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Simulation of UF$_6$ Gas Density, Temperature, Pressure, and Mach Number Changes Across a Normal Shock in a Gas Centrifuge Environment

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Calculation of UF_6 Gas Density, Temperature, Pressure, and Mach Number Changes Across a Normal Shock in a Gas Centrifuge Environment

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CALCULATION OF UF_6 GAS DENSITY, TEMPERATURE, PRESSURE, AND MACH NUMBER CHANGES ACROSS A NORMAL SHOCK IN A GAS CENTRIFUGE ENVIRONMENT

by

Richard A. Gentry

ABSTRACT

The nonlinear Rankine-Hugoniot equations are solved to obtain changes in UF_6 gas density, temperature, pressure, and Mach number across a normal shock in a gas centrifuge environment. Effects of the nonlinear temperature variation of the enthalpy and specific heats of UF_6 are included to insure that realistic predictions of gas temperature and pressure are obtained. Tables of values of gas density, temperature, pressure, and Mach number describing conditions behind a normal shock are presented as functions of the upstream Mach number and the upstream gas temperature. Values of the gas stagnation temperature and stagnation pressure are also included. The tables give tabular results corresponding to centrifuge wall speeds ranging from 350 m/s to 1100 m/s.

I. INTRODUCTION

When a nonrotating object, such as a gas removal scoop, a stagnation pressure probe, or a stagnation temperature probe, is inserted into the rapidly rotating gas in a centrifuge, the relatively cool, high-speed upstream gas is heated as it passes through a normal shock in the vicinity of the stagnation point. In order to properly predict and interpret phenomena relating to stagnation point shock compression and heating, one must properly calculate the gas temperature, velocity, density, and pressure changes across a normal shock. However, UF_6 is a calorically imperfect gas; i.e., the specific heats at constant pressure and volume, c_p and c_v; the ratio of specific heats, γ; and the enthalpy, H, are nonlinear functions of temperature. Thus, the simple shock jump conditions that assume that γ, c_p, and c_v are constant and that H is a linear function

of the gas temperature, T, cannot be used to predict changes in gas conditions across a strong normal shock in UF_6. Further, errors in calculations of the gas stagnation temperature will also occur unless the nonlinear enthalpy-temperature relationship of UF_6 is used.

The results of a series of calculations of the changes in gas temperature, density, pressure, and Mach number behind a normal shock in UF_6 are presented in this work.

First, the equation of state of UF_6 is reviewed. Then a simple iterative technique is developed for numerically solving the Rankine-Hugoniot equations. Tables of solutions are presented for a wide variety of gas centrifuge speed conditions in Appendix A. A FORTRAN listing of the computer program used to obtain the tables is included in Appendix B.

II. THERMODYNAMIC PROPERTIES OF UF_6 GAS

For conditions of interest in this analysis, UF_6 gas can be treated as an ideal gas. The partition function, Q, for a system of N UF_6 gas molecules can be written as

$$Q = Z^N \quad . \tag{1}$$

Z is the single particle partition function for a UF_6 molecule. The single particle partition function can be written as a product of terms,

$$Z = Z_{trans} \cdot Z_{rot} \cdot Z_{vib} \quad , \tag{2}$$

where Z_{trans}, Z_{rot}, and Z_{vib} are, respectively, the translational, rotational, and vibrational partition functions. The Helmholtz free energy, F, is given by

$$F = -\tau \, \ell n \, Q \quad , \tag{3}$$

where

$$\tau = kT \quad . \tag{4}$$

Here, k is Boltzmann's constant and T is the absolute temperature of the gas. The internal energy, U, is given by

$$U = -\tau^2 \frac{\partial}{\partial \tau} (F/\tau) \quad . \tag{5}$$

It can be shown that

$$U = 3NkT + NkT^2 \frac{\partial}{\partial T} (\ell n \, Z_{vib}) \quad . \tag{6}$$

The single particle vibrational partition function for UF_6 is given by

$$Z_{vib} = \prod_{i=1}^{6} \frac{g_i}{1 - e^{-\theta_i/T}} \quad , \tag{7}$$

where

$$\theta_i = h\nu_i/kT \tag{8}$$

and g_i is the degeneracy of the ith vibrational mode. Values of g_i, θ_i, and ν_i are given in Table I.

TABLE I

FUNDAMENTAL VIBRATIONAL FREQUENCIES, DEGENERACIES, AND CHARACTERISTIC TEMPERATURES FOR GASEOUS UF_6[a]

i	g_i	ν_i (cm^{-1})	θ_i (K)
1	1	667 ± 1	959
2	2	534 ± 1	768
3	3	626 ± 1	900
4	3	186 ± 1	267
5	3	200 ± 1	288
6	3	143 ± 2	205

[a]Data from reference 1.

It can be shown that

$$U = 3NkT + Nk \sum_{i=1}^{6} \frac{g_i \theta_i e^{-\theta_i/T}}{(1 - e^{-\theta_i/T})} \quad . \tag{9}$$

The enthalpy of the system is given by

$$H = U + pV = 4NkT + Nk \sum_{i=1}^{6} \frac{g_i \theta_i e^{-\theta_i/T}}{(1 - e^{-\theta_i/T})} \quad . \tag{10}$$

Here, p is the gas pressure.

The internal energy and enthalpy per unit mass, u and h, respectively, are given by

$$u = 3RT + R \sum_{i=1}^{6} \frac{g_i \theta_i e^{-\theta_i/T}}{(1 - e^{-\theta_i/T})} \tag{11}$$

and

$$h = 4RT + R \sum_{i=1}^{6} \frac{g_i \theta_i e^{-\theta_i/T}}{(1 - e^{-\theta_i/T})} \quad . \tag{12}$$

The specific heats at constant volume and constant pressure, c_v and c_p, respectively, are given by

$$c_v = \frac{\partial u}{\partial T} = 3R + R \sum_{i=1}^{6} \frac{g_i x_i^2 e^{-x_i}}{(1 - e^{-x_i})^2} \tag{13}$$

and

$$c_p = \frac{\partial u}{\partial T} + R = 4R + R \sum_{i=1}^{6} \frac{g_i x_i^2 e^{-x_i}}{(1 - e^{-x_i})^2} \quad , \tag{14}$$

where

$$x_i = \theta_i / T \quad . \tag{15}$$

The ratio of specific heats, γ, is given by

$$\gamma = \frac{c_p}{c_v} = \frac{4R + R \sum_{i=1}^{6} \frac{g_i x_i^2 e^{-x_i}}{(1 - e^{-x_i})^2}}{3R + R \sum_{i=1}^{6} \frac{g_i x_i^2 e^{-x_i}}{(1 - e^{-x_i})^2}} \quad . \tag{16}$$

The quantity $\gamma - 1$, which is important for calculating heating effects, is given by

$$\gamma - 1 = \frac{1}{3 + \sum_{i=1}^{6} \frac{g_i x_i^2 e^{-x_i}}{(1 - e^{-x_i})^2}} \quad . \tag{17}$$

At high temperatures ($x_i \ll 1$), the quantity $\gamma - 1$ approaches a limiting value of 1/18 or 0.0555556.

We will define a dimensionless enthalpy function, $\tilde{h}$, by the relationship

$$h = \tilde{h} R T \quad . \tag{18}$$

It can be shown that

$$\tilde{h} = 4 + \sum_{i=1}^{6} \frac{g_i x_i e^{-x_i}}{(1 - e^{-x_i})} \quad . \tag{19}$$

In the limit of infinite temperature, $\tilde{h}$ approaches a value of 19.0. Values of γ and $\tilde{h}$ are shown in Table II for various values of the absolute temperature.

TABLE II
VALUES OF γ AND DIMENSIONLESS ENTHALPY FOR UF_6
AT VARIOUS TEMPERATURES

T (K)	γ	$\tilde{h}(T)$
100.	1.11756	6.0296
150.	1.09282	7.5928
200.	1.08052	8.8527
250.	1.07314	9.8972
300.	1.06845	10.7751
350.	1.06535	11.5175
400.	1.06322	12.1492
450.	1.06171	12.6905
500.	1.06059	13.1576
550	1.05975	13.5637
600.	1.05910	13.9194
650.	1.05859	14.2330
700.	1.05818	14.5114
750.	1.05785	14.7598
800.	1.05758	14.9828
850.	1.05735	15.1841
900.	1.05716	15.3664
950.	1.05700	15.5324
1000.	1.05686	15.6842
1050.	1.05674	15.8233
1100.	1.05663	15.9514
1150.	1.05654	16.0697
1200.	1.05646	16.1793
1250.	1.05639	16.2810
1300.	1.05633	16.3757
1350.	1.05627	16.4640
1400.	1.05622	16.5467
1450.	1.05618	16.6242
1500.	1.05614	16.6969
1550.	1.05610	16.7654
1600.	1.05607	16.8299

Fisher[2] recently calculated values of γ and enthalpy for UF_6 using a numerical procedure to evaluate the enthalpy using the relationship

$$h = \int_0^T dT\, c_p(T) \quad . \tag{20}$$

Comparison of our results with his work gave essentially identical results for the temperature range between 100 and 1600 K.

III. NORMAL SHOCK RELATIONSHIPS FOR UF_6 GAS

Consider a system in which a stationary normal shock separates the high-speed region from the low-speed region. The three conservation equations for mass, momentum, and energy are given by*

$$\rho_1 u_1 = \rho_2 u_2 \quad , \tag{21}$$

$$p_1 + \rho_1 u_1^2 = p_2 + \rho_2 u_2^2 \quad , \tag{22}$$

and

$$h_1 + \frac{1}{2} u_1^2 = h_2 + \frac{1}{2} u_2^2 \quad . \tag{23}$$

Here, p_1, ρ_1, u_1, and h_1 are the gas pressure, density, velocity, and specific enthalpy in the high-speed, low-pressure region upstream from the shock. The quantities p_2, ρ_2, u_2, and h_2 are the pressure, density, velocity, and specific enthalpy in the high-pressure subsonic region downstream from the normal shock.

The momentum equation, Eq. (22), can be rewritten in the form

$$\frac{p_2}{p_1} - 1 = \frac{\rho_1 u_1}{p_1} (u_1 - u_2) \quad . \tag{24}$$

Using the equation of state

$$p = \rho RT \tag{25}$$

*We have chosen a coordinate system in which the shock velocity is zero; thus, u_1 and u_2 are gas velocities relative to the motion of the shock, i.e., relative to the velocity of the stagnation point.

and Eq. (21), Eq. (24) reduces to

$$\frac{u_1 T_2}{u_2 T_1} - 1 = \frac{u_1^2}{RT_1}\left(1 - \frac{u_2}{u_1}\right) \quad . \tag{26}$$

Here, T_1 and T_2 are, respectively, the gas temperatures upstream and downstream from the normal shock. Now define the dimensionless variables

$$U = u_2/\sqrt{RT_1} \quad , \tag{27}$$

$$T = T_2/T_1 \quad , \tag{28}$$

$$\tilde{M}_1 = u_1/\sqrt{RT_1} \quad , \tag{29}$$

$$\tilde{h} = h/RT \quad , \tag{30}$$

and

$$P = p_2/p_1 \quad . \tag{31}$$

Then,

$$\frac{T\tilde{M}}{U} - 1 = \tilde{M}^2\left(1 - \frac{U}{\tilde{M}}\right) \tag{32}$$

and

$$\tilde{h}_1 + \frac{1}{2}\tilde{M}^2 = \tilde{h}_2 T + \frac{1}{2}U^2 \quad . \tag{33}$$

Equations (32) and (33) can be solved by an iterative procedure. Assume that after the nth iterative step, values T^n and U^n are known. Then, we can determine corrected values,

$$T^{n+1} = T^n + \delta T \quad , \tag{34}$$

$$U^{n+1} = U^n + \delta U \quad , \tag{35}$$

and

$$T_2^{n+1} = T_2^n + T_1 \delta T \quad . \tag{36}$$

Inserting these expressions into Eqs. (32) and (33), keeping only linear correction terms, we obtain

$$\frac{T^n \tilde{M}}{U^n} + \frac{\delta T \tilde{M}}{U^n} - \frac{T^n \tilde{M}}{(U^n)^2} \delta U - 1 = \tilde{M}^2 \left(1 - \frac{U^n}{\tilde{M}} - \frac{\delta U}{\tilde{M}} \right) \tag{37}$$

and

$$\tilde{h}_1 + \frac{1}{2} \tilde{M}^2 = \frac{\gamma}{\gamma - 1} \delta T + \frac{1}{2} (U^n)^2 + U^n \delta U + \tilde{h}_2 T^n \quad . \tag{38}$$

Collecting terms, we obtain

$$f = \frac{\gamma}{\gamma - 1} \delta T + U^n \delta U \tag{39}$$

and

$$g = - \frac{\tilde{M}}{U^n} \delta T + \left(\frac{T^n \tilde{M}}{(U^n)^2} - \tilde{M} \right) \delta U \quad . \tag{40}$$

Here,

$$g = \frac{T^n \tilde{M}}{U^n} - 1 - \tilde{M}^2 \left(1 - \frac{U^n}{\tilde{M}} \right) \tag{41}$$

and

$$f = \tilde{h}_1 + \frac{1}{2} \tilde{M}^2 - \tilde{h}_2 T^n - \frac{1}{2} (U^n)^2 \quad , \tag{42}$$

where

$$\tilde{h}_2 = \tilde{h}(T_2) \quad . \tag{43}$$

Solving Eqs. (39) and (40), we find that

$$\delta T = \frac{f\left(\frac{T^n}{(U^n)^2} - 1\right) - g\left(\frac{U^n}{\tilde{M}}\right)}{\left(\frac{\gamma}{\gamma - 1}\right)\left(\frac{T^n}{(U^n)^2} - 1\right) + 1} \tag{44}$$

and

$$\delta U = \frac{\left(\frac{\gamma}{\gamma - 1}\right)\frac{g}{\tilde{M}} + \frac{f}{U^n}}{\left(\frac{\gamma}{\gamma - 1}\right)\left(\frac{T^n}{(U^n)^2} - 1\right) + 1} \quad . \tag{45}$$

For strong shocks, $U^n \ll 1$, and we obtain the following simplified expressions:

$$\delta T = \left(\frac{\gamma - 1}{\gamma}\right)\left[f - g\,\frac{(U^n)^3}{\tilde{M}T^n}\right] \tag{46}$$

and

$$\delta U = \frac{g(U_2^n)^2}{\tilde{M}T^n} + \left(\frac{\gamma - 1}{\gamma}\right)\frac{f\,U_2^n}{T^n} \quad . \tag{47}$$

An initial guess for the solution can be obtained by first assuming that $\gamma = \gamma_1 =$ constant, where γ_1 is the ratio of specific heats of the gas upstream from the shock. Then, first guesses for U and T, U^1 and T^1 can be obtained. We find that

$$U^1 = \tilde{M}\left(\frac{\gamma_1 - 1 + 2\gamma_1/\tilde{M}^2}{\gamma_1 + 1}\right) \tag{48}$$

and that

$$T^1 = \frac{[2\tilde{M}^2 - (\gamma_1 - 1)][\gamma_1 - 1 + 2\gamma_1/\tilde{M}^2]}{(\gamma_1 + 1)^2} \quad . \tag{49}$$

After U and T are determined by iteration, u_2 and T_2 can be found using the relations

$$T_2 = T_1 T \tag{50}$$

and

$$u_2 = U\sqrt{RT_1} \quad . \tag{51}$$

Also, ρ_2 and p_2 can be obtained using the relations

$$\rho_2 = \rho_1 u_1/u_2 = \rho_1 \tilde{M}/U \tag{52}$$

and

$$p_2 = \rho_2 R T_2 \quad . \tag{53}$$

A useful dimensionless quantity for assessing the pressure change across the normal shock is the quantity $\tilde{P}_2$, defined by the relationship

$$\tilde{P}_2 = p_2/\rho_1 u_1^2 \quad . \tag{54}$$

It can be shown that

$$\tilde{P}_2 = T/\tilde{M}U \quad . \tag{55}$$

$\tilde{P}_2$ is very close to unity for strong normal shocks in UF_6.

The Mach number downstream from the normal shock, M_2, is given by

$$M_2 = U/\sqrt{\gamma_2 T} \quad . \tag{56}$$

For strong shocks, the stagnation temperature, T_0, is only slightly higher than T_2, and γ can be treated as a constant in the temperature range between T_2 and T_0. Define ΔT by the relationship

$$\Delta T = T_0 - T_2 \quad . \tag{57}$$

The stagnation temperature can be determined from the relationship

$$h_2(T_2) + \frac{1}{2} u^2 = h(T_2 + \Delta T) \quad . \tag{58}$$

Since T_2 and T_0 are very close in value, we can evaluate γ at $T = T_2$ and neglect the variation of γ with temperature. We can write

$$h_2(T_2) + \frac{1}{2} u_2^2 \cong h_2(T_2) + R \frac{\gamma_2}{\gamma_2 - 1} \Delta T \quad . \tag{59}$$

Here, $\gamma_2 = \gamma(T_2)$. From this we obtain

$$\Delta T = \frac{(\gamma_2 - 1)u_2^2}{2\gamma_2 R} \quad . \tag{60}$$

Thus,

$$T_0 = T_2 + \frac{(\gamma_2 - 1)u_2^2}{2\gamma_2 R} \quad . \tag{61}$$

We can rewrite this as

$$T_0 = T_2 \left(1 + \frac{\gamma_2 - 1}{\gamma_2} M_2^2\right) \quad . \tag{62}$$

We can also determine the stagnation pressure behind the normal shock, p_0, using the relationship

$$\frac{p_0}{p_2} = \left(\frac{\rho_0}{\rho_2}\right)^{\gamma_2} \quad , \tag{63}$$

where, again, γ_2 is assumed to be a constant. Using the equation of state, Eq. (63) can be rewritten in the form

$$\frac{p_0}{p_2} = \left(\frac{T_0}{T_2}\right)^{\frac{\gamma_2}{\gamma_2 - 1}} = \left[1 + \left(\frac{\gamma_2 - 1}{2}\right) M_2^2\right]^{\frac{\gamma_2}{\gamma_2 - 1}} \quad . \tag{64}$$

A useful dimensionless stagnation pressure ratio, $\tilde{P}_0$, is defined by the relation ship

$$\tilde{P}_0 = p_0/\rho_1 u_1^2 \quad . \tag{65}$$

It can be shown that

$$\tilde{P}_0 = \frac{T}{\tilde{M}U}\left[1 + \left(\frac{\gamma - 1}{2}\right)M_2^2\right]^{\frac{\gamma}{\gamma - 1}} \quad . \tag{66}$$

Generally, $\tilde{P}_0$ is very close to unity for UF_6 where the value of M_1 is large.

IV. TABULAR LISTINGS OF NORMAL SHOCK SOLUTIONS FOR UF_6 AT VARIOUS SPEED CONDITIONS

Tables of solutions for conditions behind a normal shock are given in Appendix A. Each table gives listings for conditions behind a normal shock for a specified value of the upstream gas velocity, T_1, and the radial location of the stagnation point, X, expressed by the dimensionless distance.

$$X = A^2(r_s^2/a^2 - 1) \quad ,$$

where r_s is the radial location of the stagnation point and a is the centrifuge rotor inside radius. A^2 is the gas stratification parameter, given by

$$A^2 = V_w^2/2RT_1 \quad .$$

Tables of values are given in Appendix A for values of T_1 ranging from 290 to 330 K, with values of X ranging from 4 to 10. Solutions are given for isothermal wheel-flow temperature and velocity profiles. In each table, solutions are given for V_w values ranging from 350 m/s to velocities where the stagnation temperature is equal to or less than 1600 K. Each table contains 12 columns. The column entries are explained below.

Column No.	Variable	Symbol
1	Rotor wall speed (m/s)	V_w
2	Stratification parameter	A^2
3	Dimensionless radius	r_s/a
4	Upstream Mach number	M_1
5	Temperature behind shock (K)	T_2
6	Mach number behind shock	M_2
7	Dimensionless pressure behind shock	$\tilde{P}_2$ (Eq. 54)
8	Density ratio	ρ_2/ρ_1
9	Ratio of specific heats behind shock	$\gamma(T_2)$
10	Stagnation temperature (K)	T_0
11	Dimensionless stagnation pressure	$\tilde{P}_0$ (Eq. 65)
12	Dimensionless enthalpy function	$\tilde{h}(T_2)$ (Eq. 30)

A FORTRAN listing of the computer program used to create the tables in Appendix A is included in Appendix B.

REFERENCES

1. R. S. McDowell, L. B. Asprey, and R. T. Paine, J. Chem. Phys. 61, 3571 (1974).

2. S. S. Fisher, "Specific Heats and Enthalpies for UF_6," University of Virginia, School of Engineering and Applied Science Report No. UVA-ER-760-820, July 1982.

APPENDIX A

NORMAL SHOCK AND STAGNATION POINT PARAMETERS FOR UF_6 IN A GAS CENTRIFUGE ENVIRONMENT

$X = 4 \qquad T_1 = 290$

V_w	A^2	r_s/a	M_1	T_2	M_2	$\tilde{P}_2$	ρ_2/ρ_1	$\gamma(T_2)$	T_0	$\tilde{P}_0$	$\tilde{h}(T_2)$
350.	8.94	.7434	3.040	378.	.3647	.9646	7.32	1.0641	379.	1.0308	11.8773
375.	10.26	.7812	3.423	401.	.3335	.9656	8.76	1.0632	402.	1.0208	12.1567
400.	11.68	.8109	3.790	425.	.3101	.9664	10.13	1.0624	426.	1.0139	12.4299
425.	13.18	.8346	4.145	451.	.2919	.9670	11.43	1.0617	452.	1.0090	12.6961
450.	14.78	.8540	4.491	477.	.2773	.9675	12.67	1.0611	478.	1.0053	12.9546
475.	16.47	.8701	4.829	505.	.2652	.9679	13.85	1.0605	506.	1.0025	13.2047
500.	18.25	.8836	5.163	535.	.2552	.9683	14.96	1.0600	536.	1.0003	13.4460
525.	20.12	.8951	5.491	565.	.2467	.9686	16.02	1.0595	566.	.9985	13.6782
550.	22.08	.9049	5.816	597.	.2393	.9689	17.01	1.0591	598.	.9970	13.9011
575.	24.13	.9134	6.137	630.	.2330	.9691	17.95	1.0588	631.	.9958	14.1147
600.	26.28	.9208	6.455	665.	.2274	.9694	18.84	1.0585	666.	.9947	14.3190
625.	28.51	.9272	6.771	701.	.2226	.9696	19.68	1.0582	701.	.9939	14.5142
650.	30.84	.9329	7.086	738.	.2182	.9698	20.47	1.0579	739.	.9931	14.7005
675.	33.26	.9379	7.398	776.	.2143	.9700	21.22	1.0577	777.	.9925	14.8781
700.	35.77	.9424	7.708	815.	.2109	.9701	21.92	1.0575	816.	.9919	15.0473
725.	38.37	.9464	8.018	856.	.2078	.9703	22.58	1.0573	857.	.9914	15.2084
750.	41.06	.9500	8.326	899.	.2049	.9704	23.21	1.0572	900.	.9910	15.3617
775.	43.84	.9533	8.633	942.	.2024	.9705	23.80	1.0570	943.	.9906	15.5075
800.	46.72	.9562	8.939	987.	.2000	.9707	24.36	1.0569	988.	.9903	15.6463
825.	49.68	.9589	9.244	1033.	.1979	.9708	24.89	1.0568	1034.	.9900	15.7782
850.	52.74	.9613	9.548	1081.	.1959	.9709	25.39	1.0567	1082.	.9897	15.9036
875.	55.89	.9635	9.852	1130.	.1941	.9710	25.86	1.0566	1131.	.9894	16.0229
900.	59.13	.9656	10.154	1180.	.1925	.9711	26.31	1.0565	1181.	.9892	16.1364
925.	62.46	.9674	10.457	1232.	.1909	.9711	26.74	1.0564	1233.	.9890	16.2443
950.	65.88	.9692	10.758	1284.	.1895	.9712	27.14	1.0563	1286.	.9888	16.3470
975.	69.39	.9707	11.060	1339.	.1882	.9713	27.52	1.0563	1340.	.9887	16.4447
1000.	72.99	.9722	11.360	1394.	.1870	.9714	27.88	1.0562	1396.	.9885	16.5377
1025.	76.69	.9736	11.660	1451.	.1858	.9714	28.22	1.0562	1453.	.9884	16.6262
1050.	80.48	.9748	11.960	1510.	.1848	.9715	28.54	1.0561	1511.	.9882	16.7106
1075.	84.35	.9760	12.260	1569.	.1838	.9716	28.85	1.0561	1571.	.9881	16.7909

X = 5 T_1 = 290

V_w	A^2	r_s/a	M_1	T_2	M_2	$\tilde{P}_2$	ρ_2/ρ_1	$\gamma(T_2)$	T_0	$\tilde{P}_0$	$\tilde{h}(T_2)$
350.	8.94	.6640	2.715	360.	.3989	.9636	6.12	1.0649	361.	1.0432	11.6481
375.	10.26	.7162	3.138	383.	.3559	.9649	7.69	1.0639	385.	1.0279	11.9478
400.	11.68	.7562	3.535	408.	.3258	.9659	9.18	1.0630	409.	1.0184	12.2392
425.	13.18	.7879	3.913	434.	.3034	.9666	10.58	1.0622	435.	1.0121	12.5219
450.	14.78	.8135	4.277	461.	.2860	.9672	11.91	1.0614	462.	1.0075	12.7954
475.	16.47	.8345	4.632	489.	.2720	.9676	13.17	1.0608	490.	1.0041	13.0592
500.	18.25	.8521	4.978	518.	.2606	.9681	14.35	1.0603	519.	1.0014	13.3130
525.	20.12	.8669	5.318	549.	.2510	.9684	15.47	1.0598	550.	.9994	13.5566
550.	22.08	.8795	5.652	581.	.2429	.9687	16.52	1.0593	582.	.9977	13.7899
575.	24.13	.8904	5.982	614.	.2359	.9690	17.51	1.0589	615.	.9963	14.0130
600.	26.28	.8998	6.309	649.	.2299	.9693	18.44	1.0586	650.	.9952	14.2259
625.	28.51	.9081	6.632	685.	.2246	.9695	19.31	1.0583	686.	.9942	14.4290
650.	30.84	.9154	6.952	722.	.2200	.9697	20.14	1.0580	723.	.9934	14.6224
675.	33.26	.9218	7.270	760.	.2159	.9699	20.92	1.0578	761.	.9927	14.8065
700.	35.77	.9275	7.586	800.	.2122	.9701	21.65	1.0576	801.	.9921	14.9816
725.	38.37	.9326	7.900	841.	.2089	.9702	22.34	1.0574	842.	.9916	15.1480
750.	41.06	.9371	8.213	883.	.2059	.9704	22.98	1.0572	884.	.9911	15.3062
775.	43.84	.9413	8.524	927.	.2032	.9705	23.60	1.0571	928.	.9907	15.4565
800.	46.72	.9450	8.834	971.	.2008	.9706	24.17	1.0569	973.	.9904	15.5993
825.	49.68	.9483	9.142	1018.	.1986	.9707	24.72	1.0568	1019.	.9901	15.7349
850.	52.74	.9514	9.450	1065.	.1965	.9708	25.23	1.0567	1066.	.9898	15.8637
875.	55.89	.9542	9.756	1114.	.1947	.9709	25.72	1.0566	1115.	.9895	15.9860
900.	59.13	.9568	10.062	1164.	.1930	.9710	26.18	1.0565	1166.	.9893	16.1023
925.	62.46	.9591	10.367	1216.	.1914	.9711	26.61	1.0564	1217.	.9891	16.2128
950.	65.88	.9613	10.671	1269.	.1899	.9712	27.02	1.0564	1270.	.9889	16.3178
975.	69.39	.9633	10.975	1323.	.1886	.9713	27.41	1.0563	1325.	.9887	16.4176
1000.	72.99	.9651	11.278	1379.	.1873	.9714	27.78	1.0562	1380.	.9885	16.5126
1025.	76.69	.9669	11.580	1436.	.1861	.9714	28.13	1.0562	1437.	.9884	16.6029
1050.	80.48	.9684	11.882	1494.	.1851	.9715	28.46	1.0561	1496.	.9883	16.6889
1075.	84.35	.9699	12.183	1554.	.1840	.9715	28.77	1.0561	1555.	.9881	16.7707

X = 6 T_1 = 290

V_w	A^2	r_s/a	M_1	T_2	M_2	$\tilde{P}_2$	ρ_2/ρ_1	$\gamma(T_2)$	T_0	$\tilde{P}_0$	$\tilde{h}(T_2)$
350.	8.94	.5736	2.346	342.	.4505	.9619	4.81	1.0658	344.	1.0643	11.4001
375.	10.26	.6446	2.824	365.	.3865	.9640	6.52	1.0646	367.	1.0385	11.7240
400.	11.68	.6973	3.259	390.	.3459	.9652	8.14	1.0636	392.	1.0246	12.0360
425.	13.18	.7382	3.666	417.	.3174	.9661	9.67	1.0627	418.	1.0160	12.3371
450.	14.78	.7708	4.053	444.	.2963	.9668	11.10	1.0619	445.	1.0101	12.6271
475.	16.47	.7973	4.425	472.	.2798	.9674	12.44	1.0612	473.	1.0060	12.9059
500.	18.25	.8193	4.787	502.	.2666	.9678	13.70	1.0606	503.	1.0028	13.1733
525.	20.12	.8377	5.139	533.	.2558	.9682	14.89	1.0600	534.	1.0004	13.4292
550.	22.08	.8534	5.484	565.	.2468	.9686	16.00	1.0595	566.	.9985	13.6736
575.	24.13	.8668	5.824	598.	.2392	.9689	17.04	1.0591	599.	.9970	13.9068
600.	26.28	.8784	6.159	633.	.2326	.9691	18.01	1.0588	634.	.9957	14.1290
625.	28.51	.8886	6.489	669.	.2269	.9694	18.93	1.0584	670.	.9946	14.3404
650.	30.84	.8975	6.816	706.	.2219	.9696	19.79	1.0581	707.	.9938	14.5414
675.	33.26	.9053	7.140	744.	.2175	.9698	20.60	1.0579	745.	.9930	14.7323
700.	35.77	.9123	7.462	784.	.2136	.9700	21.36	1.0577	785.	.9924	14.9136
725.	38.37	.9185	7.781	825.	.2101	.9702	22.08	1.0575	826.	.9918	15.0857
750.	41.06	.9241	8.098	867.	.2070	.9703	22.75	1.0573	868.	.9913	15.2490
775.	43.84	.9291	8.413	911.	.2042	.9704	23.38	1.0571	912.	.9909	15.4039
800.	46.72	.9336	8.727	956.	.2016	.9706	23.98	1.0570	957.	.9905	15.5509
825.	49.68	.9377	9.039	1002.	.1993	.9707	24.54	1.0569	1003.	.9902	15.6904
850.	52.74	.9414	9.350	1050.	.1972	.9708	25.07	1.0567	1051.	.9899	15.8227
875.	55.89	.9448	9.660	1099.	.1952	.9709	25.57	1.0566	1100.	.9896	15.9482
900.	59.13	.9479	9.969	1149.	.1935	.9710	26.04	1.0565	1150.	.9893	16.0674
925.	62.46	.9508	10.276	1201.	.1918	.9711	26.49	1.0565	1202.	.9891	16.1805
950.	65.88	.9534	10.583	1254.	.1903	.9712	26.91	1.0564	1255.	.9889	16.2879
975.	69.39	.9558	10.889	1308.	.1889	.9713	27.30	1.0563	1309.	.9887	16.3900
1000.	72.99	.9580	11.194	1364.	.1876	.9713	27.68	1.0563	1365.	.9886	16.4869
1025.	76.69	.9601	11.499	1421.	.1864	.9714	28.04	1.0562	1422.	.9884	16.5791
1050.	80.48	.9620	11.803	1479.	.1853	.9715	28.38	1.0562	1480.	.9883	16.6668
1075.	84.35	.9638	12.106	1539.	.1843	.9715	28.70	1.0561	1540.	.9882	16.7502

X = 7 T_1 = 290

V_w	A^2	r_s/a	M_1	T_2	M_2	$\tilde{P}_2$	ρ_2/ρ_1	$\gamma(T_2)$	T_0	$\tilde{P}_0$	$\tilde{h}(T_2)$
350.	8.94	.4660	1.906	323.	.5405	.9586	3.35	1.0669	326.	1.1087	11.1267
375.	10.26	.5640	2.471	347.	.4311	.9625	5.25	1.0655	349.	1.0560	11.4826
400.	11.68	.6330	2.958	373.	.3726	.9644	7.02	1.0643	374.	1.0335	11.8187
425.	13.18	.6849	3.401	399.	.3351	.9656	8.68	1.0633	401.	1.0212	12.1404
450.	14.78	.7256	3.815	427.	.3087	.9664	10.22	1.0624	428.	1.0135	12.4487
475.	16.47	.7583	4.209	455.	.2890	.9671	11.66	1.0616	456.	1.0083	12.7439
500.	18.25	.7851	4.587	485.	.2736	.9676	13.01	1.0609	486.	1.0045	13.0261
525.	20.12	.8075	4.954	516.	.2613	.9680	14.27	1.0603	517.	1.0016	13.2953
550.	22.08	.8264	5.311	548.	.2512	.9684	15.44	1.0598	549.	.9994	13.5519
575.	24.13	.8426	5.661	582.	.2427	.9687	16.54	1.0593	583.	.9977	13.7959
600.	26.28	.8565	6.005	617.	.2355	.9690	17.57	1.0589	618.	.9963	14.0279
625.	28.51	.8686	6.344	653.	.2293	.9693	18.53	1.0586	654.	.9951	14.2482
650.	30.84	.8792	6.678	690.	.2239	.9695	19.43	1.0583	691.	.9941	14.4572
675.	33.26	.8886	7.008	728.	.2192	.9697	20.28	1.0580	729.	.9933	14.6554
700.	35.77	.8968	7.335	768.	.2151	.9699	21.07	1.0577	769.	.9926	14.8433
725.	38.37	.9042	7.660	809.	.2114	.9701	21.81	1.0575	810.	.9920	15.0213
750.	41.06	.9108	7.982	852.	.2081	.9703	22.51	1.0573	853.	.9915	15.1900
775.	43.84	.9167	8.301	895.	.2051	.9704	23.16	1.0572	896.	.9910	15.3498
800.	46.72	.9220	8.619	940.	.2025	.9705	23.78	1.0570	941.	.9906	15.5012
825.	49.68	.9269	8.935	987.	.2001	.9707	24.36	1.0569	988.	.9903	15.6446
850.	52.74	.9313	9.250	1034.	.1978	.9708	24.90	1.0568	1035.	.9900	15.7806
875.	55.89	.9353	9.563	1083.	.1958	.9709	25.42	1.0567	1084.	.9897	15.9094
900.	59.13	.9389	9.874	1133.	.1940	.9710	25.90	1.0566	1135.	.9894	16.0316
925.	62.46	.9423	10.185	1185.	.1923	.9711	26.36	1.0565	1186.	.9892	16.1475
950.	65.88	.9454	10.494	1238.	.1908	.9712	26.79	1.0564	1239.	.9890	16.2574
975.	69.39	.9482	10.803	1292.	.1893	.9712	27.19	1.0563	1294.	.9888	16.3617
1000.	72.99	.9508	11.110	1348.	.1880	.9713	27.58	1.0563	1349.	.9886	16.4608
1025.	76.69	.9533	11.417	1405.	.1868	.9714	27.94	1.0562	1406.	.9885	16.5549
1050.	80.48	.9555	11.723	1464.	.1856	.9715	28.29	1.0562	1465.	.9883	16.6443
1075.	84.35	.9576	12.029	1523.	.1846	.9715	28.62	1.0561	1525.	.9882	16.7293
1100.	88.32	.9596	12.334	1584.	.1836	.9716	28.93	1.0561	1586.	.9881	16.8101

X = 8 T_1 = 290

V_w	A^2	r_s/a	M_1	T_2	M_2	$\tilde{P}_2$	ρ_2/ρ_1	$\gamma(T_2)$	T_0	$\tilde{P}_0$	$\tilde{h}(T_2)$
350.	8.94	.3245	1.327	302.	.7575	.9490	1.72	1.0683	307.	1.2611	10.8012
375.	10.26	.4697	2.058	329.	.5047	.9600	3.83	1.0665	331.	1.0898	11.2185
400.	11.68	.5613	2.623	355.	.4103	.9632	5.79	1.0651	357.	1.0475	11.5850
425.	13.18	.6271	3.114	382.	.3580	.9649	7.60	1.0639	383.	1.0286	11.9305
450.	14.78	.6773	3.562	410.	.3240	.9659	9.28	1.0629	411.	1.0179	12.2593
475.	16.47	.7171	3.980	438.	.2999	.9667	10.83	1.0620	440.	1.0111	12.5726
500.	18.25	.7494	4.378	468.	.2817	.9673	12.27	1.0613	470.	1.0064	12.8709
525.	20.12	.7761	4.761	500.	.2675	.9678	13.61	1.0606	501.	1.0030	13.1546
550.	22.08	.7986	5.132	532.	.2560	.9682	14.86	1.0600	533.	1.0005	13.4242
575.	24.13	.8176	5.493	566.	.2466	.9686	16.02	1.0595	567.	.9985	13.6799
600.	26.28	.8340	5.847	600.	.2387	.9689	17.11	1.0591	601.	.9969	13.9224
625.	28.51	.8482	6.194	637.	.2319	.9692	18.12	1.0587	637.	.9956	14.1522
650.	30.84	.8606	6.536	674.	.2261	.9694	19.06	1.0584	675.	.9945	14.3697
675.	33.26	.8715	6.874	712.	.2211	.9696	19.94	1.0581	713.	.9936	14.5756
700.	35.77	.8811	7.207	752.	.2167	.9698	20.76	1.0578	753.	.9929	14.7704
725.	38.37	.8897	7.537	793.	.2128	.9700	21.53	1.0576	794.	.9922	14.9547
750.	41.06	.8973	7.864	836.	.2093	.9702	22.26	1.0574	837.	.9917	15.1290
775.	43.84	.9042	8.188	880.	.2062	.9703	22.93	1.0572	881.	.9912	15.2940
800.	46.72	.9104	8.510	925.	.2034	.9705	23.57	1.0571	926.	.9908	15.4500
825.	49.68	.9160	8.830	971.	.2008	.9706	24.17	1.0569	972.	.9904	15.5976
850.	52.74	.9210	9.148	1019.	.1985	.9707	24.73	1.0568	1020.	.9900	15.7374
875.	55.89	.9257	9.464	1068.	.1965	.9708	25.26	1.0567	1069.	.9898	15.8697
900.	59.13	.9299	9.779	1118.	.1945	.9710	25.75	1.0566	1119.	.9895	15.9949
925.	62.46	.9338	10.093	1170.	.1928	.9710	26.22	1.0565	1171.	.9893	16.1137
950.	65.88	.9373	10.405	1223.	.1912	.9711	26.66	1.0564	1224.	.9890	16.2262
975.	69.39	.9406	10.716	1277.	.1897	.9712	27.08	1.0564	1278.	.9888	16.3328
1000.	72.99	.9436	11.026	1333.	.1883	.9713	27.48	1.0563	1334.	.9887	16.4340
1025.	76.69	.9464	11.335	1390.	.1871	.9714	27.85	1.0562	1391.	.9885	16.5301
1050.	80.48	.9490	11.643	1448.	.1859	.9714	28.20	1.0562	1449.	.9884	16.6213
1075.	84.35	.9514	11.951	1508.	.1848	.9715	28.53	1.0561	1509.	.9882	16.7079
1100.	88.32	.9536	12.257	1569.	.1838	.9716	28.85	1.0561	1570.	.9881	16.7903

X = 9 T_1 = 290

V_w	A^2	r_s/a	M_1	T_2	M_2	$\tilde{P}_2$	ρ_2/ρ_1	$\gamma(T_2)$	T_0	$\tilde{P}_0$	$\tilde{h}(T_2)$
375.	10.26	.3510	1.538	309.	.6584	.9538	2.26	1.0678	313.	1.1829	10.9168
400.	11.68	.4790	2.239	337.	.4690	.9612	4.44	1.0661	339.	1.0726	11.3312
425.	13.18	.5634	2.798	364.	.3894	.9639	6.43	1.0647	366.	1.0396	11.7054
450.	14.78	.6254	3.288	392.	.3436	.9653	8.25	1.0635	394.	1.0239	12.0574
475.	16.47	.6734	3.738	421.	.3131	.9663	9.93	1.0625	423.	1.0148	12.3909
500.	18.25	.7119	4.159	452.	.2912	.9670	11.49	1.0617	453.	1.0088	12.7070
525.	20.12	.7434	4.561	483.	.2746	.9676	12.92	1.0609	484.	1.0047	13.0065
550.	22.08	.7697	4.946	516.	.2615	.9680	14.24	1.0603	517.	1.0017	13.2901
575.	24.13	.7919	5.321	549.	.2509	.9684	15.47	1.0598	550.	.9994	13.5585
600.	26.28	.8109	5.685	584.	.2422	.9688	16.62	1.0593	585.	.9976	13.8122
625.	28.51	.8273	6.042	620.	.2348	.9691	17.68	1.0589	621.	.9961	14.0521
650.	30.84	.8415	6.392	658.	.2285	.9693	18.67	1.0585	659.	.9949	14.2787
675.	33.26	.8540	6.736	696.	.2231	.9696	19.59	1.0582	697.	.9940	14.4928
700.	35.77	.8651	7.076	736.	.2183	.9698	20.45	1.0579	737.	.9931	14.6949
725.	38.37	.8749	7.412	778.	.2142	.9700	21.25	1.0577	779.	.9925	14.8858
750.	41.06	.8836	7.744	820.	.2105	.9701	22.00	1.0575	821.	.9919	15.0661
775.	43.84	.8915	8.073	864.	.2072	.9703	22.70	1.0573	865.	.9913	15.2364
800.	46.72	.8985	8.399	909.	.2043	.9704	23.36	1.0571	910.	.9909	15.3972
825.	49.68	.9049	8.723	955.	.2016	.9706	23.97	1.0570	956.	.9905	15.5492
850.	52.74	.9107	9.045	1003.	.1993	.9707	24.55	1.0568	1004.	.9902	15.6929
875.	55.89	.9159	9.365	1052.	.1971	.9708	25.09	1.0567	1053.	.9898	15.8288
900.	59.13	.9208	9.683	1102.	.1951	.9709	25.61	1.0566	1104.	.9896	15.9574
925.	62.46	.9251	9.999	1154.	.1933	.9710	26.09	1.0565	1155.	.9893	16.0790
950.	65.88	.9292	10.315	1207.	.1916	.9711	26.54	1.0565	1208.	.9891	16.1942
975.	69.39	.9329	10.628	1261.	.1901	.9712	26.97	1.0564	1263.	.9889	16.3033
1000.	72.99	.9363	10.941	1317.	.1887	.9713	27.37	1.0563	1318.	.9887	16.4067
1025.	76.69	.9395	11.252	1374.	.1874	.9714	27.75	1.0562	1376.	.9886	16.5048
1050.	80.48	.9424	11.563	1433.	.1862	.9714	28.11	1.0562	1434.	.9884	16.5979
1075.	84.35	.9451	11.872	1492.	.1851	.9715	28.45	1.0561	1494.	.9883	16.6862
1100.	88.32	.9477	12.181	1554.	.1840	.9715	28.77	1.0561	1555.	.9881	16.7701

X = 10 T_1 = 290

V_w	A^2	r_s/a	M_1	T_2	M_2	$\tilde{P}_2$	ρ_2/ρ_1	$\gamma(T_2)$	T_0	$\tilde{P}_0$	$\tilde{h}(T_2)$
400.	11.68	.3792	1.772	317.	.5774	.9572	2.94	1.0672	321.	1.1298	11.0487
425.	13.18	.4915	2.441	346.	.4357	.9624	5.14	1.0656	348.	1.0579	11.4623
450.	14.78	.5687	2.991	375.	.3694	.9645	7.14	1.0642	376.	1.0325	11.8416
475.	16.47	.6267	3.479	404.	.3296	.9657	8.97	1.0631	405.	1.0196	12.1977
500.	18.25	.6723	3.928	435.	.3026	.9666	10.64	1.0621	436.	1.0118	12.5334
525.	20.12	.7092	4.351	466.	.2829	.9673	12.17	1.0613	467.	1.0067	12.8502
550.	22.08	.7397	4.754	499.	.2678	.9678	13.59	1.0606	500.	1.0031	13.1491
575.	24.13	.7653	5.142	533.	.2558	.9682	14.89	1.0600	534.	1.0004	13.4311
600.	26.28	.7871	5.518	568.	.2460	.9686	16.10	1.0595	569.	.9983	13.6970
625.	28.51	.8058	5.885	604.	.2379	.9689	17.22	1.0591	605.	.9967	13.9477
650.	30.84	.8220	6.244	642.	.2311	.9692	18.25	1.0587	643.	.9954	14.1840
675.	33.26	.8363	6.596	681.	.2252	.9695	19.22	1.0583	681.	.9943	14.4067
700.	35.77	.8488	6.942	721.	.2201	.9697	20.11	1.0580	721.	.9935	14.6166
725.	38.37	.8599	7.284	762.	.2157	.9699	20.95	1.0578	763.	.9927	14.8145
750.	41.06	.8697	7.622	804.	.2118	.9701	21.73	1.0576	805.	.9921	15.0010
775.	43.84	.8786	7.956	848.	.2084	.9702	22.45	1.0574	849.	.9915	15.1769
800.	46.72	.8865	8.287	893.	.2053	.9704	23.13	1.0572	894.	.9910	15.3429
825.	49.68	.8937	8.615	940.	.2025	.9705	23.77	1.0570	941.	.9906	15.4994
850.	52.74	.9002	8.941	987.	.2000	.9707	24.37	1.0569	988.	.9903	15.6473
875.	55.89	.9061	9.264	1036.	.1977	.9708	24.93	1.0568	1038.	.9899	15.7869
900.	59.13	.9115	9.586	1087.	.1957	.9709	25.45	1.0567	1088.	.9896	15.9188
925.	62.46	.9165	9.906	1139.	.1938	.9710	25.95	1.0566	1140.	.9894	16.0435
950.	65.88	.9210	10.223	1192.	.1921	.9711	26.41	1.0565	1193.	.9892	16.1615
975.	69.39	.9251	10.540	1246.	.1905	.9712	26.85	1.0564	1247.	.9890	16.2731
1000.	72.99	.9290	10.855	1302.	.1891	.9713	27.26	1.0563	1303.	.9888	16.3789
1025.	76.69	.9325	11.169	1359.	.1878	.9713	27.65	1.0563	1360.	.9886	16.4790
1050.	80.48	.9358	11.482	1417.	.1865	.9714	28.02	1.0562	1419.	.9884	16.5740
1075.	84.35	.9389	11.793	1477.	.1854	.9715	28.36	1.0562	1478.	.9883	16.6641
1100.	88.32	.9417	12.104	1538.	.1843	.9715	28.69	1.0561	1540.	.9882	16.7496

X = 4 T_1 = 300

V_w	A^2	r_s/a	M_1	T_2	M_2	$\tilde{P}_2$	ρ_2/ρ_1	$\gamma(T_2)$	T_0	$\tilde{P}_0$	$\tilde{h}(T_2)$
350.	8.64	.7330	2.948	384.	.3733	.9647	6.99	1.0638	386.	1.0341	11.9618
375.	9.92	.7726	3.330	407.	.3401	.9657	8.42	1.0630	409.	1.0231	12.2346
400.	11.29	.8036	3.694	432.	.3154	.9665	9.79	1.0622	433.	1.0157	12.5016
425.	12.75	.8283	4.046	457.	.2963	.9671	11.10	1.0615	458.	1.0104	12.7620
450.	14.29	.8486	4.389	484.	.2810	.9676	12.34	1.0609	485.	1.0065	13.0150
475.	15.92	.8653	4.724	512.	.2684	.9680	13.52	1.0604	513.	1.0035	13.2601
500.	17.64	.8793	5.053	541.	.2580	.9684	14.64	1.0599	542.	1.0011	13.4968
525.	19.45	.8913	5.378	572.	.2491	.9687	15.70	1.0594	573.	.9992	13.7247
550.	21.34	.9014	5.698	604.	.2415	.9690	16.70	1.0591	605.	.9976	13.9437
575.	23.33	.9102	6.015	637.	.2350	.9692	17.65	1.0587	638.	.9963	14.1538
600.	25.40	.9179	6.329	671.	.2292	.9694	18.55	1.0584	672.	.9952	14.3548
625.	27.56	.9246	6.641	707.	.2242	.9697	19.39	1.0581	708.	.9943	14.5471
650.	29.81	.9305	6.951	744.	.2197	.9698	20.19	1.0579	745.	.9935	14.7307
675.	32.15	.9357	7.259	782.	.2157	.9700	20.95	1.0577	783.	.9928	14.9058
700.	34.58	.9404	7.565	822.	.2121	.9702	21.66	1.0575	823.	.9922	15.0727
725.	37.09	.9445	7.870	863.	.2089	.9703	22.33	1.0573	864.	.9917	15.2318
750.	39.69	.9483	8.174	905.	.2060	.9705	22.97	1.0571	906.	.9913	15.3832
775.	42.38	.9516	8.476	948.	.2034	.9706	23.57	1.0570	949.	.9909	15.5274
800.	45.16	.9547	8.778	993.	.2010	.9707	24.13	1.0569	994.	.9905	15.6645
825.	48.03	.9575	9.078	1039.	.1988	.9708	24.67	1.0568	1041.	.9902	15.7950
850.	50.98	.9600	9.378	1087.	.1968	.9709	25.18	1.0567	1088.	.9899	15.9192
875.	54.02	.9623	9.677	1136.	.1949	.9710	25.66	1.0566	1137.	.9896	16.0373
900.	57.15	.9644	9.975	1186.	.1932	.9711	26.11	1.0565	1187.	.9894	16.1497
925.	60.37	.9663	10.273	1238.	.1916	.9712	26.54	1.0564	1239.	.9892	16.2566
950.	63.68	.9681	10.570	1291.	.1902	.9713	26.95	1.0563	1292.	.9890	16.3584
975.	67.08	.9697	10.866	1345.	.1888	.9713	27.33	1.0563	1346.	.9888	16.4553
1000.	70.56	.9712	11.162	1401.	.1876	.9714	27.70	1.0562	1402.	.9886	16.5475
1025.	74.13	.9726	11.458	1457.	.1864	.9715	28.05	1.0562	1459.	.9885	16.6354
1050.	77.79	.9740	11.753	1516.	.1853	.9715	28.38	1.0561	1517.	.9884	16.7191
1075.	81.54	.9752	12.048	1576.	.1843	.9716	28.69	1.0561	1577.	.9882	16.7988

X = 5 T_1 = 300

V_w	A^2	r_s/a	M_1	T_2	M_2	$\tilde{P}_2$	ρ_2/ρ_1	$\gamma(T_2)$	T_0	$\tilde{P}_0$	$\tilde{h}(T_2)$
350.	8.64	.6493	2.612	366.	.4116	.9635	5.76	1.0646	368.	1.0484	11.7301
375.	9.92	.7043	3.036	389.	.3649	.9649	7.32	1.0636	391.	1.0312	12.0234
400.	11.29	.7464	3.431	414.	.3326	.9659	8.81	1.0627	415.	1.0208	12.3086
425.	12.75	.7795	3.808	440.	.3088	.9667	10.22	1.0620	441.	1.0138	12.5855
450.	14.29	.8063	4.170	467.	.2904	.9673	11.55	1.0613	468.	1.0089	12.8536
475.	15.92	.8282	4.521	495.	.2757	.9677	12.81	1.0607	496.	1.0052	13.1125
500.	17.64	.8465	4.864	524.	.2638	.9682	14.01	1.0602	525.	1.0024	13.3617
525.	19.45	.8619	5.201	555.	.2538	.9685	15.13	1.0597	556.	1.0002	13.6011
550.	21.34	.8751	5.531	587.	.2453	.9688	16.19	1.0593	588.	.9984	13.8306
575.	23.33	.8864	5.857	620.	.2381	.9691	17.19	1.0589	621.	.9969	14.0502
600.	25.40	.8962	6.180	655.	.2319	.9693	18.13	1.0585	656.	.9957	14.2600
625.	27.56	.9048	6.499	690.	.2264	.9696	19.01	1.0583	691.	.9947	14.4602
650.	29.81	.9123	6.815	727.	.2216	.9698	19.85	1.0580	728.	.9939	14.6510
675.	32.15	.9190	7.129	766.	.2173	.9700	20.63	1.0578	767.	.9931	14.8327
700.	34.58	.9249	7.440	805.	.2135	.9701	21.37	1.0576	806.	.9925	15.0056
725.	37.09	.9302	7.750	846.	.2101	.9703	22.07	1.0574	847.	.9919	15.1701
750.	39.69	.9349	8.058	889.	.2071	.9704	22.73	1.0572	890.	.9914	15.3265
775.	42.38	.9392	8.365	932.	.2043	.9706	23.35	1.0571	933.	.9910	15.4752
800.	45.16	.9430	8.670	977.	.2018	.9707	23.94	1.0569	978.	.9906	15.6164
825.	48.03	.9465	8.974	1023.	.1995	.9708	24.49	1.0568	1024.	.9903	15.7507
850.	50.98	.9497	9.277	1071.	.1974	.9709	25.01	1.0567	1072.	.9900	15.8783
875.	54.02	.9526	9.579	1120.	.1955	.9710	25.50	1.0566	1121.	.9897	15.9995
900.	57.15	.9553	9.881	1170.	.1937	.9711	25.97	1.0565	1171.	.9895	16.1147
925.	60.37	.9577	10.181	1222.	.1921	.9712	26.41	1.0564	1223.	.9892	16.2243
950.	63.68	.9599	10.481	1275.	.1906	.9712	26.83	1.0564	1276.	.9890	16.3284
975.	67.08	.9620	10.780	1329.	.1892	.9713	27.22	1.0563	1330.	.9889	16.4275
1000.	70.56	.9639	11.078	1385.	.1879	.9714	27.60	1.0562	1386.	.9887	16.5217
1025.	74.13	.9657	11.376	1442.	.1867	.9715	27.95	1.0562	1443.	.9885	16.6114
1050.	77.79	.9673	11.673	1500.	.1856	.9715	28.29	1.0561	1501.	.9884	16.6968
1075.	81.54	.9689	11.970	1560.	.1846	.9716	28.61	1.0561	1561.	.9883	16.7781

X = 6 T_1 = 300

V_w	A^2	r_s/a	M_1	T_2	M_2	$\tilde{P}_2$	ρ_2/ρ_1	$\gamma(T_2)$	T_0	$\tilde{P}_0$	$\tilde{h}(T_2)$
350.	8.64	.5530	2.225	347.	.4713	.9615	4.39	1.0655	350.	1.0741	11.4783
375.	9.92	.6288	2.710	371.	.3993	.9639	6.11	1.0644	373.	1.0437	11.7965
400.	11.29	.6845	3.147	396.	.3549	.9653	7.74	1.0634	398.	1.0279	12.1026
425.	12.75	.7275	3.553	422.	.3242	.9662	9.27	1.0625	423.	1.0183	12.3980
450.	14.29	.7616	3.939	449.	.3017	.9669	10.70	1.0617	450.	1.0119	12.6827
475.	15.92	.7894	4.309	478.	.2842	.9675	12.06	1.0610	479.	1.0073	12.9566
500.	17.64	.8123	4.668	507.	.2704	.9679	13.33	1.0605	508.	1.0039	13.2196
525.	19.45	.8316	5.017	538.	.2590	.9683	14.52	1.0599	539.	1.0013	13.4714
550.	21.34	.8479	5.359	570.	.2496	.9687	15.64	1.0595	571.	.9993	13.7122
575.	23.33	.8619	5.695	603.	.2416	.9690	16.70	1.0591	604.	.9976	13.9420
600.	25.40	.8740	6.026	638.	.2347	.9692	17.69	1.0587	639.	.9963	14.1611
625.	27.56	.8845	6.353	674.	.2288	.9695	18.61	1.0584	675.	.9952	14.3697
650.	29.81	.8937	6.676	711.	.2236	.9697	19.49	1.0581	712.	.9942	14.5682
675.	32.15	.9019	6.996	749.	.2191	.9699	20.31	1.0579	750.	.9934	14.7569
700.	34.58	.9091	7.314	789.	.2150	.9701	21.08	1.0576	790.	.9927	14.9361
725.	37.09	.9155	7.629	830.	.2114	.9702	21.80	1.0574	831.	.9921	15.1063
750.	39.69	.9213	7.941	872.	.2082	.9704	22.48	1.0573	873.	.9916	15.2679
775.	42.38	.9265	8.252	916.	.2053	.9705	23.13	1.0571	917.	.9912	15.4213
800.	45.16	.9312	8.562	961.	.2027	.9706	23.73	1.0570	962.	.9908	15.5669
825.	48.03	.9355	8.869	1007.	.2003	.9707	24.30	1.0568	1008.	.9904	15.7051
850.	50.98	.9393	9.176	1055.	.1981	.9709	24.84	1.0567	1056.	.9901	15.8362
875.	54.02	.9428	9.481	1104.	.1961	.9710	25.35	1.0566	1105.	.9898	15.9607
900.	57.15	.9461	9.785	1154.	.1943	.9711	25.83	1.0565	1155.	.9895	16.0789
925.	60.37	.9490	10.089	1206.	.1926	.9711	26.28	1.0565	1207.	.9893	16.1912
950.	63.68	.9517	10.391	1259.	.1910	.9712	26.71	1.0564	1260.	.9891	16.2978
975.	67.08	.9542	10.692	1313.	.1896	.9713	27.11	1.0563	1314.	.9889	16.3991
1000.	70.56	.9565	10.993	1369.	.1883	.9714	27.49	1.0563	1370.	.9887	16.4954
1025.	74.13	.9587	11.293	1426.	.1870	.9714	27.86	1.0562	1427.	.9886	16.5870
1050.	77.79	.9607	11.593	1484.	.1859	.9715	28.20	1.0562	1485.	.9884	16.6741
1075.	81.54	.9625	11.891	1544.	.1848	.9716	28.53	1.0561	1545.	.9883	16.7570

X = 7 T_1 = 300

V_w	A^2	r_s/a	M_1	T_2	M_2	$\tilde{P}_2$	ρ_2/ρ_1	$\gamma(T_2)$	T_0	$\tilde{P}_0$	$\tilde{h}(T_2)$
350.	8.64	.4361	1.754	327.	.5827	.9574	2.88	1.0666	331.	1.1336	11.1974
375.	9.92	.5427	2.339	352.	.4514	.9622	4.79	1.0652	355.	1.0651	11.5508
400.	11.29	.6164	2.834	378.	.3852	.9643	6.57	1.0641	380.	1.0384	11.8818
425.	12.75	.6714	3.279	404.	.3440	.9656	8.23	1.0631	406.	1.0243	12.1981
450.	14.29	.7142	3.694	432.	.3154	.9665	9.79	1.0622	433.	1.0157	12.5014
475.	15.92	.7485	4.086	460.	.2943	.9671	11.25	1.0614	461.	1.0099	12.7918
500.	17.64	.7766	4.463	490.	.2780	.9677	12.61	1.0608	491.	1.0057	13.0697
525.	19.45	.8000	4.827	521.	.2650	.9681	13.88	1.0602	522.	1.0027	13.3350
550.	21.34	.8198	5.182	553.	.2543	.9685	15.07	1.0597	554.	1.0003	13.5880
575.	23.33	.8366	5.529	587.	.2454	.9688	16.18	1.0593	588.	.9984	13.8288
600.	25.40	.8511	5.869	621.	.2379	.9691	17.22	1.0589	622.	.9969	14.0579
625.	27.56	.8637	6.204	657.	.2314	.9694	18.20	1.0585	658.	.9956	14.2755
650.	29.81	.8748	6.535	694.	.2258	.9696	19.11	1.0582	695.	.9946	14.4821
675.	32.15	.8845	6.861	733.	.2209	.9698	19.97	1.0580	734.	.9937	14.6782
700.	34.58	.8931	7.185	773.	.2166	.9700	20.77	1.0577	774.	.9930	14.8641
725.	37.09	.9007	7.505	814.	.2128	.9702	21.52	1.0575	815.	.9924	15.0404
750.	39.69	.9075	7.823	856.	.2094	.9703	22.23	1.0573	857.	.9918	15.2075
775.	42.38	.9137	8.138	900.	.2063	.9705	22.89	1.0572	901.	.9913	15.3658
800.	45.16	.9192	8.452	945.	.2036	.9706	23.52	1.0570	946.	.9909	15.5159
825.	48.03	.9243	8.763	991.	.2011	.9707	24.11	1.0569	992.	.9905	15.6582
850.	50.98	.9288	9.073	1039.	.1988	.9708	24.66	1.0568	1040.	.9902	15.7930
875.	54.02	.9330	9.382	1088.	.1967	.9709	25.18	1.0567	1089.	.9899	15.9209
900.	57.15	.9368	9.689	1138.	.1948	.9710	25.68	1.0566	1139.	.9896	16.0422
925.	60.37	.9402	9.995	1190.	.1931	.9711	26.14	1.0565	1191.	.9894	16.1572
950.	63.68	.9434	10.301	1243.	.1915	.9712	26.58	1.0564	1244.	.9892	16.2664
975.	67.08	.9464	10.605	1297.	.1900	.9713	27.00	1.0563	1298.	.9890	16.3701
1000.	70.56	.9491	10.908	1353.	.1886	.9714	27.39	1.0563	1354.	.9888	16.4685
1025.	74.13	.9516	11.210	1410.	.1874	.9714	27.76	1.0562	1411.	.9886	16.5620
1050.	77.79	.9539	11.512	1468.	.1862	.9715	28.11	1.0562	1469.	.9885	16.6509
1075.	81.54	.9561	11.812	1528.	.1851	.9715	28.44	1.0561	1529.	.9883	16.7354
1100.	85.38	.9581	12.113	1589.	.1841	.9716	28.76	1.0561	1590.	.9882	16.8159

X = 8 T_1 = 300

V_w	A^2	r_s/a	M_1	T_2	M_2	$\tilde{P}_2$	ρ_2/ρ_1	$\gamma(T_2)$	T_0	$\tilde{P}_0$	$\tilde{h}(T_2)$
350.	8.64	.2729	1.098	304.	.9116	.9412	1.20	1.0682	312.	1.4183	10.8349
375.	9.92	.4402	1.897	333.	.5426	.9590	3.32	1.0663	336.	1.1103	11.2798
400.	11.29	.5398	2.482	359.	.4294	.9629	5.29	1.0649	361.	1.0556	11.6435
425.	12.75	.6102	2.980	386.	.3701	.9648	7.11	1.0637	388.	1.0330	11.9843
450.	14.29	.6634	3.431	414.	.3326	.9659	8.81	1.0628	415.	1.0208	12.3084
475.	15.92	.7053	3.850	443.	.3064	.9668	10.38	1.0619	444.	1.0131	12.6172
500.	17.64	.7393	4.248	473.	.2869	.9674	11.84	1.0612	474.	1.0080	12.9114
525.	19.45	.7672	4.629	504.	.2717	.9679	13.19	1.0605	505.	1.0042	13.1914
550.	21.34	.7907	4.998	536.	.2596	.9683	14.46	1.0600	537.	1.0015	13.4576
575.	23.33	.8106	5.357	570.	.2496	.9687	15.64	1.0595	571.	.9993	13.7103
600.	25.40	.8277	5.707	605.	.2413	.9690	16.73	1.0590	606.	.9976	13.9500
625.	27.56	.8425	6.051	641.	.2343	.9692	17.76	1.0587	642.	.9962	14.1773
650.	29.81	.8554	6.390	678.	.2282	.9695	18.72	1.0584	679.	.9950	14.3926
675.	32.15	.8667	6.723	717.	.2229	.9697	19.61	1.0581	717.	.9941	14.5965
700.	34.58	.8767	7.053	756.	.2183	.9699	20.45	1.0578	757.	.9933	14.7895
725.	37.09	.8856	7.379	797.	.2143	.9701	21.23	1.0576	798.	.9926	14.9721
750.	39.69	.8936	7.702	840.	.2107	.9703	21.97	1.0574	841.	.9920	15.1450
775.	42.38	.9007	8.022	884.	.2074	.9704	22.65	1.0572	885.	.9915	15.3086
800.	45.16	.9071	8.340	929.	.2045	.9705	23.30	1.0571	930.	.9910	15.4634
825.	48.03	.9129	8.656	975.	.2019	.9707	23.91	1.0569	976.	.9906	15.6099
850.	50.98	.9182	8.970	1023.	.1995	.9708	24.48	1.0568	1024.	.9903	15.7487
875.	54.02	.9230	9.282	1072.	.1974	.9709	25.02	1.0567	1073.	.9900	15.8800
900.	57.15	.9274	9.592	1122.	.1954	.9710	25.52	1.0566	1123.	.9897	16.0045
925.	60.37	.9314	9.901	1174.	.1936	.9711	26.00	1.0565	1175.	.9895	16.1225
950.	63.68	.9351	10.209	1227.	.1920	.9712	26.45	1.0564	1228.	.9892	16.2343
975.	67.08	.9385	10.516	1281.	.1904	.9713	26.88	1.0564	1282.	.9890	16.3404
1000.	70.56	.9416	10.822	1337.	.1890	.9713	27.28	1.0563	1338.	.9888	16.4410
1025.	74.13	.9445	11.126	1394.	.1877	.9714	27.66	1.0562	1395.	.9887	16.5365
1050.	77.79	.9472	11.430	1452.	.1865	.9715	28.02	1.0562	1453.	.9885	16.6273
1075.	81.54	.9497	11.733	1512.	.1854	.9715	28.36	1.0561	1513.	.9884	16.7135
1100.	85.38	.9520	12.035	1573.	.1843	.9716	28.68	1.0561	1574.	.9882	16.7955

X = 9 T_1 = 300

V_w	A^2	r_s/a	M_1	T_2	M_2	$\tilde{P}_2$	ρ_2/ρ_1	$\gamma(T_2)$	T_0	$\tilde{P}_0$	$\tilde{h}(T_2)$
375.	9.92	.3049	1.314	311.	.7647	.9492	1.69	1.0676	317.	1.2682	10.9559
400.	11.29	.4504	2.070	340.	.5019	.9604	3.88	1.0659	343.	1.0888	11.3830
425.	12.75	.5421	2.648	368.	.4069	.9636	5.89	1.0645	370.	1.0466	11.7544
450.	14.29	.6084	3.146	396.	.3549	.9652	7.73	1.0634	397.	1.0279	12.1024
475.	15.92	.6593	3.599	425.	.3213	.9663	9.44	1.0624	426.	1.0174	12.4317
500.	17.64	.6999	4.022	455.	.2975	.9670	11.01	1.0616	457.	1.0107	12.7440
525.	19.45	.7330	4.422	487.	.2796	.9676	12.46	1.0609	488.	1.0061	13.0400
550.	21.34	.7605	4.807	519.	.2656	.9681	13.81	1.0602	520.	1.0028	13.3205
575.	23.33	.7837	5.179	553.	.2544	.9685	15.06	1.0597	554.	1.0003	13.5860
600.	25.40	.8036	5.541	588.	.2451	.9688	16.22	1.0592	589.	.9983	13.8372
625.	27.56	.8207	5.895	624.	.2374	.9691	17.30	1.0588	625.	.9968	14.0748
650.	29.81	.8355	6.242	661.	.2308	.9694	18.30	1.0585	662.	.9955	14.2994
675.	32.15	.8486	6.583	700.	.2251	.9696	19.24	1.0582	701.	.9945	14.5116
700.	34.58	.8601	6.919	740.	.2201	.9698	20.11	1.0579	741.	.9936	14.7120
725.	37.09	.8703	7.251	781.	.2158	.9700	20.93	1.0577	782.	.9929	14.9014
750.	39.69	.8793	7.580	824.	.2120	.9702	21.69	1.0575	825.	.9922	15.0804
775.	42.38	.8875	7.905	867.	.2086	.9703	22.41	1.0573	868.	.9917	15.2494
800.	45.16	.8948	8.227	912.	.2055	.9705	23.08	1.0571	913.	.9912	15.4092
825.	48.03	.9014	8.547	959.	.2028	.9706	23.70	1.0570	960.	.9908	15.5602
850.	50.98	.9074	8.865	1007.	.2003	.9707	24.29	1.0568	1008.	.9904	15.7030
875.	54.02	.9129	9.180	1056.	.1981	.9709	24.85	1.0567	1057.	.9901	15.8381
900.	57.15	.9179	9.494	1106.	.1960	.9710	25.37	1.0566	1107.	.9898	15.9659
925.	60.37	.9225	9.806	1158.	.1942	.9711	25.86	1.0565	1159.	.9895	16.0869
950.	63.68	.9266	10.117	1211.	.1924	.9711	26.32	1.0564	1212.	.9893	16.2014
975.	67.08	.9305	10.427	1265.	.1909	.9712	26.76	1.0564	1266.	.9891	16.3100
1000.	70.56	.9341	10.735	1321.	.1894	.9713	27.17	1.0563	1322.	.9889	16.4129
1025.	74.13	.9373	11.042	1378.	.1881	.9714	27.55	1.0562	1379.	.9887	16.5105
1050.	77.79	.9404	11.348	1436.	.1868	.9715	27.92	1.0562	1437.	.9885	16.6032
1075.	81.54	.9432	11.653	1496.	.1857	.9715	28.27	1.0561	1497.	.9884	16.6911
1100.	85.38	.9458	11.957	1557.	.1846	.9716	28.60	1.0561	1558.	.9883	16.7747

X = 10 T_1 = 300

V_w	A^2	r_s/a	M_1	T_2	M_2	$\tilde{P}_2$	ρ_2/ρ_1	$\gamma(T_2)$	T_0	$\tilde{P}_0$	$\tilde{h}(T_2)$
400.	11.29	.3380	1.554	320.	.6521	.9545	2.31	1.0671	324.	1.1790	11.0860
425.	12.75	.4641	2.267	349.	.4637	.9618	4.54	1.0654	351.	1.0706	11.5049
450.	14.29	.5479	2.833	378.	.3852	.9643	6.57	1.0641	380.	1.0384	11.8815
475.	15.92	.6098	3.329	407.	.3401	.9657	8.42	1.0630	409.	1.0231	12.2341
500.	17.64	.6581	3.782	438.	.3102	.9666	10.12	1.0620	439.	1.0142	12.5664
525.	19.45	.6970	4.206	469.	.2888	.9673	11.68	1.0612	471.	1.0084	12.8800
550.	21.34	.7290	4.608	502.	.2725	.9679	13.12	1.0605	503.	1.0044	13.1761
575.	23.33	.7559	4.995	536.	.2597	.9683	14.45	1.0600	537.	1.0015	13.4555
600.	25.40	.7787	5.369	571.	.2493	.9687	15.68	1.0595	572.	.9992	13.7191
625.	27.56	.7982	5.734	607.	.2407	.9690	16.81	1.0590	608.	.9975	13.9677
650.	29.81	.8152	6.090	645.	.2335	.9693	17.87	1.0586	646.	.9960	14.2022
675.	32.15	.8300	6.439	684.	.2274	.9695	18.85	1.0583	685.	.9949	14.4232
700.	34.58	.8431	6.782	724.	.2221	.9697	19.76	1.0580	724.	.9939	14.6316
725.	37.09	.8546	7.121	765.	.2174	.9699	20.61	1.0578	766.	.9931	14.8282
750.	39.69	.8649	7.455	807.	.2134	.9701	21.41	1.0575	808.	.9925	15.0135
775.	42.38	.8741	7.785	851.	.2098	.9703	22.15	1.0573	852.	.9919	15.1883
800.	45.16	.8824	8.113	896.	.2066	.9704	22.84	1.0572	897.	.9914	15.3533
825.	48.03	.8898	8.437	943.	.2037	.9706	23.49	1.0570	944.	.9909	15.5090
850.	50.98	.8966	8.758	990.	.2011	.9707	24.10	1.0569	991.	.9905	15.6560
875.	54.02	.9027	9.078	1039.	.1988	.9708	24.67	1.0568	1041.	.9902	15.7949
900.	57.15	.9083	9.395	1090.	.1966	.9709	25.21	1.0567	1091.	.9899	15.9262
925.	60.37	.9134	9.711	1142.	.1947	.9710	25.71	1.0566	1143.	.9896	16.0503
950.	63.68	.9181	10.024	1195.	.1929	.9711	26.18	1.0565	1196.	.9894	16.1678
975.	67.08	.9225	10.336	1249.	.1913	.9712	26.63	1.0564	1250.	.9891	16.2789
1000.	70.56	.9264	10.647	1305.	.1898	.9713	27.05	1.0563	1306.	.9889	16.3842
1025.	74.13	.9301	10.957	1362.	.1884	.9714	27.45	1.0563	1363.	.9888	16.4840
1050.	77.79	.9335	11.265	1420.	.1872	.9714	27.82	1.0562	1422.	.9886	16.5786
1075.	81.54	.9367	11.572	1480.	.1860	.9715	28.18	1.0562	1481.	.9884	16.6683
1100.	85.38	.9396	11.879	1541.	.1849	.9716	28.51	1.0561	1542.	.9883	16.7535

X = 4 T_1 = 310

V_w	A^2	r_s/a	M_1	T_2	M_2	$\tilde{P}_2$	ρ_2/ρ_1	$\gamma(T_2)$	T_0	$\tilde{P}_0$	$\tilde{h}(T_2)$
350.	8.36	.7224	2.859	391.	.3822	.9647	6.67	1.0635	393.	1.0376	12.0452
375.	9.60	.7638	3.240	414.	.3468	.9658	8.10	1.0627	416.	1.0255	12.3116
400.	10.93	.7962	3.602	438.	.3208	.9666	9.47	1.0620	440.	1.0175	12.5725
425.	12.33	.8220	3.951	464.	.3007	.9672	10.77	1.0614	465.	1.0118	12.8272
450.	13.83	.8430	4.291	491.	.2847	.9677	12.02	1.0608	492.	1.0076	13.0750
475.	15.41	.8605	4.622	519.	.2717	.9681	13.20	1.0603	520.	1.0044	13.3152
500.	17.07	.8750	4.948	548.	.2608	.9684	14.33	1.0598	549.	1.0019	13.5473
525.	18.82	.8874	5.269	578.	.2516	.9688	15.39	1.0594	579.	.9999	13.7710
550.	20.66	.8980	5.586	610.	.2437	.9690	16.40	1.0590	611.	.9982	13.9862
575.	22.58	.9071	5.899	643.	.2370	.9693	17.36	1.0587	644.	.9969	14.1927
600.	24.58	.9150	6.209	678.	.2310	.9695	18.26	1.0584	679.	.9957	14.3906
625.	26.67	.9220	6.517	713.	.2258	.9697	19.11	1.0581	714.	.9948	14.5799
650.	28.85	.9281	6.823	750.	.2212	.9699	19.92	1.0578	751.	.9939	14.7608
675.	31.11	.9335	7.126	788.	.2171	.9701	20.68	1.0576	789.	.9932	14.9335
700.	33.46	.9383	7.428	828.	.2134	.9702	21.40	1.0574	829.	.9926	15.0982
725.	35.89	.9426	7.729	869.	.2101	.9704	22.08	1.0573	870.	.9920	15.2552
750.	38.41	.9465	8.028	911.	.2071	.9705	22.72	1.0571	912.	.9916	15.4048
775.	41.01	.9500	8.327	955.	.2044	.9706	23.33	1.0570	956.	.9911	15.5472
800.	43.70	.9531	8.624	1000.	.2019	.9708	23.91	1.0569	1001.	.9907	15.6828
825.	46.48	.9560	8.920	1046.	.1997	.9709	24.45	1.0567	1047.	.9904	15.8119
850.	49.34	.9586	9.215	1093.	.1976	.9710	24.96	1.0566	1094.	.9901	15.9348
875.	52.28	.9610	9.510	1142.	.1957	.9711	25.45	1.0566	1143.	.9898	16.0517
900.	55.31	.9632	9.804	1192.	.1939	.9712	25.91	1.0565	1194.	.9896	16.1630
925.	58.43	.9652	10.097	1244.	.1923	.9712	26.35	1.0564	1245.	.9894	16.2690
950.	61.63	.9670	10.390	1297.	.1908	.9713	26.76	1.0563	1298.	.9891	16.3699
975.	64.91	.9687	10.682	1351.	.1895	.9714	27.15	1.0563	1352.	.9890	16.4659
1000.	68.29	.9703	10.973	1407.	.1882	.9714	27.52	1.0562	1408.	.9888	16.5574
1025.	71.74	.9717	11.265	1464.	.1870	.9715	27.88	1.0562	1465.	.9886	16.6445
1050.	75.28	.9731	11.555	1522.	.1859	.9716	28.21	1.0561	1523.	.9885	16.7276
1075.	78.91	.9743	11.846	1582.	.1848	.9716	28.53	1.0561	1583.	.9884	16.8068

X = 5 T_1 = 310

V_w	A^2	r_s/a	M_1	T_2	M_2	$\tilde{P}_2$	ρ_2/ρ_1	$\gamma(T_2)$	T_0	$\tilde{P}_0$	$\tilde{h}(T_2)$
350.	8.36	.6342	2.511	372.	.4250	.9634	5.40	1.0643	374.	1.0542	11.8111
375.	9.60	.6923	2.936	396.	.3742	.9649	6.96	1.0634	397.	1.0348	12.0982
400.	10.93	.7365	3.332	420.	.3396	.9660	8.45	1.0626	422.	1.0232	12.3774
425.	12.33	.7711	3.706	446.	.3143	.9667	9.86	1.0618	447.	1.0156	12.6487
450.	13.83	.7990	4.066	473.	.2949	.9673	11.20	1.0612	474.	1.0103	12.9115
475.	15.41	.8219	4.415	501.	.2795	.9678	12.47	1.0606	502.	1.0064	13.1655
500.	17.07	.8409	4.755	530.	.2670	.9682	13.66	1.0601	531.	1.0033	13.4103
525.	18.82	.8569	5.088	561.	.2566	.9686	14.80	1.0596	562.	1.0010	13.6456
550.	20.66	.8706	5.415	593.	.2478	.9689	15.86	1.0592	594.	.9991	13.8713
575.	22.58	.8823	5.738	626.	.2403	.9692	16.87	1.0588	627.	.9975	14.0874
600.	24.58	.8925	6.056	660.	.2339	.9694	17.82	1.0585	661.	.9963	14.2941
625.	26.67	.9014	6.372	696.	.2282	.9696	18.72	1.0582	697.	.9952	14.4914
650.	28.85	.9092	6.684	733.	.2232	.9698	19.56	1.0580	734.	.9943	14.6796
675.	31.11	.9161	6.994	772.	.2188	.9700	20.35	1.0577	773.	.9935	14.8589
700.	33.46	.9223	7.301	811.	.2149	.9702	21.10	1.0575	812.	.9928	15.0297
725.	35.89	.9277	7.607	852.	.2114	.9703	21.81	1.0573	853.	.9922	15.1922
750.	38.41	.9326	7.911	894.	.2082	.9705	22.48	1.0572	895.	.9917	15.3468
775.	41.01	.9371	8.213	938.	.2054	.9706	23.11	1.0570	939.	.9913	15.4939
800.	43.70	.9411	8.514	983.	.2028	.9707	23.70	1.0569	984.	.9909	15.6337
825.	46.48	.9447	8.814	1029.	.2004	.9708	24.26	1.0568	1030.	.9905	15.7666
850.	49.34	.9480	9.113	1077.	.1983	.9709	24.79	1.0567	1078.	.9902	15.8929
875.	52.28	.9510	9.411	1126.	.1963	.9710	25.29	1.0566	1127.	.9899	16.0131
900.	55.31	.9537	9.708	1176.	.1945	.9711	25.76	1.0565	1177.	.9897	16.1273
925.	58.43	.9563	10.004	1227.	.1928	.9712	26.21	1.0564	1229.	.9894	16.2359
950.	61.63	.9586	10.299	1280.	.1913	.9713	26.63	1.0564	1282.	.9892	16.3392
975.	64.91	.9607	10.594	1335.	.1899	.9714	27.04	1.0563	1336.	.9890	16.4374
1000.	68.29	.9627	10.888	1390.	.1885	.9714	27.42	1.0562	1392.	.9888	16.5310
1025.	71.74	.9645	11.181	1447.	.1873	.9715	27.78	1.0562	1449.	.9887	16.6200
1050.	75.28	.9662	11.474	1506.	.1862	.9716	28.12	1.0561	1507.	.9885	16.7048
1075.	78.91	.9678	11.766	1565.	.1851	.9716	28.45	1.0561	1567.	.9884	16.7855

X = 6 T_1 = 310

V_w	A^2	r_s/a	M_1	T_2	M_2	$\tilde{P}_2$	ρ_2/ρ_1	$\gamma(T_2)$	T_0	$\tilde{P}_0$	$\tilde{h}(T_2)$
350.	8.36	.5317	2.105	353.	.4945	.9611	3.99	1.0652	355.	1.0856	11.5554
375.	9.60	.6125	2.598	377.	.4131	.9637	5.71	1.0641	379.	1.0494	11.8685
400.	10.93	.6714	3.038	402.	.3644	.9652	7.34	1.0632	403.	1.0314	12.1688
425.	12.33	.7166	3.444	428.	.3314	.9662	8.87	1.0623	429.	1.0207	12.4587
450.	13.83	.7524	3.829	455.	.3073	.9670	10.32	1.0616	456.	1.0136	12.7382
475.	15.41	.7814	4.198	483.	.2888	.9675	11.68	1.0609	484.	1.0087	13.0073
500.	17.07	.8053	4.554	513.	.2742	.9680	12.96	1.0604	514.	1.0050	13.2659
525.	18.82	.8254	4.901	543.	.2623	.9684	14.16	1.0598	545.	1.0023	13.5137
550.	20.66	.8423	5.240	575.	.2524	.9687	15.30	1.0594	577.	1.0001	13.7508
575.	22.58	.8569	5.572	609.	.2441	.9690	16.36	1.0590	610.	.9983	13.9773
600.	24.58	.8694	5.900	643.	.2369	.9693	17.36	1.0587	644.	.9969	14.1933
625.	26.67	.8804	6.223	679.	.2308	.9695	18.30	1.0583	680.	.9957	14.3992
650.	28.85	.8900	6.542	716.	.2254	.9697	19.18	1.0581	717.	.9947	14.5952
675.	31.11	.8984	6.859	755.	.2207	.9699	20.01	1.0578	756.	.9938	14.7816
700.	33.46	.9059	7.172	794.	.2165	.9701	20.79	1.0576	795.	.9931	14.9587
725.	35.89	.9126	7.483	835.	.2128	.9703	21.53	1.0574	836.	.9925	15.1271
750.	38.41	.9186	7.792	878.	.2094	.9704	22.22	1.0572	879.	.9919	15.2870
775.	41.01	.9240	8.099	921.	.2064	.9706	22.87	1.0571	922.	.9914	15.4388
800.	43.70	.9288	8.404	966.	.2037	.9707	23.48	1.0569	967.	.9910	15.5830
825.	46.48	.9332	8.707	1012.	.2013	.9708	24.06	1.0568	1014.	.9906	15.7199
850.	49.34	.9372	9.010	1060.	.1990	.9709	24.61	1.0567	1061.	.9903	15.8499
875.	52.28	.9409	9.311	1109.	.1970	.9710	25.12	1.0566	1110.	.9900	15.9733
900.	55.31	.9442	9.611	1159.	.1951	.9711	25.61	1.0565	1160.	.9897	16.0906
925.	58.43	.9473	9.910	1211.	.1934	.9712	26.07	1.0564	1212.	.9895	16.2019
950.	61.63	.9501	10.208	1264.	.1918	.9713	26.51	1.0564	1265.	.9893	16.3077
975.	64.91	.9527	10.505	1318.	.1903	.9713	26.92	1.0563	1319.	.9891	16.4083
1000.	68.29	.9551	10.801	1374.	.1889	.9714	27.31	1.0562	1375.	.9889	16.5039
1025.	71.74	.9573	11.097	1431.	.1877	.9715	27.68	1.0562	1432.	.9887	16.5949
1050.	75.28	.9593	11.392	1489.	.1865	.9715	28.03	1.0561	1490.	.9886	16.6814
1075.	78.91	.9612	11.687	1549.	.1854	.9716	28.36	1.0561	1550.	.9884	16.7638

X = 7 T_1 = 310

V_w	A^2	r_s/a	M_1	T_2	M_2	$\tilde{P}_2$	ρ_2/ρ_1	$\gamma(T_2)$	T_0	$\tilde{P}_0$	$\tilde{h}(T_2)$
350.	8.36	.4040	1.599	332.	.6348	.9557	2.44	1.0663	336.	1.1675	11.2655
375.	9.60	.5206	2.208	357.	.4742	.9618	4.34	1.0650	360.	1.0758	11.6185
400.	10.93	.5994	2.712	383.	.3988	.9642	6.13	1.0639	385.	1.0438	11.9447
425.	12.33	.6576	3.161	409.	.3534	.9656	7.80	1.0629	411.	1.0277	12.2558
450.	13.83	.7027	3.576	437.	.3224	.9665	9.37	1.0621	438.	1.0180	12.5540
475.	15.41	.7387	3.968	465.	.2998	.9672	10.84	1.0613	466.	1.0116	12.8398
500.	17.07	.7681	4.343	495.	.2825	.9677	12.21	1.0607	496.	1.0071	13.1134
525.	18.82	.7925	4.706	526.	.2687	.9682	13.49	1.0601	527.	1.0037	13.3748
550.	20.66	.8131	5.058	558.	.2575	.9686	14.69	1.0596	559.	1.0012	13.6243
575.	22.58	.8306	5.402	591.	.2482	.9689	15.82	1.0592	592.	.9992	13.8619
600.	24.58	.8457	5.739	626.	.2403	.9692	16.87	1.0588	627.	.9975	14.0881
625.	26.67	.8588	6.071	662.	.2336	.9694	17.86	1.0585	663.	.9962	14.3031
650.	28.85	.8703	6.398	699.	.2278	.9697	18.79	1.0582	700.	.9951	14.5073
675.	31.11	.8803	6.721	738.	.2227	.9699	19.65	1.0579	739.	.9942	14.7012
700.	33.46	.8893	7.040	777.	.2182	.9700	20.47	1.0577	778.	.9934	14.8851
725.	35.89	.8972	7.357	818.	.2142	.9702	21.23	1.0575	820.	.9927	15.0596
750.	38.41	.9043	7.670	861.	.2107	.9704	21.95	1.0573	862.	.9921	15.2251
775.	41.01	.9107	7.982	905.	.2075	.9705	22.63	1.0571	906.	.9916	15.3820
800.	43.70	.9164	8.292	949.	.2047	.9706	23.26	1.0570	951.	.9912	15.5308
825.	46.48	.9216	8.599	996.	.2021	.9708	23.86	1.0569	997.	.9908	15.6719
850.	49.34	.9263	8.905	1043.	.1998	.9709	24.42	1.0568	1045.	.9904	15.8056
875.	52.28	.9306	9.210	1092.	.1976	.9710	24.95	1.0566	1093.	.9901	15.9325
900.	55.31	.9346	9.513	1143.	.1957	.9711	25.46	1.0566	1144.	.9898	16.0529
925.	58.43	.9382	9.815	1194.	.1939	.9712	25.93	1.0565	1195.	.9896	16.1671
950.	61.63	.9415	10.116	1247.	.1922	.9712	26.37	1.0564	1248.	.9893	16.2756
975.	64.91	.9445	10.415	1302.	.1907	.9713	26.80	1.0563	1303.	.9891	16.3785
1000.	68.29	.9474	10.714	1357.	.1893	.9714	27.19	1.0563	1359.	.9889	16.4763
1025.	71.74	.9500	11.012	1414.	.1880	.9715	27.57	1.0562	1416.	.9888	16.5693
1050.	75.28	.9524	11.310	1473.	.1868	.9715	27.93	1.0562	1474.	.9886	16.6577
1075.	78.91	.9546	11.606	1532.	.1857	.9716	28.27	1.0561	1534.	.9885	16.7417
1100.	82.63	.9567	11.902	1593.	.1846	.9716	28.59	1.0561	1595.	.9883	16.8217

X = 8 T_1 = 310

V_w	A^2	r_s/a	M_1	T_2	M_2	$\tilde{P}_2$	ρ_2/ρ_1	$\gamma(T_2)$	T_0	$\tilde{P}_0$	$\tilde{h}(T_2)$
375.	9.60	.4085	1.733	337.	.5892	.9575	2.82	1.0660	341.	1.1380	11.3392
400.	10.93	.5175	2.341	364.	.4509	.9625	4.80	1.0647	366.	1.0652	11.7018
425.	12.33	.5928	2.849	391.	.3832	.9647	6.64	1.0636	392.	1.0380	12.0382
450.	13.83	.6492	3.304	418.	.3417	.9659	8.34	1.0626	420.	1.0239	12.3577
475.	15.41	.6934	3.725	447.	.3132	.9668	9.93	1.0618	448.	1.0153	12.6621
500.	17.07	.7290	4.122	477.	.2923	.9674	11.40	1.0611	478.	1.0096	12.9522
525.	18.82	.7583	4.502	508.	.2761	.9679	12.78	1.0604	509.	1.0055	13.2285
550.	20.66	.7828	4.869	541.	.2633	.9684	14.06	1.0599	542.	1.0025	13.4913
575.	22.58	.8035	5.225	574.	.2528	.9687	15.25	1.0594	575.	1.0001	13.7409
600.	24.58	.8213	5.573	609.	.2440	.9690	16.36	1.0590	610.	.9983	13.9779
625.	26.67	.8367	5.914	645.	.2366	.9693	17.40	1.0586	646.	.9968	14.2027
650.	28.85	.8501	6.249	682.	.2303	.9696	18.37	1.0583	683.	.9956	14.4158
675.	31.11	.8619	6.580	721.	.2248	.9698	19.28	1.0580	722.	.9946	14.6176
700.	33.46	.8723	6.906	761.	.2200	.9700	20.13	1.0578	762.	.9937	14.8088
725.	35.89	.8815	7.228	802.	.2158	.9701	20.93	1.0576	803.	.9930	14.9898
750.	38.41	.8898	7.547	844.	.2121	.9703	21.68	1.0574	845.	.9924	15.1611
775.	41.01	.8972	7.864	888.	.2087	.9705	22.38	1.0572	889.	.9918	15.3233
800.	43.70	.9039	8.178	933.	.2057	.9706	23.03	1.0570	934.	.9913	15.4769
825.	46.48	.9099	8.490	979.	.2030	.9707	23.65	1.0569	980.	.9909	15.6224
850.	49.34	.9153	8.799	1027.	.2006	.9708	24.23	1.0568	1028.	.9905	15.7601
875.	52.28	.9203	9.107	1076.	.1983	.9709	24.78	1.0567	1077.	.9902	15.8906
900.	55.31	.9249	9.414	1126.	.1963	.9710	25.29	1.0566	1127.	.9899	16.0142
925.	58.43	.9290	9.719	1178.	.1944	.9711	25.78	1.0565	1179.	.9896	16.1314
950.	61.63	.9328	10.023	1231.	.1927	.9712	26.24	1.0564	1232.	.9894	16.2426
975.	64.91	.9364	10.325	1285.	.1912	.9713	26.67	1.0563	1286.	.9892	16.3480
1000.	68.29	.9396	10.627	1341.	.1897	.9714	27.08	1.0563	1342.	.9890	16.4481
1025.	71.74	.9426	10.927	1398.	.1884	.9714	27.47	1.0562	1399.	.9888	16.5431
1050.	75.28	.9454	11.226	1456.	.1871	.9715	27.83	1.0562	1458.	.9887	16.6334
1075.	78.91	.9480	11.525	1516.	.1860	.9716	28.18	1.0561	1517.	.9885	16.7191
1100.	82.63	.9504	11.823	1577.	.1849	.9716	28.51	1.0561	1578.	.9884	16.8007

X = 9 T_1 = 310

V_w	A^2	r_s/a	M_1	T_2	M_2	$\tilde{P}_2$	ρ_2/ρ_1	$\gamma(T_2)$	T_0	$\tilde{P}_0$	$\tilde{h}(T_2)$
400.	10.93	.4198	1.899	344.	.5419	.9594	3.33	1.0657	347.	1.1104	11.4338
425.	12.33	.5199	2.499	372.	.4267	.9633	5.36	1.0643	374.	1.0549	11.8035
450.	13.83	.5909	3.007	400.	.3673	.9652	7.22	1.0632	401.	1.0323	12.1476
475.	15.41	.6449	3.464	429.	.3300	.9663	8.95	1.0623	430.	1.0203	12.4729
500.	17.07	.6876	3.888	459.	.3040	.9671	10.54	1.0615	460.	1.0127	12.7814
525.	18.82	.7224	4.289	491.	.2848	.9677	12.01	1.0608	492.	1.0077	13.0739
550.	20.66	.7512	4.673	523.	.2699	.9681	13.38	1.0602	524.	1.0040	13.3513
575.	22.58	.7755	5.043	557.	.2579	.9685	14.65	1.0597	558.	1.0013	13.6139
600.	24.58	.7962	5.403	592.	.2482	.9689	15.82	1.0592	593.	.9992	13.8626
625.	26.67	.8140	5.754	628.	.2400	.9692	16.92	1.0588	629.	.9975	14.0979
650.	28.85	.8295	6.098	665.	.2331	.9694	17.94	1.0585	666.	.9961	14.3203
675.	31.11	.8430	6.436	704.	.2271	.9697	18.89	1.0582	705.	.9950	14.5307
700.	33.46	.8550	6.769	744.	.2220	.9699	19.78	1.0579	745.	.9941	14.7294
725.	35.89	.8656	7.097	785.	.2175	.9701	20.61	1.0577	786.	.9933	14.9173
750.	38.41	.8750	7.422	827.	.2135	.9702	21.39	1.0574	828.	.9926	15.0949
775.	41.01	.8835	7.744	871.	.2099	.9704	22.11	1.0573	872.	.9920	15.2627
800.	43.70	.8911	8.062	916.	.2068	.9705	22.80	1.0571	917.	.9915	15.4214
825.	46.48	.8980	8.378	962.	.2039	.9707	23.44	1.0570	963.	.9911	15.5714
850.	49.34	.9042	8.692	1010.	.2014	.9708	24.04	1.0568	1011.	.9907	15.7132
875.	52.28	.9099	9.004	1059.	.1991	.9709	24.60	1.0567	1060.	.9903	15.8475
900.	55.31	.9150	9.314	1109.	.1969	.9710	25.13	1.0566	1111.	.9900	15.9745
925.	58.43	.9198	9.622	1161.	.1950	.9711	25.63	1.0565	1162.	.9897	16.0948
950.	61.63	.9241	9.929	1214.	.1932	.9712	26.10	1.0564	1215.	.9895	16.2088
975.	64.91	.9281	10.234	1269.	.1916	.9713	26.54	1.0564	1270.	.9893	16.3168
1000.	68.29	.9318	10.538	1324.	.1901	.9713	26.96	1.0563	1325.	.9891	16.4192
1025.	71.74	.9352	10.841	1381.	.1887	.9714	27.36	1.0562	1383.	.9889	16.5164
1050.	75.28	.9383	11.143	1440.	.1875	.9715	27.73	1.0562	1441.	.9887	16.6086
1075.	78.91	.9412	11.444	1499.	.1863	.9715	28.09	1.0561	1501.	.9885	16.6961
1100.	82.63	.9440	11.744	1561.	.1852	.9716	28.42	1.0561	1562.	.9884	16.7793

X = 10 T_1 = 310

V_w	A^2	r_s/a	M_1	T_2	M_2	$\tilde{P}_2$	ρ_2/ρ_1	$\gamma(T_2)$	T_0	$\tilde{P}_0$	$\tilde{h}(T_2)$
400.	10.93	.2911	1.317	322.	.7633	.9497	1.69	1.0670	328.	1.2676	11.1137
425.	12.33	.4350	2.091	352.	.4974	.9610	3.95	1.0652	355.	1.0870	11.5471
450.	13.83	.5261	2.678	381.	.4030	.9641	6.00	1.0639	383.	1.0454	11.9218
475.	15.41	.5924	3.182	411.	.3516	.9656	7.88	1.0629	412.	1.0271	12.2710
500.	17.07	.6436	3.639	441.	.3184	.9666	9.61	1.0619	442.	1.0168	12.5999
525.	18.82	.6846	4.065	473.	.2950	.9673	11.19	1.0612	474.	1.0103	12.9104
550.	20.66	.7183	4.468	505.	.2775	.9679	12.65	1.0605	506.	1.0058	13.2036
575.	22.58	.7464	4.854	539.	.2638	.9683	14.00	1.0599	540.	1.0026	13.4804
600.	24.58	.7702	5.226	574.	.2527	.9687	15.25	1.0594	575.	1.0001	13.7417
625.	26.67	.7906	5.589	610.	.2437	.9691	16.41	1.0590	611.	.9982	13.9882
650.	28.85	.8083	5.942	648.	.2361	.9693	17.48	1.0586	649.	.9967	14.2207
675.	31.11	.8238	6.289	687.	.2296	.9696	18.48	1.0583	688.	.9955	14.4401
700.	33.46	.8373	6.629	727.	.2241	.9698	19.41	1.0580	728.	.9944	14.6470
725.	35.89	.8493	6.964	768.	.2192	.9700	20.28	1.0577	769.	.9936	14.8422
750.	38.41	.8600	7.295	810.	.2150	.9702	21.09	1.0575	811.	.9928	15.0263
775.	41.01	.8696	7.622	854.	.2112	.9703	21.84	1.0573	855.	.9922	15.2000
800.	43.70	.8782	7.945	899.	.2079	.9705	22.55	1.0572	900.	.9917	15.3640
825.	46.48	.8859	8.266	946.	.2049	.9706	23.21	1.0570	947.	.9912	15.5188
850.	49.34	.8929	8.584	993.	.2022	.9707	23.83	1.0569	995.	.9908	15.6650
875.	52.28	.8993	8.899	1042.	.1998	.9709	24.41	1.0568	1044.	.9904	15.8032
900.	55.31	.9051	9.213	1093.	.1976	.9710	24.96	1.0566	1094.	.9901	15.9338
925.	58.43	.9104	9.524	1145.	.1956	.9711	25.47	1.0566	1146.	.9898	16.0573
950.	61.63	.9153	9.834	1198.	.1938	.9712	25.96	1.0565	1199.	.9896	16.1742
975.	64.91	.9198	10.142	1252.	.1921	.9712	26.41	1.0564	1253.	.9893	16.2848
1000.	68.29	.9239	10.449	1308.	.1906	.9713	26.84	1.0563	1309.	.9891	16.3897
1025.	71.74	.9277	10.754	1365.	.1891	.9714	27.25	1.0563	1366.	.9889	16.4890
1050.	75.28	.9312	11.058	1423.	.1878	.9715	27.63	1.0562	1425.	.9887	16.5832
1075.	78.91	.9345	11.361	1483.	.1866	.9715	27.99	1.0562	1484.	.9886	16.6726
1100.	82.63	.9375	11.663	1544.	.1855	.9716	28.33	1.0561	1546.	.9884	16.7575

X = 4 T_1 = 320

V_w	A^2	r_s/a	M_1	T_2	M_2	$\tilde{P}_2$	ρ_2/ρ_1	$\gamma(T_2)$	T_0	$\tilde{P}_0$	$\tilde{h}(T_2)$
350.	8.10	.7116	2.773	398.	.3914	.9647	6.36	1.0633	400.	1.0413	12.1275
375.	9.30	.7550	3.153	421.	.3538	.9658	7.78	1.0625	423.	1.0281	12.3877
400.	10.58	.7887	3.513	445.	.3264	.9666	9.15	1.0618	447.	1.0194	12.6428
425.	11.95	.8156	3.860	471.	.3053	.9672	10.45	1.0612	472.	1.0133	12.8919
450.	13.40	.8375	4.196	497.	.2886	.9677	11.70	1.0606	499.	1.0088	13.1345
475.	14.93	.8556	4.525	525.	.2749	.9682	12.89	1.0601	526.	1.0054	13.3698
500.	16.54	.8707	4.848	554.	.2637	.9685	14.02	1.0597	556.	1.0028	13.5975
525.	18.23	.8835	5.165	585.	.2541	.9688	15.09	1.0593	586.	1.0006	13.8171
550.	20.01	.8945	5.478	617.	.2460	.9691	16.10	1.0589	618.	.9989	14.0285
575.	21.87	.9039	5.788	650.	.2390	.9694	17.06	1.0586	651.	.9974	14.2316
600.	23.81	.9122	6.094	684.	.2329	.9696	17.97	1.0583	685.	.9962	14.4262
625.	25.84	.9193	6.398	720.	.2275	.9698	18.83	1.0580	721.	.9952	14.6126
650.	27.95	.9257	6.700	757.	.2227	.9700	19.65	1.0578	758.	.9943	14.7909
675.	30.14	.9313	7.000	795.	.2185	.9702	20.42	1.0576	796.	.9936	14.9611
700.	32.41	.9363	7.298	834.	.2147	.9703	21.15	1.0574	835.	.9929	15.1236
725.	34.77	.9407	7.594	875.	.2113	.9704	21.83	1.0572	876.	.9923	15.2786
750.	37.21	.9447	7.890	918.	.2082	.9706	22.48	1.0571	919.	.9918	15.4264
775.	39.73	.9483	8.184	961.	.2054	.9707	23.10	1.0570	962.	.9914	15.5671
800.	42.34	.9516	8.477	1006.	.2029	.9708	23.68	1.0568	1007.	.9910	15.7012
825.	45.02	.9545	8.769	1052.	.2006	.9709	24.23	1.0567	1053.	.9906	15.8289
850.	47.79	.9572	9.060	1100.	.1984	.9710	24.75	1.0566	1101.	.9903	15.9505
875.	50.65	.9597	9.350	1148.	.1965	.9711	25.24	1.0565	1150.	.9900	16.0662
900.	53.58	.9620	9.640	1199.	.1947	.9712	25.71	1.0565	1200.	.9898	16.1765
925.	56.60	.9640	9.929	1250.	.1930	.9713	26.15	1.0564	1251.	.9895	16.2814
950.	59.70	.9659	10.218	1303.	.1915	.9713	26.57	1.0563	1304.	.9893	16.3814
975.	62.89	.9677	10.506	1357.	.1901	.9714	26.97	1.0563	1359.	.9891	16.4766
1000.	66.15	.9693	10.793	1413.	.1888	.9715	27.35	1.0562	1414.	.9889	16.5673
1025.	69.50	.9708	11.080	1470.	.1875	.9715	27.71	1.0562	1471.	.9888	16.6538
1050.	72.93	.9722	11.367	1528.	.1864	.9716	28.05	1.0561	1530.	.9886	16.7362
1075.	76.45	.9735	11.653	1588.	.1853	.9717	28.37	1.0561	1589.	.9885	16.8148

X = 5 T_1 = 320

V_w	A^2	r_s/a	M_1	T_2	M_2	$\tilde{P}_2$	ρ_2/ρ_1	$\gamma(T_2)$	T_0	$\tilde{P}_0$	$\tilde{h}(T_2)$
350.	8.10	.6189	2.412	379.	.4394	.9632	5.05	1.0640	381.	1.0605	11.8911
375.	9.30	.6801	2.840	402.	.3840	.9649	6.61	1.0632	404.	1.0386	12.1723
400.	10.58	.7264	3.235	426.	.3469	.9660	8.10	1.0624	428.	1.0258	12.4457
425.	11.95	.7626	3.609	452.	.3201	.9668	9.51	1.0617	453.	1.0175	12.7114
450.	13.40	.7917	3.967	479.	.2996	.9674	10.85	1.0610	480.	1.0118	12.9691
475.	14.93	.8155	4.313	507.	.2835	.9679	12.13	1.0605	508.	1.0075	13.2183
500.	16.54	.8353	4.650	536.	.2704	.9683	13.33	1.0600	538.	1.0043	13.4586
525.	18.23	.8519	4.980	567.	.2595	.9687	14.47	1.0595	568.	1.0018	13.6898
550.	20.01	.8661	5.304	599.	.2504	.9690	15.54	1.0591	600.	.9998	13.9118
575.	21.87	.8783	5.623	632.	.2426	.9692	16.56	1.0588	633.	.9982	14.1246
600.	23.81	.8888	5.938	666.	.2359	.9695	17.52	1.0584	667.	.9968	14.3281
625.	25.84	.8981	6.250	702.	.2300	.9697	18.42	1.0582	703.	.9957	14.5226
650.	27.95	.9061	6.558	739.	.2249	.9699	19.27	1.0579	740.	.9947	14.7082
675.	30.14	.9133	6.864	777.	.2203	.9701	20.08	1.0577	778.	.9939	14.8852
700.	32.41	.9196	7.168	817.	.2163	.9702	20.83	1.0575	818.	.9932	15.0539
725.	34.77	.9253	7.470	858.	.2127	.9704	21.55	1.0573	859.	.9926	15.2144
750.	37.21	.9304	7.770	900.	.2094	.9705	22.22	1.0572	901.	.9920	15.3673
775.	39.73	.9350	8.068	944.	.2065	.9707	22.86	1.0570	945.	.9916	15.5127
800.	42.34	.9391	8.365	989.	.2038	.9708	23.46	1.0569	990.	.9911	15.6510
825.	45.02	.9428	8.661	1035.	.2014	.9709	24.03	1.0568	1036.	.9908	15.7825
850.	47.79	.9462	8.956	1082.	.1992	.9710	24.57	1.0567	1084.	.9904	15.9077
875.	50.65	.9494	9.250	1131.	.1972	.9711	25.08	1.0566	1133.	.9901	16.0267
900.	53.58	.9522	9.542	1182.	.1953	.9712	25.56	1.0565	1183.	.9898	16.1398
925.	56.60	.9548	9.834	1233.	.1936	.9712	26.01	1.0564	1234.	.9896	16.2475
950.	59.70	.9572	10.126	1286.	.1920	.9713	26.44	1.0563	1287.	.9894	16.3500
975.	62.89	.9594	10.416	1340.	.1905	.9714	26.85	1.0563	1342.	.9892	16.4474
1000.	66.15	.9615	10.706	1396.	.1892	.9715	27.24	1.0562	1397.	.9890	16.5402
1025.	69.50	.9634	10.995	1453.	.1879	.9715	27.60	1.0562	1454.	.9888	16.6286
1050.	72.93	.9651	11.284	1511.	.1867	.9716	27.95	1.0561	1513.	.9887	16.7128
1075.	76.45	.9667	11.572	1571.	.1856	.9716	28.28	1.0561	1572.	.9885	16.7930

X = 6 T_1 = 320

V_w	A^2	r_s/a	M_1	T_2	M_2	$\tilde{P}_2$	ρ_2/ρ_1	$\gamma(T_2)$	T_0	$\tilde{P}_0$	$\tilde{h}(T_2)$
350.	8.10	.5095	1.986	358.	.5206	.9605	3.61	1.0649	361.	1.0992	11.6314
375.	9.30	.5958	2.488	383.	.4280	.9636	5.32	1.0639	385.	1.0557	11.9398
400.	10.58	.6581	2.931	407.	.3745	.9652	6.95	1.0630	409.	1.0352	12.2346
425.	11.95	.7056	3.339	433.	.3388	.9663	8.49	1.0622	435.	1.0232	12.5190
450.	13.40	.7430	3.723	460.	.3131	.9670	9.94	1.0614	462.	1.0155	12.7935
475.	14.93	.7733	4.090	489.	.2935	.9676	11.31	1.0608	490.	1.0101	13.0579
500.	16.54	.7982	4.444	518.	.2781	.9681	12.60	1.0603	519.	1.0062	13.3121
525.	18.23	.8191	4.788	549.	.2656	.9685	13.81	1.0598	550.	1.0032	13.5559
550.	20.01	.8368	5.125	581.	.2553	.9688	14.95	1.0593	582.	1.0009	13.7894
575.	21.87	.8519	5.454	614.	.2466	.9691	16.03	1.0589	615.	.9990	14.0126
600.	23.81	.8649	5.778	649.	.2392	.9694	17.04	1.0586	650.	.9975	14.2256
625.	25.84	.8762	6.098	685.	.2328	.9696	17.99	1.0583	686.	.9962	14.4287
650.	27.95	.8862	6.414	722.	.2272	.9698	18.88	1.0580	723.	.9951	14.6222
675.	30.14	.8949	6.727	760.	.2223	.9700	19.72	1.0578	761.	.9943	14.8063
700.	32.41	.9027	7.036	800.	.2180	.9702	20.51	1.0576	801.	.9935	14.9815
725.	34.77	.9096	7.343	841.	.2141	.9703	21.25	1.0574	842.	.9928	15.1479
750.	37.21	.9158	7.648	883.	.2107	.9705	21.95	1.0572	884.	.9922	15.3061
775.	39.73	.9214	7.951	927.	.2076	.9706	22.62	1.0571	928.	.9917	15.4564
800.	42.34	.9264	8.253	971.	.2048	.9707	23.24	1.0569	973.	.9913	15.5992
825.	45.02	.9310	8.552	1018.	.2023	.9708	23.83	1.0568	1019.	.9909	15.7348
850.	47.79	.9351	8.851	1065.	.1999	.9709	24.38	1.0567	1066.	.9905	15.8636
875.	50.65	.9389	9.148	1114.	.1978	.9710	24.90	1.0566	1115.	.9902	15.9860
900.	53.58	.9424	9.444	1164.	.1959	.9711	25.40	1.0565	1166.	.9899	16.1023
925.	56.60	.9455	9.739	1216.	.1941	.9712	25.86	1.0564	1217.	.9897	16.2128
950.	59.70	.9484	10.033	1269.	.1925	.9713	26.31	1.0564	1270.	.9894	16.3178
975.	62.89	.9511	10.326	1323.	.1910	.9714	26.72	1.0563	1325.	.9892	16.4176
1000.	66.15	.9536	10.618	1379.	.1896	.9714	27.12	1.0562	1380.	.9890	16.5126
1025.	69.50	.9559	10.910	1436.	.1883	.9715	27.50	1.0562	1437.	.9889	16.6029
1050.	72.93	.9580	11.200	1494.	.1871	.9716	27.85	1.0561	1496.	.9887	16.6889
1075.	76.45	.9600	11.491	1554.	.1859	.9716	28.19	1.0561	1555.	.9886	16.7707

X = 7 T_1 = 320

V_w	A^2	r_s/a	M_1	T_2	M_2	$\tilde{P}_2$	ρ_2/ρ_1	$\gamma(T_2)$	T_0	$\tilde{P}_0$	$\tilde{h}(T_2)$
350.	8.10	.3690	1.438	337.	.7014	.9531	2.00	1.0661	342.	1.2167	11.3293
375.	9.30	.4975	2.077	363.	.5001	.9612	3.91	1.0647	365.	1.0887	11.6854
400.	10.58	.5819	2.592	388.	.4137	.9640	5.70	1.0637	390.	1.0499	12.0072
425.	11.95	.6436	3.046	414.	.3634	.9655	7.38	1.0627	416.	1.0313	12.3133
450.	13.40	.6910	3.462	442.	.3298	.9665	8.96	1.0619	443.	1.0205	12.6066
475.	14.93	.7287	3.854	470.	.3056	.9672	10.43	1.0612	472.	1.0134	12.8879
500.	16.54	.7594	4.228	500.	.2871	.9678	11.82	1.0606	501.	1.0085	13.1572
525.	18.23	.7849	4.588	531.	.2726	.9682	13.11	1.0600	532.	1.0049	13.4148
550.	20.01	.8063	4.938	563.	.2608	.9686	14.33	1.0596	564.	1.0021	13.6607
575.	21.87	.8246	5.280	596.	.2510	.9690	15.46	1.0591	597.	.9999	13.8951
600.	23.81	.8403	5.614	631.	.2428	.9692	16.53	1.0588	632.	.9982	14.1184
625.	25.84	.8539	5.942	667.	.2358	.9695	17.53	1.0584	668.	.9968	14.3307
650.	27.95	.8658	6.266	704.	.2297	.9697	18.47	1.0582	705.	.9956	14.5326
675.	30.14	.8762	6.586	743.	.2245	.9699	19.35	1.0579	744.	.9946	14.7243
700.	32.41	.8855	6.902	782.	.2198	.9701	20.17	1.0577	783.	.9938	14.9063
725.	34.77	.8937	7.215	823.	.2157	.9703	20.95	1.0575	824.	.9931	15.0790
750.	37.21	.9010	7.525	866.	.2121	.9704	21.68	1.0573	867.	.9925	15.2429
775.	39.73	.9076	7.833	909.	.2088	.9706	22.36	1.0571	910.	.9919	15.3984
800.	42.34	.9136	8.138	954.	.2058	.9707	23.01	1.0570	955.	.9915	15.5458
825.	45.02	.9190	8.442	1001.	.2032	.9708	23.61	1.0569	1002.	.9910	15.6857
850.	47.79	.9239	8.744	1048.	.2007	.9709	24.18	1.0567	1049.	.9907	15.8183
875.	50.65	.9283	9.045	1097.	.1985	.9710	24.72	1.0566	1098.	.9903	15.9442
900.	53.58	.9324	9.344	1147.	.1965	.9711	25.23	1.0565	1149.	.9900	16.0637
925.	56.60	.9361	9.642	1199.	.1947	.9712	25.71	1.0565	1200.	.9898	16.1771
950.	59.70	.9395	9.939	1252.	.1930	.9713	26.17	1.0564	1253.	.9895	16.2848
975.	62.89	.9427	10.235	1306.	.1914	.9713	26.60	1.0563	1308.	.9893	16.3871
1000.	66.15	.9456	10.529	1362.	.1900	.9714	27.00	1.0563	1363.	.9891	16.4842
1025.	69.50	.9483	10.823	1419.	.1886	.9715	27.39	1.0562	1420.	.9889	16.5766
1050.	72.93	.9508	11.116	1477.	.1874	.9715	27.75	1.0562	1479.	.9888	16.6645
1075.	76.45	.9531	11.409	1537.	.1862	.9716	28.10	1.0561	1538.	.9886	16.7480
1100.	80.04	.9553	11.701	1598.	.1852	.9717	28.42	1.0561	1600.	.9885	16.8276

X = 8 T_1 = 320

V_w	A^2	r_s/a	M_1	T_2	M_2	$\tilde{P}_2$	ρ_2/ρ_1	$\gamma(T_2)$	T_0	$\tilde{P}_0$	$\tilde{h}(T_2)$
375.	9.30	.3742	1.562	341.	.6486	.9554	2.33	1.0658	346.	1.1775	11.3955
400.	10.58	.4941	2.201	368.	.4754	.9620	4.32	1.0645	371.	1.0767	11.7597
425.	11.95	.5749	2.720	395.	.3976	.9645	6.17	1.0634	397.	1.0436	12.0921
450.	13.40	.6347	3.180	423.	.3515	.9659	7.89	1.0625	424.	1.0273	12.4070
475.	14.93	.6812	3.603	452.	.3205	.9668	9.49	1.0617	453.	1.0177	12.7071
500.	16.54	.7185	4.000	482.	.2979	.9675	10.98	1.0610	483.	1.0113	12.9932
525.	18.23	.7492	4.379	513.	.2807	.9680	12.37	1.0604	514.	1.0068	13.2658
550.	20.01	.7747	4.745	545.	.2671	.9684	13.66	1.0598	546.	1.0035	13.5252
575.	21.87	.7964	5.099	578.	.2560	.9688	14.87	1.0594	580.	1.0010	13.7718
600.	23.81	.8149	5.444	613.	.2468	.9691	16.00	1.0590	614.	.9990	14.0060
625.	25.84	.8309	5.783	649.	.2391	.9694	17.05	1.0586	650.	.9975	14.2283
650.	27.95	.8448	6.115	686.	.2325	.9696	18.03	1.0583	687.	.9961	14.4391
675.	30.14	.8571	6.442	725.	.2267	.9698	18.96	1.0580	726.	.9951	14.6389
700.	32.41	.8679	6.765	765.	.2218	.9700	19.82	1.0578	766.	.9942	14.8282
725.	34.77	.8775	7.084	806.	.2174	.9702	20.63	1.0575	807.	.9934	15.0076
750.	37.21	.8860	7.399	848.	.2135	.9704	21.39	1.0574	849.	.9927	15.1774
775.	39.73	.8937	7.712	892.	.2100	.9705	22.10	1.0572	893.	.9921	15.3383
800.	42.34	.9006	8.022	937.	.2069	.9706	22.77	1.0570	938.	.9916	15.4907
825.	45.02	.9068	8.330	983.	.2041	.9708	23.39	1.0569	984.	.9912	15.6350
850.	47.79	.9125	8.636	1031.	.2016	.9709	23.98	1.0568	1032.	.9908	15.7717
875.	50.65	.9176	8.941	1080.	.1993	.9710	24.54	1.0567	1081.	.9904	15.9013
900.	53.58	.9223	9.243	1130.	.1972	.9711	25.06	1.0566	1131.	.9901	16.0241
925.	56.60	.9266	9.544	1182.	.1953	.9712	25.56	1.0565	1183.	.9898	16.1405
950.	59.70	.9306	9.844	1235.	.1935	.9712	26.03	1.0564	1236.	.9896	16.2510
975.	62.89	.9342	10.143	1289.	.1919	.9713	26.47	1.0563	1290.	.9894	16.3558
1000.	66.15	.9376	10.440	1345.	.1904	.9714	26.88	1.0563	1346.	.9892	16.4553
1025.	69.50	.9407	10.736	1402.	.1890	.9715	27.27	1.0562	1403.	.9890	16.5498
1050.	72.93	.9436	11.032	1460.	.1877	.9715	27.65	1.0562	1462.	.9888	16.6395
1075.	76.45	.9462	11.326	1520.	.1866	.9716	28.00	1.0561	1521.	.9886	16.7249
1100.	80.04	.9487	11.620	1581.	.1855	.9716	28.33	1.0561	1583.	.9885	16.8060

X = 9 T_1 = 320

V_w	A^2	r_s/a	M_1	T_2	M_2	$\tilde{P}_2$	ρ_2/ρ_1	$\gamma(T_2)$	T_0	$\tilde{P}_0$	$\tilde{h}(T_2)$
400.	10.58	.3869	1.723	347.	.5921	.9578	2.79	1.0655	351.	1.1402	11.4827
425.	11.95	.4968	2.351	376.	.4491	.9629	4.84	1.0642	378.	1.0647	11.8526
450.	13.40	.5728	2.870	404.	.3808	.9650	6.72	1.0631	406.	1.0374	12.1931
475.	14.93	.6301	3.333	433.	.3393	.9662	8.46	1.0622	434.	1.0234	12.5144
500.	16.54	.6751	3.759	463.	.3110	.9671	10.07	1.0614	464.	1.0149	12.8191
525.	18.23	.7116	4.160	494.	.2902	.9677	11.57	1.0607	496.	1.0093	13.1082
550.	20.01	.7418	4.543	527.	.2743	.9682	12.95	1.0601	528.	1.0053	13.3824
575.	21.87	.7671	4.912	560.	.2616	.9686	14.24	1.0596	562.	1.0023	13.6422
600.	23.81	.7887	5.269	595.	.2513	.9689	15.43	1.0592	596.	1.0000	13.8883
625.	25.84	.8073	5.618	631.	.2427	.9692	16.54	1.0588	632.	.9982	14.1212
650.	27.95	.8234	5.960	669.	.2354	.9695	17.58	1.0584	670.	.9967	14.3416
675.	30.14	.8375	6.295	707.	.2292	.9697	18.55	1.0581	708.	.9955	14.5500
700.	32.41	.8499	6.625	747.	.2239	.9699	19.45	1.0579	748.	.9945	14.7471
725.	34.77	.8609	6.950	788.	.2191	.9701	20.29	1.0576	789.	.9937	14.9334
750.	37.21	.8707	7.271	831.	.2150	.9703	21.08	1.0574	832.	.9930	15.1096
775.	39.73	.8795	7.590	875.	.2113	.9704	21.82	1.0573	876.	.9923	15.2762
800.	42.34	.8874	7.905	920.	.2081	.9706	22.52	1.0571	921.	.9918	15.4337
825.	45.02	.8945	8.217	966.	.2051	.9707	23.17	1.0569	967.	.9913	15.5827
850.	47.79	.9009	8.527	1014.	.2025	.9708	23.78	1.0568	1015.	.9909	15.7237
875.	50.65	.9068	8.835	1063.	.2001	.9709	24.35	1.0567	1064.	.9906	15.8571
900.	53.58	.9122	9.141	1113.	.1979	.9710	24.89	1.0566	1114.	.9902	15.9834
925.	56.60	.9171	9.446	1165.	.1959	.9711	25.40	1.0565	1166.	.9899	16.1030
950.	59.70	.9215	9.748	1218.	.1941	.9712	25.88	1.0564	1219.	.9897	16.2163
975.	62.89	.9257	10.050	1272.	.1924	.9713	26.33	1.0564	1273.	.9894	16.3237
1000.	66.15	.9295	10.350	1328.	.1908	.9714	26.76	1.0563	1329.	.9892	16.4256
1025.	69.50	.9330	10.649	1385.	.1894	.9714	27.16	1.0562	1386.	.9890	16.5223
1050.	72.93	.9363	10.947	1443.	.1881	.9715	27.54	1.0562	1445.	.9888	16.6141
1075.	76.45	.9393	11.243	1503.	.1869	.9716	27.90	1.0561	1504.	.9887	16.7012
1100.	80.04	.9421	11.539	1564.	.1858	.9716	28.24	1.0561	1566.	.9885	16.7841

X = 10 T_1 = 320

V_w	A^2	r_s/a	M_1	T_2	M_2	$\tilde{P}_2$	ρ_2/ρ_1	$\gamma(T_2)$	T_0	$\tilde{P}_0$	$\tilde{h}(T_2)$
425.	11.95	.4038	1.911	355.	.5388	.9598	3.37	1.0651	358.	1.1090	11.5883
450.	13.40	.5035	2.523	384.	.4231	.9637	5.45	1.0638	386.	1.0537	11.9622
475.	14.93	.5745	3.038	414.	.3641	.9655	7.35	1.0628	416.	1.0315	12.3083
500.	16.54	.6288	3.501	444.	.3272	.9666	9.10	1.0619	446.	1.0197	12.6339
525.	18.23	.6720	3.928	476.	.3016	.9674	10.71	1.0611	477.	1.0123	12.9412
550.	20.01	.7073	4.332	509.	.2827	.9679	12.19	1.0604	510.	1.0073	13.2315
575.	21.87	.7367	4.717	542.	.2680	.9684	13.56	1.0599	544.	1.0038	13.5057
600.	23.81	.7616	5.088	577.	.2563	.9688	14.83	1.0594	579.	1.0011	13.7646
625.	25.84	.7829	5.449	614.	.2467	.9691	16.01	1.0589	615.	.9990	14.0090
650.	27.95	.8014	5.800	651.	.2387	.9694	17.10	1.0586	652.	.9974	14.2397
675.	30.14	.8174	6.144	690.	.2319	.9696	18.12	1.0583	691.	.9960	14.4573
700.	32.41	.8316	6.482	730.	.2261	.9699	19.06	1.0580	731.	.9949	14.6627
725.	34.77	.8440	6.814	771.	.2210	.9700	19.95	1.0577	772.	.9940	14.8564
750.	37.21	.8551	7.141	814.	.2166	.9702	20.77	1.0575	815.	.9932	15.0393
775.	39.73	.8651	7.465	857.	.2127	.9704	21.54	1.0573	858.	.9926	15.2119
800.	42.34	.8740	7.785	902.	.2093	.9705	22.26	1.0572	903.	.9920	15.3749
825.	45.02	.8820	8.102	949.	.2062	.9707	22.93	1.0570	950.	.9915	15.5288
850.	47.79	.8893	8.417	997.	.2034	.9708	23.56	1.0569	998.	.9911	15.6741
875.	50.65	.8959	8.728	1046.	.2009	.9709	24.16	1.0567	1047.	.9907	15.8116
900.	53.58	.9019	9.038	1096.	.1986	.9710	24.71	1.0566	1097.	.9903	15.9415
925.	56.60	.9074	9.346	1148.	.1965	.9711	25.24	1.0565	1149.	.9900	16.0644
950.	59.70	.9124	9.652	1201.	.1946	.9712	25.73	1.0565	1202.	.9898	16.1807
975.	62.89	.9170	9.956	1255.	.1929	.9713	26.19	1.0564	1256.	.9895	16.2909
1000.	66.15	.9213	10.259	1311.	.1913	.9714	26.63	1.0563	1312.	.9893	16.3953
1025.	69.50	.9253	10.560	1368.	.1898	.9714	27.04	1.0563	1369.	.9891	16.4942
1050.	72.93	.9289	10.861	1426.	.1885	.9715	27.43	1.0562	1428.	.9889	16.5880
1075.	76.45	.9323	11.160	1486.	.1872	.9716	27.80	1.0561	1487.	.9887	16.6771
1100.	80.04	.9355	11.458	1547.	.1861	.9716	28.15	1.0561	1549.	.9886	16.7616

X = 4 T_1 = 330

V_w	A^2	r_s/a	M_1	T_2	M_2	$\tilde{P}_2$	ρ_2/ρ_1	$\gamma(T_2)$	T_0	$\tilde{P}_0$	$\tilde{h}(T_2)$
350.	7.86	.7007	2.690	405.	.4010	.9647	6.06	1.0630	407.	1.0452	12.2086
375.	9.02	.7460	3.068	428.	.3610	.9658	7.48	1.0623	430.	1.0308	12.4629
400.	10.26	.7812	3.427	452.	.3320	.9667	8.84	1.0616	454.	1.0214	12.7122
425.	11.59	.8092	3.772	478.	.3099	.9673	10.14	1.0611	479.	1.0148	12.9559
450.	12.99	.8319	4.106	504.	.2925	.9678	11.39	1.0605	505.	1.0101	13.1934
475.	14.47	.8507	4.432	532.	.2783	.9682	12.58	1.0600	533.	1.0064	13.4240
500.	16.04	.8664	4.751	561.	.2666	.9686	13.71	1.0596	562.	1.0036	13.6473
525.	17.68	.8796	5.065	592.	.2567	.9689	14.79	1.0592	593.	1.0013	13.8629
550.	19.40	.8910	5.375	623.	.2483	.9692	15.81	1.0588	624.	.9995	14.0706
575.	21.21	.9008	5.681	656.	.2410	.9694	16.78	1.0585	657.	.9980	14.2702
600.	23.09	.9093	5.984	691.	.2347	.9697	17.69	1.0583	692.	.9967	14.4618
625.	25.06	.9167	6.284	726.	.2291	.9699	18.56	1.0580	727.	.9956	14.6453
650.	27.10	.9233	6.582	763.	.2242	.9700	19.38	1.0578	764.	.9947	14.8209
675.	29.23	.9291	6.878	801.	.2199	.9702	20.16	1.0576	802.	.9939	14.9888
700.	31.43	.9342	7.173	841.	.2160	.9704	20.89	1.0574	842.	.9932	15.1491
725.	33.72	.9388	7.465	882.	.2125	.9705	21.59	1.0572	883.	.9926	15.3020
750.	36.08	.9429	7.757	924.	.2093	.9706	22.24	1.0571	925.	.9921	15.4479
775.	38.53	.9467	8.047	967.	.2065	.9707	22.87	1.0569	969.	.9916	15.5870
800.	41.05	.9500	8.336	1012.	.2039	.9709	23.45	1.0568	1013.	.9912	15.7196
825.	43.66	.9531	8.624	1058.	.2015	.9710	24.01	1.0567	1060.	.9909	15.8458
850.	46.35	.9559	8.912	1106.	.1993	.9711	24.54	1.0566	1107.	.9905	15.9661
875.	49.11	.9584	9.198	1155.	.1973	.9711	25.04	1.0565	1156.	.9902	16.0807
900.	51.96	.9607	9.484	1205.	.1955	.9712	25.51	1.0565	1206.	.9899	16.1899
925.	54.89	.9629	9.769	1257.	.1938	.9713	25.96	1.0564	1258.	.9897	16.2939
950.	57.89	.9648	10.053	1310.	.1922	.9714	26.38	1.0563	1311.	.9895	16.3929
975.	60.98	.9666	10.337	1364.	.1907	.9714	26.79	1.0563	1365.	.9893	16.4873
1000.	64.15	.9683	10.621	1419.	.1894	.9715	27.17	1.0562	1421.	.9891	16.5773
1025.	67.39	.9699	10.904	1476.	.1881	.9716	27.54	1.0562	1478.	.9889	16.6630
1050.	70.72	.9713	11.186	1535.	.1870	.9716	27.88	1.0561	1536.	.9887	16.7448
1075.	74.13	.9726	11.468	1594.	.1859	.9717	28.21	1.0561	1596.	.9886	16.8228

X = 5 T_1 = 330

V_w	A^2	r_s/a	M_1	T_2	M_2	$\tilde{P}_2$	ρ_2/ρ_1	$\gamma(T_2)$	T_0	$\tilde{P}_0$	$\tilde{h}(T_2)$
350.	7.86	.6031	2.315	385.	.4549	.9630	4.72	1.0638	387.	1.0676	11.9700
375.	9.02	.6676	2.746	408.	.3944	.9649	6.27	1.0629	410.	1.0427	12.2456
400.	10.26	.7161	3.142	433.	.3545	.9660	7.75	1.0622	434.	1.0286	12.5133
425.	11.59	.7540	3.515	458.	.3260	.9668	9.17	1.0615	460.	1.0195	12.7736
450.	12.99	.7843	3.871	485.	.3044	.9675	10.51	1.0609	486.	1.0133	13.0262
475.	14.47	.8090	4.215	513.	.2874	.9680	11.79	1.0603	514.	1.0088	13.2707
500.	16.04	.8296	4.550	543.	.2738	.9684	13.00	1.0599	544.	1.0053	13.5067
525.	17.68	.8469	4.877	573.	.2624	.9687	14.15	1.0594	574.	1.0026	13.7339
550.	19.40	.8616	5.197	605.	.2530	.9690	15.23	1.0590	606.	1.0005	13.9523
575.	21.21	.8742	5.513	638.	.2449	.9693	16.25	1.0587	639.	.9988	14.1616
600.	23.09	.8851	5.825	672.	.2379	.9696	17.22	1.0584	674.	.9974	14.3621
625.	25.06	.8947	6.133	708.	.2319	.9698	18.13	1.0581	709.	.9962	14.5538
650.	27.10	.9031	6.438	745.	.2265	.9700	18.99	1.0579	746.	.9952	14.7369
675.	29.23	.9105	6.741	783.	.2219	.9701	19.80	1.0577	784.	.9943	14.9115
700.	31.43	.9170	7.041	823.	.2177	.9703	20.57	1.0575	824.	.9935	15.0780
725.	33.72	.9229	7.339	864.	.2140	.9704	21.29	1.0573	865.	.9929	15.2366
750.	36.08	.9281	7.635	906.	.2106	.9706	21.97	1.0571	907.	.9923	15.3877
775.	38.53	.9329	7.930	950.	.2076	.9707	22.62	1.0570	951.	.9918	15.5315
800.	41.05	.9371	8.223	995.	.2048	.9708	23.23	1.0569	996.	.9914	15.6683
825.	43.66	.9410	8.515	1041.	.2024	.9709	23.80	1.0568	1042.	.9910	15.7986
850.	46.35	.9445	8.806	1088.	.2001	.9710	24.35	1.0567	1089.	.9906	15.9225
875.	49.11	.9477	9.095	1137.	.1980	.9711	24.86	1.0566	1138.	.9903	16.0403
900.	51.96	.9507	9.384	1187.	.1961	.9712	25.35	1.0565	1189.	.9900	16.1525
925.	54.89	.9534	9.672	1239.	.1943	.9713	25.81	1.0564	1240.	.9898	16.2592
950.	57.89	.9558	9.960	1292.	.1927	.9714	26.25	1.0563	1293.	.9895	16.3608
975.	60.98	.9581	10.246	1346.	.1912	.9714	26.66	1.0563	1347.	.9893	16.4575
1000.	64.15	.9602	10.532	1402.	.1898	.9715	27.05	1.0562	1403.	.9891	16.5496
1025.	67.39	.9622	10.817	1459.	.1885	.9716	27.43	1.0562	1460.	.9890	16.6373
1050.	70.72	.9640	11.102	1517.	.1873	.9716	27.78	1.0561	1519.	.9888	16.7208
1075.	74.13	.9657	11.386	1577.	.1862	.9717	28.12	1.0561	1578.	.9886	16.8005

X = 6 T_1 = 330

V_w	A^2	r_s/a	M_1	T_2	M_2	$\tilde{P}_2$	ρ_2/ρ_1	$\gamma(T_2)$	T_0	$\tilde{P}_0$	$\tilde{h}(T_2)$
350.	7.86	.4863	1.867	364.	.5502	.9597	3.23	1.0647	367.	1.1158	11.7058
375.	9.02	.5787	2.380	388.	.4442	.9633	4.95	1.0637	391.	1.0629	12.0103
400.	10.26	.6445	2.828	413.	.3851	.9651	6.57	1.0628	415.	1.0393	12.2999
425.	11.59	.6944	3.237	439.	.3466	.9663	8.11	1.0620	441.	1.0260	12.5791
450.	12.99	.7336	3.621	466.	.3191	.9670	9.57	1.0613	467.	1.0175	12.8485
475.	14.47	.7651	3.986	494.	.2983	.9677	10.95	1.0607	496.	1.0116	13.1083
500.	16.04	.7911	4.339	524.	.2821	.9681	12.24	1.0602	525.	1.0074	13.3582
525.	17.68	.8128	4.680	555.	.2690	.9685	13.46	1.0597	556.	1.0042	13.5981
550.	19.40	.8311	5.014	587.	.2582	.9689	14.61	1.0593	588.	1.0017	13.8279
575.	21.21	.8468	5.341	620.	.2492	.9692	15.70	1.0589	621.	.9997	14.0478
600.	23.09	.8603	5.662	654.	.2414	.9694	16.72	1.0586	655.	.9981	14.2579
625.	25.06	.8721	5.978	690.	.2348	.9697	17.68	1.0583	691.	.9967	14.4583
650.	27.10	.8824	6.291	727.	.2290	.9699	18.58	1.0580	728.	.9956	14.6493
675.	29.23	.8915	6.600	765.	.2240	.9701	19.43	1.0578	766.	.9947	14.8312
700.	31.43	.8995	6.906	805.	.2195	.9702	20.23	1.0576	806.	.9939	15.0042
725.	33.72	.9067	7.210	846.	.2155	.9704	20.98	1.0574	847.	.9932	15.1689
750.	36.08	.9131	7.511	888.	.2120	.9705	21.69	1.0572	889.	.9926	15.3254
775.	38.53	.9188	7.810	932.	.2088	.9707	22.36	1.0571	933.	.9920	15.4741
800.	41.05	.9240	8.108	977.	.2059	.9708	22.99	1.0569	978.	.9916	15.6155
825.	43.66	.9287	8.404	1023.	.2033	.9709	23.59	1.0568	1024.	.9911	15.7498
850.	46.35	.9330	8.699	1071.	.2009	.9710	24.15	1.0567	1072.	.9908	15.8775
875.	49.11	.9369	8.992	1120.	.1987	.9711	24.68	1.0566	1121.	.9904	15.9988
900.	51.96	.9405	9.284	1170.	.1967	.9712	25.18	1.0565	1171.	.9901	16.1141
925.	54.89	.9438	9.575	1221.	.1949	.9713	25.66	1.0564	1223.	.9899	16.2237
950.	57.89	.9468	9.865	1274.	.1932	.9713	26.11	1.0564	1276.	.9896	16.3279
975.	60.98	.9495	10.154	1329.	.1917	.9714	26.53	1.0563	1330.	.9894	16.4270
1000.	64.15	.9521	10.443	1384.	.1902	.9715	26.93	1.0562	1386.	.9892	16.5212
1025.	67.39	.9544	10.730	1441.	.1889	.9715	27.31	1.0562	1443.	.9890	16.6110
1050.	70.72	.9566	11.017	1500.	.1876	.9716	27.68	1.0561	1501.	.9888	16.6964
1075.	74.13	.9587	11.304	1559.	.1865	.9716	28.02	1.0561	1561.	.9887	16.7777

X = 7 T_1 = 330

V_w	A^2	r_s/a	M_1	T_2	M_2	$\tilde{P}_2$	ρ_2/ρ_1	$\gamma(T_2)$	T_0	$\tilde{P}_0$	$\tilde{h}(T_2)$
350.	7.86	.3304	1.268	341.	.7913	.9492	1.58	1.0659	347.	1.2943	11.3858
375.	9.02	.4733	1.947	368.	.5298	.9605	3.48	1.0645	371.	1.1045	11.7511
400.	10.26	.5639	2.474	393.	.4299	.9638	5.28	1.0635	395.	1.0568	12.0693
425.	11.59	.6292	2.933	420.	.3741	.9655	6.97	1.0626	421.	1.0353	12.3706
450.	12.99	.6791	3.352	447.	.3376	.9665	8.55	1.0618	448.	1.0231	12.6591
475.	14.47	.7186	3.744	475.	.3116	.9673	10.04	1.0611	477.	1.0153	12.9358
500.	16.04	.7507	4.117	505.	.2920	.9678	11.43	1.0605	506.	1.0099	13.2010
525.	17.68	.7772	4.475	536.	.2766	.9683	12.74	1.0600	537.	1.0060	13.4547
550.	19.40	.7995	4.823	568.	.2642	.9687	13.96	1.0595	569.	1.0030	13.6971
575.	21.21	.8185	5.162	601.	.2539	.9690	15.11	1.0591	602.	1.0007	13.9284
600.	23.09	.8348	5.494	636.	.2453	.9693	16.19	1.0587	637.	.9989	14.1488
625.	25.06	.8489	5.819	672.	.2380	.9695	17.20	1.0584	673.	.9974	14.3585
650.	27.10	.8612	6.140	709.	.2317	.9698	18.15	1.0581	710.	.9961	14.5580
675.	29.23	.8721	6.456	747.	.2263	.9700	19.04	1.0579	748.	.9951	14.7475
700.	31.43	.8816	6.769	787.	.2214	.9701	19.87	1.0576	788.	.9942	14.9276
725.	33.72	.8902	7.078	828.	.2172	.9703	20.66	1.0574	829.	.9935	15.0985
750.	36.08	.8978	7.385	870.	.2134	.9705	21.40	1.0573	872.	.9928	15.2608
775.	38.53	.9046	7.689	914.	.2100	.9706	22.09	1.0571	915.	.9922	15.4148
800.	41.05	.9108	7.992	959.	.2070	.9707	22.75	1.0570	960.	.9917	15.5609
825.	43.66	.9163	8.292	1005.	.2042	.9708	23.37	1.0568	1006.	.9913	15.6996
850.	46.35	.9214	8.590	1053.	.2017	.9709	23.95	1.0567	1054.	.9909	15.8312
875.	49.11	.9260	8.887	1102.	.1995	.9710	24.49	1.0566	1103.	.9905	15.9560
900.	51.96	.9302	9.182	1152.	.1974	.9711	25.01	1.0565	1153.	.9902	16.0746
925.	54.89	.9341	9.476	1204.	.1955	.9712	25.50	1.0565	1205.	.9900	16.1872
950.	57.89	.9376	9.769	1257.	.1938	.9713	25.96	1.0564	1258.	.9897	16.2941
975.	60.98	.9409	10.061	1311.	.1921	.9714	26.40	1.0563	1312.	.9895	16.3957
1000.	64.15	.9439	10.352	1367.	.1907	.9714	26.81	1.0563	1368.	.9893	16.4922
1025.	67.39	.9466	10.642	1424.	.1893	.9715	27.20	1.0562	1425.	.9891	16.5840
1050.	70.72	.9492	10.932	1482.	.1880	.9716	27.57	1.0562	1483.	.9889	16.6714
1075.	74.13	.9516	11.220	1542.	.1868	.9716	27.92	1.0561	1543.	.9887	16.7544

X = 8 T_1 = 330

V_w	A^2	r_s/a	M_1	T_2	M_2	$\tilde{P}_2$	ρ_2/ρ_1	$\gamma(T_2)$	T_0	$\tilde{P}_0$	$\tilde{h}(T_2)$
375.	9.02	.3364	1.384	345.	.7278	.9523	1.86	1.0656	350.	1.2384	11.4463
400.	10.26	.4696	2.060	373.	.5036	.9614	3.85	1.0643	376.	1.0908	11.8168
425.	11.59	.5564	2.593	400.	.4133	.9643	5.71	1.0632	402.	1.0500	12.1459
450.	12.99	.6198	3.059	427.	.3619	.9658	7.44	1.0623	429.	1.0311	12.4564
475.	14.47	.6688	3.484	456.	.3281	.9668	9.05	1.0615	458.	1.0202	12.7522
500.	16.04	.7079	3.882	486.	.3038	.9675	10.56	1.0609	487.	1.0131	13.0343
525.	17.68	.7399	4.261	517.	.2854	.9680	11.96	1.0603	518.	1.0082	13.3032
550.	19.40	.7666	4.625	549.	.2710	.9685	13.27	1.0598	551.	1.0047	13.5593
575.	21.21	.7892	4.977	583.	.2593	.9688	14.49	1.0593	584.	1.0019	13.8029
600.	23.09	.8084	5.320	618.	.2497	.9692	15.63	1.0589	619.	.9998	14.0343
625.	25.06	.8251	5.656	654.	.2416	.9694	16.70	1.0586	655.	.9981	14.2541
650.	27.10	.8395	5.985	691.	.2347	.9697	17.70	1.0583	692.	.9967	14.4627
675.	29.23	.8522	6.309	729.	.2287	.9699	18.63	1.0580	730.	.9956	14.6604
700.	31.43	.8634	6.629	769.	.2235	.9701	19.51	1.0577	770.	.9946	14.8479
725.	33.72	.8733	6.945	810.	.2190	.9702	20.33	1.0575	811.	.9938	15.0256
750.	36.08	.8822	7.257	853.	.2149	.9704	21.10	1.0573	854.	.9931	15.1939
775.	38.53	.8901	7.567	896.	.2114	.9705	21.82	1.0572	897.	.9925	15.3534
800.	41.05	.8973	7.873	941.	.2081	.9707	22.50	1.0570	942.	.9919	15.5045
825.	43.66	.9038	8.178	988.	.2052	.9708	23.14	1.0569	989.	.9915	15.6477
850.	46.35	.9096	8.480	1035.	.2026	.9709	23.74	1.0568	1036.	.9910	15.7834
875.	49.11	.9149	8.781	1084.	.2003	.9710	24.30	1.0567	1085.	.9907	15.9121
900.	51.96	.9198	9.080	1134.	.1981	.9711	24.83	1.0566	1136.	.9903	16.0340
925.	54.89	.9243	9.377	1186.	.1961	.9712	25.34	1.0565	1187.	.9900	16.1497
950.	57.89	.9283	9.673	1239.	.1943	.9713	25.81	1.0564	1240.	.9898	16.2595
975.	60.98	.9321	9.968	1293.	.1926	.9714	26.26	1.0563	1295.	.9895	16.3636
1000.	64.15	.9356	10.261	1349.	.1911	.9714	26.68	1.0563	1350.	.9893	16.4625
1025.	67.39	.9388	10.554	1406.	.1897	.9715	27.08	1.0562	1408.	.9891	16.5565
1050.	70.72	.9417	10.846	1465.	.1884	.9716	27.46	1.0562	1466.	.9889	16.6458
1075.	74.13	.9445	11.136	1524.	.1872	.9716	27.82	1.0561	1526.	.9888	16.7307
1100.	77.62	.9471	11.426	1585.	.1860	.9717	28.16	1.0561	1587.	.9886	16.8114

X = 9 T_1 = 330

V_w	A^2	r_s/a	M_1	T_2	M_2	$\tilde{P}_2$	ρ_2/ρ_1	$\gamma(T_2)$	T_0	$\tilde{P}_0$	$\tilde{h}(T_2)$
400.	10.26	.3509	1.539	351.	.6577	.9554	2.27	1.0653	355.	1.1844	11.5280
425.	11.59	.4725	2.202	379.	.4749	.9623	4.33	1.0640	382.	1.0768	11.9013
450.	12.99	.5542	2.735	408.	.3956	.9648	6.23	1.0630	410.	1.0432	12.2386
475.	14.47	.6149	3.204	437.	.3493	.9662	7.99	1.0621	438.	1.0268	12.5561
500.	16.04	.6624	3.633	467.	.3183	.9671	9.62	1.0613	468.	1.0172	12.8571
525.	17.68	.7007	4.035	498.	.2959	.9677	11.13	1.0606	500.	1.0110	13.1427
550.	19.40	.7322	4.417	531.	.2789	.9682	12.53	1.0600	532.	1.0066	13.4137
575.	21.21	.7587	4.785	564.	.2654	.9686	13.83	1.0595	565.	1.0033	13.6707
600.	23.09	.7812	5.141	599.	.2545	.9690	15.04	1.0591	600.	1.0009	13.9142
625.	25.06	.8005	5.488	635.	.2455	.9693	16.17	1.0587	636.	.9989	14.1448
650.	27.10	.8173	5.827	673.	.2379	.9696	17.22	1.0584	674.	.9974	14.3631
675.	29.23	.8319	6.159	711.	.2314	.9698	18.20	1.0581	712.	.9961	14.5696
700.	31.43	.8448	6.486	751.	.2258	.9700	19.12	1.0578	752.	.9950	14.7650
725.	33.72	.8562	6.808	792.	.2209	.9702	19.98	1.0576	793.	.9941	14.9498
750.	36.08	.8664	7.127	835.	.2166	.9703	20.78	1.0574	836.	.9933	15.1245
775.	38.53	.8754	7.442	878.	.2128	.9705	21.53	1.0572	879.	.9927	15.2899
800.	41.05	.8836	7.753	923.	.2094	.9706	22.24	1.0571	925.	.9921	15.4462
825.	43.66	.8910	8.062	970.	.2063	.9708	22.90	1.0569	971.	.9916	15.5942
850.	46.35	.8977	8.369	1017.	.2036	.9709	23.52	1.0568	1019.	.9912	15.7342
875.	49.11	.9037	8.673	1067.	.2011	.9710	24.10	1.0567	1068.	.9908	15.8668
900.	51.96	.9093	8.976	1117.	.1988	.9711	24.65	1.0566	1118.	.9905	15.9923
925.	54.89	.9143	9.276	1169.	.1968	.9712	25.17	1.0565	1170.	.9901	16.1112
950.	57.89	.9190	9.576	1222.	.1949	.9713	25.66	1.0564	1223.	.9899	16.2239
975.	60.98	.9233	9.873	1276.	.1932	.9713	26.12	1.0564	1277.	.9896	16.3308
1000.	64.15	.9272	10.170	1332.	.1916	.9714	26.55	1.0563	1333.	.9894	16.4321
1025.	67.39	.9308	10.465	1389.	.1901	.9715	26.96	1.0562	1390.	.9892	16.5283
1050.	70.72	.9342	10.759	1447.	.1888	.9715	27.35	1.0562	1448.	.9890	16.6197
1075.	74.13	.9373	11.052	1507.	.1875	.9716	27.72	1.0561	1508.	.9888	16.7064
1100.	77.62	.9402	11.344	1568.	.1863	.9717	28.07	1.0561	1569.	.9887	16.7889

X = 10 T_1 = 330

V_w	A^2	r_s/a	M_1	T_2	M_2	$\tilde{P}_2$	ρ_2/ρ_1	$\gamma(T_2)$	T_0	$\tilde{P}_0$	$\tilde{h}(T_2)$
425.	11.59	.3700	1.725	358.	.5915	.9582	2.80	1.0650	362.	1.1403	11.6275
450.	12.99	.4798	2.368	388.	.4462	.9633	4.90	1.0637	390.	1.0638	12.0027
475.	14.47	.5559	2.896	417.	.3778	.9654	6.83	1.0626	419.	1.0366	12.3459
500.	16.04	.6135	3.365	448.	.3366	.9665	8.60	1.0618	449.	1.0228	12.6683
525.	17.68	.6591	3.795	479.	.3086	.9674	10.23	1.0610	481.	1.0145	12.9724
550.	19.40	.6962	4.200	512.	.2881	.9680	11.74	1.0604	513.	1.0089	13.2598
575.	21.21	.7270	4.585	546.	.2724	.9684	13.13	1.0598	547.	1.0050	13.5314
600.	23.09	.7530	4.955	581.	.2600	.9688	14.42	1.0593	582.	1.0021	13.7879
625.	25.06	.7752	5.314	617.	.2498	.9691	15.61	1.0589	618.	.9998	14.0302
650.	27.10	.7944	5.663	654.	.2414	.9694	16.72	1.0586	655.	.9981	14.2589
675.	29.23	.8111	6.005	693.	.2343	.9697	17.75	1.0582	694.	.9966	14.4748
700.	31.43	.8257	6.340	733.	.2282	.9699	18.72	1.0580	734.	.9955	14.6786
725.	33.72	.8387	6.669	774.	.2229	.9701	19.61	1.0577	775.	.9945	14.8709
750.	36.08	.8502	6.994	817.	.2183	.9703	20.45	1.0575	818.	.9937	15.0526
775.	38.53	.8605	7.314	861.	.2142	.9704	21.23	1.0573	862.	.9929	15.2240
800.	41.05	.8697	7.631	906.	.2106	.9706	21.97	1.0571	907.	.9923	15.3859
825.	43.66	.8780	7.945	952.	.2074	.9707	22.65	1.0570	953.	.9918	15.5389
850.	46.35	.8856	8.256	1000.	.2045	.9708	23.29	1.0569	1001.	.9913	15.6835
875.	49.11	.8924	8.565	1049.	.2019	.9709	23.90	1.0567	1050.	.9909	15.8201
900.	51.96	.8986	8.871	1099.	.1996	.9710	24.47	1.0566	1100.	.9906	15.9494
925.	54.89	.9043	9.175	1151.	.1975	.9711	25.00	1.0565	1152.	.9902	16.0717
950.	57.89	.9095	9.477	1204.	.1955	.9712	25.50	1.0565	1205.	.9900	16.1874
975.	60.98	.9143	9.778	1258.	.1937	.9713	25.97	1.0564	1260.	.9897	16.2971
1000.	64.15	.9188	10.077	1314.	.1921	.9714	26.42	1.0563	1315.	.9895	16.4010
1025.	67.39	.9228	10.375	1371.	.1906	.9715	26.84	1.0563	1372.	.9892	16.4995
1050.	70.72	.9266	10.671	1429.	.1892	.9715	27.24	1.0562	1431.	.9890	16.5929
1075.	74.13	.9301	10.967	1489.	.1879	.9716	27.61	1.0561	1491.	.9889	16.6816
1100.	77.62	.9334	11.261	1550.	.1867	.9716	27.97	1.0561	1552.	.9887	16.7659

APPENDIX B

FORTRAN LISTING OF THE COMPUTER PROGRAM USED TO PRODUCE THE NORMAL SHOCK SOLUTIONS

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      PROGRAM MAIN(INPUT,OUTPUT,TTY,TAPE59=TTY,TAPE3=OUTPUT)
C***** THIS PROGRAM CALCULATES GASDYNAMIC FUNCTIONS OF HIGH SPEED
C***** URANIUM HEXAFLUORIDE GAS
C***** ENTHALPY AND GAMMA VALUES ARE CALCULATED USING  FUNDA-
C***** MENTAL VIBRATIONAL FREQUENCIES FOR UF6 TAKEN FROM THE
C***** PAPER BY R.S. MC DOWELL, L.B. ASPREY AND R.T. PAINE
C***** J. CHEM. PHYS. 61, 3571, (1970).
      DIMENSION THETA(6), DGEN(6)
      THETA(1)=205.
      THETA(2)=288.
      THETA(3)=267.
      THETA(4)=900.
      THETA(5)=768.
      THETA(6)=959.
      DGEN(1)=3.
      DGEN(2)=3.
      DGEN(3)=3.
      DGEN(4)=3.
      DGEN(5)=2.
      DGEN(6)=1.
      T1=290.
  175 XS=4.0
  165 WRITE(3,1080)
 1080 FORMAT(1H1)
      WRITE(3,1070) XS,T1
      VW=3.5E+04
      VSTILDE=(T1*2.362E+05)**0.5
  160 ASQ=0.5*(VW/VSTILDE)**2
 1070 FORMAT(2X,*X= *F3.0,2X,*T1= *F5.0,//)
      RSQ=(1.-(XS/ASQ))
      IF(RSQ.LE.0.) GO TO 155
      R=RSQ**0.5
      U1=VW*R
      T=T1
      NIT=1
      N=1
C***** CALCULATE GAMMA AND HSTAR FOR UPSTREAM GAS CONDITIONS
      GO TO 100
  120 CONTINUE
      VM1=U1/VSTILDE
      IF(VM1.LE.1.1) GO TO 155
      AM1=VM1/(GAMMA)**0.5
      VM12=VM1*VM1
      HZERO=HSTAR+0.5*VM12
      GM1=GAMMA-1.
      GP1=GAMMA+1.
      U=VM1*(GM1+(2.*GAMMA/VM12))/GP1
      TRAT=(2.*VM12-GM1)*(GM1+2.*(GAMMA/VM12))/(GP1*GP1)
      T=TRAT*T1
  125 CONTINUE
      N=2
      GO TO 100
  130 CONTINUE
      F=HZERO-HSTAR*TRAT-0.5*U*U
      G=TRAT*VM1/U
      G=G-1.-VM12*(1.-(U/VM1))
      GM1=GAMMA-1.
      GP1=GAMMA+1.
      GGM1=GM1/GAMMA
      DELTT=GGM1*(F-G*(U*U*U/(VM1*TRAT)))
      DELTU=((G*U*U/VM1)+GGM1*F*U)/TRAT
      TRAT=TRAT+DELTT
      U=U+DELTU
      T2=TRAT*T1
 1010 FORMAT(2X,*TEMP RATIO= *1PE12.4,2X,*U= *E12.4.2X,*DELT T= *
     1E12.4,2X,*DEL U= *E12.4)
      IF(NIT.GE.10) GO TO 145
      NIT=NIT+1
      T=T2
      IF(ABS(DELTU/U).GE.1.E-04) GO TO 125
      IF(ABS(DELTT/TRAT).GE.1.E-04) GO TO 125
      GO TO 150
  100 CONTINUE
C***** CALCULATE GAMMA AND THE DIMENSIONLESS ENTHALPY FUNCTION
```

```
C***** GIVEN THE GAS TEMPERATURE IN KELVINS
      SUM1=SUM2=0.
      DO 110 I=1,6
      X=THETA(I)/T
      Y=EXP(-X)
      Z=X/(1.-Y)
      SUM1=SUM1+Z*Y*DGEN(I)
      SUM2=SUM2+Z*Z*Y*DGEN(I)
  110 CONTINUE
      GAMMA=1.+1./(3.+SUM2)
      HSTAR=4.+SUM1
 1000 FORMAT(2X,*T= *1PE12.4,2X,*GAMMA= *E12.4,2X,*HSTAR= *E12.4)
      IF(N.EQ.1) GO TO 120
      IF(N.EQ.2) GO TO 130
  150 CONTINUE
      DENRAT=VM1/U
      PRAT=TRAT/(VM1*U)
      AM2=U/(GAMMA*TRAT)**0.5
      T2=T1*TRAT
      TEMPFAC=1.+0.5*GGM1*AM2*AM2
      TSTAG=T2*TEMPFAC
      IF(TSTAG.GT.1600.) GO TO 158
      PFAC=TEMPFAC**(1./GGM1)
      STAGPR=PRAT*PFAC
      VWP=VW/100.
      WRITE(3,1060) VWP,ASQ,R,AM1,T2,AM2,PRAT,DENRAT,GAMMA,TSTAG,STAGPR
     1,HSTAR
 1060 FORMAT(1X,F5.0,2X,F6.2,2X,F5.4,2X,F6.3,2X,F5.0,2X,F5.4,2X,F5.4,
     12X,F5.2,2X,F6.4,2X,F5.0,2X,F6.4,2X,2X,F7.4)
      GO TO 155
  145 WRITE(3,1020) NIT
  155 VW=VW+0.25E+04
      IF(VW.LE.1.2E+05) GO TO 160
  158 XS=XS+1.0
      IF(XS.LE.10.) GO TO 165
      T1=T1+10.
      IF(T1.LE.330.) GO TO 175
 1020 FORMAT(2X,*NIT= *I3)
      RETURN
      END
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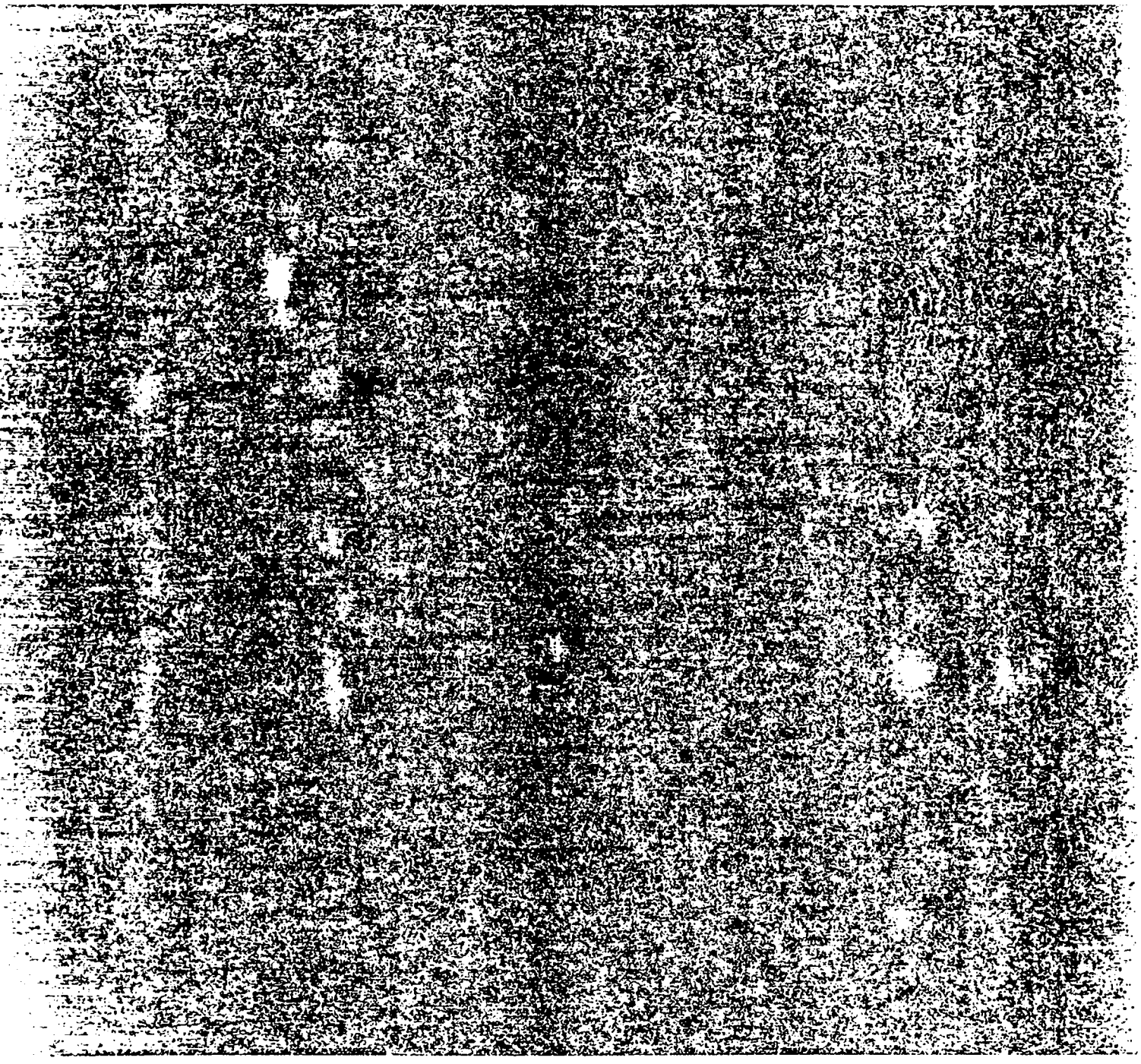

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