74064E-01	5.61580E-05	1.76792E 00
26	2.87356E-05	9.86365E-01	4.23463E-05	1.82056E 00
27	2.12215E-05	9.99738E-01	3.15855E-05	1.87534E 00
28	1.55218E-05	1.01420E 00	2.33146E-05	1.93231E 00
29	1.12490E-05	1.02978E 00	1.70386E-05	1.99154E 00
30	8.08136E-06	1.04650E 00	1.23339E-05	2.05309E 00
31	5.75768E-06	1.06437E 00	8.84760E-06	2.11702E 00
32	4.07003E-06	1.08343E 00	6.29219E-06	2.18341E 00
33	2.85579E-06	1.10371E 00	4.43841E-06	2.25230E 00
34	1.98989E-06	1.12522E 00	3.10668E-06	2.32379E 00
35	1.37751E-06	1.14802E 00	2.15877E-06	2.39793E 00
36	9.47815E-07	1.17211E 00	1.48989E-06	2.47480E 00
37	6.48496E-07	1.19755E 00	1.02173E-06	2.55448E 00
38	4.41412E-07	1.22436E 00	6.96561E-07	2.63703E 00
39	2.99043E-07	1.25257E 00	4.72302E-07	2.72253E 00
40	2.01731E-07	1.28224E 00	3.18658E-07	2.81107E 00
41	1.35571E-07	1.31339E 00	2.14033E-07	2.90272E 00
42	9.08071E-08	1.34607E 00	1.43185E-07	2.99756E 00
43	6.06511E-08	1.38033E 00	9.54530E-08	3.09567E 00
44	4.04142E-08	1.41619E 00	6.34414E-08	3.19715E 00
45	2.68794E-08	1.45371E 00	4.20601E-08	3.30206E 00
46	1.78531E-08	1.49294E 00	2.78296E-08	3.41051E 00
47	1.18477E-08	1.53393E 00	1.83873E-08	3.52258E 00
48	7.85980E-09	1.57672E 00	1.21377E-08	3.63835E 00
49	5.21518E-09	1.62136E 00	8.00964E-09	3.75793E 00
50	3.46294E-09	1.66791E 00	5.28684E-09	3.88140E 00

SUM S(J) FOR R = 1.01135910E-02 SUM S(J) FOR P = 1.06736143E-02

STRENGTHS AND F FACTORS OF THE V = 0 TO V = 3 TRANSITIONS OF HF

TEMPERATURE = 4500.0 DEG. K

	R BRANCH		P BRANCH	
J	S(J)	F(J)	S(J)	F(J)
0	1.05061E-04	9.86606E-01		
1	2.05420E-04	9.74285E-01	1.05822E-04	1.01449E 00
2	2.97448E-04	9.63017E-01	2.08400E-04	1.03008E 00
3	3.78056E-04	9.52785E-01	3.03925E-04	1.04682E 00
4	4.44867E-04	9.43574E-01	3.89028E-04	1.06472E 00
5	4.96328E-04	9.35369E-01	4.60981E-04	1.08380E 00
6	5.31745E-04	9.28158E-01	5.17840E-04	1.10410E 00
7	5.51270E-04	9.21931E-01	5.58526E-04	1.12564E 00
8	5.55796E-04	9.16676E-01	5.82833E-04	1.14846E 00
9	5.46842E-04	9.12386E-01	5.91366E-04	1.17258E 00
10	5.26379E-04	9.09055E-01	5.85427E-04	1.19804E 00
11	4.96654E-04	9.06676E-01	5.66866E-04	1.22487E 00
12	4.60025E-04	9.05247E-01	5.37899E-04	1.25312E 00
13	4.18805E-04	9.04765E-01	5.00932E-04	1.28281E 00
14	3.75131E-04	9.05229E-01	4.58391E-04	1.31399E 00
15	3.30883E-04	9.06640E-01	4.12580E-04	1.34670E 00
16	2.87618E-04	9.09001E-01	3.65566E-04	1.38098E 00
17	2.46547E-04	9.12315E-01	3.19104E-04	1.41688E 00
18	2.08542E-04	9.16586E-01	2.74598E-04	1.45444E 00
19	1.74157E-04	9.21823E-01	2.33088E-04	1.49370E 00
20	1.43671E-04	9.28032E-01	1.95273E-04	1.53471E 00
21	1.17139E-04	9.35225E-01	1.61545E-04	1.57754E 00
22	9.44356E-05	9.43410E-01	1.32032E-04	1.62222E 00
23	7.53138E-05	9.52603E-01	1.06662E-04	1.66880E 00
24	5.94441E-05	9.62815E-01	8.52078E-05	1.71735E 00
25	4.64543E-05	9.74064E-01	6.73405E-05	1.76792E 00
26	3.59591E-05	9.86365E-01	5.26730E-05	1.82056E 00
27	2.75826E-05	9.99738E-01	4.07940E-05	1.87534E 00
28	2.09742E-05	1.01420E 00	3.12954E-05	1.93231E 00
29	1.58174E-05	1.02978E 00	2.37914E-05	1.99154E 00
30	1.18346E-05	1.04650E 00	1.79304E-05	2.05309E 00
31	8.78861E-06	1.06437E 00	1.34019E-05	2.11702E 00
32	6.48043E-06	1.08343E 00	9.93851E-06	2.18341E 00
33	4.74652E-06	1.10371E 00	7.31529E-06	2.25230E 00
34	3.45468E-06	1.12522E 00	5.34651E-06	2.32379E 00
35	2.49961E-06	1.14802E 00	3.88161E-06	2.39793E 00
36	1.79863E-06	1.17211E 00	2.80047E-06	2.47480E 00
37	1.28761E-06	1.19755E 00	2.00865E-06	2.55448E 00
38	9.17441E-07	1.22436E 00	1.43288E-06	2.63703E 00
39	6.50871E-07	1.25257E 00	1.01700E-06	2.72253E 00
40	4.59949E-07	1.28224E 00	7.18494E-07	2.81107E 00
41	3.23891E-07	1.31339E 00	5.05469E-07	2.90272E 00
42	2.27374E-07	1.34607E 00	3.54258E-07	2.99756E 00
43	1.59190E-07	1.38033E 00	2.47450E-07	3.09567E 00
44	1.11200E-07	1.41619E 00	1.72339E-07	3.19715E 00
45	7.75342E-08	1.45371E 00	1.19731E-07	3.30206E 00
46	5.39842E-08	1.49294E 00	8.30131E-08	3.41051E 00
47	3.75504E-08	1.53393E 00	5.74660E-08	3.52258E 00
48	2.61054E-08	1.57672E 00	3.97376E-08	3.63835E 00
49	1.81470E-08	1.62136E 00	2.74621E-08	3.75793E 00
50	1.26193E-08	1.66791E 00	1.89767E-08	3.88140E 00

SUM S(J) FOR R = 8.31833005E-03 SUM S(J) FOR P = 8.93720376E-03

STRENGTHS AND F FACTORS OF THE V = 0 TO V = 3 TRANSITIONS OF HF

TEMPERATURE = 5000.0 DEG. K

	R BRANCH		P BRANCH	
J	S(J)	F(J)	S(J)	F(J)
0	7.88156E-05	9.86606E-01		
1	1.54319E-04	9.74285E-01	7.94741E-05	1.01449E 00
2	2.24058E-04	9.63017E-01	1.56904E-04	1.03008E 00
3	2.85918E-04	9.52785E-01	2.29696E-04	1.04682E 00
4	3.38230E-04	9.43574E-01	2.95515E-04	1.06472E 00
5	3.79845E-04	9.35369E-01	3.52411E-04	1.08380E 00
6	4.10158E-04	9.28158E-01	3.98919E-04	1.10410E 00
7	4.29115E-04	9.21931E-01	4.34117E-04	1.12564E 00
8	4.37151E-04	9.16676E-01	4.57641E-04	1.14846E 00
9	4.35137E-04	9.12386E-01	4.69671E-04	1.17258E 00
10	4.24272E-04	9.09055E-01	4.70869E-04	1.19804E 00
11	4.05983E-04	9.06676E-01	4.62300E-04	1.22487E 00
12	3.81825E-04	9.05247E-01	4.45327E-04	1.25312E 00
13	3.53374E-04	9.04765E-01	4.21504E-04	1.28281E 00
14	3.22144E-04	9.05229E-01	3.92469E-04	1.31399E 00
15	2.89520E-04	9.06640E-01	3.59845E-04	1.34670E 00
16	2.56709E-04	9.09001E-01	3.25157E-04	1.38098E 00
17	2.24709E-04	9.12315E-01	2.89768E-04	1.41688E 00
18	1.94299E-04	9.16586E-01	2.54840E-04	1.45444E 00
19	1.66045E-04	9.21823E-01	2.21305E-04	1.49370E 00
20	1.40315E-04	9.28032E-01	1.89868E-04	1.53471E 00
21	1.17303E-04	9.35225E-01	1.61014E-04	1.57754E 00
22	9.70583E-05	9.43410E-01	1.35029E-04	1.62222E 00
23	7.95170E-05	9.52603E-01	1.12028E-04	1.66880E 00
24	6.45313E-05	9.62815E-01	9.19927E-05	1.71735E 00
25	5.18962E-05	9.74064E-01	7.47958E-05	1.76792E 00
26	4.13738E-05	9.86365E-01	6.02381E-05	1.82056E 00
27	3.27117E-05	9.99738E-01	4.80733E-05	1.87534E 00
28	2.56585E-05	1.01420E 00	3.80310E-05	1.93231E 00
29	1.99743E-05	1.02978E 00	2.98357E-05	1.99154E 00
30	1.54376E-05	1.04650E 00	2.32198E-05	2.05309E 00
31	1.18498E-05	1.06437E 00	1.79335E-05	2.11702E 00
32	9.03703E-06	1.08343E 00	1.37503E-05	2.18341E 00
33	6.84974E-06	1.10371E 00	1.04703E-05	2.25230E 00
34	5.16194E-06	1.12522E 00	7.92065E-06	2.32379E 00
35	3.86896E-06	1.14802E 00	5.95490E-06	2.39793E 00
36	2.88517E-06	1.17211E 00	4.45100E-06	2.47480E 00
37	2.14141E-06	1.19755E 00	3.30878E-06	2.55448E 00
38	1.58246E-06	1.22436E 00	2.44716E-06	2.63703E 00
39	1.16473E-06	1.25257E 00	1.80136E-06	2.72253E 00
40	8.54137E-07	1.28224E 00	1.32021E-06	2.81107E 00
41	6.24311E-07	1.31339E 00	9.63716E-07	2.90272E 00
42	4.54989E-07	1.34607E 00	7.00947E-07	2.99756E 00
43	3.30739E-07	1.38033E 00	5.08176E-07	3.09567E 00
44	2.39890E-07	1.41619E 00	3.67371E-07	3.19715E 00
45	1.73677E-07	1.45371E 00	2.64927E-07	3.30206E 00
46	1.25557E-07	1.49294E 00	1.90657E-07	3.41051E 00
47	9.06704E-08	1.53393E 00	1.36982E-07	3.52258E 00
48	6.54313E-08	1.57672E 00	9.82955E-08	3.63835E 00
49	4.72025E-08	1.62136E 00	7.04777E-08	3.75793E 00
50	3.40542E-08	1.66791E 00	5.05132E-08	3.88140E 00

SUM S(J) FOR R = 6.92498595E-03 SUM S(J) FOR P = 7.55456495E-03

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2b. GROUP

3. REPORT TITLE

LINE-STRENGTH CALCULATIONS FOR THE 0 → 1, 0 → 2, 0 → 3, AND 1 → 2 VIBRATION-ROTATION BANDS OF HYDROGEN FLUORIDE

4. DESCRIPTIVE NOTES *(Type of report and inclusive dates)*

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13. ABSTRACT

Line strengths are calculated for the 0 - 1, 0 → 2, and 1 → 2 vibration-rotation bands of hydrogen fluoride by use of the anharmonic oscillator potential and for the 0 → 1, 0 → 2, 0 → 3, and 1 → 2 bands by use of the Morse potential. The two sets of calculations are compared, and it is found that the line strengths depend quite strongly on the shape of the potential well even for transitions involving such low-lying levels. All calculations have been carried out for a number of temperatures in the 300°K to 5000°K range. The partition functions and line positions used in the calculations are also presented.

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14. KEY WORDS	LINK A		LINK B		LINK C	
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