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**LOS ALAMOS SCIENTIFIC LABORATORY
OF THE UNIVERSITY OF CALIFORNIA ○ LOS ALAMOS NEW MEXICO**

**DETONATION PROPERTIES OF CONDENSED EXPLOSIVES
COMPUTED USING THE
BECKER-KISTIAKOWSKY-WILSON EQUATION OF STATE**

LOS ALAMOS NATIONAL LABORATORY
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DETONATION PROPERTIES OF CONDENSED EXPLOSIVES
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by

Charles L. Mader

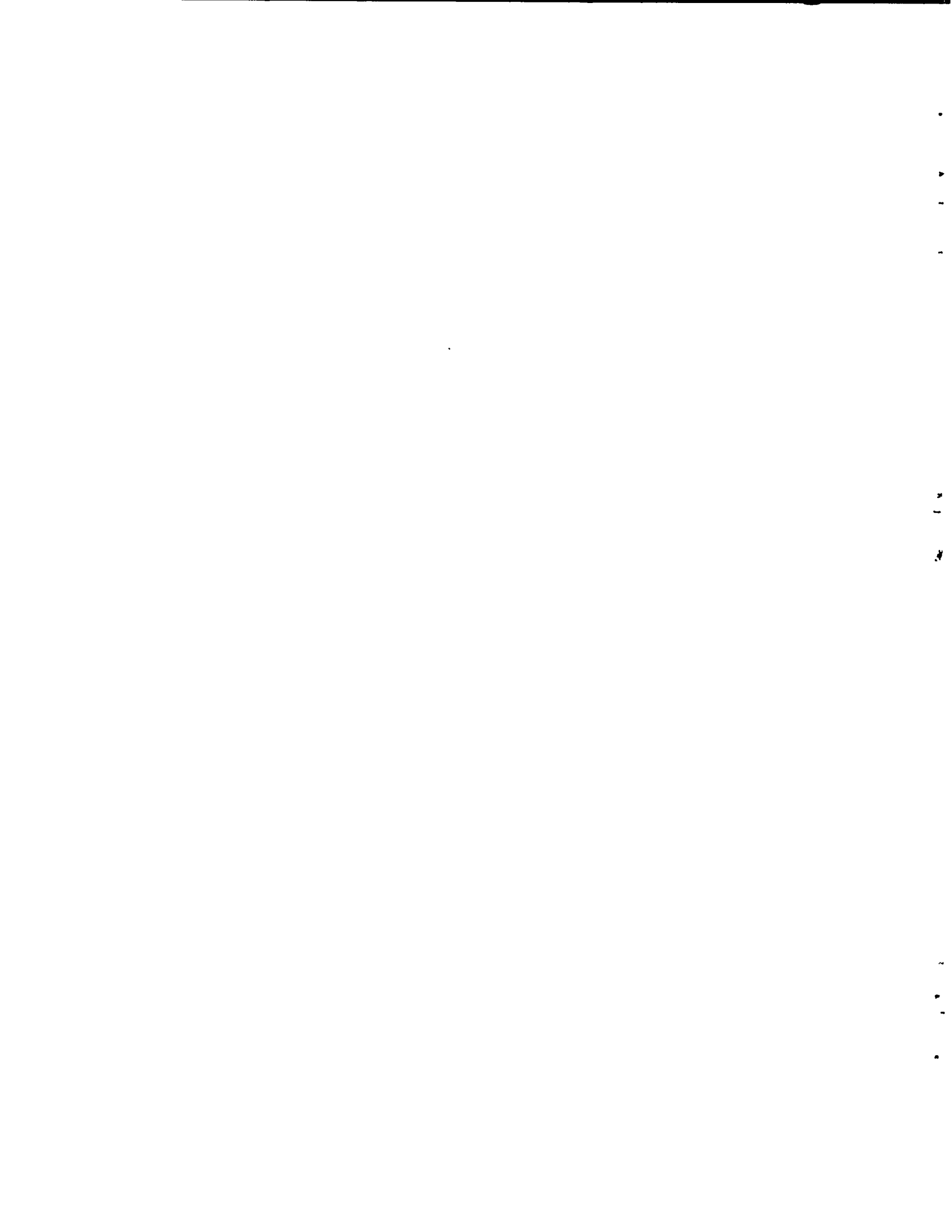
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ABSTRACT

The history and theoretical basis of the Becker-Kistiakowsky-Wilson (BKW) equation of state are reviewed, and the results of an extensive parameter study are described. The covolumes of water and carbon dioxide were changed to 250 and 600, respectively, to obtain better agreement with the experimental Hugoniot. Using these covolumes, a single set of BKW equation of state parameters could not be found that would reproduce the experimental detonation properties of TNT and RDX within experimental error. The BKW equation of state parameters that would reproduce the detonation velocity-density curve of RDX from 1.8 to 1.0 gm/cc were found to result in a physically unrealistic behavior above 0.5 megabar. It was found that the BKW equation of state parameters $\alpha = 0.5$, $\beta = 0.16$, and $\kappa = 10.91$ were satisfactory for most explosive systems and that $\alpha = 0.5$, $\beta = 0.09585$, $\kappa = 12.685$ were satisfactory for high density explosives whose detonation products contain large amounts of solid carbon.

The computed detonation properties using these equation of state parameters and covolumes are presented for many of the more interesting explosives.

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INTRODUCTION

The semiempirical Becker-Kistiakowsky-Wilson (BKW) equation of state has been used successfully for predicting the detonation properties of condensed explosives, for understanding the observed detonation properties,¹ and as an equation of state for hydrodynamic calculations.² The studies of Fickett³ with the Lennard-Jones—Devonshire equation of state suggest that it may not be possible to improve markedly the agreement, already obtained using the BKW equation of state, between the computed and experimental detonation properties by improving the form of the equation of state. The idealizing assumptions of chemical and thermodynamic equilibrium, for example, may prevent one from obtaining complete agreement for all explosives with any equation of state.

Cowan and Fickett⁴ performed the most recent BKW equation of state parameter study in 1954. Since that time, considerable additional experimental data have become available. The experimental Hugoniot of water, carbon dioxide, and nitrogen permit a good determination of the individual covolumes of the major constituents of the detonation products of CHNO explosives. Also, the new fast computers such as the IBM-7030 and codes such as Stretch BKW⁵ permit one to perform a parameter study for an explosive in the time required to perform a single C-J calculation a few years ago. We therefore undertook a parameter study to determine if we could obtain an improved set of equation of state parameters, and also to determine if we could describe the detonation properties of most explosives to within experimental error with a single set of equation of state parameters.

The latter effort was unsuccessful. It was not possible to find a set of BKW equation of state parameters (α , β , κ) that would reproduce the experimentally observed detonation properties of RDX and TNT with covolumes that reproduced the experimental shock Hugoniot of the individual detonation products.

Cowan and Fickett⁴ did their BKW parameter study with "geometrical" covolumes for Composition B, which made the agreement about equally poor (and in opposite directions) for RDX and TNT.

The present results support Fickett's conclusion that, because of the effect of other idealizing assumptions, extensive efforts to improve the equation of state for use in the prediction of detonation properties have probably reached a point of diminishing return.

The detonation properties computed using the results of the parameter study are presented for many of the more interesting explosives.

HISTORICAL BACKGROUND

The historical background of the Becker-Kistiakowsky-Wilson equation of state is of some value, since it gives an insight into its theoretical basis. Although commonly called the Kistiakowsky-Wilson equation of state, it was attributed to Becker by Kistiakowsky and Wilson.⁶

Becker,⁷ in 1921, proposed the equation

$$\frac{PV}{RT} = (1 + X e^X) - \frac{a}{V} + \frac{b}{V^{n+1}} \quad \text{where } X = \frac{k}{V}$$

as an equation of state for nitrogen at high densities. It was derived assuming a virial equation of state and using a repulsive or "point centers of repulsion" potential to estimate the first term, $X e^X$. The second term, $\frac{a}{V}$, described the attractive forces, and the last term was used by Becker to obtain agreement at the critical point.

In 1922, Becker⁸ used the equation

$$\frac{PV}{RT} = 1 + Xe^X$$

to compute the detonation velocities of nitroglycerine and mercury fulminate. He stated that the computed detonation velocities were determined "with an accuracy indicating the order at least of the magnitude observed."

Kistiakowsky and Wilson^{6,9} used for X the expression $K/VT^{1/3}$ and found that K, the covolume, could be approximated as an additive function of the covolumes of the constituent molecules of the product gases for a large number of explosives. R. S. Halford was an active contributor to this equation of state study.⁹

Kistiakowsky and Wilson⁹ attribute to D. P. MacDougall and L. Epstein the addition of β to the repulsive term, resulting in an equation of state of the form

$$\frac{PV}{RT} = 1 + Xe^{\beta X} \quad \text{with } X = K/VT^\alpha.$$

The values of α and β found satisfactory for reproducing the experimental detonation velocities for a number of explosives were 0.25 and 0.3, respectively.

Cowan and Fickett⁴ added a θ to T to prevent the pressure from tending to infinity as the temperature tends to zero and to keep $(\partial P/\partial T)_V$ positive over the range of volumes of interest. They found that the values $\alpha = 0.5$ and $\beta = 0.09$ were satisfactory for reproducing the experimental detonation velocity-density curve and the C-J pressure of Composition B. The value of θ they used was 400; K was defined as $\kappa \sum X_i k_i$, where κ was 11.85, the k_i were the individual geometrical covolumes, and X_i was the mole fraction.

With this historical background it becomes apparent that the BKW

equation of state is based upon a repulsive potential applied to the virial equation of state,

$$\frac{PV}{RT} = 1 + \frac{B}{V} + \frac{C}{V^2} + \dots$$

Let $X = \frac{B}{V}$. Then, neglecting higher order terms,

$$\frac{PV}{RT} = 1 + X + \beta X^2,$$

or, to a first approximation,

$$\frac{PV}{RT} = 1 + X e^{\beta X}.$$

Using a repulsive potential of the form $U = A/r^n$ where r is the separation distance, Jeans¹⁰ shows that

$$B = \frac{K}{T^{3/n}} \quad \text{or} \quad = \frac{K}{T^\alpha} \quad \text{if } \alpha = 3/n \text{ and } K \propto A^{3/n}.$$

$$\text{Thus } X = \frac{K}{VT^\alpha}.$$

BKW EQUATION OF STATE PARAMETER STUDY

In a parameter study of the BKW equation of state one may adjust the BKW parameters α , β , and κ , and the covolumes of the detonation products.

Cowan and Fickett⁴ showed that, for a given alpha and beta, one may adjust kappa to give the experimental velocity for a single explosive at a single density. One may change the slope of the detonation velocity-density curve by changing beta. With successive iterations on kappa and beta, we reproduced the experimental detonation velocities at two densities for a single explosive. A modification of Stretch BKW⁵ was written to perform the

iteration on beta and kappa so as to reproduce the experimental detonation velocities at any two densities for any explosive.

For CHNO explosives the covolumes of primary importance are those of water, carbon dioxide, carbon monoxide, and nitrogen. Since experimental Hugoniot are available for water,¹¹ and for liquid nitrogen and solid carbon dioxide¹² in the pressure range of interest (500 to 100 kbar), the covolumes of these species were adjusted so as to best reproduce these Hugoniot for any alpha, beta, and kappa set.

It was not possible to reproduce exactly all three experimental Hugoniot with any set of BKW parameters of interest in detonation calculations; however, it was possible to improve considerably the over-all agreement, as shown in Figures 1, 2, and 3. The covolume of water was changed to 250, and the covolume of carbon dioxide was changed to 600. The new covolumes reproduced the experimental Hugoniot with about the same over-all agreement for the three new sets of alpha, beta, and kappa we shall describe below. The comparison of these new covolumes with the covolumes estimated by Fickett³ from his LJD intermolecular potentials is shown in Table I. The new covolumes for water and carbon dioxide are in better agreement with the covolumes estimated from the LJD potentials than those used previously.

Parameters Fitting RDX

Using the new covolumes for water and carbon dioxide, a beta and kappa were computed which reproduced the experimental detonation velocities of RDX at 1.80 and 1.0 gm/cc. Alpha was chosen so as to reproduce the experimental C-J pressure. The results are presented in Table II as the second set of parameters.

As shown in Table III, this set of parameters reproduced the experimental

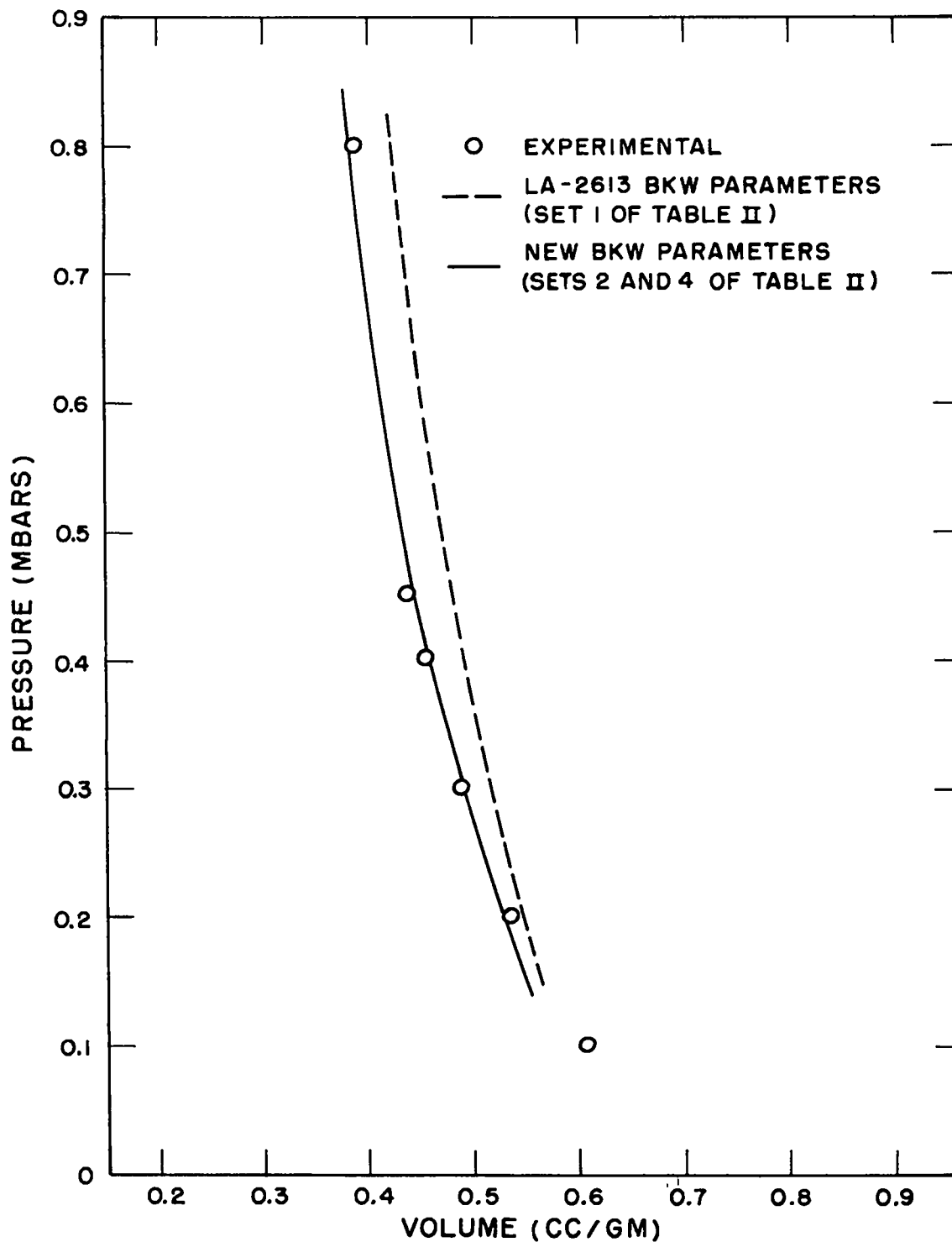


Figure 1. Water Hugoniot.

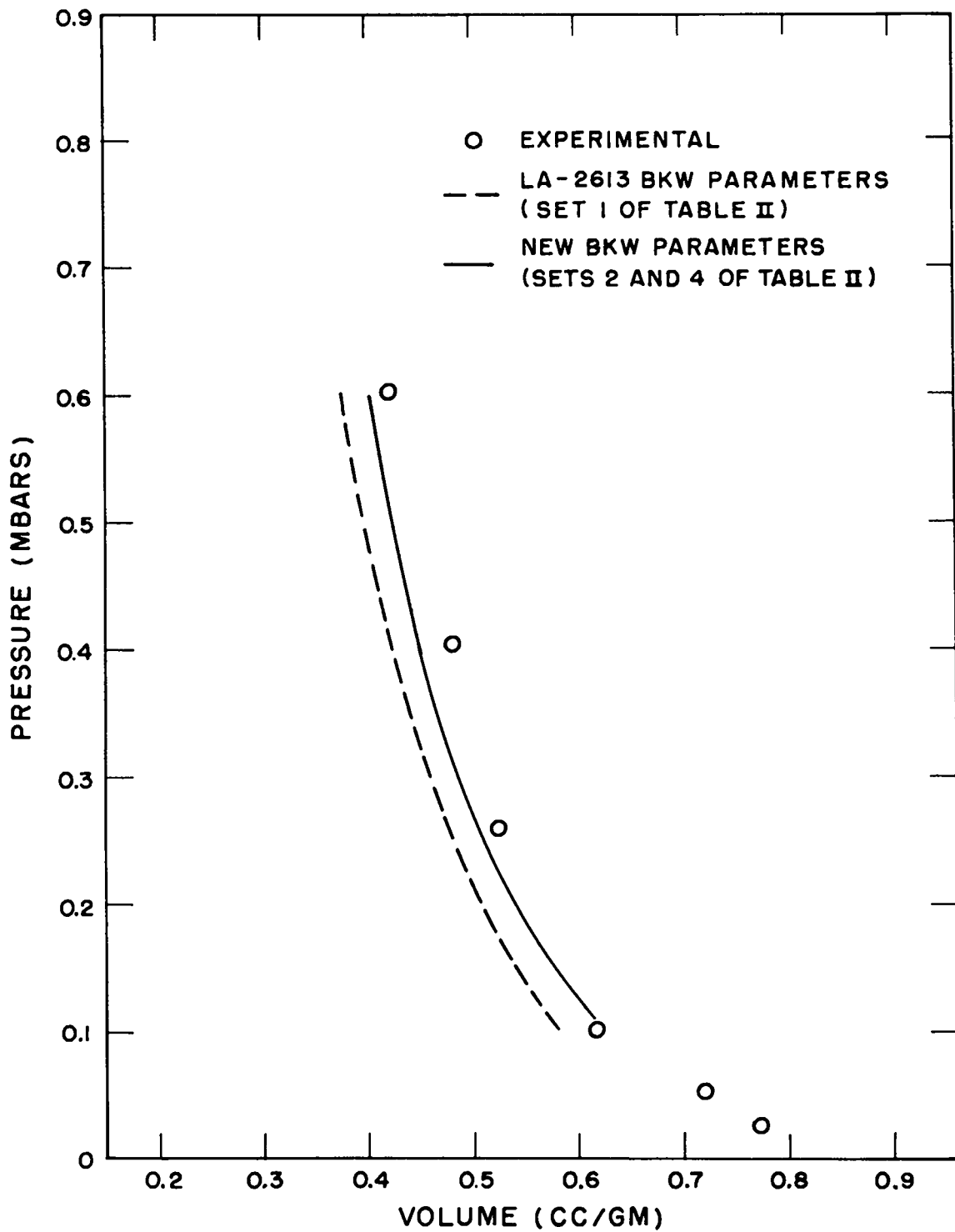


Figure 2. Liquid Nitrogen Hugoniot.

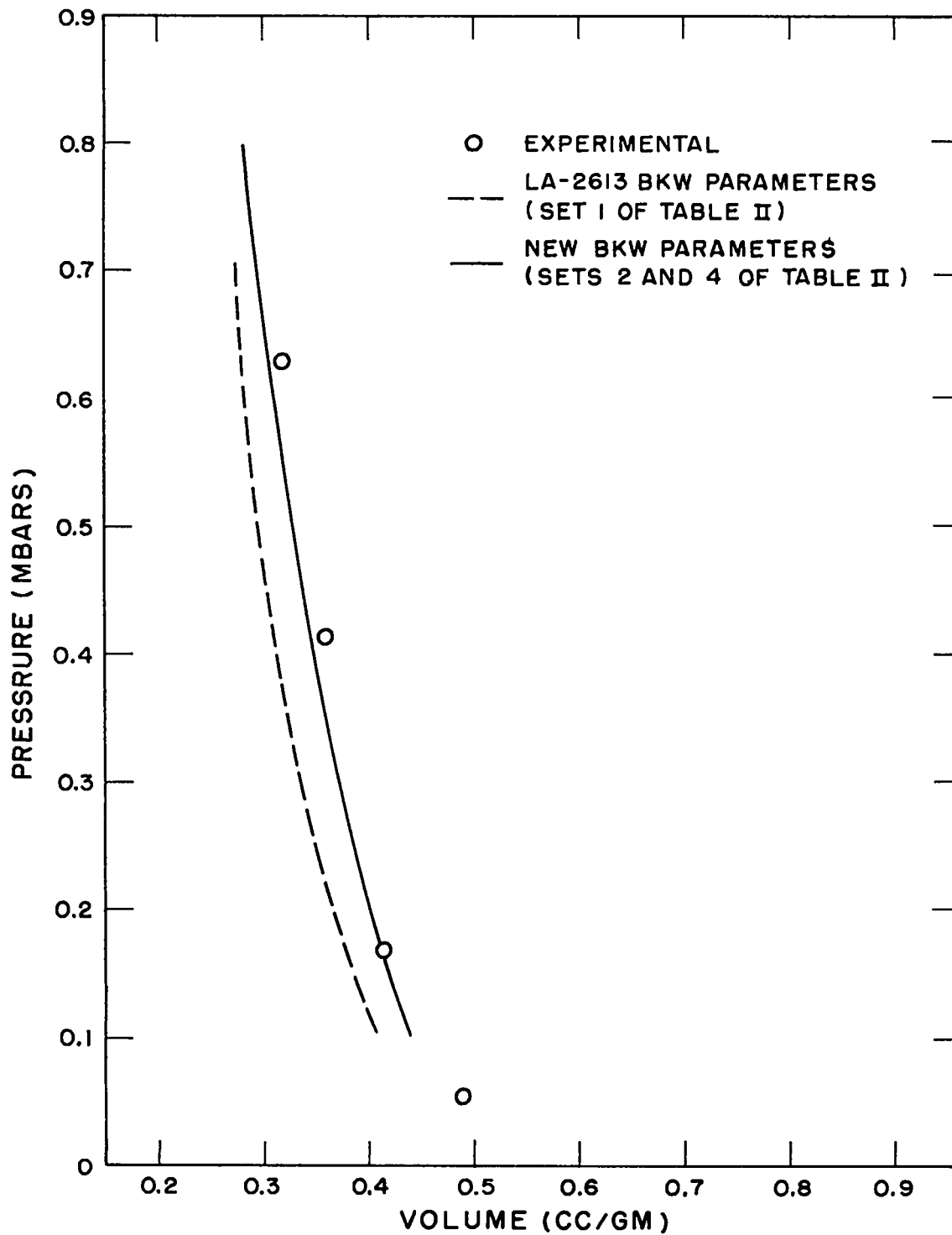


Figure 3. Solid Carbon Dioxide Hugoniot.

TABLE I. COVOLUMES OF DETONATION PRODUCTS

Species	True Geometrical	Adjusted Geometrical (Ref. 1)	Least Squared (Ref. 4)	This Report	LJD $\sim(r_i)^3$ (Ref. 3)	LJD $\sim(r_i)^3(T_i)^{\frac{1}{2}}$ (Ref. 3)
H ₂ O	420	360	307	250	215	231
CO ₂	735	670	540	600	487	547
CO	490	390	285	390	380	380
N ₂	380	380	529	380	380	380
NO	386	386		386	358	335
H ₂	180	180		180	214	65
O ₂	350	350		350	297	311
CH ₄	528	528		528	455	515

TABLE II. BKW PARAMETERS

Number	Parameter Set	β	κ	α	θ	Covolumes			
						H ₂ O	CO ₂	CO	N ₂
1	LA-2613	0.09	11.85	0.50	400	360	670	390	380
2	Fitting RDX	0.181	14.15	0.54	400	250	600	390	380
3	Fitting TNT	0.09585	12.685	0.50	400	250	600	390	380
4	Best Fit for RDX with $\left(\frac{\partial P}{\partial T}\right)_V > 0$	0.16	10.91	0.50	400	250	600	390	380

TABLE III. THE C-J DETONATION PROPERTIES OF VARIOUS EXPLOSIVES

Explosive		Experimental ^a	Old BKW Parameters (Ref. 1)	Parameters Fitting RDX	Parameters Fitting TNT	RDX Parameters	LJD Equation of State (Ref. 3)
						with positive $\left(\frac{\partial P}{\partial T}\right)_V$	
RDX $\rho = 1.80$ $C_3H_6N_6O_6$	D	8754	8527	8754	8263	8754	8796
	P	347	343	342	324	347	324
	T		2688	2336	2861	2587	4039
	γ	2.98	2.82	3.03	2.79	2.98	3.29
RDX $\rho = 1.0$ $C_3H_6N_6O_6$	D	5981	6200	5989		6128	
	P		111	104		108	
	T		3447	3489		3600	
	γ		2.46	2.44		2.48	
TNT $\rho = 1.64$ $C_7H_5N_3O_6$	D	6950	7248	7136	6950	7197	6878
	P	190	219	209	206	213	183
	T		2765	2707	2937	2829	3662
	γ	3.16	2.94	3.00	2.85	2.98	3.22
Octol $\rho = 1.809$ $C_{6.835}H_{10.025}N_{9.215}O_{10.43}$	D	8476	8364	8553		8555	
	P	343	331	329		333	
	T		2658	2349		2578	
	γ	2.79	2.82	3.02		2.98	
Cyclotol $\rho = 1.743$ $C_{5.045}H_{7.461}N_{6.876}O_{7.753}$	D	8250	8209	8277	7910	8311	
	P	313	310	300	288	305	
	T		2739	2503	2928	2711	
	γ	2.79	2.81	2.98	2.78	2.95	
Composition B $\rho = 1.713$ $C_{6.851}H_{8.750}N_{7.650}O_{9.3}$	D	8030	7984	8037		8084	7987
	P	294	287	279		284	259
	T		2779	2574		2763	3963
	γ	2.76	2.81	2.96		2.94	3.22
HMX $\rho = 1.90$ $C_4H_8N_8O_8$	D	~9100	8885	9231	8556	9159	
	P	~ 393	381	393	364	395	
	T		2520	2073	2693	2364	
	γ	~ 3.0	2.94	3.12	2.82	3.03	

PETN	D	7980	8008	7978	7696	8056	
$\rho = 1.67$	P	300	286	274	267	280	
$C_5H_8N_4O_{12}$	T	3400	2992	2814	3226	3018	
	γ	2.55	2.75	2.88	2.70	2.86	
Nitromethane	P	6290	6838	6350	6390	6463	6353
$\rho = 1.128$	P	141	146	127	130	130	125
CH_3NO_2	T	3380	2915	3029	3167	3120	3803
	γ	2.17	2.61	2.59	2.54	2.62	2.66
Liquid TNT	D	6580	6653	6469	6406	6556	
$\rho = 1.447$	P	172	168	156	157	160	
$C_7H_5N_3O_6$	T	3030	2961	2957	3126	3055	
	γ	2.64	2.80	2.87	2.77	2.87	
Nitroglycerine	D	7580	7636	7600		7700	7286
$\rho = 1.59$	P		251	239		246	208
$C_3H_5N_3O_9$	T	3470	3265	3013		3216	4679
	γ		2.70	2.84		2.83	3.08
Diaminotrinitrobenzene	D	7520	7921	7957	7559	7959	
$\rho = 1.788$ (DATB)	P	259	298	279	264	282	
$C_6H_5N_2O_6$	T		2491	2295	2667	2477	
	γ	2.90	2.86	3.06	2.86	3.02	
Triaminotrinitrobenzene	D	~7900	8210	8533	7848	8411	
$\rho = 1.895$ (TATB)	P		332	330	297	326	
$C_6H_6N_3O_6$	T		1978	1659	2128	1887	
	γ		2.93	3.18	2.92	3.11	
Tetranitromethane (TNM)	D	6360	5741	6553		6421	6055
$\rho = 1.64$	P	159	141	165		162	132
CN_4O_8	T	2800	1621	1140		1341	2441
	γ	3.17	2.84	3.25		3.16	3.54
Hexanitrosobenzene	D	8070	7473	7568		7735	
$\rho = 1.70$ (HNB)	P		259	262		272	
$C_6N_6O_6$	T		4252	4086		4292	
	γ		2.66	2.72		2.74	

TABLE III (continued)

Explosive		Experimental ^a	Old BKW Parameters (Ref. 1)	Parameters Fitting RDX	Parameters Fitting TNT	RDX Parameters with positive $\left(\frac{\partial P}{\partial T}\right)_V$	LJD Equation of State (Ref. 3)
Trinitrotriazidobenzene (TNTAB) $\rho = 1.74$ $C_6N_{12}O_6$	D	8576	7709	7924		8094	8489
	P		281	290		300	311
	T		4141	3812		4046	5365
	γ		2.68	2.77		2.80	3.03
Hydrazine Nitrate $\rho = 1.626$ $N_2H_5NO_3$	D	8691	8366	8705		8474	8238
	P		280	286		276	235
	T		1393	1114		1347	2435
	γ		3.06	3.31		3.22	3.13
Alex 20 $\rho = 1.801$ $C_{1.873}H_{2.469}N_{1.613}$ $O_{2.039}Al_{0.7338}$	D	7530	7657	7319		7450	
	P	230	254	236		243	
	T		4876	5058		5142	
	γ	3.44	3.15	3.09		3.11	
1/3.75 EDB/TNM $\rho = 1.40$ $B_{10}H_{18}C_{5.75}N_{15}O_{30}$	D	6740	6860	6749		6945	
	P	172	199	186		196	
	T	4460	5364	5252		5336	
	γ	2.70	2.30	2.42		2.43	
1/4.45 EDB/TNM $\rho = 1.427$ $B_{10}H_{18}C_{6.45}N_{17.8}$ $O_{35.6}$	D	6820	6858	6696		6897	
	P	167	200	185		196	
	T		5358	5328		5409	
	γ	2.97	2.35	2.44		2.46	
HNO_3/CH_3NO_2 $\rho = 1.29$ $C_{6.434}H_{3.0192}N_{12.869}$ $O_{3.4405}$	D	6540	6779	6608		6666	6090
	P	145	162	150		153	121
	T	3400	2446	2344		2477	3500
	γ	2.80	2.67	2.77		2.76	2.96
1/0.071 NM/TNM $\rho = 1.197$ $C_{1.071}H_3N_{1.284}O_{2.568}$	D	6570	7087	6666		6798	6672
	P	138	166	148		153	147
	T	3480	3137	3238		3354	4250
	γ	2.74	2.58	2.58		2.61	2.63

} $\rho = 1.6$

1/0.25 NM/TNM $\rho = 1.310$ $C_{1.25}H_3N_2O_4$	D	6880	7204	6927	7094	6716
	P	156	191	174	181	156
	T	3750	3896	3866	3998	5039
	γ	2.89	2.55	2.61	2.63	2.79
1/0.50 NM/TNM $\rho = 1.397$ $C_{1.5}H_3N_3O_5$	D	6780	7114	6811	7133	6553
	P	168	196	175	191	153
	T	3580	3577	3708	3565	4457
	γ	2.82	2.60	2.62	2.71	2.93
1/1.29 C_6H_6 /TNM $\rho = 1.362$ $C_{7.29}H_6N_5O_{10.32}$	D	6850	6975	6811	6960	
	P		184	175	181	
	T	3520	3680	3708	3855	
	γ		2.61	2.62	2.65	
TFNA $\rho = 1.692$ $C_5H_7N_4O_6F_3$	D	7400	7322	7606	7569	
	P	249	242	240	242	
	T		2315	2017	2204	
	γ	2.72	2.74	3.08	3.01	
TFENA $\rho = 1.523$ $C_2H_3N_2O_2F_3$	D	6650	6155	6552	6491	
	P	174	162	161	162	
	T		1835	1667	1827	
	γ	2.87	2.57	3.05	2.95	
65/35 RDX/TFNA $\rho = 1.754$ $C_{3.7}H_{6.35}N_{5.3}O_6F_{1.05}$	D	8220	8054	8290	8278	
	P	324	302	299	302	
	T		2552	2223	2446	
	γ	2.66	2.77	3.04	2.98	
1/1.25 AN/TNM $\rho = 1.380$ $C_{4.25}H_3N_6O_{10}$	D	6710	6995	6880	7074	
	P	156	194	182	192	
	T	4000	4686	4638	4760	
	γ	2.98	2.48	2.57	2.59	
Tetryl $\rho = 1.70$ $C_7H_5N_5O_8$	D	7560	7587	7565	7629	
	P		261	246	251	
	T		2903	2751	2917	
	γ		2.81	2.95	2.93	

^a For source of experimental values, see Reference 1 or 3.

detonation velocities of the explosives described in Reference 1 within ~200 m/sec. Since previous deviations were as high as 500 m/sec, this was an encouraging result.

Unfortunately, this set of parameters gives detonation velocities that are grossly too large for high density explosives whose detonation products contain large amounts of solid carbon. The slopes of the computed detonation velocity-density curves for high density TNT, DATB, and TATB are too steep when calculated with the parameters found by fitting RDX.

For some explosives not considered in Reference 1, such as hydrazine nitrate and tetranitromethane, the agreement between computed and experimental detonation velocities was markedly improved; however, while agreement was improved with the new parameters for HNB and TNTAB, it was still far from satisfactory.

The parameters fitting RDX result in a serious difficulty at pressures above about 0.5 mbar for many of the explosives. Since such a large beta is necessary to obtain a sufficiently steep detonation velocity-density curve for RDX, the imperfection terms of the equation of state become sufficiently large at the higher pressures that $(\partial P/\partial T)_V$ goes from a positive value through zero to a negative value with increasing pressure. The isentrope temperatures reach a maximum value and then decrease with increasing pressure. Perhaps most disturbing is the behavior of $(\partial E/\partial P)_V$, which goes to infinity and then changes sign with increasing pressure. Obviously this set of parameters is not satisfactory if one wishes to compute isentropes good to 1 mbar.

Parameters Best Fitting RDX With Positive $(\partial P/\partial T)_V$

Various attempts at varying all the BKW equation of state parameters to obtain a set that would both reproduce the experimental detonation

velocities of RDX at 1.80 and 1.0 gm/cc and have a positive $(\partial P/\partial T)_V$ for all explosives up to one mbar pressure were unsuccessful.

The best procedure tried was to find as large a beta as possible that would result in a positive $(\partial P/\partial T)_V$ and as steep a detonation velocity-density curve for RDX as possible. The final parameters determined by this procedure are presented in Table II as the fourth set. This set of parameters was used for the BKW calculations presented at the end of this report with the exception of those for TNT, DATB, TATB, and liquid TNT.

As shown in Table III the agreement between the computed and experimental detonation velocities is poorer for most explosives than that obtained with the parameters fitting RDX; however, the agreement is still considerably improved over the old parameter set. The difficulties associated with high density explosives whose detonation products contain large amounts of solid carbon are, of course, still present.

Parameters Fitting TNT

The fundamental difficulty in trying to find a single set of equation of state parameters that would reproduce the detonation properties of RDX and TNT is probably that the detonation products for both systems are not in complete thermodynamic equilibrium, and the effect on the detonation properties is larger for TNT than for RDX. We therefore computed a beta and kappa set for TNT by reproducing the experimental detonation velocities of TNT at 1.64 and 1.0 gm/cc. The results are given in Table II as the third set of parameters.

These parameters give good agreement for high density explosives containing large amounts of solid carbon in the detonation products, such as TATB, DATB, and TNT, but give too low detonation velocities for explosives with smaller amounts of solid carbon in the detonation products as shown in Table III.

Thus these parameters make a crude adjustment for the effect of large amounts of solid carbon in the detonation products. The primary effect is to change the slope of the detonation velocity-density curve for these explosives.

While using a different set of equation of state parameters for explosives containing large amounts of solid carbon may not be too desirable, it does avoid the large (and probably incorrect) energy drops associated with the use of large positive heats of formation for solid carbon that were used previously.

Summary of Parameter Study

The recommended parameters for most explosives are those that represent the best fit to RDX with a positive $(\partial P/\partial T)_V$ over the range of volumes of interest. The parameters recommended for high density explosives whose detonation products contain about half or more of the total number of moles of detonation products as solid carbon are the set obtained by fitting TNT.

It is perhaps useful to emphasize that we are dealing with an idealized model of the detonation process whose only recommendation is that, in general, it reproduces the experimentally observed state parameters reasonably well. Its usefulness in hydrodynamic calculations and as a tool for understanding the experimentally observed performance has been proved often; however, its use for extended extrapolations or very detailed predictions must be confirmed with experimental data before the results can be believed.

BKW CALCULATIONS

The IBM run pages contain the computed detonation properties for some of the more interesting explosives. The calculations were performed

with the IBM-7030 STRETCH computer using the code "STRETCH BKW", which is described in detail in Reference 5.

The C-J state; the detonation Hugoniot; the isentrope through the computed C-J state; the displaced isentrope through the experimental C-J pressure and the BKW Hugoniot temperature computed for that pressure; the coefficients to fits of the pressure, volume, energy, and temperature along the isentrope; and the particle velocity along the isentrope are given for many of the common explosives.

The isentrope data are fit to an equation of the form

$$\ln(P) = A + B(\ln V) + C(\ln V)^2 + D(\ln V)^3 + E(\ln V)^4$$

where $(\ln V)^N$ is printed as LNV*N. The format of the numbers is $\pm X.XXXX \dots \pm XXX$, where $\pm XXX$ is the exponent to the base 10.

As input data the calculation requires, for the explosive, its elemental composition, heat of formation, density and formula weight; and, for the gaseous explosion products, their elemental compositions, heats of formation, covolumes, and quartic fits of their ideal gas entropies as functions of temperature. For the solid explosion products the calculation also requires the density, molecular weight, and (if the solid is to be considered compressible) the parameters to the Cowan solid equation of state.⁴

The thermodynamic functions were taken from the compilations of Mader.¹³ The thermodynamic integration constants⁵ were computed from these tables at 2500°K. The parameters for the carbon equation of state were computed using for the experimental Hugoniot of graphite the expressions $U_s = 0.24 + 2.38 U_p$ up to 215 kbar, and $U_s = 0.516 + 0.576 U_p$ above 215 kbar, where U_s is shock velocity and U_p is particle velocity. The coefficient of isothermal compressibility used was 2.976 mbar^{-1} , the linear coefficient of expansion was $3.8 \times 10^{-6} \text{ }^\circ\text{C}^{-1}$, and the heat capacity was $0.16 \text{ cal/gm/}^\circ\text{C}$.

The other solids considered as detonation products were assumed to be incompressible. The sources of the other input parameters are given in References 1 or 3.

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CATALOG OF COMPUTED DETONATION PROPERTIES

Explosive	Densities for C-J Calculations	Densities for Isentrope Calculations	Displaced Isentrope through Exper. P _{CJ}	Page
CHNO (Solid One Component)				
HMX	1.9, 1.6, 1.4, 1.2, 1.0	1.9		25
RDX	1.8, 1.6, 1.4, 1.2, 1.0	1.8		43
TNT	1.64, 1.6, 1.4, 1.2, 1.0	1.64	190	61
DATB	1.788, 1.6, 1.4, 1.2, 1.0			84
TATB	1.89, 1.6, 1.4, 1.2, 1.0			94
PETN	1.67, 1.77, 1.4, 1.2, 1.0			104
Tetryl	1.70, 1.60, 1.4, 1.2, 1.0			114
Picric Acid	1.76, 1.6, 1.4, 1.2, 1.0			124
CHNO (Solid Mixtures)				
Octol	1.809, 1.6, 1.4, 1.2, 1.0	1.809	343	134
Cyclotol	1.743, 1.6, 1.4, 1.2, 1.0	1.743	313	157
Composition B	1.715, 1.6, 1.4, 1.2, 1.0	1.715, 1.6, 1.4	293	180
9404	1.844	1.844	367	219
9010	1.781	1.781	319	234
CHNO (Liquids)				
Liquid TNT	1.447	1.447	172	252
Nitromethane	1.128	1.128	141	267
Nitroglycerine	1.59			282
HNO ₃ /CH ₃ NO ₂	1.29			284
C ₆ H ₆ /TNM	1.362			286
1/0.071-NM/TNM	1.197			288
1/0.25 -NM/TNM	1.310			290
1/0.50 -NM/TNM	1.397			292
1/1.25 -AN/TNM	1.380			294
CHNOAl				
Alex 20	1.801	1.801	231	296
CNO				
Tetranitromethane	1.64			311
HNB	1.70			312
TNTAB	1.74			313
HNO				
Hydrazine Nitrate	1.626			314
BCHNO				
1/3.75-EDB/TNM	1.40			315
1/4.45-EDB/TNM	1.427			317
CHNOF				
65/35-RDX/TFNA	1.754			319
TFNA	1.692			321
TFENA	1.523			323

A STRETCH BAW CALCULATION FOR THE EXPLOSIVE
MXC CYCLOTETRAMETHYLENE TETRANITRANINE

THE NUMBER OF ELEMENTS IS 4

THE NUMBER OF GAS SPECIES IS 11

THE NUMBER OF SOLID SPECIES IS 1

THE RW EQUATION OF STATE PARAMETERS ARE

ALPHA= 5.0000000000-001 BETA= 1.6000000000-001 THETA= 4.0000000000+002 KAPPA= 1.09097784436+001

THE COMPOSITION OF THE EXPLOSIVE IS

4.0000000000+000 MOLES OF C
8.0000000000+000 MOLES OF H
8.0000000000+000 MOLES OF N
8.0000000000+000 MOLES OF O

THE DENSITY OF THE EXPLOSIVE IS 1.9000000000+000 GRAMS/CC

THE MOLECULAR WEIGHT IS 2.9616800000+002 GRAMS

THE HEAT OF FORMATION AT 0 DEG K IS 4.3460000000+004 CALORIES PER FORMULA WEIGHT

THE SOLID (COWAN) EQUATION OF STATE PARAMETERS VO, AS, BS, CS, DS, ES, A1, A2, C1, C2, C3, ATOMIC WT

SOL C 4.4444444444-001 8.30935837268-001 -1.39381809219+000 6.72569716021-001 -1.13537262508-001 6.49155882007-003
-2.26705345948-001 1.20516569323-001 8.31600000000-002 -1.75590000000-001 1.55310000000-001 1.20100000000+001

THE INPUT DETONATION PRODUCT ELEMENTAL COMPOSITION MATRIX

0.0+00	2.0+00	0.0+00	1.0+00	0.0+00	2.0+00	0.0+00	0.0+00	0.0+00	0.0+00	0.0+00	2.0+00
1.0+00	0.0+00	0.0+00	2.0+00	1.0+00	0.0+00	0.0+00	1.0+00	0.0+00	3.0+00	1.0+00	0.0+00
0.0+00	1.0+00	0.0+00	0.0+00	0.0+00	0.0+00	1.0+00	1.0+00	0.0+00	0.0+00	2.0+00	0.0+00
0.0+00	1.0+00	0.0+00	1.0+00	1.0+00	4.0+00	0.0+00	0.0+00	1.0+00	0.0+00	0.0+00	0.0+00

A STRETCH BKW CALCULATION FOR THE EXPLOSIVE
 HMX CYCLOTETRAMETHYLENE TETRANITRAMINE

THE COMPUTED C-J PRESSURE IS 3.95282515442-001 MEGABARS

THE COMPUTED DETONATION VELOCITY IS 9.15983097680-001 CM/MICROSECOND

THE COMPUTED C-J TEMPERATURE IS 2.36405529150+003 DEGREES KELVIN

THE COMPUTED C-J VOLUME IS 3.95811620865-001 CC/GRAM OF EXPLOSIVE

THE COMPUTED GAMMA IS 3.03293215529+000

THE VOLUME OF THE GAS IS 1.10715941728+001 CC/MOLE OF GAS AND THERE ARE 1.00039302996+001 MOLES OF GAS

SOLID VOLUME IN CC/GM
 SOL C 2.69773750935-001

THE C-J COMPOSITION OF THE DETONATION PRODUCTS AND THE INPUT COEFFICIENTS TO THE THERMODYNAMIC FITS FOR EACH SPECIE

SPECIE	NO OF MOLES	COEFFICIENTS A,B,C,D,E, THE INTEGRATION CONSTANT, HEAT OF FORMATION IN CALORIES/MOLE, CONVOLUME					
N2O	3.99999144034+000	4.25884200000+001	1.48080500000-002	-2.63918100000-006	1.92045300000-010	0.00000000000+000	
H2	9.89205281000-007	1.34282835158+003	-5.71070000000+004	2.50000000000+002	1.67778100000-010	0.00000000000+000	
O2	1.72946957003-006	2.97034700000+001	1.14382900000-002	-2.20122200000-006	1.90157000000-010	0.00000000000+000	
CO2	1.99605324726+000	1.17589615365+003	0.00000000000+000	1.80000000000+002	2.77030000000-010	0.00000000000+000	
CO	7.86211761463-003	4.70309000000+001	1.28714700000-002	-2.50021700000-006	1.82818100000-010	0.00000000000+000	
NH3	5.01973485044-006	1.03537647396+003	0.00000000000+000	3.50000000000+002	2.19780100000-010	0.00000000000+000	
H	1.22076069215-009	4.74811200000+001	1.95446300000-002	-3.72129600000-006	1.31682300000-010	0.00000000000+000	
NO	3.64878233111-005	7.46280968750+002	-9.39680000000+004	6.00000000000+002	1.89321300000-010	0.00000000000+000	
N2	3.99997924622+000	4.53308200000+001	1.23816100000-002	-2.41640300000-006	1.79832200000-010	0.00000000000+000	
OH	7.62023861177-010	1.12158830990+003	-2.72010000000+004	3.90000000000+002	1.68915500000-010	0.00000000000+000	
CH4	1.99514416286-008	4.20181600000+001	1.91166200000-002	-3.16433000000-006	2.47071400000-010	0.00000000000+000	
SOL C	1.99608461519+000	1.20696121615+003	-9.36800000000+003	4.76000000000+002	9.34999500000-011	0.00000000000+000	
		2.63911000000+001	8.12137200000-003	-1.69074000000-006			
		7.94631617188+002	5.16190000000+004	7.60000000000+001			
		4.84149800000+001	1.26938600000-002	-2.49460000000-006			
		1.20924970373+003	2.14770000000+004	3.86000000000+002			
		4.39234000000+001	1.22250100000-002	-2.37900500000-006			
		1.13916134896+003	0.00000000000+000	3.80000000000+002			
		4.24179200000+001	1.15684700000-002	-2.22665900000-006			
		1.18551754427+003	3.36000000000+003	4.13000000000+002			
		3.87568600000+001	2.36401300000-002	-3.70795700000-006			
		1.04242791146+003	-1.60000000000+004	5.28000000000+002			
		-2.46151900000-001	7.17985500000-003	-1.29755000000-006			
		-2.58204389323+002	0.00000000000+000	0.00000000000+000			

THE BAW HUGONIOT FOR THE DETONATION PRODUCTS OF
NMX CYCLOTETRAMETHYLENE TETRAITRANINE

PRESSURE = 5.0000000000-001 VOLUME = 3.66471276060-001 TEMPERATURE = 2.48595622390+003
H2O 3.99999757543+000
H2 2.12497793119-007
O2 8.17436866595-006
CO2 1.99758684814+000
CO 4.72644754592-003
NH3 1.47419885457-006
H 1.72228370468-010
NO 8.59318884622-005
N2 3.99995629696+000
OH 1.24896251020-010
CH4 3.14507911199-010
SOL C 1.99768670400+000

PRESSURE = 4.5000000000-001 VOLUME = 3.7932223915-001 TEMPERATURE = 2.41887058036+003
H2O 3.99999592387+000
H2 4.00292956489-007
O2 3.78374345484-006
CO2 1.99710256514+000
CO 5.73631488343-003
NH3 2.44990447470-006
H 1.91527252029-010
NO 5.50833375882-005
N2 3.99997124338+000
OH 1.47612346085-010
CH4 4.06178054163-010
SOL C 1.99716111957+000

PRESSURE = 4.0000000000-001 VOLUME = 3.94267133847-001 TEMPERATURE = 2.36795584357+003
H2O 3.99999204865+000
H2 9.06779958190-007
O2 1.84234584021-006
CO2 1.99617703351+000
CO 7.61255012358-003
NH3 4.69552290509-006
H 2.29907151244-010
NO 3.76493328740-005
N2 3.99997882757+000
OH 1.89887400599-010
CH4 5.39409317769-010
SOL C 1.99621041583+000

PRESSURE = 3.5000000000-001 VOLUME = 4.12118116744-001 TEMPERATURE = 2.33531937500+003
H2O 3.99998161704+000
H2 2.51858949351-006
O2 9.70341439964-007
CO2 1.99438184025+000
CO 1.12246598175-002
NH3 1.04912040107-005
H 2.96286802296-010
NO 2.81017081520-005
N2 3.99998070354+000
OH 2.61728446060-010
CH4 8.36451119740-008
SOL C 1.99439343629+000

PRESSURE = 3.0000000000-001 VOLUME = 4.34158313466-001 TEMPERATURE = 2.32402365840+003
H2O 3.99994941932+000
H2 8.72855073571-006
O2 5.71561057343-007
CO2 1.99065970718+000
CO 1.87065187255-002
NH3 2.75149203854-005
H 4.04887370934-010
NO 2.35041018381-005
N2 3.99997449049+000
OH 3.78420908282-010
CH4 2.89679075843-007
SOL C 1.99063348442+000

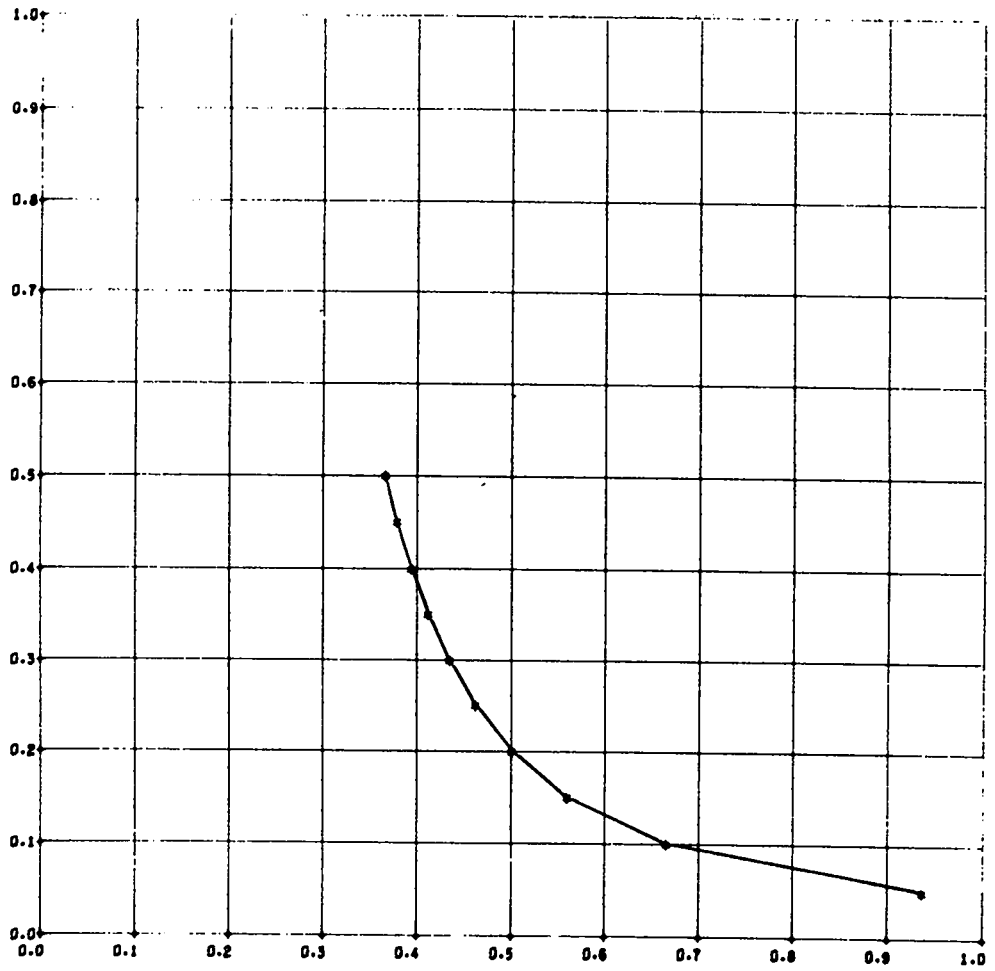
PRESSURE = 2.5000000000-001 VOLUME = 4.62584868234-001 TEMPERATURE = 2.33843246768+003
H2O 3.99983097347+000
H2 3.83139371475-005
O2 3.90714940570-007
CO2 1.98213349701+000
CO 3.58785925956-002
NH3 8.48613856127-005
H 5.77170047387-010
NO 2.26579322745-005
N2 3.99994624034+000
OH 5.61710877935-010
CH4 1.70997403999-006
SOL C 1.98198620042+000

PRESSURE = 2.0000000000-001 VOLUME = 5.01572618497-001 TEMPERATURE = 2.38422419233+003
H2O 3.99929924793+000
H2 2.15292942241-004
O2 3.19952563363-007
CO2 1.96006407562+000
CO 8.05460640161-002
NH3 3.06006257975-004
H 1.25012200325-007
NO 2.57749988773-005
N2 3.99983410937+000
OH 1.21920196846-007
CH4 1.31631396876-005
SOL C 1.95937669723+000

PRESSURE = 1.5000000000-001 VOLUME = 5.60359664737-001 TEMPERATURE = 2.46620278208+003
H2O 3.99627618112+000
H2 1.55962755494-003
O2 3.11496162090-007
CO2 1.89513905809+000
CO 2.13369690503-001
NH3 1.26891862980-003
H 9.74608425046-007
NO 3.44307965250-005
N2 3.99934832529+000
OH 9.58401265637-007
CH4 1.31923438142-004
SOL C 1.89133932797+000

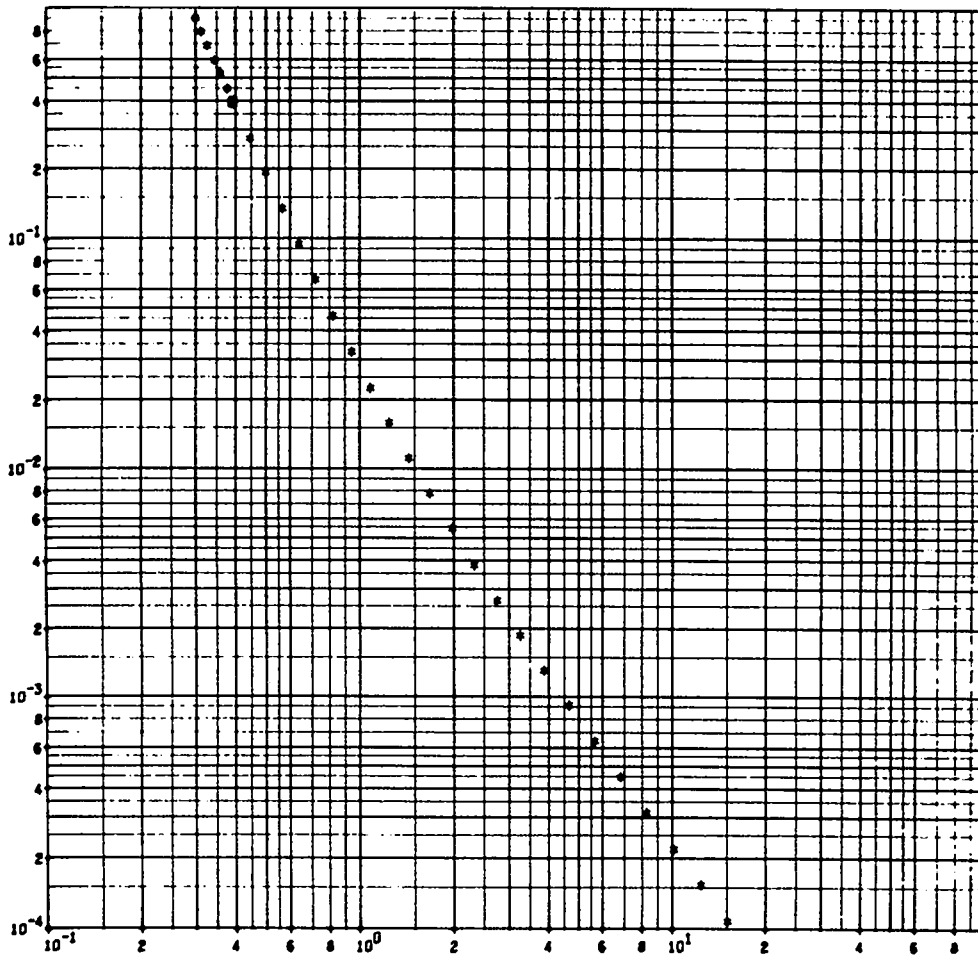
PRESSURE = 1.0000000000-001 VOLUME = 6.65114722908-001 TEMPERATURE = 2.57668972830+003
H2O 3.97298839569+000
H2 1.46017944803-002
O2 3.05133445586-007
CO2 1.68736476781+000
CO 6.52224111944-001
NH3 5.93622156457-003
H 1.07660935377-005
NO 4.82340479251-005
N2 3.99706772219+000
OH 9.11243009696-006
CH4 1.74776911064-003
SOL C 1.65866335113+000

PRESSURE = 5.0000000000-002 VOLUME = 9.36368571926-001 TEMPERATURE = 2.65413774120+003
H2O 3.67981323986+000
H2 1.98609770704-001
O2 1.44084563069-007
CO2 1.09817609987+000
CO 2.12371457278+000
NH3 3.22682725079-002
H 1.51195728209-004
NO 4.41763822550-005
N2 3.98384377555+000
OH 7.55230825057-005
CH4 3.65306106361-002
SOL C 7.41578716720-001

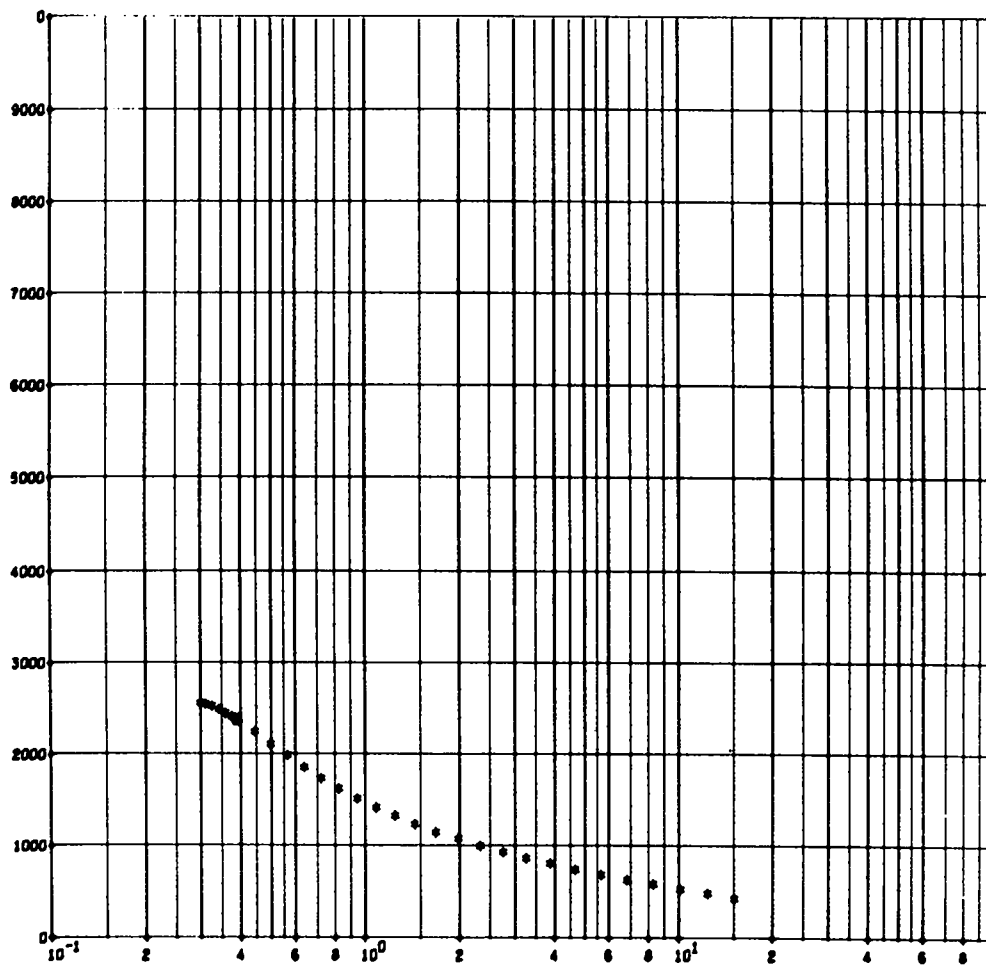


MOX CYCLOTETRAMETHYLENE TETRANITRANINE

PRESSURE-VOLUME MUGONIOT

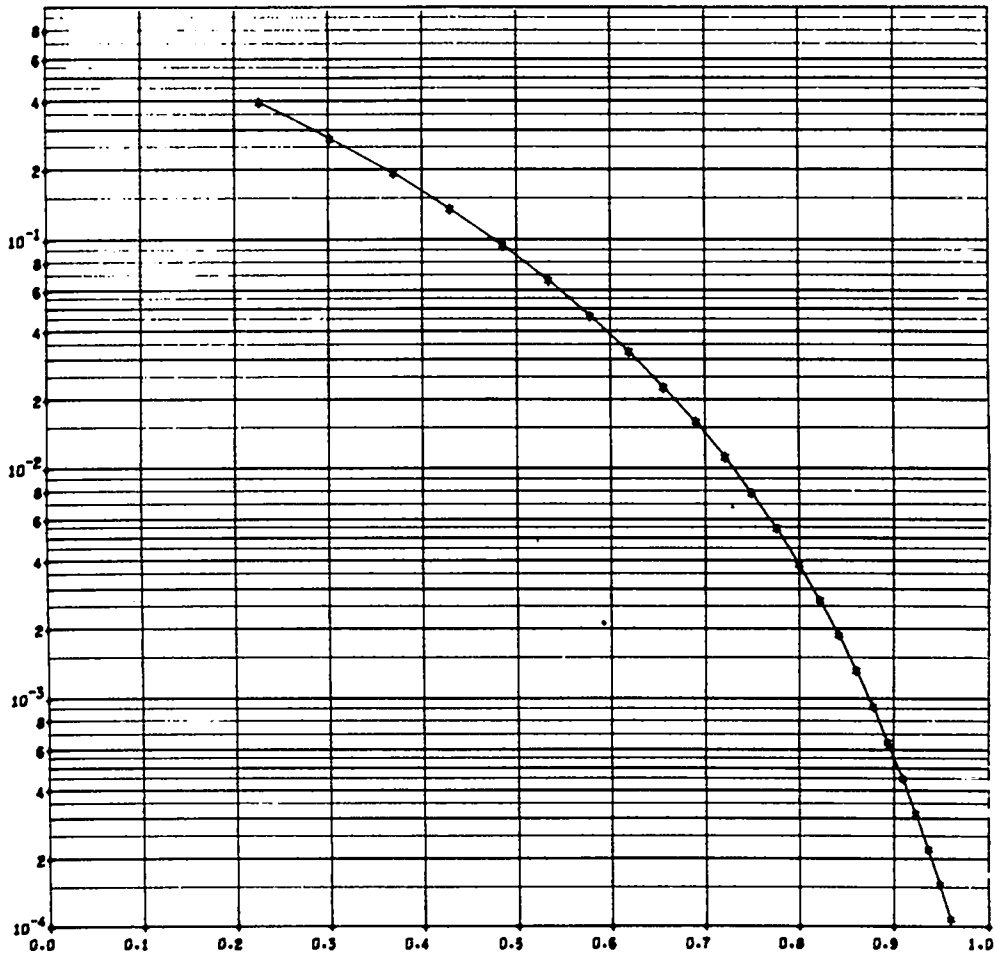


HMX CYCLOTETRAETHYLENE TETRANITRANINE
 PRESSURE-VOLUME ISENTROPE THRU THE C-J VALUE



MM CYCLOTETRAMETHYLENE TETRANITRAMINE

TEMPERATURE-VOLUME ISENTROPE THRU THE C-J VALUE



MPa CYCLOTETRAMETHYLENE TETRANITRAMINE

PRESSURE-PARTICLE VELOCITY

A STRETCH BKW CALCULATION FOR THE EXPLOSIVE
HNX CYCLOTETRAMETHYLENE TETRANITRINE

THE NUMBER OF ELEMENTS IS 4

THE NUMBER OF GAS SPECIES IS 11

THE NUMBER OF SOLID SPECIES IS 1

THE KW EQUATION OF STATE PARAMETERS ARE

ALPHA= 5.0000000000-001 BETA= 1.6000000000-001 THETA= 4.0000000000+002 KAPPA= 1.09097784436+001

THE COMPOSITION OF THE EXPLOSIVE IS

4.0000000000+000 MOLES OF C
8.0000000000+000 MOLES OF H
8.0000000000+000 MOLES OF N
8.0000000000+000 MOLES OF O

THE DENSITY OF THE EXPLOSIVE IS 1.6000000000+000 GRAMS/CC

THE MOLECULAR WEIGHT IS 2.9616800000+002 GRAMS

THE HEAT OF FORMATION AT 0 DEG K IS 4.3460000000+004 CALORIES PER FORMULA WEIGHT

THE SOLID (COMAN) EQUATION OF STATE PARAMETERS VO, AS, BS, CS, DS, ES, A1, A2, C1, C2, C3, ATOMIC WT

SOL C 4.4444444444-001 8.30935837268-001 -1.39381809219+000 6.72569716021-001 -1.13537262508-001 6.49155882007-003
-2.26705345948-001 1.20516569525-001 8.31600000000-002 -1.75590000000-001 1.55310000000-001 1.20100000000+001

THE INPUT DETONATION PRODUCT ELEMENTAL COMPOSITION MATRIX

0.0+00	2.0+00	0.0+00	1.0+00	0.0+00	2.0+00	0.0+00	0.0+00	0.0+00	0.0+00	0.0+00	2.0+00
1.0+00	0.0+00	0.0+00	2.0+00	1.0+00	0.0+00	0.0+00	1.0+00	0.0+00	3.0+00	1.0+00	0.0+00
0.0+00	1.0+00	0.0+00	0.0+00	0.0+00	0.0+00	1.0+00	1.0+00	0.0+00	0.0+00	2.0+00	0.0+00
0.0+00	1.0+00	0.0+00	1.0+00	1.0+00	4.0+00	0.0+00	0.0+00	1.0+00	0.0+00	0.0+00	0.0+00

A STRETCH BRW CALCULATION FOR THE EXPLOSIVE
 NHX CYCLOTETRAMETHYLENE TETRANITRAMINE

THE COMPUTED CJ PRESSURE IS 2.63370709909-001 MEGABARS

THE COMPUTED DETONATION VELOCITY IS 7.98909769227-001 CM/MICROSECOND

THE COMPUTED CJ TEMPERATURE IS 2.95465116766+003 DEGREES KELVIN

THE COMPUTED CJ VOLUME IS 4.63812857440-001 CC/GRAM OF EXPLOSIVE

THE COMPUTED GAMMA IS 2.87746576428+000

THE VOLUME OF THE GAS IS 1.29045699695+001 CC/MOLE OF GAS AND THERE ARE 1.00907824050+001 MOLES OF GAS

SOLID VOLUME IN CC/GM
 SOL C 3.11874379389-001

THE C-J COMPOSITION OF THE DETONATION PRODUCTS AND THE INPUT COEFFICIENTS TO THE THERMODYNAMIC FITS FOR EACH SPECIE

SPECIE	NO OF MOLES	COEFFICIENTS A,B,C,D,E, THE INTEGRATION CONSTANT, HEAT OF FORMATION IN CALORIES/MOLE, CONVOLUME				
H2O	3.99854486461+000	4.25884200000+001	1.48080500000-002	-2.63918100000-006	1.92045300000-010	0.00000000000+000
		1.34282835156+003	-5.71070000000+004	2.50000000000+002		
N2	4.49512129685-004	2.97034700000+001	1.14382900000-002	-2.20122200000-006	1.67776100000-010	0.00000000000+000
		1.17589615365+003	0.00000000000+000	1.80000000000+002		
O2	1.06936147684-005	4.70309000000+001	1.28714700000-002	-2.50021700000-006	1.90157000000-010	0.00000000000+000
		1.03537647396+003	0.00000000000+000	3.50000000000+002		
CO2	1.90982221947+000	4.74811200000+001	1.95446300000-002	-3.72129600000-006	2.77030000000-010	0.00000000000+000
		7.46280968750+002	-9.39680000000+004	6.00000000000+002		
CO	1.81423255350-001	4.53308200000+001	1.23816100000-002	-2.41640300000-006	1.82818100000-010	0.00000000000+000
		1.12158830990+003	-2.72010000000+004	3.90000000000+002		
NH3	6.21863706506-004	4.20181600000+001	1.91166200000-002	-3.16433000000-006	2.19780100000-010	0.00000000000+000
		1.20696121615+003	-9.36800000000+004	4.76000000000+002		
H	1.55863398952-006	2.63911000000+001	8.12137200000-003	-1.69074000000-006	1.31682300000-010	0.00000000000+000
		7.94631617188+002	5.16190000000+004	7.60000000000+001		
NO	3.64781225796-004	4.84149800000+001	1.26938600000-002	-2.49460000000-006	1.89321300000-010	0.00000000000+000
		1.20924970573+003	2.14770000000+004	3.86000000000+002		
N2	3.99950667753+000	4.39234000000+001	1.22250100000-002	-2.37900500000-006	1.79832200000-010	0.00000000000+000
		1.13916134896+003	0.00000000000+000	3.80000000000+002		
OH	1.27264843838-006	4.24179200000+001	1.15684700000-002	-2.22659000000-006	1.68915500000-010	0.00000000000+000
		1.18331754427+003	3.36000000000+003	4.13000000000+002		
CH4	3.57060286970-005	3.87568600000+001	2.36401300000-002	-3.70795700000-006	2.47071400000-010	0.00000000000+000
		1.04242791146+003	-1.60000000000+004	5.28000000000+002		
SOL C	1.90871881915+000	-2.46151900000-001	7.17985300000-003	-1.29755000000-006	9.34999500000-011	0.00000000000+000
		-2.58204389323+002	0.00000000000+000	0.00000000000+000		

A STRETCH BRW CALCULATION FOR THE EXPLOSIVE
 HWX CYCLOTETRAMETHYLENE TETRANITRANINE

THE NUMBER OF ELEMENTS IS 4

THE NUMBER OF GAS SPECIES IS 11

THE NUMBER OF SOLID SPECIES IS 1

THE KW EQUATION OF STATE PARAMETERS ARE

ALPHA= 5.0000000000-001 BETA= 1.6000000000-001 THETA= 4.0000000000+002 KAPPA= 1.09097784436+001

THE COMPOSITION OF THE EXPLOSIVE IS

4.0000000000+000 MOLES OF C
 8.0000000000+000 MOLES OF H
 8.0000000000+000 MOLES OF N
 8.0000000000+000 MOLES OF O

THE DENSITY OF THE EXPLOSIVE IS 1.4000000000+000 GRAMS/CC

THE MOLECULAR WEIGHT IS 2.9616800000+002 GRAMS

THE HEAT OF FORMATION AT 0 DEG K IS 4.3460000000+004 CALORIES PER FORMULA WEIGHT

THE SOLID (COMAN)EQUATION OF STATE PARAMETERS VO, AS, BS, CS, DS, ES, A1, A2, C1, C2, C3, ATOMIC WT

SOL C 4.4444444444-001 8.30935837268-001 -1.39381809219+000 6.72569716021-001 -1.13537262508-001 6.49155882007-003
 -2.26709345948-001 1.20516569925-001 8.31600000000-002 -1.75590000000-001 1.53310000000-001 1.20100000000+001

THE INPUT DETONATION PRODUCT ELEMENTAL COMPOSITION MATRIX

0.0+00	2.0+00	0.0+00	1.0+00	0.0+00	2.0+00	0.0+00	0.0+00	0.0+00	0.0+00	0.0+00	2.0+00
1.0+00	0.0+00	0.0+00	2.0+00	1.0+00	0.0+00	0.0+00	1.0+00	0.0+00	3.0+00	1.0+00	0.0+00
0.0+00	1.0+00	0.0+00	0.0+00	0.0+00	0.0+00	1.0+00	1.0+00	0.0+00	0.0+00	2.0+00	0.0+00
0.0+00	1.0+00	0.0+00	1.0+00	1.0+00	4.0+00	0.0+00	0.0+00	1.0+00	0.0+00	0.0+00	0.0+00

A STRETCH BKN CALCULATION FOR THE EXPLOSIVE
 HMX CYCLOTETRAMETHYLENE TETRANITRINE

THE COMPUTED C-J PRESSURE IS 1.99598963992-001 MEGABARS

THE COMPUTED DETONATION VELOCITY IS 7.30508690429-001 CM/MICROSECOND

THE COMPUTED C-J TEMPERATURE IS 3.25776373061+003 DEGREES KELVIN

THE COMPUTED C-J VOLUME IS 5.23454566743-001 CC/GRAM OF EXPLOSIVE

THE COMPUTED GAMMA IS 2.74300602853+000

THE VOLUME OF THE GAS IS 1.43769414744+001 CC/MOLE OF GAS AND THERE ARE 1.03123593707+001 MOLES OF GAS

SOLID VOLUME IN CC/GM
 SOL C 3.34935673143-001

THE C-J COMPOSITION OF THE DETONATION PRODUCTS AND THE INPUT COEFFICIENTS TO THE THERMODYNAMIC FITS FOR EACH SPECIE

SPECIE	NO OF MOLES	COEFFICIENTS A,B,C,D,E, THE INTEGRATION CONSTANT, HEAT OF FORMATION IN CALORIES/MOLE, COVOLUME					
HED	3.98777197532+000	4.25884200000+001	1.48080500000-002	-2.63918100000-006	1.92045300000-010	0.00000000000+000	
HE	5.29006526946-003	1.34282835156+003	-5.71070000000+004	2.50000000000+002	-2.20122200000-006	1.67776100000-010	0.00000000000+000
OE	1.96190614291-005	2.97034700000+001	1.14382900000-002	0.00000000000+000	1.80000000000+002	1.90157000000-010	0.00000000000+000
COE	1.69503636259+000	4.70509000000+001	1.28714700000-002	-2.50021700000-006	3.50000000000+002	2.77030000000-010	0.00000000000+000
CO	6.21264550351-001	1.03537647396+003	0.00000000000+000	1.95446300000-002	6.00000000000+002	1.82818100000-010	0.00000000000+000
HNS	3.77835764470-003	4.74811200000+001	1.23816100000-002	-2.72010000000+004	3.90000000000+002	2.19780100000-010	0.00000000000+000
H	2.83348559843-005	7.46280968750+002	-9.39880000000+004	4.78000000000+002	-2.41640300000-006	1.31682300000-010	0.00000000000+000
NO	8.29906521036-004	4.53308200000+001	1.23816100000-002	-1.68074000000-006	7.60000000000+001	1.89321300000-010	0.00000000000+000
NE	3.99769586792+000	1.21584309900+003	-2.72010000000+004	3.86000000000+002	-2.37900500000-006	1.79832200000-010	0.00000000000+000
OH	2.16045101558-005	4.20181600000+001	1.91166200000-002	-3.18433000000-006	3.80000000000+002	1.68915500000-010	0.00000000000+000
CH4	6.22726629180-004	1.20896121615+003	-9.36800000000+004	4.78000000000+002	4.13000000000+002	2.47071400000-010	0.00000000000+000
SOL C	1.68307638043+000	2.63911000000+001	8.12137200000-003	-1.68074000000-006	-2.49460000000-006	9.34999500000-011	0.00000000000+000
		7.94631617188+002	5.16190000000-002	7.60000000000+001	-2.37900500000-006		
		4.84149800000+001	1.26938600000-002	2.49460000000-006	3.80000000000+002		
		1.20924970573+003	2.14770000000+004	3.86000000000+002	-2.37900500000-006		
		4.39234000000+001	1.22230100000-002	-2.37900500000-006	1.79832200000-010		
		1.13916134896+003	0.00000000000+000	3.80000000000+002	1.79832200000-010		
		4.24179200000+001	1.15684700000-002	-2.22665900000-006	1.68915500000-010		
		1.18351754427+003	3.56000000000+003	4.13000000000+002	2.47071400000-010		
		3.87568600000+001	2.36401300000-002	-3.70795700000-006	2.47071400000-010		
		1.04242791146+003	-1.60000000000+004	5.28000000000+002	9.34999500000-011		
		-2.46151900000-001	7.17983300000-003	-1.29755000000-006	0.00000000000+000		
		-2.58204389323+002	0.00000000000+000	0.00000000000+000			

A STRETCH BKW CALCULATION FOR THE EXPLOSIVE
HMX CYCLOTETRAMETHYLENE TETRANITRINE

THE NUMBER OF ELEMENTS IS 4

THE NUMBER OF GAS SPECIES IS 11

THE NUMBER OF SOLID SPECIES IS 1

THE KW EQUATION OF STATE PARAMETERS ARE

ALPHA= 5.0000000000-001 BETA= 1.6000000000-001 THETA= 4.0000000000+002 KAPPA= 1.09097784436+001

THE COMPOSITION OF THE EXPLOSIVE IS

4.0000000000+000 MOLES OF C
8.0000000000+000 MOLES OF H
8.0000000000+000 MOLES OF N
8.0000000000+000 MOLES OF O

THE DENSITY OF THE EXPLOSIVE IS 1.2000000000+000 GRAMS/CC

THE MOLECULAR WEIGHT IS 2.9616800000+002 GRAMS

THE HEAT OF FORMATION AT 0 DEG K IS 4.3460000000+004 CALORIES PER FORMULA WEIGHT

THE SOLID (COMAN) EQUATION OF STATE PARAMETERS VO, AS, BS, CS, DS, ES, A1, A2, C1, C2, C3, ATOMIC WT

SOL C 4.4444444444-001 8.30959837268-001 -1.39381809219+000 6.72569716021-001 -1.13537262508-001 6.49155882007-003
 -2.26705345948-001 1.20516569525-001 8.31600000000-002 -1.75590000000-001 1.59310000000-001 1.20100000000+001

THE INPUT DETONATION PRODUCT ELEMENTAL COMPOSITION MATRIX

0.0+00	2.0+00	0.0+00	1.0+00	0.0+00	2.0+00	0.0+00	0.0+00	0.0+00	0.0+00	0.0+00	2.0+00
1.0+00	0.0+00	0.0+00	2.0+00	1.0+00	0.0+00	0.0+00	1.0+00	0.0+00	3.0+00	1.0+00	0.0+00
0.0+00	1.0+00	0.0+00	0.0+00	0.0+00	0.0+00	1.0+00	1.0+00	0.0+00	0.0+00	2.0+00	0.0+00
0.0+00	1.0+00	0.0+00	1.0+00	1.0+00	4.0+00	0.0+00	0.0+00	1.0+00	0.0+00	0.0+00	0.0+00

A STRETCH BRW CALCULATION FOR THE EXPLOSIVE
 NHX CYCLOTETRAMETHYLENE TETRANITRAMINE

THE COMPUTED C_J PRESSURE IS 1.48342972223-001 MEGABARS

THE COMPUTED DETONATION VELOCITY IS 6.68665230045-001 CM/MICROSECOND

THE COMPUTED C_J TEMPERATURE IS 3.46388316263+003 DEGREES KELVIN

THE COMPUTED C_J VOLUME IS 6.02932484461-001 CC/GRAM OF EXPLOSIVE

THE COMPUTED GAMMA IS 2.61686044039+000

THE VOLUME OF THE GAS IS 1.61576298697+001 CC/MOLE OF GAS AND THERE ARE 1.07193722073+001 MOLES OF GAS

SOLID VOLUME IN CC/GM
 SOL C 3.55551501228-001

THE C-J COMPOSITION OF THE DETONATION PRODUCTS AND THE INPUT COEFFICIENTS TO THE THERMODYNAMIC FITS FOR EACH SPECIE

SPECIE	NO OF MOLES	COEFFICIENTS A,B,C,D,E, THE INTEGRATION CONSTANT, HEAT OF FORMATION IN CALORIES/MOLE, COVOLUME					
H ₂ O	3.93574833099+000	4.25884200000+001	1.48080500000-002	-2.63918100000-006	1.92045300000-010	0.00000000000+000	
HE	3.32298858796-002	1.34282835156+003	-5.71070000000+004	2.50000000000+002			
O ₂	2.15941588880-005	2.97034700000+001	1.14382900000-002	-2.20122200000-006	1.67776100000-010	0.00000000000+000	
CO ₂	1.32543483955+000	1.17589615363+003	0.00000000000+000	1.80000000000+002			
CO	1.41200182482+000	4.70309000000+001	1.28714700000-002	-2.50021700000-006	1.90157000000-010	0.00000000000+000	
NH ₃	1.37833125161-002	1.03537647396+003	0.00000000000+000	3.50000000000+002			
H	2.23427138071-004	4.74811200000+001	1.95446300000-002	-3.72129600000-006	2.77030000000-010	0.00000000000+000	
NO	1.19853798165-003	7.46280968750+002	-9.39680000000+004	6.00000000000+002			
NE	3.99250907475+000	4.53308200000+001	1.23816100000-002	-2.41640300000-006	1.82818100000-010	0.00000000000+000	
OH	1.38438789017-004	1.12158830990+003	-2.72010000000+004	3.90000000000+002			
CH ₄	5.08294069487-003	4.20181600000+001	1.91166200000-002	-3.16433000000-006	2.19780100000-010	0.00000000000+000	
SOL C	1.25748039493+000	1.20896121615+003	-9.36800000000+003	4.78000000000+002			
		7.94631617188+002	5.16190000000+004	7.60000000000+001	1.31682300000-010	0.00000000000+000	
		4.84149800000+001	1.26938600000-002	-2.49460000000-006	1.89321300000-010	0.00000000000+000	
		1.20924970373+003	2.14770000000+004	3.86000000000+002			
		4.39234000000+001	1.22230100000-002	-2.37900300000-006	1.79832200000-010	0.00000000000+000	
		1.13916134896+003	0.00000000000+000	3.80000000000+002			
		4.24179200000+001	1.15884700000-002	-2.22863900000-006	1.68915500000-010	0.00000000000+000	
		1.18351734427+003	3.58000000000+003	4.13000000000+002			
		3.87568600000+001	2.38401300000-002	-3.70793700000-006	2.47071400000-010	0.00000000000+000	
		1.04242791146+003	-1.80000000000+004	5.28000000000+002			
		-2.46151900000-001	7.17985500000-003	-1.29755000000-006	9.34999500000-011	0.00000000000+000	
		-2.58204389323+002	0.00000000000+000	0.00000000000+000			

A STRETCH BKW CALCULATION FOR THE EXPLOSIVE
NAME CYCLOTETRAMETHYLENE TETRAINITRINE

THE NUMBER OF ELEMENTS IS 4

THE NUMBER OF GAS SPECIES IS 11

THE NUMBER OF SOLID SPECIES IS 1

THE KW EQUATION OF STATE PARAMETERS ARE

ALPHA= 5.0000000000-001 BETA= 1.6000000000-001 THETA= 4.0000000000+002 KAPPA= 1.09097784436+001

THE COMPOSITION OF THE EXPLOSIVE IS

4.0000000000+000 MOLES OF C
8.0000000000+000 MOLES OF H
8.0000000000+000 MOLES OF N
8.0000000000+000 MOLES OF O

THE DENSITY OF THE EXPLOSIVE IS 1.0000000000+000 GRAMS/CC

THE MOLECULAR WEIGHT IS 2.9616800000+002 GRAMS

THE HEAT OF FORMATION AT 0 DEG K IS 4.3460000000+004 CALORIES PER FORMULA WEIGHT

THE SOLID (COMAN)EQUATION OF STATE PARAMETERS VO, AS, BS, CS, DS, ES, A1, A2, C1, C2, C3, ATOMIC WT

SOL C 4.4444444444-001 8.30935837268-001 -1.39381809219+000 6.72569716021-001 -1.13537262508-001 6.49155882007-003
-2.26705345948-001 1.20516569525-001 8.31600000000-002 -1.75590000000-001 1.55310000000-001 1.20100000000+001

THE INPUT DETONATION PRODUCT ELEMENTAL COMPOSITION MATRIX

0.0+00	2.0+00	0.0+00	1.0+00	0.0+00	2.0+00	0.0+00	0.0+00	0.0+00	0.0+00	0.0+00	2.0+00
1.0+00	0.0+00	0.0+00	2.0+00	1.0+00	0.0+00	0.0+00	1.0+00	0.0+00	3.0+00	1.0+00	0.0+00
0.0+00	1.0+00	0.0+00	0.0+00	0.0+00	0.0+00	1.0+00	1.0+00	0.0+00	0.0+00	2.0+00	0.0+00
0.0+00	1.0+00	0.0+00	1.0+00	1.0+00	4.0+00	0.0+00	0.0+00	1.0+00	0.0+00	0.0+00	0.0+00

A STRETCH BAR CALCULATION FOR THE EXPLOSIVE
 HWX CYCLOTETRAMETHYLENE TETRA-NITRAMINE

THE COMPUTED C-J PRESSURE IS 1.07465239666-001 MEGABARS

THE COMPUTED DETONATION VELOCITY IS 6.11880687457-001 CM/MICROSECOND

THE COMPUTED C-J TEMPERATURE IS 3.58681624518+003 DEGREES KELVIN

THE COMPUTED C-J VOLUME IS 7.12967893404-001 CC/GRAM OF EXPLOSIVE

THE COMPUTED GAMMA IS 2.48389839215+000

THE VOLUME OF THE GAS IS 1.84567661937+001 CC/MOLE OF GAS AND THERE ARE 1.12908725306+001 MOLES OF GAS

SOLID VOLUME IN CC/GM
 SOL C 3.73885765249-001

THE C-J COMPOSITION OF THE DETONATION PRODUCTS AND THE INPUT COEFFICIENTS TO THE THERMODYNAMIC FITS FOR EACH SPECIE

SPECIE	NO OF MOLES	COEFFICIENTS A,B,C,D,E	THE INTEGRATION CONSTANT	HEAT OF FORMATION IN CALORIES/MOLE	COVOLUME
HEO	3.73926768806+000	4.25884200000+001 1.34282835156+003	1.48080500000-002 -5.71070000000+004	-2.63918100000-006 2.50000000000+002	1.92045300000-010 0.00000000000+000
HE	1.46076973982-001	2.97034700000+001 1.17589615365+003	1.14382900000-002 0.00000000000+000	-2.20122200000-006 1.80000000000+002	1.67776100000-010 0.00000000000+000
OE	1.55914056844-005	4.70309000000+001 1.03537647396+003	1.28714700000-002 0.00000000000+000	-2.50021700000-006 3.50000000000+002	1.90157000000-010 0.00000000000+000
COE	9.02982571887-001	4.74811200000+001 7.46280988750+002	1.95446300000-002 -9.39680000000+004	-3.72129600000-006 6.00000000000+002	2.77030000000-010 0.00000000000+000
CO	2.45301719417+000	4.53308200000+001 1.12158830990+003	1.23816100000-002 -2.72010000000+004	-2.41640300000-006 3.90000000000+002	1.82818100000-010 0.00000000000+000
NHO	3.83570116923-002	4.20181600000+001 1.20696121615+003	1.91166200000-002 -9.36800000000+003	-3.18433000000-006 4.76000000000+002	2.19780100000-010 0.00000000000+000
H	1.06016451493-003	2.63911000000+001 7.94631617188+002	8.12137200000-003 5.16190000000+004	-1.69074000000-006 7.60000000000+001	1.31682300000-010 0.00000000000+000
NO	1.24048682895-003	4.84149800000+001 1.20924970573+003	1.26938600000-002 2.14770000000+004	-2.49480000000-006 3.86000000000+002	1.89321300000-010 0.00000000000+000
NE	3.98020125074+000	4.39234000000+001 1.13916134896+003	1.22250100000-002 0.00000000000+000	-2.37909500000-006 3.80000000000+002	1.79832200000-010 0.00000000000+000
OH	4.78304351868-004	4.24179200000+001 1.18351754427+003	1.15684700000-002 3.58000000000+003	-2.22965900000-006 4.13000000000+002	1.68915500000-010 0.00000000000+000
CH4	2.81752929919-002	3.87568600000+001 1.04242791146+003	2.38401300000-002 -1.60000000000+004	-3.70795700000-006 5.28000000000+002	2.47071400000-010 0.00000000000+000
SOL C	6.15824940990-001	-2.46151900000-001 -2.58204389323+002	7.17985500000-003 0.00000000000+000	-1.29755000000-006 0.00000000000+000	9.34999500000-011 0.00000000000+000

A STRETCH BAW CALCULATION FOR THE EXPLOSIVE
RDX CYCLOTTRIMETHYLENE TRINITRAMINE

THE NUMBER OF ELEMENTS IS 4

THE NUMBER OF GAS SPECIES IS 11

THE NUMBER OF SOLID SPECIES IS 1

THE KW EQUATION OF STATE PARAMETERS ARE

ALPHA= 5.0000000000-001 BETA= 1.8000000000-001 THETA= 4.0000000000+002 KAPPA= 1.09097784436+001

THE COMPOSITION OF THE EXPLOSIVE IS

3.0000000000+000 MOLES OF C
6.0000000000+000 MOLES OF H
6.0000000000+000 MOLES OF N
6.0000000000+000 MOLES OF O

THE DENSITY OF THE EXPLOSIVE IS 1.8000000000+000 GRAMS/CC

THE MOLECULAR WEIGHT IS 2.2212600000+002 GRAMS

THE HEAT OF FORMATION AT 0 DEG K IS 3.3970000000+004 CALORIES PER FORMULA WEIGHT

THE SOLID (COMAN) EQUATION OF STATE PARAMETERS VO, AS, BS, CS, DS, ES, A1, A2, C1, C2, C3, ATOMIC WT

SOL C 4.4444444444-001 8.30935837268-001 -1.39381809219+000 6.72569716021-001 -1.13537262508-001 6.49155882007-003
-2.26705345948-001 1.20516569525-001 8.31600000000-002 -1.75590000000-001 1.55310000000-001 1.20100000000+001

THE INPUT DETONATION PRODUCT ELEMENTAL COMPOSITION MATRIX

0.0+00	2.0+00	0.0+00	1.0+00	0.0+00	2.0+00	0.0+00	0.0+00	0.0+00	0.0+00	0.0+00	2.0+00
1.0+00	0.0+00	0.0+00	2.0+00	1.0+00	0.0+00	0.0+00	1.0+00	0.0+00	3.0+00	1.0+00	0.0+00
0.0+00	1.0+00	0.0+00	0.0+00	0.0+00	0.0+00	1.0+00	1.0+00	0.0+00	0.0+00	2.0+00	0.0+00
0.0+00	1.0+00	0.0+00	1.0+00	1.0+00	4.0+00	0.0+00	0.0+00	1.0+00	0.0+00	0.0+00	0.0+00

A STRETCH BKW CALCULATION FOR THE EXPLOSIVE
 ROX CYCLOTTRIMETHYLENE TRINITRANINE

THE COMPUTED CJ PRESSURE IS 3.46665097210-001 MEGABARS

THE COMPUTED DETONATION VELOCITY IS 8.75399410775-001 CM/MICROSECOND

THE COMPUTED CJ TEMPERATURE IS 2.58759684164+003 DEGREES KELVIN

THE COMPUTED CJ VOLUME IS 4.15934359030-001 CC/GRAM OF EXPLOSIVE

THE COMPUTED GAMMA IS 2.97900868070+000

THE VOLUME OF THE GAS IS 1.16225688900+001 CC/MOLE OF GAS AND THERE ARE 7.51092350914+000 MOLES OF GAS

SOLID VOLUME IN CC/GM
 SOL C 2.84814958638-001

THE C-J COMPOSITION OF THE DETONATION PRODUCTS AND THE INPUT COEFFICIENTS TO THE THERMODYNAMIC FITS FOR EACH SPECIE

SPECIE	NO OF MOLES	COEFFICIENTS A,B,C,D,E, THE INTEGRATION CONSTANT, HEAT OF FORMATION IN CALORIES/MOLE, COVOLUME					
H2O	2.99994356797+000	4.2588420000+001	1.4808050000-002	-2.6391810000-006	1.9204530000-010	0.0000000000+000	
HE	9.45336764577-006	1.34282835156+003	-5.7107000000+004	2.5000000000+002	1.6777610000-010	0.0000000000+000	
OE	2.88709128123-006	2.9703470000+001	1.1438290000-002	-2.2012220000-006	1.9015700000-010	0.0000000000+000	
COE	1.48906109732+000	1.17589615365+003	0.0000000000+000	1.8000000000+002	2.7703000000-010	0.0000000000+000	
CO	2.18523153708-002	4.7030900000+001	1.2871470000-002	-2.5002170000-006	1.6281810000-010	0.0000000000+000	
NH3	2.95030236497-005	1.03537647396+003	0.0000000000+000	3.5000000000+002	2.1978010000-010	0.0000000000+000	
H	5.39685124881-010	4.7481120000+001	1.9544630000-002	-3.7212960000-006	1.3168230000-010	0.0000000000+000	
NO	7.41473561472-005	7.46280968750+002	-9.3968000000+004	6.0000000000+002	1.8932130000-010	0.0000000000+000	
N2	2.99994817482+000	4.5330820000+001	1.2381610000-002	-2.4164030000-006	1.7983220000-010	0.0000000000+000	
OH	4.96485385577-010	1.12158830990+003	-2.7201000000+004	3.9000000000+002	1.6891550000-010	0.0000000000+000	
CH4	3.61804259018-007	4.2018160000+001	1.9116620000-002	-3.1643300000-006	2.4707140000-010	0.0000000000+000	
SOL C	1.48908622550+000	1.20696121615+003	-9.3680000000+003	4.7800000000+002	9.3499950000-011	0.0000000000+000	
		2.6391100000+001	8.1213720000-003	-1.6907400000-006			
		7.94631617188+002	5.1619000000+004	7.6000000000+001			
		4.8414980000+001	1.2693860000-002	-2.4946000000-006			
		1.20924970573+003	2.1477000000+004	3.8600000000+002			
		4.3923400000+001	1.2225010000-002	-2.3790050000-006			
		1.13916134896+003	0.0000000000+000	3.8000000000+002			
		4.2417920000+001	1.1568470000-002	-2.2266590000-006			
		1.18351754427+003	3.5600000000+003	4.1300000000+002			
		3.8756860000+001	2.3640130000-002	-3.7079570000-006			
		1.04242791146+003	-1.6000000000+004	5.2800000000+002			
		-2.4615190000-001	7.1798550000-003	-1.2975500000-006			
		-2.58204389323+002	0.0000000000+000	0.0000000000+000			

THE BKM HUGONIOT FOR THE DETONATION PRODUCTS OF
 ROX CYCLOTRIMETHYLENE TRINITRAMINE

PRESSURE = 5.0000000000-001 VOLUME = 3.68557077305-001 TEMPERATURE = 2.86379760623+003
 H2O 2.99998545675+000
 H2 1.75209441379-006
 O2 2.99510371886-005
 CO2 1.49307824145+000
 CO 1.34951759890-002
 NH3 6.46272308178-006
 H 1.92957342779-009
 NO 3.03020767827-004
 N2 2.99984425825+000
 OH 1.46899486944-009
 CH4 4.76846215155-008
 SOL C 1.49342633487+000

PRESSURE = 4.5000000000-001 VOLUME = 3.81506113071-001 TEMPERATURE = 2.75345100959+003
 H2O 2.99998077633+000
 H2 2.52684205402-006
 O2 1.35716810560-005
 CO2 1.49266348788+000
 CO 1.44827571343-002
 NH3 1.10316374122-005
 H 4.65538472552-010
 NO 1.82347015501-004
 N2 2.99990331067+000
 OH 4.02522207381-010
 CH4 7.44673695363-008
 SOL C 1.49285368052+000

PRESSURE = 4.0000000000-001 VOLUME = 3.96585100173-001 TEMPERATURE = 2.66222602667+003
 H2O 2.99997077571+000
 H2 4.31645692245-006
 O2 6.27212442669-006
 CO2 1.48155026760+000
 CO 1.68019321578-002
 NH3 1.64156865125-005
 H 4.85385917550-010
 NO 1.14212252974-004
 N2 2.99993468603+000
 OH 4.31513816828-010
 CH4 1.41924073016-007
 SOL C 1.49164765832+000

PRESSURE = 3.5000000000-001 VOLUME = 4.14600748574-001 TEMPERATURE = 2.59153063583+003
 H2O 2.99994793430+000
 H2 8.94036154686-006
 O2 3.02481485420-006
 CO2 1.48927403710+000
 CO 2.14219473145-002
 NH3 2.82984242570-005
 H 5.35110619436-010
 NO 7.59940672640-005
 N2 2.99994789375+000
 OH 4.91207464724-010
 CH4 3.38596580150-007
 SOL C 1.48930367699+000

PRESSURE = 3.0000000000-001 VOLUME = 4.36835268140-001 TEMPERATURE = 2.54370084621+003
 H2O 2.99988911074+000
 H2 2.29802212291-005
 O2 1.56736021380-006
 CO2 1.48473939092+000
 CO 3.05739371165-002
 NH3 5.72246433175-005
 H 6.25425736367-010
 NO 5.0349915744-005
 N2 2.99994387018+000
 OH 5.92644964968-010
 CH4 1.03573240317-006
 SOL C 1.48468563623+000

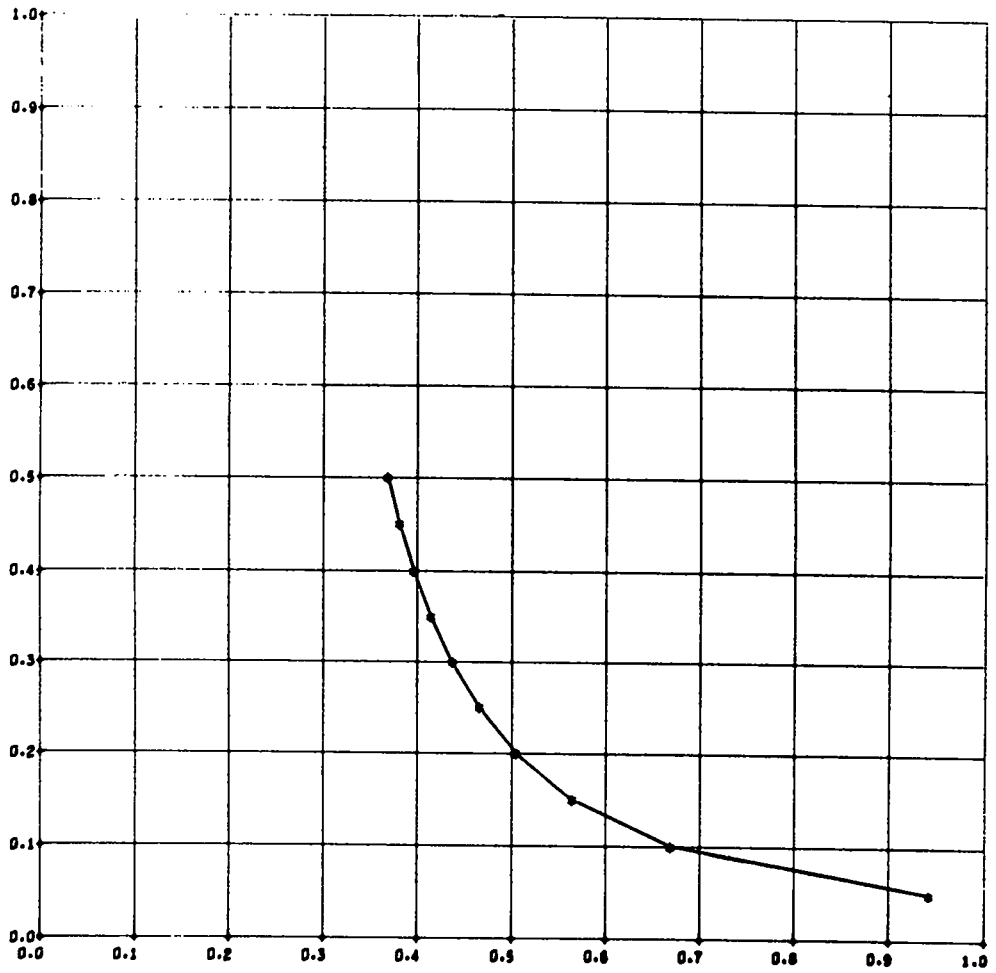
PRESSURE = 2.5000000000-001 VOLUME = 4.65492050544-001 TEMPERATURE = 2.52225169109+003
 H2O 2.99971100539+000
 H2 7.50252964169-005
 O2 9.02909729024-007
 CO2 1.47518768652+000
 CO 4.98671468389-002
 NH3 1.37053744152-004
 H 8.27418689504-008
 NO 4.45959591718-005
 N2 2.99990917515+000
 OH 7.29581631586-008
 CH4 4.15542318599-006
 SOL C 1.47494101122+000

PRESSURE = 2.000000000-001 VOLUME = 5.04768734185-001 TEMPERATURE = 2.53174529661+003
H2O 2.99905146998+000
H2 3.17985142932-004
O2 5.96674917367-007
CO2 1.45298000817+000
CO 9.49455637141-002
NH3 3.90427387221-004
H 2.98771756277-007
NO 4.14747846121-005
N2 2.99978404891+000
OH 2.81827192150-007
CH4 2.23067461804-005
SOL C 1.45205212137+000

PRESSURE = 1.500000000-001 VOLUME = 5.63965127927-001 TEMPERATURE = 2.57565625108+003
H2O 2.99591142543+000
H2 1.76370573185-003
O2 4.50987369952-007
CO2 1.39491973954+000
CO 2.14202371017-001
NH3 1.31815996427-003
H 1.58986837120-006
NO 4.43234923489-005
N2 2.99931875827+000
OH 1.48901007418-006
CH4 1.63042226335-004
SOL C 1.39071484722+000

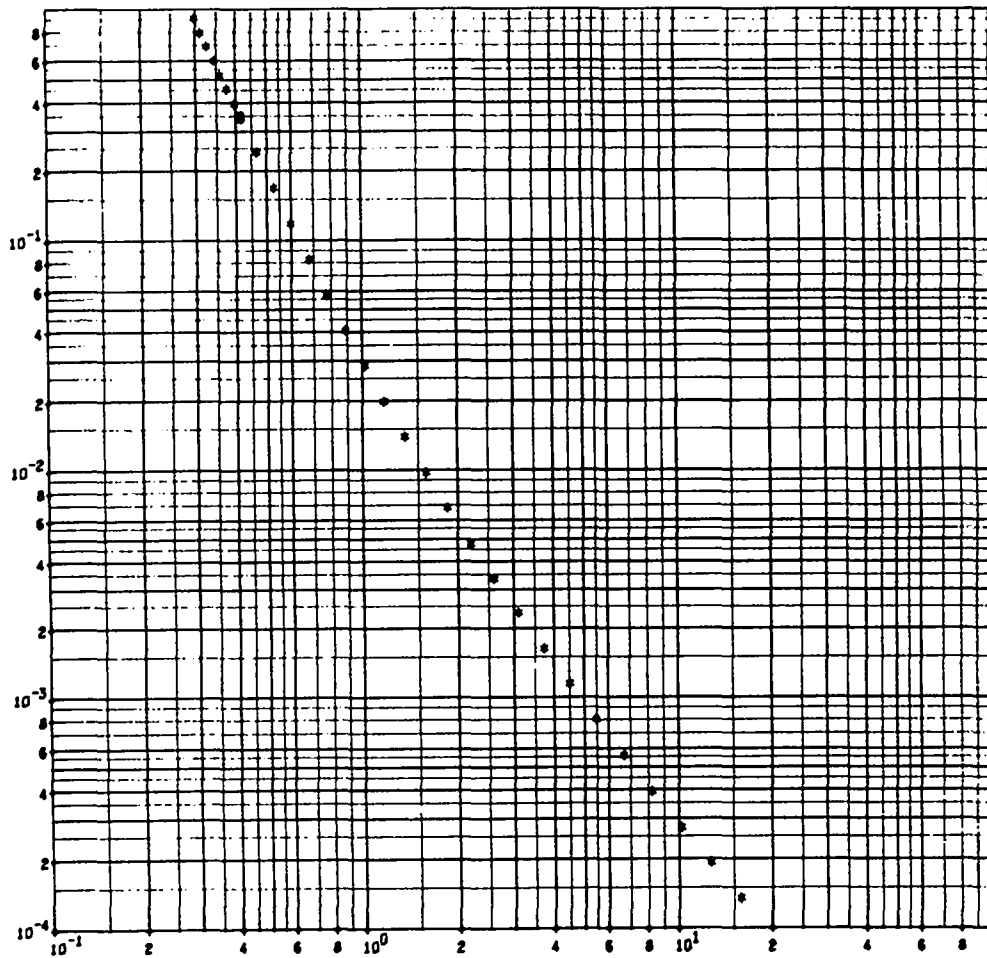
PRESSURE = 1.000000000-001 VOLUME = 6.69390582631-001 TEMPERATURE = 2.64623444260+003
H2O 2.97504086283+000
H2 1.36669154868-002
O2 3.37534926300-007
CO2 1.22857468343+000
CO 5.67749356448-001
NH3 5.26437632279-003
H 1.24983502133-005
NO 4.96036531305-005
N2 2.99734271001+000
OH 1.01351433674-005
CH4 1.68172022828-003
SOL C 1.20198423989+000

PRESSURE = 5.000000000-002 VOLUME = 9.42048069942-001 TEMPERATURE = 2.68667664133+003
H2O 2.73910822800+000
H2 1.81913364174-001
O2 1.26926084643-007
CO2 7.95239286958-001
CO 1.67030933302+000
NH3 2.37823278108-002
H 1.36073358867-004
NO 3.78398140091-005
N2 2.98708991829+000
OH 6.57713983448-005
CH4 3.01019980150-002
SOL C 5.04349380008-001



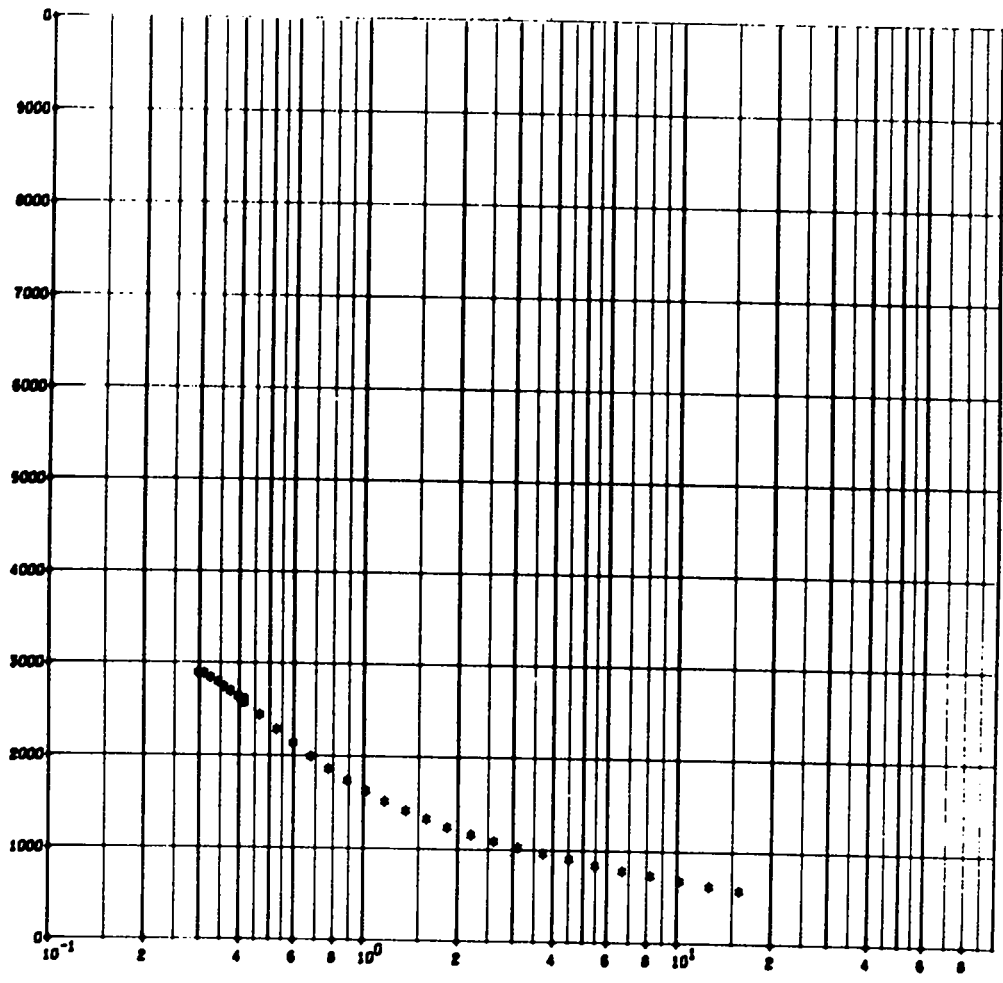
ROX CYCLOTRIMETHYLENE TRINITRAMINE

PRESSURE-VOLUME HUGONIOT



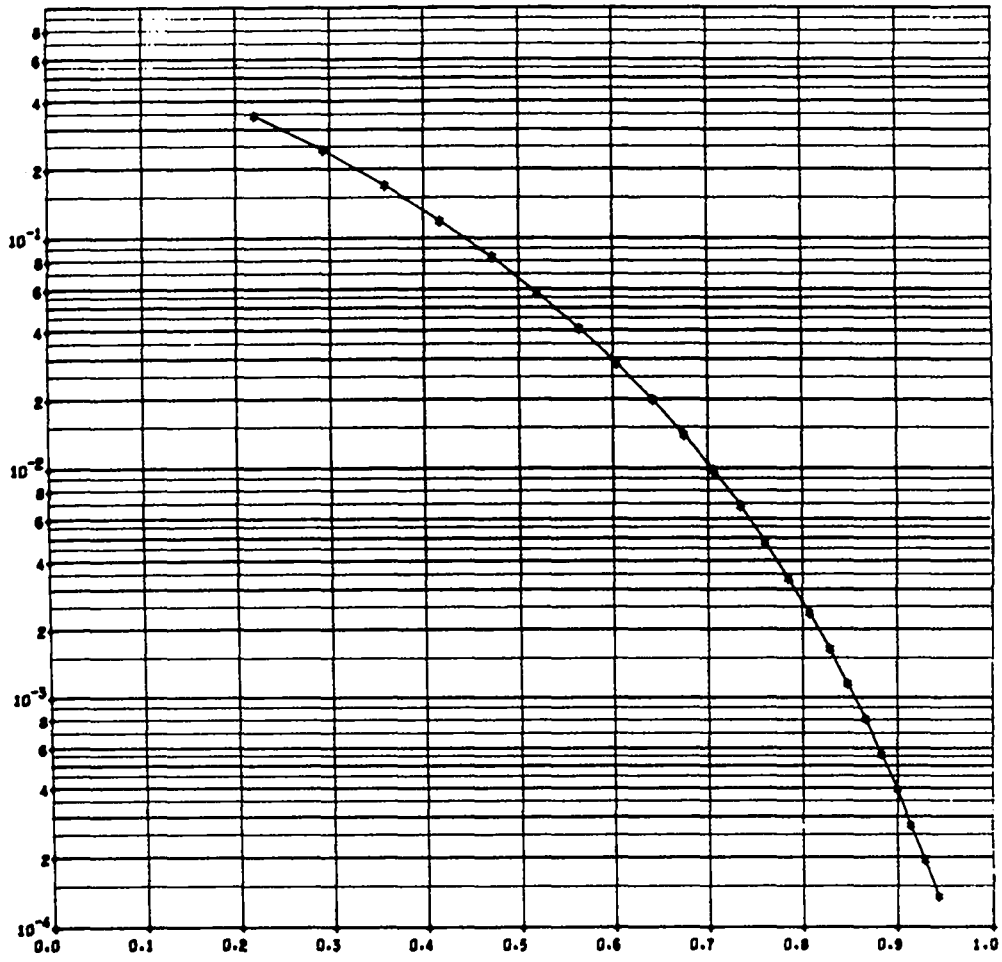
ROX CYCLOTRIMETHYLENE TRINITRAMINE

PRESSURE-VOLUME ISENTROPE THRU THE C-J VALUE



ROX CYCLOTRIMETHYLENE TRINITRAMINE

TEMPERATURE-VOLUME ISENTROPE THRU THE C-J VALUE



NOX CYCLOTRIMETHYLENE TRINITRAMINE

PRESSURE-PARTICLE VELOCITY

A STRETCH BKN CALCULATION FOR THE EXPLOSIVE
RDX CYCLOTTRIMETHYLENE TRINITRAMINE

THE NUMBER OF ELEMENTS IS 4

THE NUMBER OF GAS SPECIES IS 11

THE NUMBER OF SOLID SPECIES IS 1

THE KW EQUATION OF STATE PARAMETERS ARE

ALPHA= 5.0000000000-001 BETA= 1.8000000000-001 THETA= 4.0000000000+002 KAPPA= 1.09097784436+001

THE COMPOSITION OF THE EXPLOSIVE IS

3.0000000000+000 MOLES OF C
6.0000000000+000 MOLES OF H
6.0000000000+000 MOLES OF N
6.0000000000+000 MOLES OF O

THE DENSITY OF THE EXPLOSIVE IS 1.6000000000+000 GRAMS/CC

THE MOLECULAR WEIGHT IS 2.2212600000+002 GRAMS

THE HEAT OF FORMATION AT 0 DEG K IS 3.3970000000+004 CALORIES PER FORMULA WEIGHT

THE SOLID (GOWAN) EQUATION OF STATE PARAMETERS VO, AS, BS, CS, DS, ES, A1, A2, C1, C2, C3, ATOMIC WT

SOL C 4.4444444444-001 8.30935837268-001 -1.39361809219+000 6.72569716021-001 -1.13537262508-001 6.49155842007-003
-2.26705345948-001 1.20516569525-001 8.31600000000-002 -1.75590000000-001 1.55310000000-001 1.20100000000+001

THE INPUT DETONATION PRODUCT ELEMENTAL COMPOSITION MATRIX

0.0+00	2.0+00	0.0+00	1.0+00	0.0+00	2.0+00	0.0+00	0.0+00	0.0+00	0.0+00	0.0+00	2.0+00
1.0+00	0.0+00	0.0+00	2.0+00	1.0+00	0.0+00	0.0+00	1.0+00	0.0+00	3.0+00	1.0+00	0.0+00
0.0+00	1.0+00	0.0+00	0.0+00	0.0+00	0.0+00	1.0+00	1.0+00	0.0+00	0.0+00	2.0+00	0.0+00
0.0+00	1.0+00	0.0+00	1.0+00	1.0+00	4.0+00	0.0+00	0.0+00	1.0+00	0.0+00	0.0+00	0.0+00

A STRETCH BKN CALCULATION FOR THE EXPLOSIVE
 ROX CYCLOTINETHYLENE TRINITRANINE

THE COMPUTED CJ PRESSURE IS 2.64627716390-001 MEGABARS

THE COMPUTED DETONATION VELOCITY IS 7.99435623395-001 CM/MICROSECOND

THE COMPUTED CJ TEMPERATURE IS 2.97012912895+003 DEGREES KELVIN

THE COMPUTED CJ VOLUME IS 4.63256540108-001 CC/GRAM OF EXPLOSIVE

THE COMPUTED GAMMA IS 2.86412927366+000

THE VOLUME OF THE GAS IS 1.28871078432+001 CC/MOLE OF GAS AND THERE ARE 7.56963560826+000 MOLES OF GAS

SOLID VOLUME IN CC/GM
 SOL C 3.11550870845-001

THE C-J COMPOSITION OF THE DETONATION PRODUCTS AND THE INPUT COEFFICIENTS TO THE THERMODYNAMIC FITS FOR EACH SPECIE

SPECIE	NO OF MOLES	COEFFICIENTS A,B,C,D,E, THE INTEGRATION CONSTANT, HEAT OF FORMATION IN CALORIES/MOLE, COVOLUME				
HE2	2.99887891439+000	4.2588420000+001	1.4808050000-002	-2.6391610000-006	1.9804530000-010	0.0000000000+000
HE	3.46878582604-004	1.34282835156+003	-3.7107000000-004	2.5000000000+002		
OE	8.61790495128-006	2.9703470000+001	1.1438890000-002	-2.2012220000-006	1.6777610000-010	0.0000000000+000
COE	1.43082612989+000	1.17589615365+003	0.0000000000+000	1.8000000000-002		
CO	1.39161112522-001	4.7030900000+001	1.2271470000-002	-2.5002170000-006	1.9019700000-010	0.0000000000+000
NH3	4.78317792984-004	1.03537847396+003	0.0000000000+000	3.5000000000+002		
H	1.24836169880-006	4.7481120000+001	1.9544630000-002	-3.7212960000-006	2.7703000000-010	0.0000000000+000
NO	2.89461931378-004	7.48280988730+002	-9.3968000000+004	6.0000000000+002		
NE	2.99961611014+000	4.5330820000+001	1.2381610000-002	-2.4164030000-006	1.8881610000-010	0.0000000000+000
OH	1.01555713186-006	1.12198830990+003	-2.7201000000+004	3.9000000000+002		
CH4	2.77991889245-005	4.2018160000+001	1.9118620000-002	-3.1843300000-006	2.1978010000-010	0.0000000000+000
SOL C	1.42998495839+000	1.20898121615+003	-9.3680000000+003	4.7800000000+002		
		2.6391100000+001	8.1213720000-003	-1.6907400000-006	1.3168230000-010	0.0000000000+000
		7.94631617188+002	3.1613000000+004	7.6000000000+001		
		4.8414980000+001	1.2693880000-002	-2.4846000000-006	1.8932130000-010	0.0000000000+000
		1.20924970573+003	2.1477000000+004	3.8800000000+002		
		4.3923400000+001	1.2225010000-002	-2.3790080000-006	1.7963220000-010	0.0000000000+000
		1.13916134896+003	0.0000000000+000	3.8000000000+002		
		4.2417920000+001	1.1568470000-002	-2.2286580000-006	1.6891550000-010	0.0000000000+000
		1.18331754427+003	3.9800000000+003	4.1300000000+002		
		3.8758880000+001	2.3640130000-002	-3.7078970000-006	2.4707140000-010	0.0000000000+000
		1.04242791148+003	-1.6000000000+004	5.2800000000+002		
		-2.4815190000-001	7.1798930000-003	-1.2973500000-006	9.3499950000-011	0.0000000000+000
		-2.58204389323+002	0.0000000000+000	0.0000000000+000		

A STRETCH BKW CALCULATION FOR THE EXPLOSIVE
RDX CYCLOTTRIMETHYLENE TRINITRAMINE

THE NUMBER OF ELEMENTS IS 4

THE NUMBER OF GAS SPECIES IS 11

THE NUMBER OF SOLID SPECIES IS 1

THE KW EQUATION OF STATE PARAMETERS ARE

ALPHA= 5.0000000000-001 BETA= 1.6000000000-001 THETA= 4.0000000000+002 KAPPA= 1.09097784436+001

THE COMPOSITION OF THE EXPLOSIVE IS

3.0000000000+000 MOLES OF C
6.0000000000+000 MOLES OF H
6.0000000000+000 MOLES OF N
6.0000000000+000 MOLES OF O

THE DENSITY OF THE EXPLOSIVE IS 1.4000000000+000 GRAMS/CC

THE MOLECULAR WEIGHT IS 2.2212600000+002 GRAMS

THE HEAT OF FORMATION AT 0 DEG K IS 3.3970000000+004 CALORIES PER FORMULA WEIGHT

THE SOLID (COMAN) EQUATION OF STATE PARAMETERS VO, AS, BS, CS, DS, ES, A1, A2, C1, C2, C3, ATOMIC WT

SOL C 4.4444444444-001 8.30935837268-001 -1.39381809219+000 6.72569716021-001 -1.13537262508-001 6.48155882007-003
-2.26705345948-001 1.20516569525-001 8.31600000000-002 -1.75590000000-001 1.55310000000-001 1.20100000000+001

THE INPUT DETONATION PRODUCT ELEMENTAL COMPOSITION MATRIX

0.0+00	2.0+00	0.0+00	1.0+00	0.0+00	2.0+00	0.0+00	0.0+00	0.0+00	0.0+00	0.0+00	0.0+00	2.0+00
1.0+00	0.0+00	0.0+00	2.0+00	1.0+00	0.0+00	0.0+00	1.0+00	0.0+00	3.0+00	1.0+00	0.0+00	0.0+00
0.0+00	1.0+00	0.0+00	0.0+00	0.0+00	0.0+00	1.0+00	1.0+00	0.0+00	0.0+00	2.0+00	0.0+00	0.0+00
0.0+00	1.0+00	0.0+00	1.0+00	1.0+00	4.0+00	0.0+00	0.0+00	1.0+00	0.0+00	0.0+00	0.0+00	0.0+00

A STRETCH BKW CALCULATION FOR THE EXPLOSIVE
 ROX CYCLOTTRIMETHYLENE TRINITRAMINE

THE COMPUTED CJ PRESSURE IS 2.00050279358-001 MEGABARS

THE COMPUTED DETONATION VELOCITY IS 7.31173386860-001 CM/MICROSECOND

THE COMPUTED CJ TEMPERATURE IS 3.27155550748+003 DEGREES KELVIN

THE COMPUTED CJ VOLUME IS 5.23370662931-001 CC/GRAM OF EXPLOSIVE

THE COMPUTED GAMMA IS 2.74136108340+000

THE VOLUME OF THE GAS IS 1.43691267776+001 CC/MOLE OF GAS AND THERE ARE 7.73848203502+000 MOLES OF GAS

SOLID VOLUME IN CC/GM
 SOL C 3.34840265972-001

THE C-J COMPOSITION OF THE DETONATION PRODUCTS AND THE INPUT COEFFICIENTS TO THE THERMODYNAMIC FITS FOR EACH SPECIE

SPECIE	NO OF MOLES	COEFFICIENTS A,B,C,D,E, THE INTEGRATION CONSTANT, HEAT OF FORMATION IN CALORIES/MOLE, COVOLUME					
H2O	2.99058568736+000	4.25884200000+001	1.48080500000-002	-2.63918100000-006	1.82045300000-010	0.00000000000+000	
HE	4.07766600935-003	1.34282835156+003	-5.71070000000+004	2.50000000000+002	-2.20122200000-006	1.67776100000-010	0.00000000000+000
OE	1.54593404935-005	2.97034700000+001	1.14382900000-002	-2.20122200000-006	1.90157000000-010	0.00000000000+000	
COE	1.26721205703+000	1.17589615365+003	0.00000000000+000	1.80000000000+002	6.00000000000+002	0.00000000000+000	
CO	4.74294186679-001	4.70309000000+001	1.28714700000-002	-2.50021700000-006	1.82818100000-010	0.00000000000+000	
NH3	2.89989490966-003	1.03537647396+003	0.00000000000+000	3.50000000000+002	4.76000000000+002	0.00000000000+000	
H	2.24331925338-005	4.74811200000+001	1.95446300000-002	-3.72129600000-006	1.31682300000-010	0.00000000000+000	
NO	6.47863193891-004	7.48280968750+002	-9.39680000000+004	6.00000000000+002	1.89321300000-010	0.00000000000+000	
N2	2.99822612095+000	4.53508200000+001	1.23816100000-002	-2.41640300000-006	1.79832200000-010	0.00000000000+000	
OH	1.70300272798-005	1.12158830990+003	-2.72010000000+004	3.90000000000+002	1.68915500000-010	0.00000000000+000	
CH4	4.83436328631-004	4.20181600000+001	1.91168200000-002	-3.16433000000-006	2.47071400000-010	0.00000000000+000	
SOL C	1.25801031996+000	1.20696121615+003	-9.36800000000+003	4.76000000000+002	9.34999500000-011	0.00000000000+000	
		2.43911000000+001	8.12137200000-003	-1.69074000000-006	0.00000000000+000		
		7.94631617188+002	5.16190000000+004	7.60000000000+001			
		4.84149800000+001	1.26938600000-002	-2.49480000000-006			
		1.20924970573+003	2.14770000000+004	3.86000000000+002			
		4.39234000000+001	1.22250100000-002	-2.37900000000-006			
		1.13916134896+003	0.00000000000+000	3.80000000000+002			
		4.24179200000+001	1.15684700000-002	-2.22883900000-006			
		1.18391754427+003	3.56000000000+003	4.13000000000+002			
		3.87588600000+001	2.38401300000-002	-3.70793700000-006			
		1.04242791146+003	-1.60000000000+004	3.28000000000+002			
		-2.46151900000-001	7.17985500000-003	-1.29733000000-006			
		-2.58204389323+002	0.00000000000+000	0.00000000000+000			

A STRETCH BRW CALCULATION FOR THE EXPLOSIVE
 RDX CYCLOTTRIMETHYLENE TRINITRAMINE

THE NUMBER OF ELEMENTS IS 4

THE NUMBER OF GAS SPECIES IS 11

THE NUMBER OF SOLID SPECIES IS 1

THE KW EQUATION OF STATE PARAMETERS ARE
 ALPHA= 5.0000000000-001 BETA= 1.6000000000-001 THETA= 4.0000000000+002 KAPPA= 1.09097784436+001

THE COMPOSITION OF THE EXPLOSIVE IS
 3.0000000000+000 MOLES OF C
 6.0000000000+000 MOLES OF H
 6.0000000000+000 MOLES OF N
 6.0000000000+000 MOLES OF O

THE DENSITY OF THE EXPLOSIVE IS 1.2000000000+000 GRAMS/CC

THE MOLECULAR WEIGHT IS 2.2212600000+002 GRAMS

THE HEAT OF FORMATION AT 0 DEG K IS 3.3970000000+004 CALORIES PER FORMULA WEIGHT

THE SOLID (GOWAN) EQUATION OF STATE PARAMETERS VO, AS, BS, CS, DS, ES, A1, A2, C1, C2, C3, ATOMIC WT

SOL C 4.4444444444-001 8.30935837268-001 -1.39381009219+000 6.72569716021-001 -1.13337262908-001 6.49155882007-003
 -2.26705349948-001 1.20916569525-001 8.31600000000-002 -1.75590000000-001 1.55310000000-001 1.20100000000+001

THE INPUT DETONATION PRODUCT ELEMENTAL COMPOSITION MATRIX

0.0+00	2.0+00	0.0+00	1.0+00	0.0+00	2.0+00	0.0+00	0.0+00	0.0+00	0.0+00	0.0+00	2.0+00
1.0+00	0.0+00	0.0+00	2.0+00	1.0+00	0.0+00	0.0+00	1.0+00	0.0+00	3.0+00	1.0+00	0.0+00
0.0+00	1.0+00	0.0+00	0.0+00	0.0+00	0.0+00	1.0+00	1.0+00	0.0+00	0.0+00	2.0+00	0.0+00
0.0+00	1.0+00	0.0+00	1.0+00	1.0+00	4.0+00	0.0+00	0.0+00	1.0+00	0.0+00	0.0+00	0.0+00

A STRETCH BAW CALCULATION FOR THE EXPLOSIVE
RDX CYCLOTTRIMETHYLENE TRINITRANINE

THE COMPUTED C_J PRESSURE IS 1.48747930502-001 MEGABARS

THE COMPUTED DETONATION VELOCITY IS 6.69444246203-001 CM/MICROSECOND

THE COMPUTED C_J TEMPERATURE IS 3.47762845881+003 DEGREES KELVIN

THE COMPUTED C_J VOLUME IS 6.02840888750-001 CC/GRAM OF EXPLOSIVE

THE COMPUTED GAMMA IS 2.61542319759+000

THE VOLUME OF THE GAS IS 1.61457866897+001 CC/MOLE OF GAS AND THERE ARE 8.04806336416+000 MOLES OF GAS

SOLID VOLUME IN CC/GM
SOL C 3.55452149746-001

THE C-J COMPOSITION OF THE DETONATION PRODUCTS AND THE INPUT COEFFICIENTS TO THE THERMODYNAMIC FITS FOR EACH SPECIE

SPECIE	NO OF MOLES	COEFFICIENTS A,B,C,D,E, THE INTEGRATION CONSTANT, HEAT OF FORMATION IN CALORIES/MOLE, COVOLUME					
NEO	2.95079132031+000	4.25884200000+001	1.48080900000-002	-2.63918100000-006	1.92045300000-010	0.00000000000+000	
ME	2.54400936511-002	1.3428285156+003	-5.71070000000+004	2.50000000000+002			
OE	1.68994949731-005	2.97034700000+001	1.14382900000-002	-2.20122200000-006	1.67776100000-010	0.00000000000+000	
COE	9.88250745101-001	1.17589615365+003	0.00000000000+000	1.80000000000+002			
CO	1.07163513774+000	4.70309000000+001	1.28714700000-002	-2.50021700000-006	1.90157000000-010	0.00000000000+000	
NPS	1.05304061436-002	1.03537647396+003	0.00000000000+000	3.50000000000+002			
N	1.75185099060-004	4.74811200000+001	1.95446300000-002	-3.72129600000-006	2.77030000000-010	0.00000000000+000	
NO	9.30328058169-004	7.46280968750+002	-9.39680000000+004	6.00000000000+002			
NE	2.99426963290+000	4.53508200000+001	1.23816100000-002	-2.41640300000-006	1.82818100000-010	0.00000000000+000	
ON	1.07924697002-004	1.12158830990+003	-2.72010000000+004	3.90000000000+002			
CH4	3.91573096425-003	4.20181600000+001	1.91166200000-002	-3.16433000000-006	2.19780100000-010	0.00000000000+000	
SOL C	9.36196386190-001	1.20696121615+003	-9.36800000000+003	4.76000000000+002			
		2.63911000000+001	8.12137200000-003	-1.69074000000-006	1.31682300000-010	0.00000000000+000	
		7.94631617188+002	5.16190000000+004	7.60000000000+001			
		4.84149800000+001	1.26938600000-002	-2.49460000000-006	1.89321300000-010	0.00000000000+000	
		1.20924970573+003	2.14770000000+004	3.86000000000+002			
		4.39234000000+001	1.22250100000-002	-2.37900500000-006	1.79832200000-010	0.00000000000+000	
		1.13916134896+003	0.00000000000+000	3.80000000000+002			
		4.24179200000+001	1.15684700000-002	-2.22663900000-006	1.68915500000-010	0.00000000000+000	
		1.18351754427+003	3.56000000000+003	4.13000000000+002			
		3.87568600000+001	2.36401300000-002	-3.70795700000-006	2.47071400000-010	0.00000000000+000	
		1.04242791146+003	-1.60000000000+004	5.28000000000+002			
		-2.46151900000-001	7.17985300000-003	-1.29755300000-006	9.34999500000-011	0.00000000000+000	
		-2.58204389323+002	0.00000000000+000	0.00000000000+000			

A STRETCH BWK CALCULATION FOR THE EXPLOSIVE
 RDX CYCLOTTRIMETHYLENE TRINITRANINE

THE NUMBER OF ELEMENTS IS 4

THE NUMBER OF GAS SPECIES IS 11

THE NUMBER OF SOLID SPECIES IS 1

THE KW EQUATION OF STATE PARAMETERS ARE

ALPHA= 5.0000000000-001 BETA= 1.8000000000-001 THETA= 4.0000000000+002 KAPPA= 1.09097784436+001

THE COMPOSITION OF THE EXPLOSIVE IS

3.0000000000+000 MOLES OF C
 6.0000000000+000 MOLES OF H
 6.0000000000+000 MOLES OF N
 6.0000000000+000 MOLES OF O

THE DENSITY OF THE EXPLOSIVE IS 1.0000000000+000 GRAMS/CC

THE MOLECULAR WEIGHT IS 2.2212600000+002 GRAMS

THE HEAT OF FORMATION AT 0 DEG K IS 3.3970000000+004 CALORIES PER FORMULA WEIGHT

THE SOLID (COMAN) EQUATION OF STATE PARAMETERS VO, AS, BS, CS, DS, ES, A1, A2, C1, C2, C3, ATOMIC WT

SOL C 4.4444444444-001 8.30935837268-001 -1.39381808219+000 6.72569716021-001 -1.13537262308-001 6.49155882007-003
 -2.26705345948-001 1.20516569525-001 8.31600000000-002 -1.75590000000-001 1.55310000000-001 1.20100000000+001

THE INPUT DETONATION PRODUCT ELEMENTAL COMPOSITION MATRIX

0.0+00	2.0+00	0.0+00	1.0+00	0.0+00	2.0+00	0.0+00	0.0+00	0.0+00	0.0+00	0.0+00	0.0+00	2.0+00
1.0+00	0.0+00	0.0+00	2.0+00	1.0+00	0.0+00	0.0+00	1.0+00	0.0+00	3.0+00	1.0+00	0.0+00	0.0+00
0.0+00	1.0+00	0.0+00	0.0+00	0.0+00	0.0+00	1.0+00	1.0+00	0.0+00	0.0+00	2.0+00	0.0+00	0.0+00
0.0+00	1.0+00	0.0+00	1.0+00	1.0+00	4.0+00	0.0+00	0.0+00	1.0+00	0.0+00	0.0+00	0.0+00	0.0+00

A STRETCH BKW CALCULATION FOR THE EXPLOSIVE
 RDX CYCLOTTRIMETHYLENE TRINITRAMINE

THE COMPUTED CJ PRESSURE IS 1.07809224640-001 MEGABARS

THE COMPUTED DETONATION VELOCITY IS 6.12757337622-001 CM/MICROSECOND

THE COMPUTED CJ TEMPERATURE IS 3.60072244464+003 DEGREES KELVIN

THE COMPUTED CJ VOLUME IS 7.12872457956-001 CC/GRAM OF EXPLOSIVE

THE COMPUTED GAMMA IS 2.48274051746+000

THE VOLUME OF THE GAS IS 1.84416202977+001 CC/MOLE OF GAS AND THERE ARE 8.47630669709+000 MOLES OF GAS

SOLID VOLUME IN CC/GM
 SOL C 3.73793184332-001

THE C-J COMPOSITION OF THE DETONATION PRODUCTS AND THE INPUT COEFFICIENTS TO THE THERMODYNAMIC FITS FOR EACH SPECIE

SPECIE	NO OF MOLES	COEFFICIENTS A,B,C,D,E, THE INTEGRATION CONSTANT, HEAT OF FORMATION IN CALORIES/MOLE, COVOLUME					
H2O	2.80097538726+000	4.2588420000+001	1.4808050000+002	-2.6391810000-006	1.9204530000-010	0.0000000000+000	
H2	1.11368521395-001	1.3428285156+003	-5.7107000000+004	2.5000000000+002			
O2	1.21552457869-005	2.9703470000+001	1.1438290000-002	-2.2012220000-006	1.6777610000-010	0.0000000000+000	
CO2	6.71617669647-001	1.17589615365+003	0.0000000000+000	1.8000000000+002			
CO	1.85443433227+000	4.7050900000+001	1.2871470000-002	-2.5002170000-006	1.9015700000-010	0.0000000000+000	
NH3	2.92299297615-002	1.03537647396+003	0.0000000000+000	3.5000000000+002			
H	8.26813338280-004	4.7481120000+001	1.9544630000-002	-3.7212960000-006	2.7703000000-010	0.0000000000+000	
NO	9.60059918326-004	7.46280968750+002	-9.3968000000+004	6.0000000000+002			
N2	2.98490500516+000	4.5350820000+001	1.2381610000-002	-2.4164030000-006	1.8281810000-010	0.0000000000+000	
OH	3.70570771785-004	1.12158830990+003	-2.7201000000+004	3.9000000000+002			
CH4	2.16062523261-002	4.2018160000+001	1.9116620000-002	-3.1643300000-006	2.1978010000-010	0.0000000000+000	
SOL C	4.52341745758-001	1.20696121615+003	-9.3680000000+003	4.7600000000+002			
		7.94631617188+002	5.1619000000+004	7.6000000000+001	1.3168230000-010	0.0000000000+000	
		4.8414980000+001	1.2693860000-002	-2.4946000000-006	1.8932130000-010	0.0000000000+000	
		1.20924970573+003	2.1477000000+004	3.9600000000+002			
		4.3923400000+001	1.2225010000-002	-2.3790050000-006	1.7983220000-010	0.0000000000+000	
		1.13916134896+003	0.0000000000+000	3.8000000000+002			
		4.2417920000+001	1.1368470000-002	-2.2268390000-006	1.6891550000-010	0.0000000000+000	
		1.18351754427+003	3.5600000000+003	4.1300000000+002			
		3.8756860000+001	2.3640130000-002	-3.7079370000-006	2.4707140000-010	0.0000000000+000	
		1.04242791148+003	-1.6000000000+004	5.2800000000+002			
		-2.4615190000-001	7.1798550000-003	-1.2975300000-006	9.3499950000-011	0.0000000000+000	
		-2.58204389323+002	0.0000000000+000	0.0000000000+000			

A STRETCH BAW CALCULATION FOR THE EXPLOSIVE
TNT TRINITROTOLUENE

THE NUMBER OF ELEMENTS IS 4

THE NUMBER OF GAS SPECIES IS 11

THE NUMBER OF SOLID SPECIES IS 1

THE HW EQUATION OF STATE PARAMETERS ARE

ALPHA= 5.0000000000-001 BETA= 9.9850000000-002 THETA= 4.0000000000+002 KAPPA= 1.26847111054+001

THE COMPOSITION OF THE EXPLOSIVE IS

7.0000000000+000 MOLES OF C
5.0000000000+000 MOLES OF H
3.0000000000+000 MOLES OF N
6.0000000000+000 MOLES OF O

THE DENSITY OF THE EXPLOSIVE IS 1.6400000000+000 GRAMS/CC

THE MOLECULAR WEIGHT IS 2.2713000000+002 GRAMS

THE HEAT OF FORMATION AT 0 DEG K IS -1.4400000000+003 CALORIES PER FORMULA WEIGHT

THE SOLID (COMAN)EQUATION OF STATE PARAMETERS VO, AS, BS, CS, DS, ES, A1, A2, C1, C2, C3, ATOMIC WT

SOL C 4.4444444444-001 8.30935837268-001 -1.39381809219+000 6.72569716021-001 -1.13537262508-001 6.49155882007-003
-2.26705345948-001 1.20516569925-001 8.3160000000-002 -1.7559000000-001 1.5531000000-001 1.2010000000+001

THE INPUT DETONATION PRODUCT ELEMENTAL COMPOSITION MATRIX

0.0+00	2.0+00	0.0+00	1.0+00	0.0+00	2.0+00	0.0+00	0.0+00	0.0+00	0.0+00	0.0+00	2.0+00
1.0+00	0.0+00	0.0+00	2.0+00	1.0+00	0.0+00	0.0+00	1.0+00	0.0+00	3.0+00	1.0+00	0.0+00
0.0+00	1.0+00	0.0+00	0.0+00	0.0+00	0.0+00	1.0+00	1.0+00	0.0+00	0.0+00	2.0+00	0.0+00
0.0+00	1.0+00	0.0+00	1.0+00	1.0+00	4.0+00	0.0+00	0.0+00	1.0+00	0.0+00	0.0+00	0.0+00

A STRETCH BRW CALCULATION FOR THE EXPLOSIVE
TNT TRINITROTOLUENE

THE COMPUTED CJ PRESSURE IS 2.05746796948-001 MEGABARS

THE COMPUTED DETONATION VELOCITY IS 6.95001872246-001 CM/MICROSECOND

THE COMPUTED CJ TEMPERATURE IS 2.93713296672+003 DEGREES KELVIN

THE COMPUTED CJ VOLUME IS 4.51386677305-001 CC/GRAM OF EXPLOSIVE

THE COMPUTED GAMMA IS 2.85019489843+000

THE VOLUME OF THE GAS IS 1.40352787293+001 CC/MOLE OF GAS AND THERE ARE 5.84395977808+000 MOLES OF GAS

SOLID VOLUME IN CC/GM
SOL C 3.31177621856-001

THE C-J COMPOSITION OF THE DETONATION PRODUCTS AND THE INPUT COEFFICIENTS TO THE THERMODYNAMIC FITS FOR EACH SPECIE

SPECIE	NO OF MOLES	COEFFICIENTS A,B,C,D,E, THE INTEGRATION CONSTANT, HEAT OF FORMATION IN CALORIES/MOLE, CONVOLUME					
NO2	2.49693525880+000	4.2588420000+001	1.4808050000-002	-2.8391810000-006	1.9204530000-010	0.0000000000+000	
NO	8.58878422582-004	1.34282835156+003	-5.7107000000+004	2.5000000000+002	1.6777610000-010	0.0000000000+000	
O2	3.81764064496-006	2.9703470000+001	1.1438290000-002	-2.2012220000-006	1.9015700000-010	0.0000000000+000	
CO2	1.85761752326+000	1.17589615365+003	0.0000000000+000	1.8000000000+002	2.7703000000-010	0.0000000000+000	
CO	1.87668943493-001	4.7030900000+001	1.2871470000-002	-2.5002170000-006	1.8281810000-010	0.0000000000+000	
H2O	1.22471327664-003	1.03537647396+003	0.0000000000+000	3.5000000000+002	2.1978010000-010	0.0000000000+000	
H	1.78515528144-006	4.7481120000+001	1.9544630000-002	-3.7212960000-006	1.3168230000-010	0.0000000000+000	
N2	1.50289603217-004	7.46280968750+002	-9.3968000000+004	6.0000000000+002	1.8932130000-010	0.0000000000+000	
CH4	1.83243566180-004	4.5330820000+001	1.2381610000-002	-2.4164030000-006	2.4707140000-010	0.0000000000+000	
SOL C	5.15453028968+000	1.12138830990+003	-2.7201000000+004	3.9000000000+002	9.3499590000-011	0.0000000000+000	
		4.2018160000+001	1.9116620000-002	-3.1643300000-006			
		1.20696121615+003	-9.3680000000+003	4.7600000000+002			
		2.6391100000+001	8.1213720000-003	-1.6907400000-006			
		7.94631617188+002	5.1619000000+004	7.6000000000+001			
		1.8414980000+001	1.2693860000-002	-2.4946000000-006			
		1.20924970573+003	2.1477000000+004	3.8600000000+002			
		4.3923400000+001	1.2225010000-002	-2.3790050000-006			
		1.13916134896+003	0.0000000000+000	3.8000000000+002			
		4.2417920000+001	1.1568470000-002	-2.2266590000-006			
		1.18351754427+003	3.5600000000+003	4.1300000000+002			
		3.8756860000+001	2.3640130000-002	-3.7079570000-006			
		1.04242791146+003	-1.6000000000+004	5.2800000000+002			
		-2.4815190000-001	7.1798530000-003	-1.2975300000-006			
		-2.58204389323+002	0.0000000000+000	0.0000000000+000			

THE BKW HUGONIOT FOR THE DETONATION PRODUCTS OF
TNT TRINITROTOLUENE

PRESSURE = 5.0000000000-001 VOLUME = 3.34990240416-001 TEMPERATURE = 4.28659260020+003
H2O 2.49792764003+000
H2 2.67318844822-004
O2 6.44944707089-004
CO2 1.65316232837+000
CO 1.89099310986-001
NH3 1.04602672149-003
H 6.65372336396-006
NO 5.35009523330-003
N2 1.49680193902+000
OH 8.40759333475-006
CH4 1.14235190176-004
SOL C 5.15762412345+000

PRESSURE = 4.5000000000-001 VOLUME = 3.46892504534-001 TEMPERATURE = 4.00135327350+003
H2O 2.49818738231+000
H2 2.49796866771-004
O2 3.09590765151-004
CO2 1.66406398447+000
CO 1.69946054460-001
NH3 9.11817297581-004
H 4.30811863826-006
NO 3.11378202998-003
N2 1.49798720034+000
OH 5.63073914794-006
CH4 9.50627261958-003
SOL C 5.16589489835+000

PRESSURE = 4.0000000000-001 VOLUME = 3.60613371871-001 TEMPERATURE = 3.73305181260+003
H2O 2.49834868369+000
H2 2.47204891041-004
O2 1.38131883230-004
CO2 1.67233160183+000
CO 1.54977668670-001
NH3 8.22567193768-004
H 2.85212671564-006
NO 1.73029922636-003
N2 1.49872356679+000
OH 3.88099476303-006
CH4 8.34470335742-005
SOL C 5.17260728247+000

PRESSURE = 3.5000000000-001 VOLUME = 3.76870359192-001 TEMPERATURE = 3.4879989974+003
H2O 2.49838645298+000
H2 2.69004763344-004
O2 5.79630908169-005
CO2 1.67714461283+000
CO 1.46274784151-001
NH3 7.87483437817-004
H 2.02121434057-006
NO 9.30733697084-004
N2 1.49914089143+000
OH 2.87732934197-006
CH4 8.04339132631-005
SOL C 5.17650016910+000

PRESSURE = 3.0000000000-001 VOLUME = 3.96731817110-001 TEMPERATURE = 3.26957743947+003
H2O 2.49823529431+000
H2 3.34793508141-004
O2 2.31746790825-005
CO2 1.67757122648+000
CO 1.46061612172-001
NH3 8.20302601543-004
H 1.61026001732-006
NO 4.91929719127-004
N2 1.49934388384+000
OH 2.40148632490-006
CH4 8.87462018133-005
SOL C 5.17627841515+000

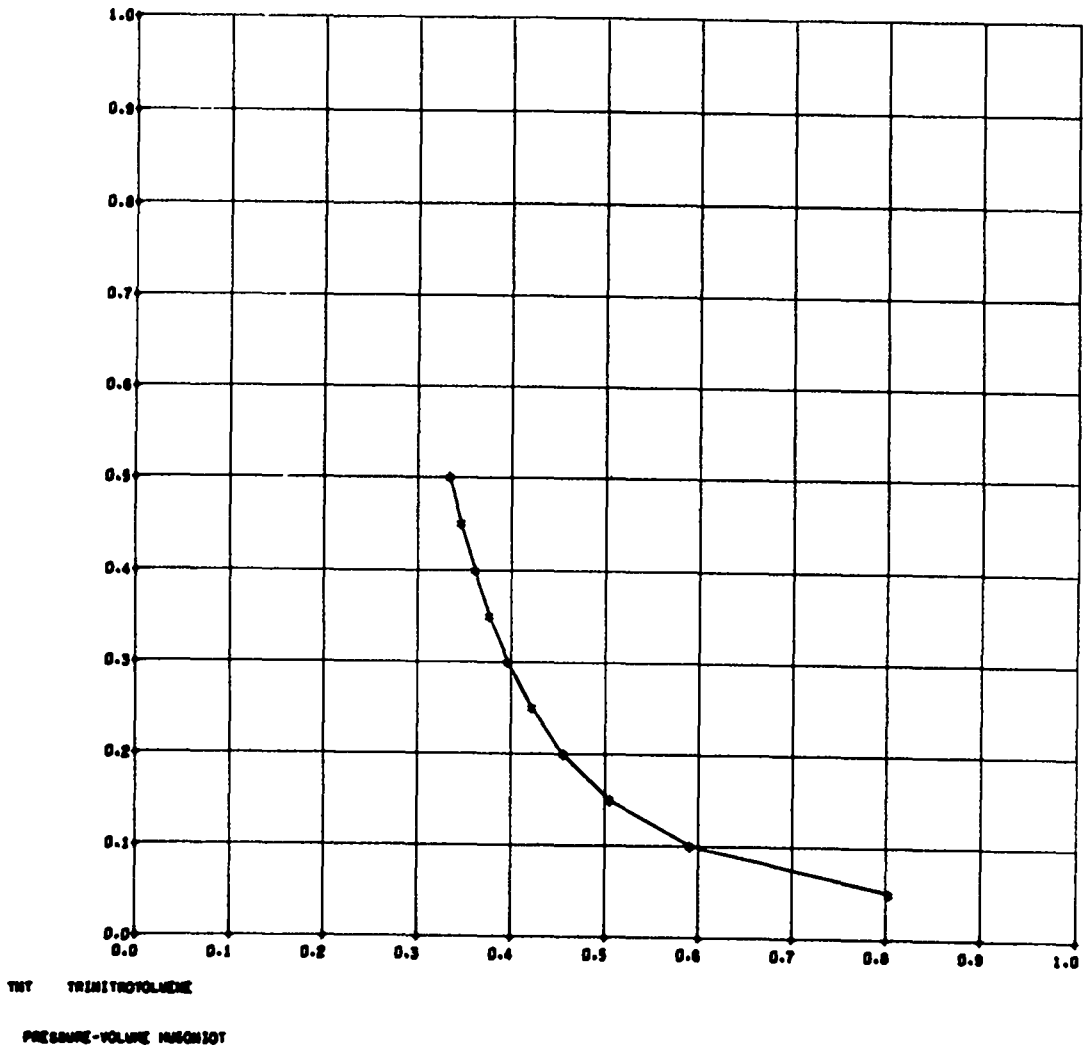
PRESSURE = 2.5000000000-001 VOLUME = 4.21971478215-001 TEMPERATURE = 3.07975895236+003
H2O 2.49783426861+000
H2 4.98116233643-004
O2 8.96449057813-006
CO2 1.67171631906+000
CO 1.58452837640-001
NH3 9.53968886759-004
H 1.52674991426-006
NO 2.59935700969-004
N2 1.49939304772+000
OH 2.37094302170-006
CH4 1.17356501326-004
SOL C 5.16971346680+000

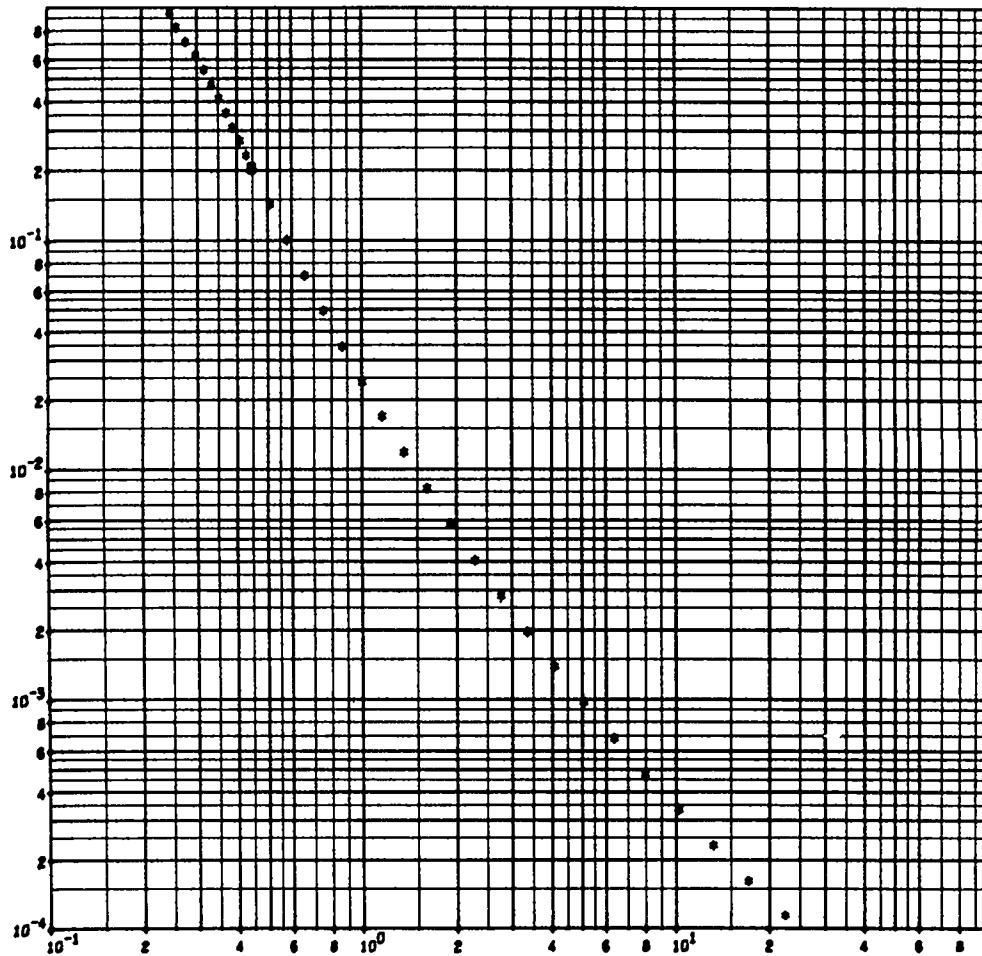
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H2O 2.49675044854+000
H2 9.36654590637-004
O2 3.41631372640-006
CO2 1.65482241137+000
CO 1.93454704101-001
NH3 1.27711443960-003
H 1.85391198576-006
NO 1.40255338258-004
N2 1.49929131511+000
OH 2.93665677297-006
CH4 1.97414960736-004
SOL C 5.15152546957+000

PRESSURE = 1.5000000000-001 VOLUME = 5.05728106285-001 TEMPERATURE = 2.79377305812+003
H2O 2.49360424560+000
H2 2.40272181334-003
O2 1.30069198085-006
CO2 1.61351924530+000
CO 2.79270784817-001
NH3 2.04633577267-003
H 3.18664413894-006
NO 7.89832066862-005
N2 1.49893734051+000
OH 4.89439529069-006
CH4 4.59744204580-004
SOL C 5.10675022568+000

PRESSURE = 1.0000000000-001 VOLUME = 5.91470892337-001 TEMPERATURE = 2.69839116312+003
H2O 2.48090498499+000
H2 9.46164150178-003
O2 4.74154150486-007
CO2 1.50438004689+000
CO 5.10276288295-001
NH3 4.14621234266-003
H 8.87248690753-006
NO 4.59586128017-005
N2 1.49790391452+000
OH 1.17260131293-005
CH4 1.70187787298-003
SOL C 4.98364178694+000

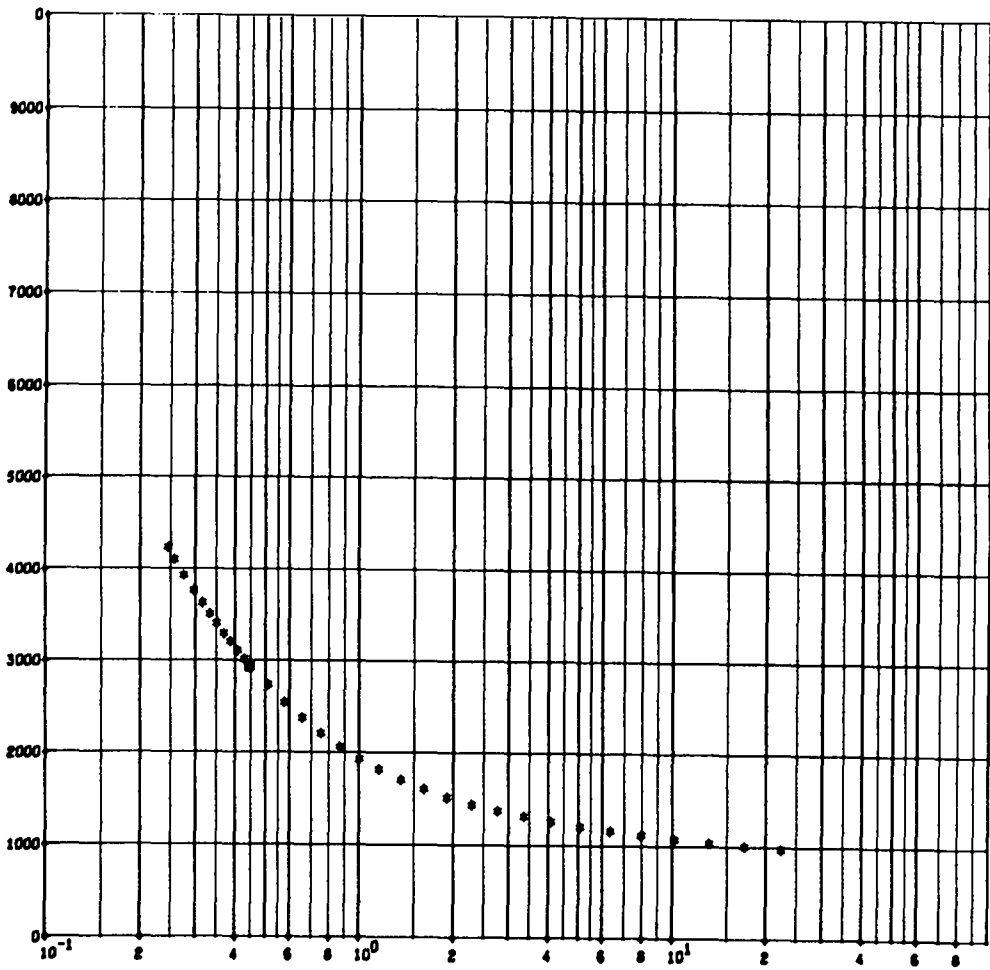
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H2O 2.38166252229+000
H2 7.31876682531-002
O2 1.07618630124-007
CO2 1.16806608330+000
CO 1.28214506553+000
NH3 1.17863696402-002
H 4.68562189396-005
NO 2.14885528905-005
N2 1.49409607090+000
OH 3.85417785692-002
CH4 1.37137779993-002
SOL C 4.53607507316+000





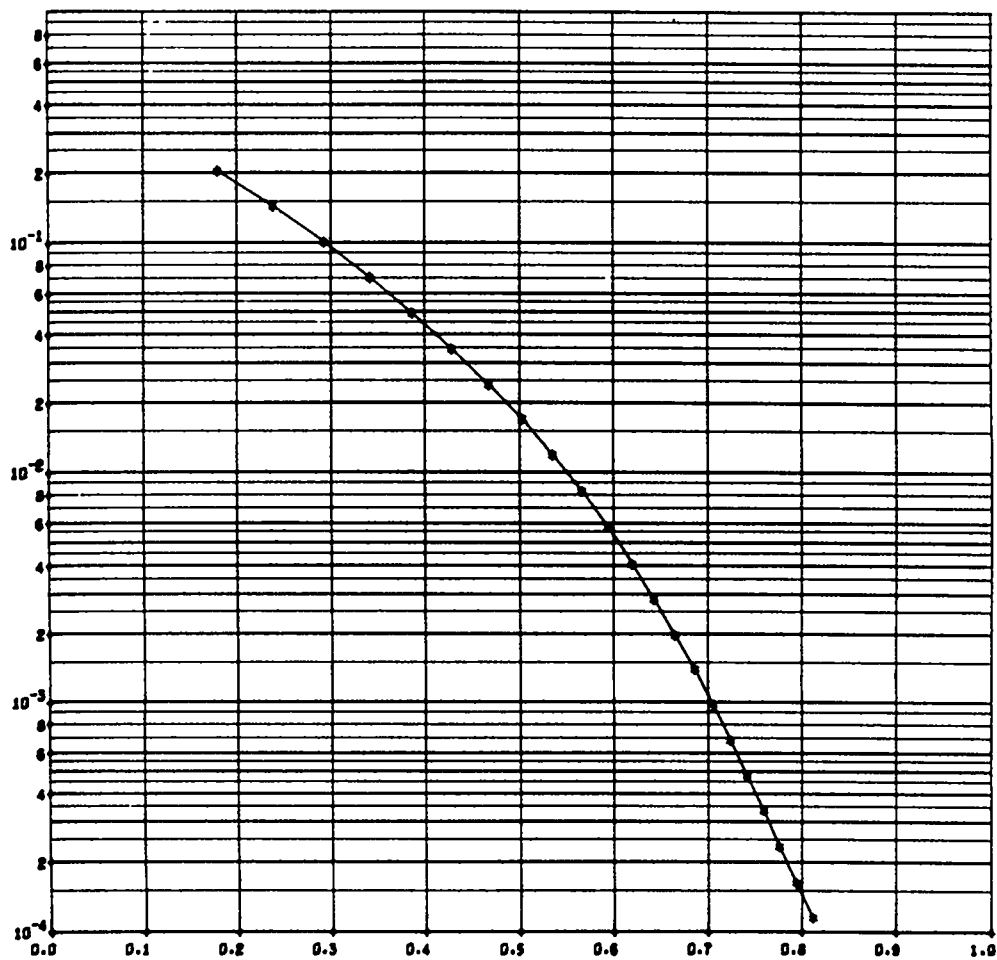
TNT TRINITROTOLUENE

PRESSURE-VOLUME ISENTROPE THRU THE C-J VALUE



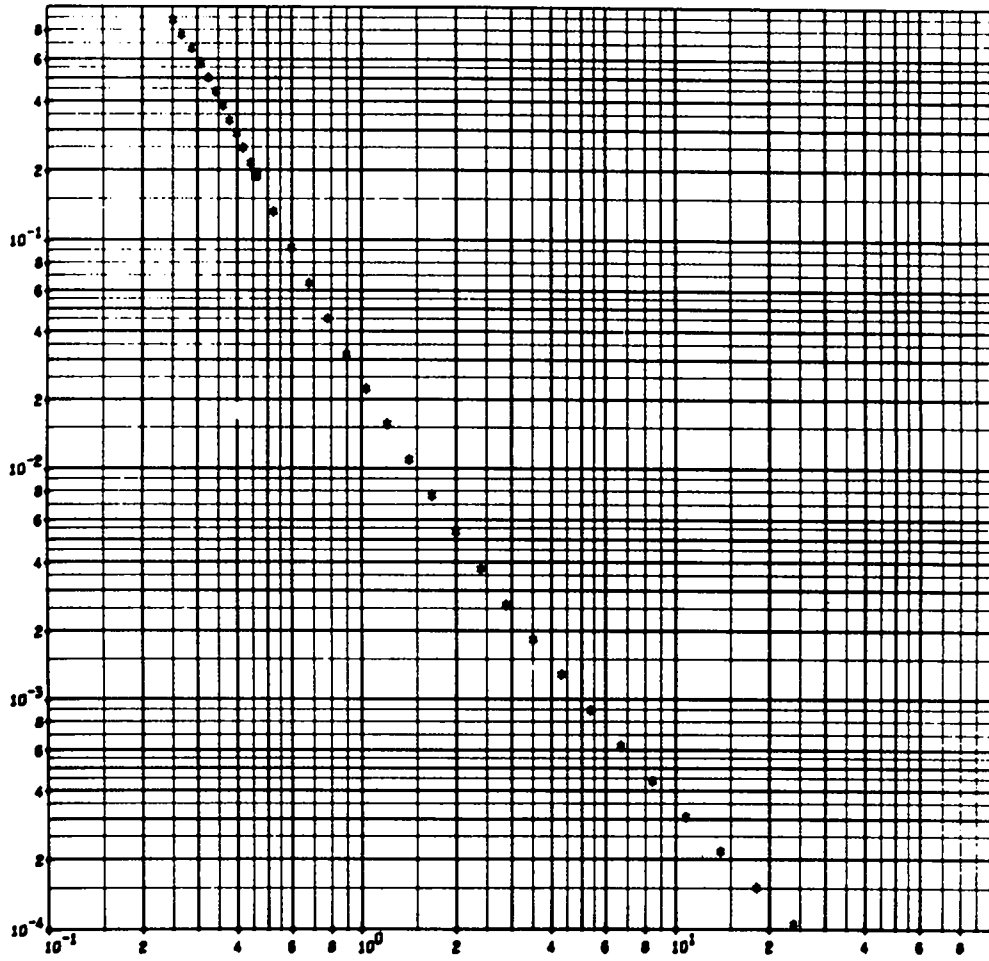
TNT TRINITROTOLUENE

TEMPERATURE-VOLUME IDENTROPE THRU THE C-J VALUE



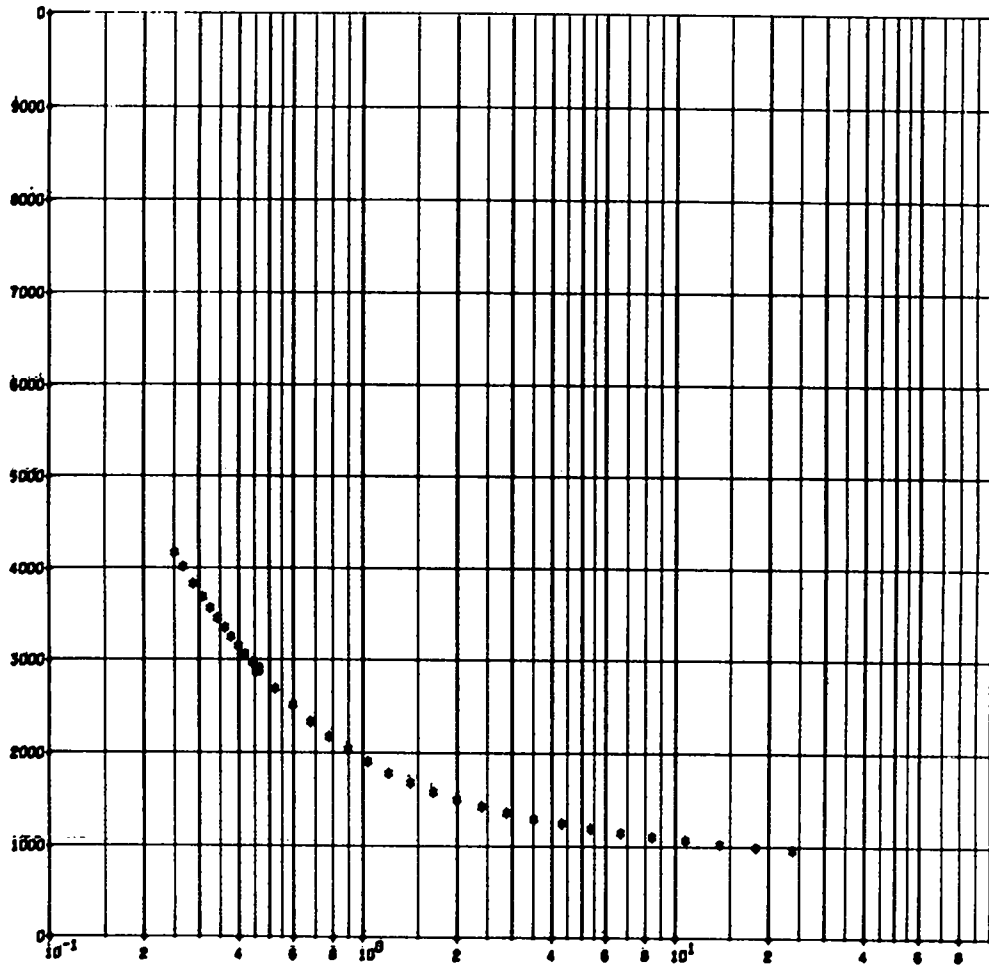
TNT TRINITROTOLUENE

PRESSURE-PARTICLE VELOCITY



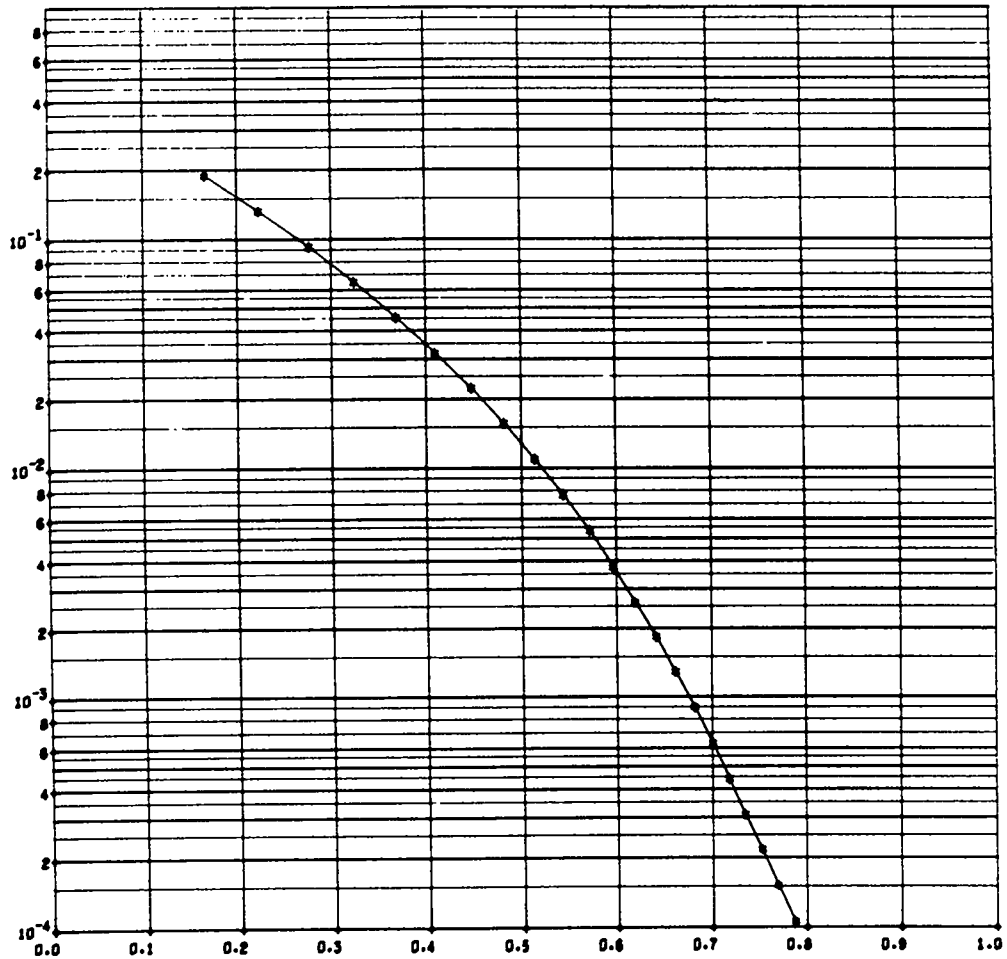
TNT TRINITROTOLUENE

PRESSURE-VOLUME ISENTROPE THRU THE C-J VALUE



TNT TRINITROTOLUENE

TEMPERATURE-VOLUME ISENTROPE THRU THE C-J VALUE



TNT TRINITROTOLUENE

PRESSURE-PARTICLE VELOCITY

A STRETCH BAW CALCULATION FOR THE EXPLOSIVE
TNT TRINITROTOLUENE

THE NUMBER OF ELEMENTS IS 4

THE NUMBER OF GAS SPECIES IS 11

THE NUMBER OF SOLID SPECIES IS 1

THE KW EQUATION OF STATE PARAMETERS ARE

ALPHA= 5.0000000000-001 BETA= 9.5850000000-002 THETA= 4.0000000000+002 KAPPA= 1.26847111054+001

THE COMPOSITION OF THE EXPLOSIVE IS

7.0000000000+000 MOLES OF C
5.0000000000+000 MOLES OF H
3.0000000000+000 MOLES OF N
6.0000000000+000 MOLES OF O

THE DENSITY OF THE EXPLOSIVE IS 1.6000000000+000 GRAMS/CC

THE MOLECULAR WEIGHT IS 2.2713000000+002 GRAMS

THE HEAT OF FORMATION AT 0 DEG K IS -1.4400000000+003 CALORIES PER FORMULA WEIGHT

THE SOLID (COMAN)EQUATION OF STATE PARAMETERS VO, AS, BS, CS, DS, ES, A1, A2, C1, C2, C3, ATOMIC WT

SOL C 4.4444444444-001 8.30935837268-001 -1.39381809219+000 6.72569716021-001 -1.13537262508-001 6.49155882007-003
-2.26705345948-001 1.20516569525-001 8.3160000000-002 -1.7559000000-001 1.5531000000-001 1.2010000000+001

THE INPUT DETONATION PRODUCT ELEMENTAL COMPOSITION MATRIX

0.0+00	2.0+00	0.0+00	1.0+00	0.0+00	2.0+00	0.0+00	0.0+00	0.0+00	0.0+00	0.0+00	2.0+00
1.0+00	0.0+00	0.0+00	2.0+00	1.0+00	0.0+00	0.0+00	1.0+00	0.0+00	3.0+00	1.0+00	0.0+00
0.0+00	1.0+00	0.0+00	0.0+00	0.0+00	0.0+00	1.0+00	1.0+00	0.0+00	0.0+00	2.0+00	0.0+00
0.0+00	1.0+00	0.0+00	1.0+00	1.0+00	4.0+00	0.0+00	0.0+00	1.0+00	0.0+00	0.0+00	0.0+00

A STRETCH BAR CALCULATION FOR THE EXPLOSIVE
TNT TRINITROTOLUENE

THE COMPUTED C_J PRESSURE IS 1.94385076526-001 MEGABARS

THE COMPUTED DETONATION VELOCITY IS 6.83073538994-001 CM/MICROSECOND

THE COMPUTED C_J TEMPERATURE IS 2.97103733731+003 DEGREES KELVIN

THE COMPUTED C_J VOLUME IS 4.62263190759-001 CC/GRAM OF EXPLOSIVE

THE COMPUTED GAMMA IS 2.84053729237+000

THE VOLUME OF THE GAS IS 1.43759031554+001 CC/MOLE OF GAS AND THERE ARE 5.86503868738+000 MOLES OF GAS

SOLID VOLUME IN CC/GM
SOL C 3.35435085951-001

THE C-J COMPOSITION OF THE DETONATION PRODUCTS AND THE INPUT COEFFICIENTS TO THE THERMODYNAMIC FITS FOR EACH SPECIE

SPECIE	NO OF MOLES	COEFFICIENTS A,B,C,D,E, THE INTEGRATION CONSTANT, HEAT OF FORMATION IN CALORIES/MOLE, CONVOLUME				
H2O	2.49589787367+000	4.25884200000+001	1.48080500000-002	-2.63918100000-006	1.92045300000-010	0.00000000000+000
H2	1.25989698234-003	1.34282835156+003	-5.71070000000+004	2.50000000000+002	1.67776100000-010	0.00000000000+000
O2	4.13947582863-006	2.97034700000+001	1.14382900000-002	-2.20122200000-006	1.80157000000-010	0.00000000000+000
CO2	1.63717080045+000	1.17589615365+003	0.00000000000+000	1.80000000000+002	2.77030000000-010	0.00000000000+000
CO	2.29580273135-001	4.70309000000+001	1.28714700000-002	-2.50021700000-006	1.82818100000-010	0.00000000000+000
NH3	1.53833451633-003	1.03537647398+003	0.00000000000+000	3.50000000000+002	2.19780100000-010	0.00000000000+000
H	2.80561260410-006	4.74811200000+001	1.95446300000-002	-3.72129600000-006	1.31682300000-010	0.00000000000+000
NO	1.67646368000-004	7.46280988750+002	-9.39890000000+004	6.00000000000+002	1.89321300000-010	0.00000000000+000
N2	1.49914700956+000	4.53308200000+001	1.23816100000-002	-2.41640300000-006	1.79832200000-010	0.00000000000+000
OH	4.32698017114-006	1.12158830990+003	-2.72010000000+004	3.90000000000+002	1.68915500000-010	0.00000000000+000
CH4	2.65580639746-004	4.20181600000+001	1.91166200000-002	-3.16433000000-006	2.47071400000-010	0.00000000000+000
SOL C	5.13298334978+000	2.63911000000+001	8.12137200000-003	-1.69074000000-006	9.34999900000-011	0.00000000000+000
		7.94631617188+002	5.16190000000+004	7.60000000000+001		
		4.84148800000+001	1.26938800000-002	-2.49460000000-006		
		1.20924970573+003	2.14770000000+004	3.86000000000+002		
		4.39234000000+001	1.22250100000-002	-2.37909000000-006		
		1.13916134896+003	0.00000000000+000	3.80000000000+002		
		4.24179200000+001	1.15684700000-002	-2.22683900000-006		
		1.18351754427+003	3.56000000000+003	4.13000000000+002		
		3.87568600000+001	2.36401300000-002	-3.70799700000-006		
		1.04242791146+003	-1.60000000000+004	5.28000000000+002		
		-2.46151900000-001	7.17985500000-003	-1.29755000000-006		
		-2.58204389323+002	0.00000000000+000	0.00000000000+000		

A STRETCH BKW CALCULATION FOR THE EXPLOSIVE
TNT TRINITROTOLUENE

THE NUMBER OF ELEMENTS IS 4

THE NUMBER OF GAS SPECIES IS 11

THE NUMBER OF SOLID SPECIES IS 1

THE KW EQUATION OF STATE PARAMETERS ARE
ALPHA= 5.000000000-001 BETA= 9.585000000-002 THETA= 4.000000000+002 KAPPA= 1.26847111054+001

THE COMPOSITION OF THE EXPLOSIVE IS
7.000000000+000 MOLES OF C
9.000000000+000 MOLES OF H
3.000000000+000 MOLES OF N
6.000000000+000 MOLES OF O

THE DENSITY OF THE EXPLOSIVE IS 1.400000000+000 GRAMS/CC

THE MOLECULAR WEIGHT IS 2.271300000+002 GRAMS

THE HEAT OF FORMATION AT 0 DEG K IS -1.440000000+003 CALORIES PER FORMULA WEIGHT

THE SOLID (COMAN) EQUATION OF STATE PARAMETERS VO, AS, BS, CS, DS, ES, A1, A2, C1, C2, C3, ATOMIC WT

SOL C 4.444444444-001 8.30935837268-001 -1.39381809219+000 6.72569716021-001 -1.13537262504-001 6.49155882007-003
-2.26705345948-001 1.20516569525-001 8.31600000000-002 -1.75590000000-001 1.55310000000-001 1.20100000000+001

THE INPUT DETONATION PRODUCT ELEMENTAL COMPOSITION MATRIX

0.0+00	2.0+00	0.0+00	1.0+00	0.0+00	2.0+00	0.0+00	0.0+00	0.0+00	0.0+00	0.0+00	2.0+00
1.0+00	0.0+00	0.0+00	2.0+00	1.0+00	0.0+00	0.0+00	1.0+00	0.0+00	3.0+00	1.0+00	0.0+00
0.0+00	1.0+00	0.0+00	0.0+00	0.0+00	0.0+00	1.0+00	1.0+00	0.0+00	0.0+00	2.0+00	0.0+00
0.0+00	1.0+00	0.0+00	1.0+00	1.0+00	4.0+00	0.0+00	0.0+00	1.0+00	0.0+00	0.0+00	0.0+00

A STRETCH BWX CALCULATION FOR THE EXPLOSIVE
TNT TRINITROTOLUENE

THE COMPUTED CJ PRESSURE IS 1.45403593537-001 MEGABARS

THE COMPUTED DETONATION VELOCITY IS 6.24621952201-001 CM/MICROSECOND

THE COMPUTED CJ TEMPERATURE IS 3.10711183906+003 DEGREES KELVIN

THE COMPUTED CJ VOLUME IS 5.24142165576-001 CC/GRAM OF EXPLOSIVE

THE COMPUTED GAMMA IS 2.75653450615+000

THE VOLUME OF THE GAS IS 1.62460756883+001 CC/MOLE OF GAS AND THERE ARE 6.02326080707+000 MOLES OF GAS

SOLID VOLUME IN CC/GM
SOL C 3.55050252241-001

THE C-J COMPOSITION OF THE DETONATION PRODUCTS AND THE INPUT COEFFICIENTS TO THE THERMODYNAMIC FITS FOR EACH SPECIE

SPECIE	NO OF MOLES	COEFFICIENTS A,B,C,D,E, THE INTEGRATION CONSTANT, HEAT OF FORMATION IN CALORIES/MOLE, COVOLUME				
H2O	2.48465281735+000	4.2588420000+001	1.4908050000-002	-2.6391810000-006	1.9604530000-010	0.0000000000+000
H2	6.65641041750-003	1.34282835158+003	-5.7107000000+004	2.5000000000+002		
CO	5.12784968901-006	2.9703470000+001	1.1438290000-002	-2.2012220000-006	1.6777610000-010	0.0000000000+000
CO2	1.48659731529+000	1.17589615365+003	0.0000000000+000	1.8000000000+002		
CO	5.41872722164-001	4.7030900000+001	1.2871470000-002	-2.5002170000-006	1.9015700000-010	0.0000000000+000
NH3	4.01782321806-003	1.03537647396+003	0.0000000000+000	3.5000000000+002		
N2	1.49786872718+000	4.7481120000+001	1.9544630000-002	-3.7212960000-006	2.7703000000-010	0.0000000000+000
N2	1.49786872718+000	7.46280968750+002	-9.3968000000+004	6.0000000000+002		
NO	2.44722419416-004	4.5330820000+001	1.2381610000-002	-2.4164030000-006	1.8281810000-010	0.0000000000+000
NO	2.44722419416-004	1.12158830990+003	-2.7201000000+004	3.9000000000+002		
OH	2.48917925895-005	4.2018160000+001	1.9118620000-002	-3.1643300000-006	2.1978010000-010	0.0000000000+000
OH	2.48917925895-005	1.20696121615+003	-9.3680000000+003	4.7600000000+002		
CH4	1.32097787795-003	2.6391100000+001	6.1213720000-003	-1.6907400000-006	1.3168230000-010	0.0000000000+000
CH4	1.32097787795-003	7.94831617188+002	5.1619000000+004	7.6000000000+001		
CH4	1.32097787795-003	4.8414980000+001	1.2693860000-002	-2.4948000000-006	1.8832130000-010	0.0000000000+000
CH4	1.32097787795-003	1.20924970373+003	2.1477000000+004	3.8600000000+002		
CH4	1.32097787795-003	4.3923400000+001	1.2225010000-002	-2.3790080000-006	1.7963220000-010	0.0000000000+000
CH4	1.32097787795-003	1.13916134886+003	0.0000000000+000	3.8000000000+002		
CH4	1.32097787795-003	4.2417820000+001	1.1588470000-002	-2.2866390000-006	1.6891550000-010	0.0000000000+000
CH4	1.32097787795-003	1.18351734427+003	3.5600000000+003	4.1300000000+002		
CH4	1.32097787795-003	3.8756860000+001	2.3640130000-002	-3.7079570000-006	2.4707140000-010	0.0000000000+000
CH4	1.32097787795-003	1.04242781148+003	-1.6000000000+004	5.2800000000+002		
SOL C	4.97020898467+000	-2.4615190000-001	7.1788550000-003	-1.2875500000-006	9.3489950000-011	0.0000000000+000
SOL C	4.97020898467+000	-2.58204389323+002	0.0000000000+000	0.0000000000+000		

A STRETCH BWK CALCULATION FOR THE EXPLOSIVE
TNT TRINITROTOLUENE

THE NUMBER OF ELEMENTS IS 4

THE NUMBER OF GAS SPECIES IS 11

THE NUMBER OF SOLID SPECIES IS 1

THE KW EQUATION OF STATE PARAMETERS ARE

ALPHA= 5.0000000000-001 BETA= 9.5850000000-002 THETA= 4.0000000000+002 KAPPA= 1.26847111054+001

THE COMPOSITION OF THE EXPLOSIVE IS

7.0000000000+000 MOLES OF C
5.0000000000+000 MOLES OF H
3.0000000000+000 MOLES OF N
6.0000000000+000 MOLES OF O

THE DENSITY OF THE EXPLOSIVE IS 1.2000000000+000 GRAMS/CC

THE MOLECULAR WEIGHT IS 2.2713000000+002 GRAMS

THE HEAT OF FORMATION AT 0 DEG K IS -1.4400000000+003 CALORIES PER FORMULA WEIGHT

THE SOLID (COMAN) EQUATION OF STATE PARAMETERS VO, AS, BS, CS, DS, ES, A1, A2, C1, C2, C3, ATOMIC WT

SOL C 4.4444444444-001 8.30935837268-001 -1.39381809E19+000 6.725697160E1-001 -1.13537262504-001 6.48155882007-003
-2.26705345948-001 1.20518569525-001 8.3160000000-002 -1.7559000000-001 1.5531000000-001 1.2010000000+001

THE INPUT DETONATION PRODUCT ELEMENTAL COMPOSITION MATRIX

0.0+00	2.0+00	0.0+00	1.0+00	0.0+00	2.0+00	0.0+00	0.0+00	0.0+00	0.0+00	0.0+00	2.0+00
1.0+00	0.0+00	0.0+00	2.0+00	1.0+00	0.0+00	0.0+00	1.0+00	0.0+00	3.0+00	1.0+00	0.0+00
0.0+00	1.0+00	0.0+00	0.0+00	0.0+00	0.0+00	1.0+00	1.0+00	0.0+00	0.0+00	2.0+00	0.0+00
0.0+00	1.0+00	0.0+00	1.0+00	1.0+00	4.0+00	0.0+00	0.0+00	1.0+00	0.0+00	0.0+00	0.0+00

A STRETCH BKW CALCULATION FOR THE EXPLOSIVE
TNT TRINITROTOLUENE

THE COMPUTED CJ PRESSURE IS 1.06709865613-001 MEGABARS

THE COMPUTED DETONATION VELOCITY IS 5.68897099116-001 CM/MICROSECOND

THE COMPUTED CJ TEMPERATURE IS 3.18227309874+003 DEGREES KELVIN

THE COMPUTED CJ VOLUME IS 6.04367557215-001 CC/GRAM OF EXPLOSIVE

THE COMPUTED GAMMA IS 2.63952001092+000

THE VOLUME OF THE GAS IS 1.85053580243+001 CC/MOLE OF GAS AND THERE ARE 6.28235839071+000 MOLES OF GAS

SOLID VOLUME IN CC/GM
SOL C 3.72310383336-001

THE C-J COMPOSITION OF THE DETONATION PRODUCTS AND THE INPUT COEFFICIENTS TO THE THERMODYNAMIC FITS FOR EACH SPECIE

SPECIE	NO OF MOLES	COEFFICIENTS A,B,C,D,E, THE INTEGRATION CONSTANT, HEAT OF FORMATION IN CALORIES/MOLE, CONVOLUME				
H2O	2.45097046224+000	4.25884200000+001	1.48080500000-002	-2.63918100000-006	1.82045300000-010	0.00000000000+000
H2	2.61061297823-002	1.34282835158+003	-5.71070000000+004	2.50000000000+002	1.67776100000-010	0.00000000000+000
O2	4.51467038441-006	2.97034700000+001	1.14382900000-002	-2.20122200000-006	1.80000000000+002	0.00000000000+000
CO2	1.25297139513+000	1.17589615363+003	0.00000000000+000	1.80000000000+002	1.80157000000-010	0.00000000000+000
CO	1.04272102939+000	4.70309000000+001	1.28714700000-002	-2.50021700000-006	3.50000000000+002	0.00000000000+000
NH3	8.56348912759-003	1.03537847398+003	0.00000000000+000	3.50000000000+002	2.77030000000-010	0.00000000000+000
N	8.58120328985-005	4.74811200000+001	1.95446300000-002	-3.72129800000-006	6.00000000000+002	0.00000000000+000
NO	2.71395254740-004	7.46280968750+002	-9.39880000000+004	6.00000000000+002	1.82818100000-010	0.00000000000+000
H2	1.49558255781+000	4.53508200000+001	1.23818100000-002	-2.41640300000-006	3.80000000000+002	0.00000000000+000
OH	8.52975242095-005	1.12158830990+003	-2.72010000000+004	3.80000000000+002	2.19780100000-010	0.00000000000+000
CH4	4.99830975601-003	4.20181800000+001	1.81168200000-002	-3.18433000000-006	4.78000000000+002	0.00000000000+000
SOL C	4.69951126773+000	1.20896121815+003	-9.36800000000+004	4.78000000000+002	1.31682300000-010	0.00000000000+000
		2.63911000000+001	8.12137200000-003	-1.69074000000-006	1.79832200000-010	0.00000000000+000
		7.94831817188+002	5.18190000000+004	7.60000000000+002	1.69915500000-010	0.00000000000+000
		4.84149800000+001	1.28938800000-002	-2.49460000000-006	1.89321300000-010	0.00000000000+000
		1.20824870573+003	2.14770000000+004	3.86000000000+002	1.79832200000-010	0.00000000000+000
		4.39234000000+001	1.22250100000-002	-2.37900900000-006	3.80000000000+002	0.00000000000+000
		1.13918134896+003	0.00000000000+000	3.80000000000+002	1.69915500000-010	0.00000000000+000
		4.24179200000+001	1.15684700000-002	-2.22885900000-006	2.47071400000-010	0.00000000000+000
		1.18351734427+003	3.58000000000+003	4.13000000000+002	2.47071400000-010	0.00000000000+000
		3.87568800000+001	2.36401300000-002	-3.70795700000-006	5.28000000000+002	0.00000000000+000
		1.04242791148+003	-1.80000000000+004	5.28000000000+002	-1.29755000000-006	0.00000000000+000
		-2.48151900000-001	7.17995500000-003	-1.29755000000-006	9.34999900000-011	0.00000000000+000
		-2.58204389323+002	0.00000000000+000	0.00000000000+000		

A STRETCH BKN CALCULATION FOR THE EXPLOSIVE
TNT TRINITROTOLUENE

THE NUMBER OF ELEMENTS IS 4

THE NUMBER OF GAS SPECIES IS 11

THE NUMBER OF SOLID SPECIES IS 1

THE RM EQUATION OF STATE PARAMETERS ARE

ALPHA= 5.0000000000-001 BETA= 9.5950000000-002 THETA= 4.0000000000+002 KAPPA= 1.26847111054+001

THE COMPOSITION OF THE EXPLOSIVE IS

7.0000000000+000 MOLES OF C
5.0000000000+000 MOLES OF N
3.0000000000+000 MOLES OF N
8.0000000000+000 MOLES OF O

THE DENSITY OF THE EXPLOSIVE IS 1.000000000+000 GRAMS/CC

THE MOLECULAR WEIGHT IS 2.2713000000+002 GRAMS

THE HEAT OF FORMATION AT 0 DEG K IS -1.440000000+003 CALORIES PER FORMULA WEIGHT

THE SOLID (COMAN) EQUATION OF STATE PARAMETERS VO, AS, BS, CS, DS, ES, A1, A2, C1, C2, C3, ATOMIC WT

SOL C 4.4444444444-001 8.30935837268-001 -1.39381808219+000 6.72569716021-001 -1.13537282508-001 6.48155842007-003
-2.26705345948-001 1.20518589525-001 8.31600000000-002 -1.75590000000-001 1.55310000000-001 1.20100000000+001

THE INPUT DETONATION PRODUCT ELEMENTAL COMPOSITION MATRIX

0.0+00	2.0+00	0.0+00	1.0+00	0.0+00	2.0+00	0.0+00	0.0+00	0.0+00	0.0+00	0.0+00	2.0+00
1.0+00	0.0+00	0.0+00	2.0+00	1.0+00	0.0+00	0.0+00	1.0+00	0.0+00	3.0+00	1.0+00	0.0+00
0.0+00	1.0+00	0.0+00	0.0+00	0.0+00	0.0+00	1.0+00	1.0+00	0.0+00	0.0+00	2.0+00	0.0+00
0.0+00	1.0+00	0.0+00	1.0+00	1.0+00	4.0+00	0.0+00	0.0+00	1.0+00	0.0+00	0.0+00	0.0+00

A STRETCH BURN CALCULATION FOR THE EXPLOSIVE
TNT TRINITROTOLUENE

THE COMPUTED C/J PRESSURE IS 7.6175260786-002 MEGABARS

THE COMPUTED DETONATION VELOCITY IS 5.16168229122-001 CM/MICROSECOND

THE COMPUTED C/J TEMPERATURE IS 3.20080436837+003 DEGREES KELVIN

THE COMPUTED C/J VOLUME IS 7.14092411555-001 CC/GRAM OF EXPLOSIVE

THE COMPUTED GAMMA IS 2.49758772691+000

THE VOLUME OF THE GAS IS 2.13910458747+001 CC/MOLE OF GAS AND THERE ARE 6.64584816984+000 MOLES OF GAS

SOLID VOLUME IN CC/GM
SOL C 3.87362547138-001

THE C-J COMPOSITION OF THE DETONATION PRODUCTS AND THE INPUT COEFFICIENTS TO THE THERMODYNAMIC FITS FOR EACH SPECIE

SPECIE	NO OF MOLES	COEFFICIENTS A,B,C,D,E, THE INTEGRATION CONSTANT, HEAT OF FORMATION IN CALORIES/MOLE, COVOLUME				
HEO	2.35786830757+000	4.25844200000+001	1.48080500000-002	-2.63918100000-006	1.92045300000-010	0.00000000000+000
		1.34282835156+003	-9.71070000000+004	2.50000000000+002		
HE	8.47697841157-002	2.97034700000+001	1.14382900000-002	-2.20122200000-006	1.67776100000-010	0.00000000000+000
		1.17589615365+003	0.00000000000+000	1.80000000000+002		
OE	2.84029454637-006	4.70309000000+001	1.28714700000-002	-2.50021700000-006	1.90157000000-010	0.00000000000+000
		1.03937647398+003	0.00000000000+000	3.50000000000+002		
COE	9.63583421925-001	4.74811200000+001	1.95446300000-002	-3.72129800000-006	2.77030000000-010	0.00000000000+000
		7.46280988750+002	-9.39880000000+004	6.00000000000+002		
CO	1.71452540456+000	4.53308200000+001	1.23818100000-002	-2.41640300000-006	1.82818100000-010	0.00000000000+000
		1.12158830990+003	-2.72010000000+004	3.90000000000+002		
NHS	1.62316377496-002	4.20181800000+001	1.91166200000-002	-3.16433000000-006	2.19780100000-010	0.00000000000+000
		1.20898121615+003	-9.36800000000+003	4.78000000000+002		
H	2.78371794554-004	2.63911000000+001	8.12137200000-003	-1.69074000000-006	1.31682300000-010	0.00000000000+000
		7.94831617188+002	5.16190000000+004	7.60000000000+001		
NO	2.34939044456-004	4.84149800000+001	1.26938600000-002	-2.49480000000-006	1.89321300000-010	0.00000000000+000
		1.20924970973+003	2.14770000000+004	3.86000000000+002		
NE	1.49176871180+000	4.39234000000+001	1.22250100000-002	-2.37900900000-006	1.79432200000-010	0.00000000000+000
		1.13916134896+003	0.00000000000+000	3.80000000000+002		
OH	1.98824388246-004	4.24179200000+001	1.15684700000-002	-2.22685900000-006	1.68915500000-010	0.00000000000+000
		1.18351754427+003	3.56000000000+003	-2.13000000000+002		
CM	1.63879268015-002	3.87568600000+001	2.36401300000-002	-3.70795700000-006	2.47071400000-010	0.00000000000+000
		1.04242791146+003	-1.60000000000+004	5.28000000000+002		
SOL C	4.30550324671+000	-2.46151900000-001	7.17985500000-003	-1.29755000000-006	9.34899500000-011	0.00000000000+000
		-2.98204389323+002	0.00000000000+000	0.00000000000+000		

A STRETCH BRW CALCULATION FOR THE EXPLOSIVE
DATA DIAMINO TRINITROBENZENE

THE NUMBER OF ELEMENTS IS 4

THE NUMBER OF GAS SPECIES IS 11

THE NUMBER OF SOLID SPECIES IS 1

THE KW EQUATION OF STATE PARAMETERS ARE

ALPHA= 5.0000000000-001 BETA= 9.58500000000-002 THETA= 4.0000000000+002 KAPPA= 1.26847111054+001

THE COMPOSITION OF THE EXPLOSIVE IS

6.0000000000+000 MOLES OF C
5.0000000000+000 MOLES OF H
5.0000000000+000 MOLES OF N
6.0000000000+000 MOLES OF O

THE DENSITY OF THE EXPLOSIVE IS 1.7880000000+000 GRAMS/CC

THE MOLECULAR WEIGHT IS 2.4310000000+002 GRAMS

THE HEAT OF FORMATION AT 0 DEG K IS 1.2000000000+004 CALORIES PER FORMULA WEIGHT

THE SOLID (CONAN) EQUATION OF STATE PARAMETERS VO, A0, B0, C0, D0, E0, A1, A2, C1, C2, C3, ATOMIC WT

SOL C 4.4444444444-001 8.30935837268-001 -1.39381809219+000 6.72569716021-001 -1.13537262508-001 6.49155842007-003
-2.26705345948-001 1.20516569525-001 8.31600000000-002 -1.75590000000-001 1.55310000000-001 1.20100000000+001

THE INPUT DETONATION PRODUCT ELEMENTAL COMPOSITION MATRIX

0.0+00	2.0+00	0.0+00	1.0+00	0.0+00	2.0+00	0.0+00	0.0+00	0.0+00	0.0+00	0.0+00	2.0+00
1.0+00	0.0+00	0.0+00	2.0+00	1.0+00	0.0+00	0.0+00	1.0+00	0.0+00	3.0+00	1.0+00	0.0+00
0.0+00	1.0+00	0.0+00	0.0+00	0.0+00	0.0+00	1.0+00	1.0+00	0.0+00	0.0+00	2.0+00	0.0+00
0.0+00	1.0+00	0.0+00	1.0+00	1.0+00	4.0+00	0.0+00	0.0+00	1.0+00	0.0+00	0.0+00	0.0+00

A STRETCH BWM CALCULATION FOR THE EXPLOSIVE
 DATB DIAMINO TRINITROBENZENE

THE COMPUTED C_J PRESSURE IS 2.64836885589-001 MEGABARS

THE COMPUTED DETONATION VELOCITY IS 7.55921356139-001 CM/MICROSECOND

THE COMPUTED C_J TEMPERATURE IS 2.66672263844+003 DEGREES KELVIN

THE COMPUTED C_J VOLUME IS 4.14310633315-001 CC/GRAM OF EXPLOSIVE

THE COMPUTED GAMMA IS 2.85782277482+000

THE VOLUME OF THE GAS IS 1.25416501885+001 CC/MOLE OF GAS AND THERE ARE 6.77751838917+000 MOLES OF GAS

SOLID VOLUME IN CC/GM
 SOL C 3.09963328899-001

THE C-J COMPOSITION OF THE DETONATION PRODUCTS AND THE INPUT COEFFICIENTS TO THE THERMODYNAMIC FITS FOR EACH SPECIE

SPECIE	NO OF MOLES	COEFFICIENTS A,B,C,D,E, THE INTEGRATION CONSTANT, HEAT OF FORMATION IN CALORIES/MOLE, CONVOLUME				
H2O	2.49938507917+000	4.2588420000+001	1.4808050000-002	-2.6391810000-006	1.9204530000-010	0.0000000000+000
		1.34282835136+003	-5.7107000000+004	2.5000000000+002		
H2	8.53588741463-005	2.9703470000+001	1.1438290000-002	-2.2012220000-006	1.6777610000-010	0.0000000000+000
		1.17589613365+003	0.0000000000+000	1.8000000000+002		
O2	1.41617240351-006	4.7030900000+001	1.2871470000-002	-2.5002170000-006	1.9015700000-010	0.0000000000+000
		1.03537647396+003	0.0000000000+000	3.5000000000+002		
CO2	1.72271334904+000	4.7481120000+001	1.9544630000-002	-3.7212960000-006	2.7703000000-010	0.0000000000+000
		7.46280968750+002	-9.3968000000+004	6.0000000000+002		
CO	5.51166351326-002	4.5330820000+001	1.2381610000-002	-2.4164030000-006	1.8281810000-010	0.0000000000+000
		1.12158830990+003	-2.7201000000+004	3.9000000000+002		
NH3	3.30884429104-004	4.2018160000+001	1.9116620000-002	-3.1643300000-006	2.1978010000-010	0.0000000000+000
		1.20696121615+003	-9.3680000000+003	4.7600000000+002		
H	9.87256649286-008	2.6391100000+001	8.1213720000-003	-1.6907400000-006	1.3168230000-010	0.0000000000+000
		7.94631617188+002	5.1619000000+004	7.6000000000+001		
NO	6.85983543183-005	4.8414980000+001	1.2693860000-002	-2.4946000000-006	1.8932130000-010	0.0000000000+000
		1.20924970573+003	2.1477000000+004	3.8600000000+002		
N2	2.49980025861+000	4.3923400000+001	1.2225010000-002	-2.3790030000-006	1.7983220000-010	0.0000000000+000
		1.13916134896+003	0.0000000000+000	3.8000000000+002		
OH	1.56923354952-007	4.2417920000+001	1.1568470000-002	-2.2266590000-006	1.6891550000-010	0.0000000000+000
		1.18351754427+003	3.5600000000+003	4.1300000000+002		
CH4	1.65537440921-005	3.8756860000+001	2.3640130000-002	-3.7079570000-006	2.4707140000-010	0.0000000000+000
		1.04242791146+003	-1.6000000000+004	5.2800000000+002		
SOL C	4.22215346209+000	-2.4615190000-001	7.1798550000-003	-1.2975500000-006	9.3499960000-011	0.0000000000+000
		-2.58204389323+002	0.0000000000+000	0.0000000000+000		

A STRETCH BAW CALCULATION FOR THE EXPLOSIVE
DATA DIAMINO TRINITROBENZENE

THE NUMBER OF ELEMENTS IS 4

THE NUMBER OF GAS SPECIES IS 11

THE NUMBER OF SOLID SPECIES IS 1

THE KW EQUATION OF STATE PARAMETERS ARE

ALPHA= 5.0000000000-001 BETA= 9.5890000000-032 THETA= 4.0000000000+002 KAPPA= 1.28847111054+001

THE COMPOSITION OF THE EXPLOSIVE IS

6.0000000000+000 MOLES OF C
5.0000000000+000 MOLES OF H
5.0000000000+000 MOLES OF N
6.0000000000+000 MOLES OF O

THE DENSITY OF THE EXPLOSIVE IS 1.6000000000+000 GRAMS/CC

THE MOLECULAR WEIGHT IS 2.4310000000+002 GRAMS

THE HEAT OF FORMATION AT 0 DEG K IS 1.2000000000+004 CALORIES PER FORMULA WEIGHT

THE SOLID (COVAN) EQUATION OF STATE PARAMETERS VO, AS, BS, CS, DS, ES, A1, A2, C1, C2, C3, ATOMIC WT

SOL C 4.4444444444-001 8.30935837288-001 -1.39381808219+000 6.72569716021-001 -1.13537262508-001 6.49155882007-003
-2.26705345948-001 1.20516569925-001 8.31600000000-002 -1.75590000000-001 1.55310000000-001 1.20100000000+001

THE INPUT DETONATION PRODUCT ELEMENTAL COMPOSITION MATRIX

0.0+00	2.0+00	0.0+00	1.0+00	0.0+00	2.0+00	0.0+00	0.0+00	0.0+00	0.0+00	0.0+00	2.0+00
1.0+00	0.0+00	0.0+00	2.0+00	1.0+00	0.0+00	0.0+00	1.0+00	0.0+00	3.0+00	1.0+00	0.0+00
0.0+00	1.0+00	0.0+00	0.0+00	0.0+00	0.0+00	1.0+00	1.0+00	0.0+00	0.0+00	2.0+00	0.0+00
0.0+00	1.0+00	0.0+00	1.0+00	1.0+00	4.0+00	0.0+00	0.0+00	1.0+00	0.0+00	0.0+00	0.0+00

A STRETCH BRW CALCULATION FOR THE EXPLOSIVE
 DATE DIAMINO TRINITROBENZENE

THE COMPUTED C_J PRESSURE IS 2.05775935756-001 MEGABARS

THE COMPUTED DETONATION VELOCITY IS 7.00088864986-001 CM/MICROSECOND

THE COMPUTED C_J TEMPERATURE IS 2.87398892268+003 DEGREES KELVIN

THE COMPUTED C_J VOLUME IS 4.60999123521-001 CC/GRAM OF EXPLOSIVE

THE COMPUTED GAMMA IS 2.81093672262+000

THE VOLUME OF THE GAS IS 1.39704118453+001 CC/MOLE OF GAS AND THERE ARE 6.83869437773+000 MOLES OF GAS

SOLID VOLUME IN CC/GM
 SOL C 3.30860458501-001

THE C-J COMPOSITION OF THE DETONATION PRODUCTS AND THE INPUT COEFFICIENTS TO THE THERMODYNAMIC FITS FOR EACH SPECIE

SPECIE	NO OF MOLES	COEFFICIENTS A,B,C,D,E, THE INTEGRATION CONSTANT, HEAT OF FORMATION IN CALORIES/MOLE, COVOLUME					
MEQ	2.49700072621+000	4.25884200000+001	1.48080500000-002	-2.63918100000-006	1.92045300000-010	0.00000000000+000	
ME	7.57027416114-004	1.34282833156+003	-9.71070000000+004	2.50000000000+002			
OE	2.86581404440-006	2.97034700000+001	1.14382900000-002	-2.20122200000-006	1.67776100000-010	0.00000000000+000	
COE	1.66277969045+000	1.17589615365+003	0.00000000000+000	1.80000000000+002			
CO	1.77278987422-001	4.70309000000+001	1.28714700000-002	-2.50021700000-006	1.90157000000-010	0.00000000000+000	
CO2	1.12158830990+003	1.03537647396+003	0.00000000000+000	3.50000000000+002			
NMS	1.30081942201-003	4.74811200000+001	1.95446300000-002	-3.72129600000-006	2.77030000000-010	0.00000000000+000	
N	1.40568251287-006	7.48280968750+002	-9.39680000000+004	6.00000000000+002			
NO	1.53090273276-004	4.53308200000+001	1.23816100000-002	-2.41640300000-006	1.82818100000-010	0.00000000000+000	
NO2	2.49927304515+000	1.12158830990+003	-2.72010000000+004	3.90000000000+002			
OH	2.06357397162-006	4.20181600000+001	1.91166200000-002	-3.16433000000-006	2.19780100000-010	0.00000000000+000	
CH4	1.44636302917-004	1.20696121615+003	-9.36800000000+003	4.76000000000+002			
SOL C	4.15979668583+000	2.63911000000+001	8.12137200000-003	-1.69074000000-006	1.31682300000-010	0.00000000000+000	
		7.94631617188+002	5.16190000000+004	7.60000000000+001			
		4.84149800000+001	1.26938600000-002	-2.49460000000-006	1.89321300000-010	0.00000000000+000	
		1.20924970573+003	2.14770000000+004	3.86000000000+002			
		4.39234000000+001	1.22250100000-002	-2.37900500000-006	1.79832200000-010	0.00000000000+000	
		1.15916134896+003	0.00000000000+000	3.80000000000+002			
		4.24179200000+001	1.15684700000-002	-2.22665900000-006	1.68915500000-010	0.00000000000+000	
		1.18351754427+003	3.58000000000+003	4.13000000000+002			
		3.87568600000+001	2.36401300000-002	-3.70795700000-006	2.47071400000-010	0.00000000000+000	
		1.04242791146+003	-1.60000000000+004	5.28000000000+002			
		-2.46151900000-001	7.17985500000-003	-1.29755000000-006	9.34999500000-011	0.00000000000+000	
		-2.58204389323+002	0.00000000000+000	0.00000000000+000			

A STRETCH BRW CALCULATION FOR THE EXPLOSIVE
DATA DIAMINO TRINITROBENZENE

THE NUMBER OF ELEMENTS IS 4

THE NUMBER OF GAS SPECIES IS 11

THE NUMBER OF SOLID SPECIES IS 1

THE KW EQUATION OF STATE PARAMETERS ARE

ALPHA= 5.0000000000-001 BETA= 9.5850000000-002 THETA= 4.0000000000+002 KAPPA= 1.26847111054+001

THE COMPOSITION OF THE EXPLOSIVE IS

6.0000000000+000 MOLES OF C
5.0000000000+000 MOLES OF H
5.0000000000+000 MOLES OF N
6.0000000000+000 MOLES OF O

THE DENSITY OF THE EXPLOSIVE IS 1.4000000000+000 GRAMS/CC

THE MOLECULAR WEIGHT IS 2.4310000000+002 GRAMS

THE HEAT OF FORMATION AT 0 DEG K IS 1.2000000000+004 CALORIES PER FORMULA WEIGHT

THE SOLID (COMAN) EQUATION OF STATE PARAMETERS VO, AS, BS, CS, DS, ES, A1, A2, C1, C2, C3, ATOMIC WT

SOL C 4.4444444444-001 8.30955837268-001 -1.39581809219+000 6.72569716021-001 -1.13537262508-001 6.48155842007-003
-2.26705345948-001 1.20516569525-001 8.3160000000-002 -1.7599000000-001 1.5531000000-001 1.2010000000+001

THE INPUT DETONATION PRODUCT ELEMENTAL COMPOSITION MATRIX

0.0+00	2.0+00	0.0+00	1.0+00	0.0+00	2.0+00	0.0+00	0.0+00	0.0+00	0.0+00	0.0+00	2.0+00
1.0+00	0.0+00	0.0+00	2.0+00	1.0+00	0.0+00	0.0+00	1.0+00	0.0+00	3.0+00	1.0+00	0.0+00
0.0+00	1.0+00	0.0+00	0.0+00	0.0+00	0.0+00	1.0+00	1.0+00	0.0+00	0.0+00	2.0+00	0.0+00
0.0+00	1.0+00	0.0+00	1.0+00	1.0+00	4.0+00	0.0+00	0.0+00	1.0+00	0.0+00	0.0+00	0.0+00

A STRETCH BRN CALCULATION FOR THE EXPLOSIVE
 DATE DIAMINO TRINITROBENZENE

THE COMPUTED CJ PRESSURE IS 1.55000209352-001 MEGABARS

THE COMPUTED DETONATION VELOCITY IS 6.42226428932-001 CM/MICROSECOND

THE COMPUTED CJ TEMPERATURE IS 3.04485707439+003 DEGREES KELVIN

THE COMPUTED CJ VOLUME IS 5.22552627552-001 CC/GRAM OF EXPLOSIVE

THE COMPUTED GAMMA IS 2.72539303552+000

THE VOLUME OF THE GAS IS 1.57715790509+001 CC/MOLE OF GAS AND THERE ARE 6.98266177941+000 MOLES OF GAS

SOLID VOLUME IN CC/GM
 SOL C 3.50848471770-001

THE C-J COMPOSITION OF THE DETONATION PRODUCTS AND THE INPUT COEFFICIENTS TO THE THERMODYNAMIC FITS FOR EACH SPECIE

SPECIE	NO OF MOLES	COEFFICIENTS A,B,C,D,E; THE INTEGRATION CONSTANT, HEAT OF FORMATION IN CALORIES/MOLE, COVOLUME					
HED	2.46778275896+000	4.29884200000+001	1.48080500000-002	-2.63918100000-006	1.92045300000-010	0.00000000000+000	
HE	4.69718053805-003	1.34282895156+003	-5.71070000000+004	2.50000000000+002			
ME	4.69718053805-003	2.97034700000+001	1.14382900000-002	-2.20122200000-006	1.67776100000-010	0.00000000000+000	
OE	4.28292957408-006	1.17589815365+003	0.00000000000+000	1.80000000000+002			
COE	1.52470189864+000	4.70309000000+001	1.28714700000-002	-2.50021700000-006	1.90157000000-010	0.00000000000+000	
CO	4.62527565073-001	1.03337647396+003	0.00000000000+000	3.50000000000+002			
NMG	3.85528631155-003	4.74811200000+001	1.95446300000-002	-3.72129600000-006	2.77030000000-010	0.00000000000+000	
H	1.24290073149-005	7.46280968750+002	-9.39680000000+004	6.00000000000+002			
NO	2.61769131547-004	4.53308200000+001	1.23816100000-002	-2.41640300000-006	1.82818100000-010	0.00000000000+000	
NH3	1.20696121615-003	1.12158830990+003	-2.72010000000+004	3.90000000000+002			
M	2.49794147228+000	4.20181800000+001	1.91166200000-002	-3.16433000000-006	2.19780100000-010	0.00000000000+000	
NO2	2.49794147228+000	1.20696121615+003	-9.36800000000+003	4.76000000000+002			
OH	1.56236959634-005	2.63911000000+001	8.12137200000-003	-1.69074000000-006	1.31682300000-010	0.00000000000+000	
CH4	8.61552842896-004	7.94631617188+002	5.16190000000+004	7.60000000000+001			
SOL C	4.01190902344+000	4.84149800000+001	1.26938600000-002	-2.49460000000-006	1.89321300000-010	0.00000000000+000	
		1.20924970573+003	2.14770000000+004	3.86000000000+002			
		4.39234000000+001	1.22250100000-002	-2.37900500000-006	1.79832200000-010	0.00000000000+000	
		1.13916134896+003	0.00000000000+000	3.80000000000+002			
		4.24179200000+001	1.15684700000-002	-2.22663900000-006	1.68915500000-010	0.00000000000+000	
		1.18351754427+003	3.56000000000+003	4.13000000000+002			
		3.87568600000+001	2.36401300000-002	-3.70795700000-006	2.47071400000-010	0.00000000000+000	
		1.04242791146+003	-1.60000000000+004	5.28000000000+002			
		-2.46151900000-001	7.17985500000-003	-1.29755000000-006	9.34999500000-011	0.00000000000+000	
		-2.58204389323+002	0.00000000000+000	0.00000000000+000			

A STRETCH BKM CALCULATION FOR THE EXPLOSIVE
DATA DIAMINO TRINITROBENZENE

THE NUMBER OF ELEMENTS IS 4

THE NUMBER OF GAS SPECIES IS 11

THE NUMBER OF SOLID SPECIES IS 1

THE RW EQUATION OF STATE PARAMETERS ARE

ALPHA= 5.0000000000-001 BETA= 9.5850000000-002 THETA= 4.0000000000+002 KAPPA= 1.26847111054+001

THE COMPOSITION OF THE EXPLOSIVE IS

6.0000000000+000 MOLES OF C
5.0000000000+000 MOLES OF H
5.0000000000+000 MOLES OF N
6.0000000000+000 MOLES OF O

THE DENSITY OF THE EXPLOSIVE IS 1.2000000000+000 GRAMS/CC

THE MOLECULAR WEIGHT IS 2.4310000000+002 GRAMS

THE HEAT OF FORMATION AT 0 DEG K IS 1.2000000000+004 CALORIES PER FORMULA WEIGHT

THE SOLID (COMAN)EQUATION OF STATE PARAMETERS YO, AS, BS, CS, DS, ES, A1, A2, C1, C2, C3, ATOMIC WT

SOL C 4.4444444444-001 8.30935837268-001 -1.39381809219+000 6.72569716021-001 -1.13537262508-001 6.49155882007-003
-2.26705345948-001 1.20516569525-001 8.31600000000-002 -1.75590000000-001 1.55310000000-001 1.20100000000+001

THE INPUT DETONATION PRODUCT ELEMENTAL COMPOSITION MATRIX

0.0+00	2.0+00	0.0+00	1.0+00	0.0+00	2.0+00	0.0+00	0.0+00	0.0+00	0.0+00	0.0+00	2.0+00
1.0+00	0.0+00	0.0+00	2.0+00	1.0+00	0.0+00	0.0+00	1.0+00	0.0+00	3.0+00	1.0+00	0.0+00
0.0+00	1.0+00	0.0+00	0.0+00	0.0+00	0.0+00	1.0+00	1.0+00	0.0+00	0.0+00	2.0+00	0.0+00
0.0+00	1.0+00	0.0+00	1.0+00	1.0+00	4.0+00	0.0+00	0.0+00	1.0+00	0.0+00	0.0+00	0.0+00

A STRETCH BAW CALCULATION FOR THE EXPLOSIVE
 DATB DIAMINO TRINITROBENZENE

THE COMPUTED CJ PRESSURE IS 1.14426745365-001 MEGABARS

THE COMPUTED DETONATION VELOCITY IS 5.86864926342-001 CM/MICROSECOND

THE COMPUTED CJ TEMPERATURE IS 3.15398778043+003 DEGREES KELVIN

THE COMPUTED CJ VOLUME IS 6.02613489994-001 CC/GRAM OF EXPLOSIVE

THE COMPUTED GAMMA IS 2.61189253332+000

THE VOLUME OF THE GAS IS 1.79519580563+001 CC/MOLE OF GAS AND THERE ARE 7.23612933698+000 MOLES OF GAS

SOLID VOLUME IN CC/GM
 SOL C 3.68640497430-001

THE C-J COMPOSITION OF THE DETONATION PRODUCTS AND THE INPUT COEFFICIENTS TO THE THERMODYNAMIC FITS FOR EACH SPECIE

SPECIE	NO OF MOLES	COEFFICIENTS A,B,C,D,E, THE INTEGRATION CONSTANT, HEAT OF FORMATION IN CALORIES/MOLE, CONVOLUME					
H2O	2.45843681973+000	4.25884200000+001	1.48080500000-002	-2.63918100000-006	1.82045300000-010	0.00000000000+000	
H2	2.06423954643-002	1.34282835196+003	-5.71070000000+004	2.50000000000+002	-2.20122200000-006	1.67776100000-010	0.00000000000+000
O2	4.39476561079-006	2.97034700000+001	1.14382900000-002	-2.50021700000-006	1.90157000000-010	0.00000000000+000	
CO2	1.29259251418+000	1.17589615365+003	0.00000000000+000	1.80000000000+002	3.50000000000+002	0.00000000000+000	
CO	9.55974878935-001	1.03537647396+003	0.00000000000+000	-3.72129600000-006	2.77030000000-010	0.00000000000+000	
NH3	8.98232045984-003	4.74811200000+001	1.95446300000-002	6.00000000000+002	1.82818100000-010	0.00000000000+000	
H	6.66166686269-005	1.12158830990+003	-2.72010000000+004	-3.18433000000-006	2.19780100000-010	0.00000000000+000	
NO	3.29213894792-004	1.20696121615+003	-9.36800000000+003	4.76000000000+002	1.31682300000-010	0.00000000000+000	
N2	2.49534423283+000	2.63911000000+001	8.12137200000-003	-2.49460000000-006	1.89321300000-010	0.00000000000+000	
OH	6.52695394429-005	7.94631617188+002	5.16190000000+004	7.60000000000+001	1.79832200000-010	0.00000000000+000	
CH4	3.69068051904-003	4.84149800000+001	1.26958600000-002	-2.82685900000-006	1.68915500000-010	0.00000000000+000	
SOL C	3.74774192636+000	1.20924970573+003	2.14770000000+004	5.86000000000+002	2.47071400000-010	0.00000000000+000	
		4.39234000000+001	1.22250100000-002	-2.37900500000-006	1.79832200000-010	0.00000000000+000	
		1.13916134896+003	0.00000000000+000	3.80000000000+002	1.68915500000-010	0.00000000000+000	
		1.18351754427+003	1.15684700000-002	-2.22685900000-006	1.68915500000-010	0.00000000000+000	
		3.87568600000+001	2.36401300000-002	-3.70795700000-006	2.47071400000-010	0.00000000000+000	
		1.04242791148+003	-1.60000000000+004	5.28000000000+002	1.79832200000-010	0.00000000000+000	
		-2.46131900000-001	7.17983500000-003	-1.29755000000-006	9.34999500000-011	0.00000000000+000	
		-2.58204389323+002	0.00000000000+000	0.00000000000+000			

A STRETCH BKW CALCULATION FOR THE EXPLOSIVE
DATA DIAMINO TRINITROBENZENE

THE NUMBER OF ELEMENTS IS 4

THE NUMBER OF GAS SPECIES IS 11

THE NUMBER OF SOLID SPECIES IS 1

THE KW EQUATION OF STATE PARAMETERS ARE

ALPHA= 5.000000000+001 BETA= 9.595000000+002 THETA= 4.000000000+002 KAPPA= 1.26847111054+001

THE COMPOSITION OF THE EXPLOSIVE IS

6.000000000+000 MOLES OF C
5.000000000+000 MOLES OF H
5.000000000+000 MOLES OF N
6.000000000+000 MOLES OF O

THE DENSITY OF THE EXPLOSIVE IS 1.000000000+000 GRAMS/CC

THE MOLECULAR WEIGHT IS 2.431000000+002 GRAMS

THE HEAT OF FORMATION AT 0 DEG K IS 1.200000000+004 CALORIES PER FORMULA WEIGHT

THE SOLID (COMAN) EQUATION OF STATE PARAMETERS VO, AS, BS, CS, DS, ES, A1, A2, C1, C2, C3, ATOMIC WT

SOL C 4.444444444+001 9.30935837288+001 -1.39381808219+000 6.72569716021+001 -1.13537282508+001 6.48155882007+003
-2.26705343948+001 1.20516589525+001 8.31600000000+002 -1.75590000000+001 1.95310000000+001 1.20100000000+001

THE INPUT DETONATION PRODUCT ELEMENTAL COMPOSITION MATRIX

0.0+00	2.0+00	0.0+00	1.0+00	0.0+00	2.0+00	0.0+00	0.0+00	0.0+00	0.0+00	0.0+00	2.0+00
1.0+00	0.0+00	0.0+00	2.0+00	1.0+00	0.0+00	0.0+00	1.0+00	0.0+00	3.0+00	1.0+00	0.0+00
0.0+00	1.0+00	0.0+00	0.0+00	0.0+00	0.0+00	1.0+00	1.0+00	0.0+00	0.0+00	2.0+00	0.0+00
0.0+00	1.0+00	0.0+00	1.0+00	1.0+00	4.0+00	0.0+00	0.0+00	1.0+00	0.0+00	0.0+00	0.0+00

A STRETCH BRN CALCULATION FOR THE EXPLOSIVE
 DATB DIAMINO TRINITROBENZENE

THE COMPUTED C-J PRESSURE IS 8.17131085134-002 MEGABARS

THE COMPUTED DETONATION VELOCITY IS 5.34100033481-001 CM/MICROSECOND

THE COMPUTED C-J TEMPERATURE IS 3.19886603466+003 DEGREES KELVIN

THE COMPUTED C-J VOLUME IS 7.13999029736-001 CC/GRAM OF EXPLOSIVE

THE COMPUTED GAMMA IS 2.49102917456+000

THE VOLUME OF THE GAS IS 2.07680391029+001 CC/MOLE OF GAS AND THERE ARE 7.60826498470+000 MOLES OF GAS

SOLID VOLUME IN CC/GM
 SOL C 3.84512482203-001

THE C-J COMPOSITION OF THE DETONATION PRODUCTS AND THE INPUT COEFFICIENTS TO THE THERMODYNAMIC FITS FOR EACH SPECIE

SPECIE	NO OF MOLES	COEFFICIENTS A,B,C,D,E, THE INTEGRATION CONSTANT, HEAT OF FORMATION IN CALORIES/MOLE, CONVOLUME					
H2O	2.37194593708+000	4.2588420000+001	1.4808050000-002	-2.6391810000-006	1.9804930000-010	0.0000000000+000	
H2	7.35999099408-002	1.3428233198+003	-9.7107000000+004	2.5000000000+002	1.8777610000-010	0.0000000000+000	
O2	3.04885211668-008	2.8703470000+001	1.1438890000-002	-2.2012220000-006	1.8019700000-010	0.0000000000+000	
CO2	9.87972735286-001	1.17588819383+003	0.0000000000+000	1.8000000000+002	2.7703000000-010	0.0000000000+000	
CO	1.65161725139+000	4.7030900000+001	1.2371470000-002	-2.9002170000-006	1.8019700000-010	0.0000000000+000	
NH3	1.88990582347-002	1.03937847398+003	0.0000000000+000	3.5000000000+002	2.7703000000-010	0.0000000000+000	
H	2.49520205289-004	4.7481180000+001	1.8844830000-002	-3.7212980000-006	1.8019700000-010	0.0000000000+000	
NO	3.09889493377-004	7.48280888730+002	-9.3888000000+004	6.0000000000+002	1.8019700000-010	0.0000000000+000	
N2	2.4908952614+000	4.5330820000+001	1.2381610000-002	-2.4164030000-006	1.8019700000-010	0.0000000000+000	
OH	1.7595796431-004	1.12158830880+003	-2.7201000000+004	3.8000000000+002	1.8019700000-010	0.0000000000+000	
CH4	1.33867643240-002	4.2018180000+001	1.9118620000-002	-3.1843300000-006	1.8019700000-010	0.0000000000+000	
SOL C	3.34701324888+000	1.22888121615+003	-9.3680000000+003	4.7800000000+002	1.8019700000-010	0.0000000000+000	
		2.6391100000+001	8.1213720000-003	-1.8907400000-006	1.3188200000-010	0.0000000000+000	
		7.94631817188+002	5.1819000000+004	7.6000000000+002	1.8019700000-010	0.0000000000+000	
		4.8614980000+001	1.8893860000-002	-2.4848000000-006	1.8019700000-010	0.0000000000+000	
		1.80824870973+003	2.1677000000+004	3.8000000000+002	1.8019700000-010	0.0000000000+000	
		4.3823400000+001	1.2225010000-002	-2.3790050000-006	1.8019700000-010	0.0000000000+000	
		1.13916134888+003	0.0000000000+000	3.8000000000+002	1.8019700000-010	0.0000000000+000	
		4.2417820000+001	1.1968470000-002	-2.2288580000-006	1.8019700000-010	0.0000000000+000	
		1.18391754427+003	3.3600000000+003	4.1300000000+002	1.8019700000-010	0.0000000000+000	
		3.8754860000+001	2.3640130000-002	-3.7078970000-006	1.8019700000-010	0.0000000000+000	
		1.04242781148+003	-1.8000000000+004	5.2800000000+002	1.8019700000-010	0.0000000000+000	
		-2.4815180000-001	7.1788550000-003	-1.8875500000-006	1.8019700000-010	0.0000000000+000	
		-2.58204389323+002	0.0000000000+000	0.0000000000+000	1.8019700000-010	0.0000000000+000	

A STRETCH BAW CALCULATION FOR THE EXPLOSIVE
TATB TRIANINO TRINITROBENZENE

THE NUMBER OF ELEMENTS IS 4

THE NUMBER OF GAS SPECIES IS 11

THE NUMBER OF SOLID SPECIES IS 1

THE KW EQUATION OF STATE PARAMETERS ARE

ALPHA= 9.0000000000-001 BETA= 9.5850000000-002 THETA= 4.0000000000+002 KAPPA= 1.26847111054+001

THE COMPOSITION OF THE EXPLOSIVE IS

6.0000000000+000 MOLES OF C
6.0000000000+000 MOLES OF H
6.0000000000+000 MOLES OF N
6.0000000000+000 MOLES OF O

THE DENSITY OF THE EXPLOSIVE IS 1.8950000000+000 GRAMS/CC

THE MOLECULAR WEIGHT IS 2.5810000000+002 GRAMS

THE HEAT OF FORMATION AT 0 DEG K IS -1.7000000000+004 CALORIES PER FORMULA WEIGHT

THE SOLID (COMAN) EQUATION OF STATE PARAMETERS VO, AS, BS, CS, DS, ES, A1, A2, C1, C2, C3, ATOMIC WT

SOL C 4.4444444444-001 8.30935837268-001 -1.39381808219+000 6.72589716021-001 -1.13537262508-001 6.49155842007-003
-2.26705345948-001 1.20516569525-001 8.31600000000-002 -1.75590000000-001 1.55310000000-001 1.20100000000+001

THE INPUT DETONATION PRODUCT ELEMENTAL COMPOSITION MATRIX

0.0+00	2.0+00	0.0+00	1.0+00	0.0+00	2.0+00	0.0+00	0.0+00	0.0+00	0.0+00	0.0+00	2.0+00
1.0+00	0.0+00	0.0+00	2.0+00	1.0+00	0.0+00	0.0+00	1.0+00	0.0+00	3.0+00	1.0+00	0.0+00
0.0+00	1.0+00	0.0+00	0.0+00	0.0+00	0.0+00	1.0+00	1.0+00	0.0+00	0.0+00	2.0+00	0.0+00
0.0+00	1.0+00	0.0+00	1.0+00	1.0+00	4.0+00	0.0+00	0.0+00	1.0+00	0.0+00	0.0+00	0.0+00

A STRETCH BRM CALCULATION FOR THE EXPLOSIVE
TATS TRIAMINO TRINITROBENZENE

THE COMPUTED CJ PRESSURE IS 2.97344188271-001 MEGABARS

THE COMPUTED DETONATION VELOCITY IS 7.84845515086-001 CM/MICROSECOND

THE COMPUTED CJ TEMPERATURE IS 2.12775520362+003 DEGREES KELVIN

THE COMPUTED CJ VOLUME IS 3.93282222181-001 CC/GRAM OF EXPLOSIVE

THE COMPUTED GAMMA IS 2.92570916291+000

THE VOLUME OF THE GAS IS 1.13905269103+001 CC/MOLE OF GAS AND THERE ARE 7.50296524400+000 MOLES OF GAS

SOLID VOLUME IN CC/GH
SOL C 2.97050426610-001

THE C-J COMPOSITION OF THE DETONATION PRODUCTS AND THE INPUT COEFFICIENTS TO THE THERMODYNAMIC FITS FOR EACH SPECIE

SPECIE	NO OF MOLES	COEFFICIENTS A,B,C,D,E, THE INTEGRATION CONSTANT, HEAT OF FORMATION IN CALORIES/MOLE, CONVOLUME					
H2O	2.99995371032+000	4.25884200000+001	1.48080500000-002	-2.63918100000-006	1.92045300000-010	0.00000000000+000	
H2	2.77967468142-006	1.34282835156+003	-5.71070000000+004	2.50000000000+002			
O2	4.63369850177-008	2.97034700000+001	1.14382900000-002	-2.20122200000-006	1.67776100000-010	0.00000000000+000	
CO2	1.49705025998+000	1.17589615365+003	0.00000000000+000	1.80000000000+002			
CO	5.94197721861-003	4.70309000000+001	1.28714700000-002	-2.50021700000-006	1.90157000000-010	0.00000000000+000	
NH3	2.85400816382-005	1.03537647396+003	0.00000000000+000	3.50000000000+002			
H	5.33697053956-010	7.46280968750+002	1.95446300000-002	-3.72129600000-006	2.77030000000-010	0.00000000000+000	
N	5.33697053956-010	4.74811200000+001	-9.39680000000+004	6.00000000000+002			
O	5.33697053956-010	4.53308200000+001	1.23816100000-002	-2.41640300000-006	1.82818100000-010	0.00000000000+000	
NH	5.33697053956-010	1.12158830990+003	-2.72010000000+004	3.90000000000+002			
NO	3.69915555221-006	4.20181600000+001	1.91166200000-002	-3.16433000000-006	2.19780100000-010	0.00000000000+000	
N2	2.99998388038+000	1.20696121615+003	-9.36800000000+003	4.76000000000+002			
OH	6.75800085472-010	2.63911000000+001	8.12137200000-003	-1.69074000000-006	1.31682300000-010	0.00000000000+000	
CH4	3.49638228095-007	7.94631617188+002	5.16190000000+004	7.60000000000+001			
SOL C	4.49700741317+000	4.86149800000+001	1.26938600000-002	-2.49460000000-006	1.89321300000-010	0.00000000000+000	
		1.20924970973+003	2.14770000000+004	3.86000000000+002			
		4.39234000000+001	1.22250100000-002	-2.37900900000-006	1.79832200000-010	0.00000000000+000	
		1.13916134896+003	0.00000000000+000	3.80000000000+002			
		4.24179200000+001	1.15684700000-002	-2.22683900000-006	1.68915500000-010	0.00000000000+000	
		1.18351734427+003	3.58000000000+003	4.13000000000+002			
		3.87588600000+001	2.36401300000-002	-3.70793700000-006	2.47071400000-010	0.00000000000+000	
		1.04242791146+003	-1.60000000000+004	5.28000000000+002			
		-2.46151900000-001	7.17985300000-003	-1.29735000000-006	9.34999500000-011	0.00000000000+000	
		-2.58204389323+002	0.00000000000+000	0.00000000000+000			

A STRETCH BKM CALCULATION FOR THE EXPLOSIVE
TATB TRIAMINO TRINITROBENZENE

THE NUMBER OF ELEMENTS IS 4

THE NUMBER OF GAS SPECIES IS 11

THE NUMBER OF SOLID SPECIES IS 1

THE KW EQUATION OF STATE PARAMETERS ARE
ALPHA= 5.0000000000-001 BETA= 9.5850000000-002 THETA= 4.0000000000+002 KAPPA= 1.26847111054+001

THE COMPOSITION OF THE EXPLOSIVE IS
6.0000000000+000 MOLES OF C
6.0000000000+000 MOLES OF H
6.0000000000+000 MOLES OF N
6.0000000000+000 MOLES OF O

THE DENSITY OF THE EXPLOSIVE IS 1.6000000000+000 GRAMS/CC

THE MOLECULAR WEIGHT IS 2.5810000000+002 GRAMS

THE HEAT OF FORMATION AT 0 DEG K IS -1.7000000000+004 CALORIES PER FORMULA WEIGHT

THE SOLID (COWAN) EQUATION OF STATE PARAMETERS VO, AS, BS, CS, DS, ES, A1, A2, C1, C2, C3, ATOMIC WT

SOL C 4.4444444444-001 8.30935837268-001 -1.39381808219+000 6.72569716021-001 -1.13537262508-001 6.48155882007-003
-2.26705345948-001 1.20516589525-001 8.31600000000-002 -1.75590000000-001 1.55310000000-001 1.20100000000+001

THE INPUT DETONATION PRODUCT ELEMENTAL COMPOSITION MATRIX

0.0+00	2.0+00	0.0+00	1.0+00	0.0+00	2.0+00	0.0+00	0.0+00	0.0+00	0.0+00	0.0+00	2.0+00
1.0+00	0.0+00	0.0+00	2.0+00	1.0+00	0.0+00	0.0+00	1.0+00	0.0+00	3.0+00	1.0+00	0.0+00
0.0+00	1.0+00	0.0+00	0.0+00	0.0+00	0.0+00	1.0+00	1.0+00	0.0+00	0.0+00	2.0+00	0.0+00
0.0+00	1.0+00	0.0+00	1.0+00	1.0+00	4.0+00	0.0+00	0.0+00	1.0+00	0.0+00	0.0+00	0.0+00

A STRETCH BKM CALCULATION FOR THE EXPLOSIVE
TATB TRIAMINO TRINITROBENZENE

THE COMPUTED CJ PRESSURE IS 1.99000080880-001 MEGABARS

THE COMPUTED DETONATION VELOCITY IS 6.93533092898-001 CM/MICROSECOND

THE COMPUTED CJ TEMPERATURE IS 2.45596468628+003 DEGREES KELVIN

THE COMPUTED CJ VOLUME IS 4.63386837979-001 CC/GRAM OF EXPLOSIVE

THE COMPUTED GAMMA IS 2.86723984286+000

THE VOLUME OF THE GAS IS 1.35177403505+001 CC/MOLE OF GAS AND THERE ARE 7.53316715762+000 MOLES OF GAS

SOLID VOLUME IN CC/GM
SOL C 3.31267575803-001

THE C-J COMPOSITION OF THE DETONATION PRODUCTS AND THE INPUT COEFFICIENTS TO THE THERMODYNAMIC FITS FOR EACH SPECIE

SPECIE	NO OF MOLES	COEFFICIENTS A,B,C,D,E, THE INTEGRATION CONSTANT, HEAT OF FORMATION IN CALORIES/MOLE, CONVOLUME				
H2O	2.99877152948+000	4.258420000+001	1.48080500000-002	-2.63918100000-006	1.92045300000-010	0.000000000+000
		1.34282835156+003	-5.71070000000+004	2.50000000000-002		
H2	2.47718206052-004	2.97034700000+001	1.14382900000-002	-2.20122200000-006	1.87776100000-010	0.000000000+000
		1.17389813365+003	0.000000000+000	1.80000000000+002		
O2	2.59374334859-007	4.70309000000+001	1.28714700000-002	-2.50021700000-006	1.90197000000-010	0.000000000+000
		1.03337847396+003	0.000000000+000	3.50000000000+002		
CO2	1.46740818850+000	4.74811200000+001	1.95448300000-002	-3.72129800000-006	2.77030000000-010	0.000000000+000
		7.46280988750+002	-9.39880000000+004	6.00000000000+002		
CO	6.63871402166-002	4.53308200000+001	1.23818100000-002	-2.41840300000-006	1.82818100000-010	0.000000000+000
		1.12158830990+003	-2.72010000000+004	3.90000000000+002		
NH3	6.01655065663-004	4.20181600000+001	1.91188200000-002	-3.18433000000-006	2.19780100000-010	0.000000000+000
		1.20698121815+003	-9.36800000000+003	4.78000000000+002		
H	1.30782706372-007	2.63911000000+001	8.12137200000-003	-1.89074000000-006	1.31682300000-010	0.000000000+000
		7.94831817188+002	5.18190000000+004	7.80000000000+001		
NO	2.42581291028-005	4.84149800000+001	1.28938800000-002	-2.49480000000-006	1.89321300000-010	0.000000000+000
		1.20924979573+003	2.14770000000+004	3.86300000000+002		
N2	2.99968704340+000	4.39234000000+001	1.22230100000-002	-2.37900500000-006	1.79832200000-010	0.000000000+000
		1.13918134896+003	0.000000000+000	3.80000000000+002		
OH	1.78414590413-007	4.24179200000+001	1.15884700000-002	-2.22883900000-006	1.68915500000-010	0.000000000+000
		1.18351734427+003	3.58000000000+003	4.13000000000+002		
CH4	3.90580627968-005	3.87568800000+001	2.38401300000-002	-3.70795700000-006	2.47071400000-010	0.000000000+000
		1.04242791146+003	-1.60000000000+004	5.28000000000+002		
SOL C	4.46616561322+000	-2.46151900000-001	7.17989300000-003	-1.29739000000-006	9.34999500000-011	0.000000000+000
		-2.58204389323+002	0.00000000000+000	0.00000000000+000		

A STRETCH BWM CALCULATION FOR THE EXPLOSIVE
TATB TRIANINO TRINITROBENZENE

THE NUMBER OF ELEMENTS IS 4

THE NUMBER OF GAS SPECIES IS 11

THE NUMBER OF SOLID SPECIES IS 1

THE KW EQUATION OF STATE PARAMETERS ARE

ALPHA= 5.0000000000-001 BETA= 9.5850000000-002 THETA= 4.0000000000+002 KAPPA= 1.26847111054+001

THE COMPOSITION OF THE EXPLOSIVE IS

6.0000000000+000 MOLES OF C
6.0000000000+000 MOLES OF H
6.0000000000+000 MOLES OF N
6.0000000000+000 MOLES OF O

THE DENSITY OF THE EXPLOSIVE IS 1.4000000000+000 GRAMS/CC

THE MOLECULAR WEIGHT IS 2.5810000000+002 GRAMS

THE HEAT OF FORMATION AT 0 DEG K IS -1.7000000000+004 CALORIES PER FORMULA WEIGHT

THE SOLID (COMAN) EQUATION OF STATE PARAMETERS VO, AS, BS, CS, DS, ES, A1, A2, C1, C2, C3, ATOMIC WT

SOL C 4.4444444444-001 8.30939837268-001 -1.39381808219+000 6.72969716021-001 -1.13537262508-001 6.48155842007-003
-2.26705345948-001 1.2051856925-001 8.3160000000-002 -1.7559000000-001 1.5531000000-001 1.2010000000+001

THE INPUT DETONATION PRODUCT ELEMENTAL COMPOSITION MATRIX

0.0+00	2.0+00	0.0+00	1.0+00	0.0+00	2.0+00	0.0+00	0.0+00	0.0+00	0.0+00	0.0+00	2.0+00
1.0+00	0.0+00	0.0+00	2.0+00	1.0+00	0.0+00	0.0+00	1.0+00	0.0+00	3.0+00	1.0+00	0.0+00
0.0+00	1.0+00	0.0+00	0.0+00	0.0+00	0.0+00	1.0+00	1.0+00	0.0+00	0.0+00	2.0+00	0.0+00
0.0+00	1.0+00	0.0+00	1.0+00	1.0+00	4.0+00	0.0+00	0.0+00	1.0+00	0.0+00	0.0+00	0.0+00

A STRETCH BKW CALCULATION FOR THE EXPLOSIVE
TATB TRIAMINO TRINITROBENZENE

THE COMPUTED CJ PRESSURE IS 1.47822061108-001 MEGABARS

THE COMPUTED DETONATION VELOCITY IS 6.32343064480-001 CM/MICROSECOND

THE COMPUTED CJ TEMPERATURE IS 2.63569458167+003 DEGREES KELVIN

THE COMPUTED CJ VOLUME IS 5.25671367051-001 CC/GRAM OF EXPLOSIVE

THE COMPUTED GAMMA IS 2.78699124798+000

THE VOLUME OF THE GAS IS 1.53930882335+001 CC/MOLE OF GAS AND THERE ARE 7.60989475995+000 MOLES OF GAS

SOLID VOLUME IN CC/GM
SOL C 3.51812597016-001

THE C-J COMPOSITION OF THE DETONATION PRODUCTS AND THE INPUT COEFFICIENTS TO THE THERMODYNAMIC FITS FOR EACH SPECIE

SPECIE	NO OF MOLES	COEFFICIENTS A,B,C,D,E, THE INTEGRATION CONSTANT, HEAT OF FORMATION IN CALORIES/MOLE, COVOLUME				
H2O	2.99333458067+000	4.2588420000+001	1.4808050000-002	-2.6391810000-006	1.9204530000-010	0.0000000000+000
		1.34282835156+003	-5.7107000000+004	2.5000000000+002		
N2	2.24489818855-003	2.9703470000+001	1.1438290000-002	-2.2012220000-006	1.6777610000-010	0.0000000000+000
		1.17589615365+003	0.0000000000+000	1.8000000000+002		
O2	5.09353295243-007	4.7030900000+001	1.2871470000-002	-2.5002170000-006	1.9015700000-010	0.0000000000+000
		1.02537647396+003	0.0000000000+000	3.5000000000+002		
CO2	1.39392297914+000	4.7481120000+001	1.9544630000-002	-3.7212960000-006	2.7703000000-010	0.0000000000+000
		7.46280968750+002	-9.3968000000+004	6.0000000000+002		
CO	2.18763243665-001	4.5330820000+001	1.2381610000-002	-2.4164030000-006	1.8281810000-010	0.0000000000+000
		1.12158830990+003	-2.7201000000+004	3.9000000000+002		
NH3	2.44528079047-003	4.2018160000+001	1.9116620000-002	-3.1643300000-006	2.1978010000-010	0.0000000000+000
		1.20696121615+003	-9.3680000000+003	4.7600000000+002		
H	1.90832826132-006	2.6391100000+001	6.1213720000-003	-1.6907400000-006	1.3168230000-010	0.0000000000+000
		7.94631617188+002	5.1619000000+004	7.6000000000+001		
NO	5.36867639982-005	4.8414980000+001	1.2693860000-002	-2.4946000000-006	1.8932130000-010	0.0000000000+000
		1.20924970573+003	2.1477000000+004	3.8600000000+002		
N2	2.99875051622+000	4.3923400000+001	1.2225010000-002	-2.3790050000-006	1.7983220000-010	0.0000000000+000
		1.13916134896+003	0.0000000000+000	3.8000000000+002		
OH	2.31190958360-006	4.2417920000+001	1.1568470000-002	-2.2266590000-006	1.6891550000-010	0.0000000000+000
		1.18351754427+003	3.9600000000+003	4.1300000000+002		
CH4	3.75244916101-004	3.8756860000+001	2.3640130000-002	-3.7079570000-006	2.4707140000-010	0.0000000000+000
		1.04242791146+003	-1.6000000000+004	5.2800000000+002		
SOL C	4.38693893228+000	-2.4615190000-001	7.1798550000-003	-1.2975500000-006	9.3499950000-011	0.0000000000+000
		-2.58204388323+002	0.0000000000+000	0.0000000000+000		

A STRETCH BRW CALCULATION FOR THE EXPLOSIVE
TATB TRIAMINO TRINITROBENZENE

THE NUMBER OF ELEMENTS IS 4

THE NUMBER OF GAS SPECIES IS 11

THE NUMBER OF SOLID SPECIES IS 1

THE KW EQUATION OF STATE PARAMETERS ARE
ALPHA= 5.0000000000-001 BETA= 9.5850000000-002 THETA= 4.0000000000+002 KAPPA= 1.26847111094+001

THE COMPOSITION OF THE EXPLOSIVE IS
6.0000000000+000 MOLES OF C
6.0000000000+000 MOLES OF H
6.0000000000+000 MOLES OF N
6.0000000000+000 MOLES OF O

THE DENSITY OF THE EXPLOSIVE IS 1.2000000000+000 GRAMS/CC

THE MOLECULAR WEIGHT IS 2.5810000000+002 GRAMS

THE HEAT OF FORMATION AT 0 DEG K IS -1.7000000000+004 CALORIES PER FORMULA WEIGHT

THE SOLID (COVAN) EQUATION OF STATE PARAMETERS VO, AS, BS, CS, DS, ES, A1, A2, C1, C2, C3, ATOMIC WT

SOL C 4.4444444444-001 8.30935837268-001 -1.39381809219+000 6.72569716021-001 -1.13537262508-001 6.49155882007-003
-2.26705345948-001 1.20516569525-001 8.3160000000-002 -1.7559000000-001 1.5531000000-001 1.2010000000+001

THE INPUT DETONATION PRODUCT ELEMENTAL COMPOSITION MATRIX

0.0+00	2.0+00	0.0+00	1.0+00	0.0+00	2.0+00	0.0+00	0.0+00	0.0+00	0.0+00	0.0+00	2.0+00
1.0+00	0.0+00	0.0+00	2.0+00	1.0+00	0.0+00	0.0+00	1.0+00	0.0+00	3.0+00	1.0+00	0.0+00
0.0+00	1.0+00	0.0+00	0.0+00	0.0+00	0.0+00	1.0+00	1.0+00	0.0+00	0.0+00	2.0+00	0.0+00
0.0+00	1.0+00	0.0+00	1.0+00	1.0+00	4.0+00	0.0+00	0.0+00	1.0+00	0.0+00	0.0+00	0.0+00

A STRETCH BRW CALCULATION FOR THE EXPLOSIVE
TATB TRIAMINO TRINITROBENZENE

THE COMPUTED C-J PRESSURE IS 1.07399815902-001 MEGABARS

THE COMPUTED DETONATION VELOCITY IS 5.73285679021-001 CM/MICROSECOND

THE COMPUTED C-J TEMPERATURE IS 2.76529731521+003 DEGREES KELVIN

THE COMPUTED C-J VOLUME IS 6.06401816983-001 CC/GRAM OF EXPLOSIVE

THE COMPUTED GAMMA IS 2.67214562158+000

THE VOLUME OF THE GAS IS 1.77176104056+001 CC/MOLE OF GAS AND THERE ARE 7.77753942885+000 MOLES OF GAS

SOLID VOLUME IN CC/GM
SOL C 3.70021349414-001

THE C-J COMPOSITION OF THE DETONATION PRODUCTS AND THE INPUT COEFFICIENTS TO THE THERMODYNAMIC FITS FOR EACH SPECIE

SPECIE	NO OF MOLES	COEFFICIENTS A,B,C,D,E, THE INTEGRATION CONSTANT, HEAT OF FORMATION IN CALORIES/MOLE, CONVOLUME					
H2O	2.97185046574+000	4.2588420000+001	1.4808050000-002	-2.6391810000-006	1.9204530000-010	0.0000000000+000	
H2	1.29268544464-002	1.34282835198+003	-5.7107000000+004	2.5000000000+002	-2.2012220000-006	1.6777610000-010	
O2	6.60628093910-007	2.9703470000+001	1.1438290000-002	-2.2012220000-006	1.8000000000+002	0.0000000000+000	
CO2	1.24118688027+000	1.17589613365+003	0.0000000000+000	1.8000000000+002	-2.5002170000-006	1.9015700000-010	
CO	5.45676571471-001	4.7030900000+001	1.2871470000-002	-2.5002170000-006	3.5000000000+002	0.0000000000+000	
NH3	7.10837225342-003	1.05537847396+003	0.0000000000+000	3.5000000000+002	-3.7212960000-006	2.7703000000-010	
H	1.48634590031-005	4.7481120000+001	1.9544630000-002	-2.4164030000-006	6.0000000000+002	0.0000000000+000	
NO	8.3235568234-005	7.46280988750+002	-9.3968000000+004	-2.4164030000-006	3.9000000000+002	1.8281810000-010	
N2	2.99640419609+000	4.5330820000+001	1.2381610000-002	-2.4164030000-006	3.9000000000+002	0.0000000000+000	
OH	1.46454339933-005	1.12158830990+003	-2.7201000000+004	-3.1643300000-006	4.7800000000+002	0.0000000000+000	
CH4	2.27268349272-003	4.2018160000+001	1.9116620000-002	-3.1643300000-006	4.7800000000+002	2.1978010000-010	
SOL C	4.21086386477+000	1.20696121615+003	-9.3680000000+003	-1.8907400000-006	7.6000000000+001	0.0000000000+000	
		7.94631617188+002	5.1619000000+004	-2.4946000000-006	3.8600000000+002	1.8932130000-010	
		4.8414980000+001	1.2693860000-002	-2.4946000000-006	3.8600000000+002	0.0000000000+000	
		1.20924970573+003	2.1477000000+004	-2.3790050000-006	3.8000000000+002	1.7983220000-010	
		4.3923400000+001	1.2225010000-002	-2.2266590000-006	4.1300000000+002	0.0000000000+000	
		1.13916134898+003	0.0000000000+000	-2.2266590000-006	4.1300000000+002	1.6891550000-010	
		4.2417920000+001	1.1568470000-002	-2.4707140000-010	0.0000000000+000	0.0000000000+000	
		1.18351754427+003	3.5600000000+003	2.4707140000-010	0.0000000000+000	0.0000000000+000	
		3.8756860000+001	2.3640130000-002	-1.6000000000+004	5.2800000000+002	2.4707140000-010	
		1.04242791146+003	-1.6000000000+004	-1.2975500000-006	9.3499950000-011	0.0000000000+000	
		-2.4615190000-001	7.1798550000-003	0.0000000000+000	0.0000000000+000	0.0000000000+000	
		-2.58204389323+002	0.0000000000+000	0.0000000000+000	0.0000000000+000	0.0000000000+000	

A STRETCH BKW CALCULATION FOR THE EXPLOSIVE
TATB TRIAMINO TRINITROBENZENE

THE NUMBER OF ELEMENTS IS 4

THE NUMBER OF GAS SPECIES IS 11

THE NUMBER OF SOLID SPECIES IS 1

THE KW EQUATION OF STATE PARAMETERS ARE

ALPHA= 5.0000000000-001 BETA= 9.5850000000-002 THETA= 4.0000000000+002 KAPPA= 1.26847111054+001

THE COMPOSITION OF THE EXPLOSIVE IS

6.0000000000+000 MOLES OF C
6.0000000000+000 MOLES OF H
6.0000000000+000 MOLES OF N
6.0000000000+000 MOLES OF O

THE DENSITY OF THE EXPLOSIVE IS 1.0000000000+000 GRAMS/CC

THE MOLECULAR WEIGHT IS 2.5810000000+002 GRAMS

THE HEAT OF FORMATION AT 0 DEG K IS -1.7000000000+004 CALORIES PER FORMULA WEIGHT

THE SOLID (CONJAN) EQUATION OF STATE PARAMETERS VO, AS, BS, CS, DS, ES, A1, A2, C1, C2, C3, ATOMIC WT

SOL C 4.4444444444-001 8.30935637268-001 -1.39381809219+000 6.72569716021-001 -1.13537262508-001 6.49155882007-003
-2.26705345948-001 1.20516569525-001 8.3160000000-002 -1.7559000000-001 1.5531000000-001 1.2010000000+001

THE INPUT DETONATION PRODUCT ELEMENTAL COMPOSITION MATRIX

0.0+00	2.0+00	0.0+00	1.0+00	0.0+00	2.0+00	0.0+00	0.0+00	0.0+00	0.0+00	0.0+00	2.0+00
1.0+00	0.0+00	0.0+00	2.0+00	1.0+00	0.0+00	0.0+00	1.0+00	0.0+00	3.0+00	1.0+00	0.0+00
0.0+00	1.0+00	0.0+00	0.0+00	0.0+00	0.0+00	1.0+00	1.0+00	0.0+00	0.0+00	2.0+00	0.0+00
0.0+00	1.0+00	0.0+00	1.0+00	1.0+00	4.0+00	0.0+00	0.0+00	1.0+00	0.0+00	0.0+00	0.0+00

A STRETCH BKW CALCULATION FOR THE EXPLOSIVE
TATB TRIAMINO TRINITROBENZENE

THE COMPUTED C_J PRESSURE IS 7.57402677128-002 MEGABARS

THE COMPUTED DETONATION VELOCITY IS 5.17161736967-001 CM/MICROSECOND

THE COMPUTED C_J TEMPERATURE IS 2.83569449738+003 DEGREES KELVIN

THE COMPUTED C_J VOLUME IS 7.16816248404-001 CC/GRAM OF EXPLOSIVE

THE COMPUTED GAMMA IS 2.53122942735+000

THE VOLUME OF THE GAS IS 2.06979807890+001 CC/MOLE OF GAS AND THERE ARE 8.06612732257+000 MOLES OF GAS

SOLID VOLUME IN CC/GM
SOL C 3.89872893905-001

THE C-J COMPOSITION OF THE DETONATION PRODUCTS AND THE INPUT COEFFICIENTS TO THE THERMODYNAMIC FITS FOR EACH SPECIE

SPECIE	NO OF MOLES	COEFFICIENTS A,B,C,D,E, THE INTEGRATION CONSTANT, HEAT OF FORMATION IN CALORIES/MOLE, COMVOLUME					
H ₂ O	2.89934071469+000	4.25884200000+001	1.48080500000-002	-2.63918100000-006	1.92045300000-010	0.00000000000+000	
H ₂	5.47800669752-002	1.34282835156+003	-5.71070000000+004	2.50000000000+002	1.67776100000-010	0.00000000000+000	
O ₂	5.54134089016-007	2.97034700000+001	1.14382900000-002	-2.20122200000-006	1.90157000000-010	0.00000000000+000	
CO ₂	1.00741346423+000	1.17589615365+003	0.00000000000+000	1.80000000000+002	2.77030000000-010	0.00000000000+000	
CO	1.08568709756+000	1.03537647398+003	0.00000000000+000	3.50000000000+002	1.82818100000-010	0.00000000000+000	
NH ₃	1.66918993060-002	4.74811200000+001	1.95446300000-002	-3.72129600000-006	2.19780100000-010	0.00000000000+000	
H	7.15006216775-005	7.46280968750+002	-9.39880000000+004	6.00000000000+002	1.31682300000-010	0.00000000000+000	
NO	9.17923513024-005	4.53308200000+001	1.23816100000-002	-2.41640300000-006	1.89321300000-010	0.00000000000+000	
N ₂	2.99160815417+000	1.12158830990+003	-2.72010000000+004	3.90000000000+002	1.79832200000-010	0.00000000000+000	
OH	5.23586683254-005	1.20696121615+003	-9.36800000000+004	4.76000000000+002	1.68915500000-010	0.00000000000+000	
CH ₄	1.03897198641-002	2.63911000000+001	8.12137200000-003	-1.69074000000-006	2.47071400000-010	0.00000000000+000	
SOL C	3.89872893905-001	7.94631617188+002	5.16190000000+004	7.60000000000+002	9.34999500000-011	0.00000000000+000	
		4.84149800000+001	1.26938600000-002	-2.49460000000-006			
		1.20924970573+003	2.14770000000+004	3.86000000000+002			
		1.15916134898+003	0.00000000000+000	3.80000000000+002			
		1.18551734427+003	3.58000000000+003	4.13000000000+002			
		3.87568600000+001	2.36401300000-002	-3.70795700000-006			
		1.04242781148+003	-1.60000000000+004	5.28000000000+002			
		-2.46151900000-001	7.17965500000-003	-1.29755000000-006			
		-2.58204389323+002	0.00000000000+000	0.00000000000+000			

A STRETCH BWM CALCULATION FOR THE EXPLOSIVE
PETN PENTA ERYTHRITOL TETRANITRATE

THE NUMBER OF ELEMENTS IS 4

THE NUMBER OF GAS SPECIES IS 11

THE NUMBER OF SOLID SPECIES IS 1

THE KW EQUATION OF STATE PARAMETERS ARE

ALPHA= 5.0000000000-001 BETA= 1.6000000000-001 THETA= 4.0000000000+002 KAPPA= 1.09097784436+001

THE COMPOSITION OF THE EXPLOSIVE IS

5.0000000000+000 MOLES OF C
8.0000000000+000 MOLES OF H
4.0000000000+000 MOLES OF N
1.2000000000+001 MOLES OF O

THE DENSITY OF THE EXPLOSIVE IS 1.6700000000+000 GRAMS/CC

THE MOLECULAR WEIGHT IS 3.1614600000+002 GRAMS

THE HEAT OF FORMATION AT 0 DEG K IS -9.5500000000+004 CALORIES PER FORMULA WEIGHT

THE SOLID (COMAN)EQUATION OF STATE PARAMETERS VO, AS, BS, CS, DS, ES, A1, A2, C1, C2, C3, ATOMIC WT

SOL C 4.4444444444-001 8.30935857268-001 -1.39381809219+000 6.72569716021-001 -1.13537262508-001 6.49155842007-003
-2.26705345948-001 1.20516569529-001 8.3160000000-002 -1.7559000000-001 1.5531000000-001 1.2010000000+001

THE INPUT DETONATION PRODUCT ELEMENTAL COMPOSITION MATRIX

0.0+00	2.0+00	0.0+00	1.0+00	0.0+00	2.0+00	0.0+00	0.0+00	0.0+00	0.0+00	0.0+00	2.0+00
1.0+00	0.0+00	0.0+00	2.0+00	1.0+00	0.0+00	0.0+00	1.0+00	0.0+00	3.0+00	1.0+00	0.0+00
0.0+00	1.0+00	0.0+00	0.0+00	0.0+00	0.0+00	1.0+00	1.0+00	0.0+00	0.0+00	2.0+00	0.0+00
0.0+00	1.0+00	0.0+00	1.0+00	1.0+00	4.0+00	0.0+00	0.0+00	1.0+00	0.0+00	0.0+00	0.0+00

A STRETCH BRM CALCULATION FOR THE EXPLOSIVE
 PETN PENTA ERITHRITOL TETRA NITRATE

THE COMPUTED CJ PRESSURE IS 2.80342210074-001 MEGABARS

THE COMPUTED DETONATION VELOCITY IS 8.05661397224-001 CM/MICROSECOND

THE COMPUTED CJ TEMPERATURE IS 3.01836709121+003 DEGREES KELVIN

THE COMPUTED CJ VOLUME IS 4.43938959177-001 CC/GRAM OF EXPLOSIVE

THE COMPUTED GAMMA IS 2.86663420740+000

THE VOLUME OF THE GAS IS 1.35563959653+001 CC/MOLE OF GAS AND THERE ARE 1.01119587843+001 MOLES OF GAS

SOLID VOLUME IN CC/GM
 SOL C 3.06849085885-001

THE C-J COMPOSITION OF THE DETONATION PRODUCTS AND THE INPUT COEFFICIENTS TO THE THERMODYNAMIC FITS FOR EACH SPECIE

SPECIE	NO OF MOLES	COEFFICIENTS A,B,C,D,E, THE INTEGRATION CONSTANT, HEAT OF FORMATION IN CALORIES/MOLE, CONVOLVE					
HEO	3.99902954415+000	4.2584420000+001	1.4800000000-002	-2.8391810000-006	1.9204530000-010	0.0000000000+000	
HE	2.84382389570-004	1.34282435156+003	-5.7107000000+004	2.5000000000-002	1.6777810000-010	0.0000000000+000	
OE	2.34449867540-005	2.9703470000+001	1.1438890000-002	-2.2012220000-006	1.9019700000-010	0.0000000000+000	
COE	3.68873402256+000	1.17588615365+003	0.0000000000+000	1.8000000000-002	2.7703000000-010	0.0000000000+000	
CO	2.23037350774-001	4.7030800000+001	1.2871470000-002	-2.5002170000-006	1.8291810000-010	0.0000000000+000	
NHO	4.13257857097-004	1.03537847596+003	0.0000000000+000	3.5000000000-002	2.1978010000-010	0.0000000000+000	
H	1.07722214550-006	7.46280968750+002	1.9544830000-002	-3.7212980000-006	1.3168230000-010	0.0000000000+000	
NO	4.16553498529-004	4.5330800000+001	1.2381810000-002	-2.4184030000-006	1.8832130000-010	0.0000000000+000	
NE	1.99958909432+000	1.12158430990+003	-2.7201000000+004	3.9000000000-002	1.7983220000-010	0.0000000000+000	
OH	1.61692440725-006	4.2018160000+001	1.9118820000-002	-3.1843300000-006	1.6891950000-010	0.0000000000+000	
CH4	3.24198020252-005	1.22888121815+003	-9.3880000000+003	4.7800000000-002	2.4707140000-010	0.0000000000+000	
SOL C	8.88198207064-001	2.6391100000+001	8.1213720000-003	-1.6907400000-006	9.3499950000-011	0.0000000000+000	
		7.94831817188+002	5.1619000000+004	7.8000000000+001			
		4.8414980000+001	1.2893880000-002	-2.4948000000-006			
		1.20824970973+003	2.1477000000+004	3.8600000000+002			
		4.3982400000+001	1.2229010000-002	-2.3780030000-006			
		1.13916134896+003	0.0000000000+000	3.8000000000+002			
		4.2417920000+001	1.1588470000-002	-2.2286590000-006			
		1.18351734427+003	3.5800000000+003	4.1300000000+002			
		3.8756880000+001	2.3840130000-002	-3.7079570000-006			
		1.04242791146+003	-1.6000000000+004	5.2800000000+002			
		-2.4615190000-001	7.1798930000-003	-1.2975500000-006			
		-2.58204389323+002	0.0000000000+000	0.0000000000+000			

A STRETCH BWK CALCULATION FOR THE EXPLOSIVE
PETN PENTA ERYTHRITOL TETRANITRATE

THE NUMBER OF ELEMENTS IS 4

THE NUMBER OF GAS SPECIES IS 11

THE NUMBER OF SOLID SPECIES IS 1

THE KW EQUATION OF STATE PARAMETERS ARE
ALPHA= 5.0000000000-001 BETA= 1.6000000000-001 THETA= 4.0000000000+002 KAPPA= 1.09097784436+001

THE COMPOSITION OF THE EXPLOSIVE IS
5.0000000000+000 MOLES OF C
8.0000000000+000 MOLES OF H
4.0000000000+000 MOLES OF N
1.2000000000+001 MOLES OF O

THE DENSITY OF THE EXPLOSIVE IS 1.7700000000+000 GRAMS/CC

THE MOLECULAR WEIGHT IS 3.1614600000+002 GRAMS

THE HEAT OF FORMATION AT 0 DEG K IS -9.5900000000+004 CALORIES PER FORMULA WEIGHT

THE SOLID (GOMAN) EQUATION OF STATE PARAMETERS VO, A9, B9, C9, D9, E9, A1, A2, C1, C2, C3, ATOMIC WT

SOL C 4.4444444444-001 8.30955837268-001 -1.39981809219+000 6.72969716021-001 -1.19537262508-001 6.49155882007-003
-2.26705345948-001 1.20516569525-001 8.3160000000-002 -1.7559000000-001 1.5531000000-001 1.2010000000+001

THE INPUT DETONATION PRODUCT ELEMENTAL COMPOSITION MATRIX

0.0+00	2.0+00	0.0+00	1.0+00	0.0+00	2.0+00	0.0+00	0.0+00	0.0+00	0.0+00	0.0+00	2.0+00
1.0+00	0.0+00	0.0+00	2.0+00	1.0+00	0.0+00	0.0+00	1.0+00	0.0+00	3.0+00	1.0+00	0.0+00
0.0+00	1.0+00	0.0+00	0.0+00	0.0+00	0.0+00	1.0+00	1.0+00	0.0+00	0.0+00	2.0+00	0.0+00
0.0+00	1.0+00	0.0+00	1.0+00	1.0+00	4.0+00	0.0+00	0.0+00	1.0+00	0.0+00	0.0+00	0.0+00

A STRETCH BAR CALCULATION FOR THE EXPLOSIVE
 PETN PENTA ERYTHRITOL TETRANITRATE

THE COMPUTED CJ PRESSURE IS 3.18810616112-001 MEGABARS

THE COMPUTED DETONATION VELOCITY IS 8.42116191592-001 CM/MICROSECOND

THE COMPUTED CJ TEMPERATURE IS 2.83258686619+003 DEGREES KELVIN

THE COMPUTED CJ VOLUME IS 4.21475404798-001 CC/GRAM OF EXPLOSIVE

THE COMPUTED GAMMA IS 2.93717326342+000

THE VOLUME OF THE GAS IS 1.29262008199+001 CC/MOLE OF GAS AND THERE ARE 1.00481193749+001 MOLES OF GAS

SOLID VOLUME IN CC/GM
 SOL C 2.94243787510-001

THE C-J COMPOSITION OF THE DETONATION PRODUCTS AND THE INPUT COEFFICIENTS TO THE THERMODYNAMIC FITS FOR EACH SPECIE

SPECIE	NO OF MOLES	COEFFICIENTS A,B,C,D,E, THE INTEGRATION CONSTANT, HEAT OF FORMATION IN CALORIES/MOLE, COVOLUME					
H2O	3.99972934302+000	4.25884200000+001	1.48080500000-002	-2.63918100000-006	1.92045300000-010	0.00000000000+000	
H2	5.83594230746-005	1.34282835196+003	-5.71070000000+004	2.50000000000+002	-2.20122200000-006	1.67776100000-010	
O2	1.38062244759-005	2.97034700000+001	1.14382900000-002	1.80000000000+002	-2.50021700000-006	1.90157000000-010	
CO2	3.95188547789+000	1.17589615365+003	0.00000000000+000	3.50000000000+002	-3.72129600000-006	2.77030000000-010	
CO	9.62470743704-002	4.70309000000+001	1.28714700000-002	6.00000000000+002	-2.41640300000-006	1.82818100000-010	
NH3	1.34085153458-004	4.74811200000+001	1.95446300000-002	3.90000000000+002	-3.16433000000-006	2.19780100000-010	
H	1.58954535142-007	7.46280968750+002	-9.39680000000+004	4.76000000000+002	-1.69074000000-006	1.31682300000-010	
NO	2.24774184679-004	4.53308200000+001	1.23816100000-002	7.60000000000+001	-2.49460000000-006	1.89321300000-010	
N2	1.99982057033+000	1.12158830990+003	-2.72010000000+004	3.86000000000+002	-2.37900500000-006	1.79832200000-010	
OH	2.39989835617-007	4.20181600000+001	1.91166200000-002	3.80000000000+002	-2.22665900000-006	1.68915500000-010	
CH4	5.48517792332-006	1.20696121615+003	-9.36800000000+003	4.13000000000+002	-3.70795700000-006	2.47071400000-010	
SOL C	9.51861962358-001	2.63911000000+001	8.12137200000-003	5.28000000000+002	-1.29755000000-006	9.34999500000-011	
		4.84149800000+001	1.26938600000-002	0.00000000000+000	0.00000000000+000		
		1.20924970573+003	2.14770000000+004	3.80000000000+002			
		4.39234000000+001	1.22250100000-002	3.80000000000+002			
		1.13916134896+003	0.00000000000+000	3.80000000000+002			
		4.24179200000+001	1.15684700000-002	-2.22665900000-006			
		1.18351754427+003	3.56000000000+003	4.13000000000+002			
		3.87568600000+001	2.36401300000-002	-3.70795700000-006			
		1.04242791146+003	-1.60000000000+004	5.28000000000+002			
		-2.48131900000-001	7.17985500000-003	-1.29755000000-006			
		-2.58204389323+002	0.00000000000+000	0.00000000000+000			

A STRETCH BRN CALCULATION FOR THE EXPLOSIVE
PETH PENTA ERYTHRITOL TETRANITRATE

THE NUMBER OF ELEMENTS IS 4

THE NUMBER OF GAS SPECIES IS 11

THE NUMBER OF SOLID SPECIES IS 1

THE KW EQUATION OF STATE PARAMETERS ARE

ALPHA= 5.0000000000-001 BETA= 1.6000000000-001 THETA= 4.0000000000+002 KAPPA= 1.09097784436+001

THE COMPOSITION OF THE EXPLOSIVE IS

5.0000000000+000 MOLES OF C
8.0000000000+000 MOLES OF H
4.0000000000+000 MOLES OF N
1.2000000000+001 MOLES OF O

THE DENSITY OF THE EXPLOSIVE IS 1.4000000000+000 GRAMS/CC

THE MOLECULAR WEIGHT IS 3.1614600000+002 GRAMS

THE HEAT OF FORMATION AT 0 DEG K IS -9.5500000000+004 CALORIES PER FORMULA WEIGHT

THE SOLID (COWAN) EQUATION OF STATE PARAMETERS VO, AS, BS, CS, DS, ES, A1, A2, C1, C2, C3, ATOMIC WT

SOL C 4.4444444444-001 8.30935837268-001 -1.39381809219+000 6.72569716021-001 -1.13537262508-001 6.49155882007-003
-2.26705345948-001 1.20516569525-001 8.31600000000-002 -1.75590000000-001 1.55310000000-001 1.20100000000+001

THE INPUT DETONATION PRODUCT ELEMENTAL COMPOSITION MATRIX

0.0+00	2.0+00	0.0+00	1.0+00	0.0+00	2.0+00	0.0+00	0.0+00	0.0+00	0.0+00	0.0+00	2.0+00
1.0+00	0.0+00	0.0+00	2.0+00	1.0+00	0.0+00	0.0+00	1.0+00	0.0+00	3.0+00	1.0+00	0.0+00
0.0+00	1.0+00	0.0+00	0.0+00	0.0+00	0.0+00	1.0+00	1.0+00	0.0+00	0.0+00	2.0+00	0.0+00
0.0+00	1.0+00	0.0+00	1.0+00	1.0+00	4.0+00	0.0+00	0.0+00	1.0+00	0.0+00	0.0+00	0.0+00

A STRETCH BKM CALCULATION FOR THE EXPLOSIVE
 PETN PENTA ERYTHRITOL TETRANITRATE

THE COMPUTED CJ PRESSURE IS 1.96370805321-001 MEGABARS

THE COMPUTED DETONATION VELOCITY IS 7.18775385440-001 CM/MICROSECOND

THE COMPUTED CJ TEMPERATURE IS 3.39286553287+003 DEGREES KELVIN

THE COMPUTED CJ VOLUME IS 5.20361408343-001 CC/GRAM OF EXPLOSIVE

THE COMPUTED GAMMA IS 2.68330351051+000

THE VOLUME OF THE GAS IS 1.54342267678+001 CC/MOLE OF GAS AND THERE ARE 1.05390636488+001 MOLES OF GAS

SOLID VOLUME IN CC/GM
 SOL C 3.36757863187-001

THE C-J COMPOSITION OF THE DETONATION PRODUCTS AND THE INPUT COEFFICIENTS TO THE THERMODYNAMIC FITS FOR EACH SPECIE

SPECIE	NO OF MOLES	COEFFICIENTS A,B,C,D,E, THE INTEGRATION CONSTANT, HEAT OF FORMATION IN CALORIES/MOLE, COVOLUME				
H2O	3.98789046126+000	4.2588420000+001	1.4808050000-002	-2.6391810000-006	1.9204530000-010	0.0000000000+000
H2	5.82587025861-003	1.34282855156+003	-5.7107000000+004	2.5000000000+002	1.6777610000-010	0.0000000000+000
O2	5.11875706959-005	2.9703470000+001	1.1438290000-002	-2.2012220000-006	1.9019700000-010	0.0000000000+000
CO2	3.46853921067+000	1.17589815365+003	0.0000000000+000	1.8000000000+002	2.7703000000-010	0.0000000000+000
CO	1.07374871219+000	4.7030900000+001	1.2871470000-002	-2.5002170000-006	1.6281810000-010	0.0000000000+000
NH3	3.06463065868-003	1.03537647398+003	0.0000000000+000	3.5000000000+002	2.1978010000-010	0.0000000000+000
H	3.98354468014-005	4.7481120000+001	1.9544830000-002	-3.7212980000-006	1.3168250000-010	0.0000000000+000
NO	1.12947546201-003	7.46280988750+002	-9.3988000000+004	6.0000000000+002	1.8932130000-010	0.0000000000+000
N2	1.99790294694+000	4.5330820000+001	1.2381610000-002	-2.4184030000-006	1.7983220000-010	0.0000000000+000
OH	5.05546109661-005	1.12158430990+003	-2.7201000000+004	3.9000000000+002	1.6891550000-010	0.0000000000+000
CH4	8.20763731900-004	4.2018180000+001	1.9118820000-002	-3.1843300000-006	2.4707140000-010	0.0000000000+000
SOL C	4.56891313411-001	1.20698121615+003	-9.3680000000+003	4.7600000000+002	1.2975500000-006	0.0000000000+000
		2.6391100000+001	8.1213720000-003	-1.8907400000-006	9.3499950000-011	0.0000000000+000
		7.94831617188+002	5.1619000000+004	7.6000000000+001		
		4.8414980000+001	1.2693860000-002	-2.4946000000-006		
		1.20924970573+003	2.1477000000+004	3.8600000000+002		
		4.3923400000+001	1.2225010000-002	-2.3790050000-006		
		1.13916134898+003	0.0000000000+000	3.8000000000+002		
		4.2417920000+001	1.1588470000-002	-2.2268590000-006		
		1.18351754427+003	3.5600000000+003	4.1300000000+002		
		3.8756860000+001	2.3640130000-002	-3.7079570000-006		
		1.04242791146+003	-1.6000000000+004	5.2800000000+002		
		-2.4815190000-001	7.1798550000-003	-1.2975500000-006		
		-2.58204389323+002	0.0000000000+000	0.0000000000+000		

A STRETCH BKW CALCULATION FOR THE EXPLOSIVE
PETN PENTA ERYTHRITOL TETRANITRATE

THE NUMBER OF ELEMENTS IS 4

THE NUMBER OF GAS SPECIES IS 11

THE NUMBER OF SOLID SPECIES IS 1

THE KW EQUATION OF STATE PARAMETERS ARE

ALPHA= 5.0000000000-001 BETA= 1.6000000000-001 THETA= 4.0000000000+002 KAPPA= 1.09097784436+001

THE COMPOSITION OF THE EXPLOSIVE IS

5.0000000000+000 MOLES OF C
8.0000000000+000 MOLES OF H
4.0000000000+000 MOLES OF N
1.2000000000+001 MOLES OF O

THE DENSITY OF THE EXPLOSIVE IS 1.2000000000+000 GRAMS/CC

THE MOLECULAR WEIGHT IS 3.1614600000+002 GRAMS

THE HEAT OF FORMATION AT 0 DEG K IS -9.5500000000+004 CALORIES PER FORMULA WEIGHT

THE SOLID (COMAN) EQUATION OF STATE PARAMETERS VO, AS, BS, CS, DS, ES, A1, A2, C1, C2, C3, ATOMIC WT

SOL C 4.4444444444-001 8.30955837268-001 -1.39381809219+000 6.72569716021-001 -1.13537262508-001 6.49155882007-003
-2.26705349948-001 1.20516589525-001 6.31600000000-002 -1.75590000000-001 1.55310000000-001 1.20100000000+001

THE INPUT DETONATION PRODUCT ELEMENTAL COMPOSITION MATRIX

0.0+00	2.0+00	0.0+00	1.0+00	0.0+00	2.0+00	0.0+00	0.0+00	0.0+00	0.0+00	0.0+00	2.0+00
1.0+00	0.0+00	0.0+00	2.0+00	1.0+00	0.0+00	0.0+00	1.0+00	0.0+00	3.0+00	1.0+00	0.0+00
0.0+00	1.0+00	0.0+00	0.0+00	0.0+00	0.0+00	1.0+00	1.0+00	0.0+00	0.0+00	2.0+00	0.0+00
0.0+00	1.0+00	0.0+00	1.0+00	1.0+00	4.0+00	0.0+00	0.0+00	1.0+00	0.0+00	0.0+00	0.0+00

A STRETCH BKW CALCULATION FOR THE EXPLOSIVE
 PETN PENTA ERYTHRITOL TETRANITRATE

THE COMPUTED CJ PRESSURE IS 1.44243652530-001 MEGABARS

THE COMPUTED DETONATION VELOCITY IS 6.59876968800-001 CM/MICROSECOND

THE COMPUTED CJ TEMPERATURE IS 3.58980023659+003 DEGREES KELVIN

THE COMPUTED CJ VOLUME IS 6.03292322884-001 CC/GRAM OF EXPLOSIVE

THE COMPUTED GAMMA IS 2.62251736959+000

THE VOLUME OF THE GAS IS 1.73515881976+001 CC/MOLE OF GAS AND THERE ARE 1.09919883147+001 MOLES OF GAS

SOLID VOLUME IN CC/GH
 SOL C 3.57839936042-001

THE C-J COMPOSITION OF THE DETONATION PRODUCTS AND THE INPUT COEFFICIENTS TO THE THERMODYNAMIC FITS FOR EACH SPECIE

SPECIE	NO OF MOLES	COEFFICIENTS A,B,C,D,E, THE INTEGRATION CONSTANT, HEAT OF FORMATION IN CALORIES/MOLE, COVOLUME					
H2O	3.96219650478+000	4.25884200000+001	1.48080500000-002	-2.43918100000-006	1.92045300000-010	0.00000000000+000	
H2	2.50118343351-002	1.34282835156+003	-5.71070000000+004	2.50000000000+002	1.67776100000-010	0.00000000000+000	
O2	1.03685290905-004	2.97034700000+001	1.14382900000-002	-2.20122200000-006	1.90197000000-010	0.00000000000+000	
CO2	3.03684353801+000	1.17589615365+003	0.00000000000+000	1.80000000000+002	2.77030000000-010	0.00000000000+000	
CO	1.96142618547+000	4.70309000000+001	1.28714700000-002	-2.50021700000-006	1.82818100000-010	0.00000000000+000	
NH3	6.02302855896-003	1.03537647396+003	0.00000000000+000	3.50000000000+002	2.19780100000-010	0.00000000000+000	
H	2.53558978948-004	4.74811200000+001	1.95446300000-002	-3.72129800000-006	1.31682300000-010	0.00000000000+000	
NO	2.14329215891-003	7.46280968730+002	-9.39680000000+004	6.00000000000+002	1.89321300000-010	0.00000000000+000	
N2	1.99591683964+000	4.53308200000+001	1.23816100000-002	-2.41840300000-006	1.79832200000-010	0.00000000000+000	
OH	3.39570996505-004	1.12158830990+003	-2.72010000000+004	3.90000000000+002	1.68915500000-010	0.00000000000+000	
CH4	1.73027652758-003	4.20181600000+001	1.91166200000-002	-3.16433000000-006	2.47071400000-010	0.00000000000+000	
SOL C	0.00000000000+000	1.20696121615+003	-9.36800000000+003	4.76000000000+002	9.34999500000-011	0.00000000000+000	
		2.46391100000+001	8.12137200000-003	-1.89074000000-006			
		7.94631617168+002	5.18190000000+004	7.00000000000+001			
		4.84149800000+001	1.26938600000-002	-2.49460000000-006			
		1.20924970573+003	2.14770000000+004	3.86000000000+002			
		4.39234000000+001	1.22250100000-002	-2.37900300000-006			
		1.13916134896+003	0.00000000000+000	3.80000000000+002			
		4.24179200000+001	1.15684700000-002	-2.22685900000-006			
		1.18351734427+003	3.58000000000+003	4.13000000000+002			
		3.87568600000+001	2.36401300000-002	-3.70799700000-006			
		1.04242791146+003	-1.60000000000+004	5.28000000000+002			
		-2.46151900000-001	7.17989500000-003	-1.29755000000-006			
		-2.58204389323+002	0.00000000000+000	0.00000000000+000			

A STRETCH BKW CALCULATION FOR THE EXPLOSIVE
PETN PENTA ERYTHRITOL TETRANITRATE

THE NUMBER OF ELEMENTS IS 4

THE NUMBER OF GAS SPECIES IS 11

THE NUMBER OF SOLID SPECIES IS 1

THE KW EQUATION OF STATE PARAMETERS ARE

ALPHA= 5.0000000000-001 BETA= 1.6000000000-001 THETA= 4.0000000000+002 KAPPA= 1.09097784436+001

THE COMPOSITION OF THE EXPLOSIVE IS

5.0000000000+000 MOLES OF C
8.0000000000+000 MOLES OF H
4.0000000000+000 MOLES OF N
1.2000000000+001 MOLES OF O

THE DENSITY OF THE EXPLOSIVE IS 1.0000000000+000 GRAMS/CC

THE MOLECULAR WEIGHT IS 3.1614600000+002 GRAMS

THE HEAT OF FORMATION AT 0 DEG K IS -9.5500000000+004 CALORIES PER FORMULA WEIGHT

THE SOLID (COWAN) EQUATION OF STATE PARAMETERS VO, A0, B0, C0, D0, E0, A1, A2, C1, C2, C3, ATOMIC WT

SOL C 4.4444444444-001 8.30935837268-001 -1.39381809219+000 6.72569716021-001 -1.13537262508-001 6.49155882007-003
-2.26705345948-001 1.20516569525-001 8.31600000000-002 -1.75590000000-001 1.55310000000-001 1.20100000000+001

THE INPUT DETONATION PRODUCT ELEMENTAL COMPOSITION MATRIX

0.0+00	2.0+00	0.0+00	1.0+00	0.0+00	2.0+00	0.0+00	0.0+00	0.0+00	0.0+00	0.0+00	2.0+00
1.0+00	0.0+00	0.0+00	2.0+00	1.0+00	0.0+00	0.0+00	1.0+00	0.0+00	3.0+00	1.0+00	0.0+00
0.0+00	1.0+00	0.0+00	0.0+00	0.0+00	0.0+00	1.0+00	1.0+00	0.0+00	0.0+00	2.0+00	0.0+00
0.0+00	1.0+00	0.0+00	1.0+00	1.0+00	4.0+00	0.0+00	0.0+00	1.0+00	0.0+00	0.0+00	0.0+00

A STRETCH BRW CALCULATION FOR THE EXPLOSIVE
 PETN PENTA ERYTHRITOL TETRANITRATE

THE COMPUTED CJ PRESSURE IS 1.01591157942-001 MEGABARS

THE COMPUTED DETONATION VELOCITY IS 5.94735981179-001 CM/MICROSECOND

THE COMPUTED CJ TEMPERATURE IS 3.97060894334+003 DEGREES KELVIN

THE COMPUTED CJ VOLUME IS 7.12787585605-001 CC/GRAM OF EXPLOSIVE

THE COMPUTED GAMMA IS 2.48170937781+000

THE VOLUME OF THE GAS IS 2.04737519522+001 CC/MOLE OF GAS AND THERE ARE 1.10065289726+001 MOLES OF GAS

SOLID VOLUME IN CC/GM
 SOL C 3.78470216957-001

THE C-J COMPOSITION OF THE DETONATION PRODUCTS AND THE INPUT COEFFICIENTS TO THE THERMODYNAMIC FITS FOR EACH SPECIE

SPECIE	NO OF MOLES	COEFFICIENTS A,B,C,D,E, THE INTEGRATION CONSTANT, HEAT OF FORMATION IN CALORIES/MOLE, COVOLUME					
H2O	3.94141684669+000	4.2588420000+001	1.4808050000-002	-2.6391810000-008	1.9204530000-010	0.0000000000+000	
H2	4.95083707941-002	1.34282835196+003	-5.7107000000+004	2.5000000000+002	-2.2012220000-008	1.6777610000-010	0.0000000000+000
O2	1.64200295002-003	1.17589613365+003	0.0000000000+000	1.8000000000+002	-2.5002170000-008	1.9015700000-010	0.0000000000+000
CO2	3.03853771579+000	1.03537647396+003	0.0000000000+000	3.5000000000+002	-3.7212960000-008	2.7703000000-010	0.0000000000+000
CO	1.96126837992+000	4.7481120000+001	1.9544630000-002	6.0000000000+002	-2.4164030000-008	1.8281810000-010	0.0000000000+000
NH3	3.9000785009-003	1.12158830990+003	-2.7201000000+004	3.9000000000+002	-3.1643300000-008	2.1978010000-010	0.0000000000+000
H	1.39423615625-003	1.20696121615+003	-9.3680000000+003	4.7600000000+002	-1.6907400000-008	1.3168230000-010	0.0000000000+000
NO	1.26756477207-002	2.6391100000+001	8.1213720000-003	7.6000000000+001	-2.4946000000-008	1.8932130000-010	0.0000000000+000
N2	1.99171217221+000	7.94631617188+002	5.1619000000+004	3.8600000000+002	-2.3790030000-008	1.7943220000-010	0.0000000000+000
OH	4.27968818712-003	1.20924970973+003	2.1477000000+004	3.8000000000+002	-2.2265900000-008	1.6891550000-010	0.0000000000+000
CH4	1.93904285861-004	1.13916134898+003	0.0000000000+000	4.1300000000+002	-3.7079570000-008	2.4707140000-010	0.0000000000+000
SOL C	0.0000000000+000	1.18351754427+003	3.5800000000+003	5.2800000000+002	-1.6000000000+004	7.1798550000-003	0.0000000000+000
		3.8756860000+001	2.3640130000-002	-1.2975500000-006	9.3499950000-011	0.0000000000+000	
		1.04242791146+003	-1.6000000000+004	0.0000000000+000			
		-2.4615190000-001	7.1798550000-003	-1.2975500000-006			
		-2.58204389323+002	0.0000000000+000	0.0000000000+000			

A STRETCH BKM CALCULATION FOR THE EXPLOSIVE
TETRYL TRINITROPHENYL METHYL NITRANINE

THE NUMBER OF ELEMENTS IS 4

THE NUMBER OF GAS SPECIES IS 11

THE NUMBER OF SOLID SPECIES IS 1

THE KM EQUATION OF STATE PARAMETERS ARE

ALPHA= 5.0000000000-001 BETA= 1.6000000000-001 THETA= 4.0000000000+002 KAPPA= 1.09097784436+001

THE COMPOSITION OF THE EXPLOSIVE IS

7.0000000000+000 MOLES OF C
5.0000000000+000 MOLES OF H
5.0000000000+000 MOLES OF N
8.0000000000+000 MOLES OF O

THE DENSITY OF THE EXPLOSIVE IS 1.7000000000+000 GRAMS/CC

THE MOLECULAR WEIGHT IS 2.8715000000+002 GRAMS

THE HEAT OF FORMATION AT 0 DEG K IS 8.0000000000+003 CALORIES PER FORMULA WEIGHT

THE SOLID (COHAN) EQUATION OF STATE PARAMETERS VO, AS, BS, CS, DS, ES, A1, A2, C1, C2, C3, ATOMIC WT

SOL C 4.4444444444-001 8.30935837268-001 -1.39381809219+000 6.72569716021-001 -1.13537262508-001 6.49155842007-003
-2.26705345948-001 1.20516589925-001 8.31600000000-002 -1.75990000000-001 1.55310000000-001 1.20100000000+001

THE INPUT DETONATION PRODUCT ELEMENTAL COMPOSITION MATRIX

0.0+00	2.0+00	0.0+00	1.0+00	0.0+00	2.0+00	0.0+00	0.0+00	0.0+00	0.0+00	0.0+00	2.0+00
1.0+00	0.0+00	0.0+00	2.0+00	1.0+00	0.0+00	0.0+00	1.0+00	0.0+00	3.0+00	1.0+00	0.0+00
0.0+00	1.0+00	0.0+00	0.0+00	0.0+00	0.0+00	1.0+00	1.0+00	0.0+00	0.0+00	2.0+00	0.0+00
0.0+00	1.0+00	0.0+00	1.0+00	1.0+00	4.0+00	0.0+00	0.0+00	1.0+00	0.0+00	0.0+00	0.0+00

A STRETCH BRW CALCULATION FOR THE EXPLOSIVE
TETRYL TRINITROPHENYL METHYL NITRAMINE

THE COMPUTED CJ PRESSURE IS 2.51527031631-001 MEGABARS

THE COMPUTED DETONATION VELOCITY IS 7.62908569634-001 CM/MICROSECOND

THE COMPUTED CJ TEMPERATURE IS 2.91721972872+003 DEGREES KELVIN

THE COMPUTED CJ VOLUME IS 4.38701239421-001 CC/GRAM OF EXPLOSIVE

THE COMPUTED GAMMA IS 2.93377252194+000

THE VOLUME OF THE GAS IS 1.40621523203+001 CC/MOLE OF GAS AND THERE ARE 7.83645296261+000 MOLES OF GAS

SOLID VOLUME IN CC/GM
SOL C 3.15508338847-001

THE C-J COMPOSITION OF THE DETONATION PRODUCTS AND THE INPUT COEFFICIENTS TO THE THERMODYNAMIC FITS FOR EACH SPECIE

SPECIE	NO OF MOLES	COEFFICIENTS A,B,C,D,E, THE INTEGRATION CONSTANT, HEAT OF FORMATION IN CALORIES/MOLE, COVOLUME
H2O	2.49913889976+000	4.25884200000+001 1.48080500000-002 -2.63918100000-006 1.92045300000-010 0.00000000000+000
H2	2.49925606704-004	1.34282835156+003 -5.71070000000+004 2.50000000000+002 1.67776100000-010 0.00000000000+000
O2	8.72828032251-006	2.97034700000+001 1.14382900000-002 -2.20122200000-006 1.90157000000-010 0.00000000000+000
CO2	2.66387130394+000	1.17589615365+003 0.00000000000+000 1.80000000000+002 2.77030000000-010 0.00000000000+000
CO	1.72841699917-001	4.70309000000+001 1.28714700000-002 -2.50021700000-006 1.82818100000-010 0.00000000000+000
NH3	3.74803326508-004	1.03537647396+003 0.00000000000+000 3.50000000000+002 2.19780100000-010 0.00000000000+000
H	7.62512632135-007	4.74811200000+001 1.95446300000-002 -3.72129600000-006 1.31682300000-010 0.00000000000+000
NO	2.58220705930-004	7.46280988750+002 -9.39680000000+004 6.00000000000+002 1.89321300000-010 0.00000000000+000
N2	2.49968348798+000	4.53308200000+001 1.23816100000-002 -2.41640300000-006 1.79832200000-010 0.00000000000+000
OH	1.11517022645-006	1.12158830990+003 -2.72010000000+004 3.90000000000+002 1.68915500000-010 0.00000000000+000
CH4	2.40154008999-005	4.20181600000+001 1.91166200000-002 -3.16433000000-006 2.47071400000-010 0.00000000000+000
SOL C	4.16326298074+000	1.20896121615+003 5.16190000000+004 7.60000000000+001 9.34999900000-011 0.00000000000+000
		7.94631617188+002 8.12137200000-003 -1.69074000000-006 0.00000000000+000
		4.84149800000+001 1.26938600000-002 -2.49460000000-006 0.00000000000+000
		1.20524970373+003 2.14770000000+004 3.88000000000+002 0.00000000000+000
		4.39234000000+001 1.22250100000-002 -2.37900500000-006 0.00000000000+000
		1.13916134896+003 0.00000000000+000 3.80000000000+002 0.00000000000+000
		4.24179200000+001 1.15884700000-002 -2.22685900000-006 0.00000000000+000
		1.18351734427+003 3.98000000000+003 4.13000000000+002 0.00000000000+000
		3.87368600000+001 2.36401300000-002 -3.70793700000-006 0.00000000000+000
		1.04242791146+003 -1.80000000000+004 5.28000000000+002 0.00000000000+000
		-2.48151900000-001 7.17989300000-003 -1.29733000000-006 0.00000000000+000
		-2.58204389323+002 0.00000000000+000 0.00000000000+000 0.00000000000+000

A STRETCH B/W CALCULATION FOR THE EXPLOSIVE
TETRYL TRINITROPHENYL METHYL NITRANINE

THE NUMBER OF ELEMENTS IS 4

THE NUMBER OF GAS SPECIES IS 11

THE NUMBER OF SOLID SPECIES IS 1

THE KW EQUATION OF STATE PARAMETERS ARE

ALPHA= 5.0000000000-001 BETA= 1.6000000000-001 THETA= 4.0000000000+002 KAPPA= 1.09097784436+001

THE COMPOSITION OF THE EXPLOSIVE IS

7.0000000000+000 MOLES OF C
5.0000000000+000 MOLES OF H
5.0000000000+000 MOLES OF N
8.0000000000+000 MOLES OF O

THE DENSITY OF THE EXPLOSIVE IS 1.6000000000+000 GRAMS/CC

THE MOLECULAR WEIGHT IS 2.8715000000+002 GRAMS

THE HEAT OF FORMATION AT 0 DEG K IS 8.0000000000+003 CALORIES PER FORMULA WEIGHT

THE SOLID (COMAN) EQUATION OF STATE PARAMETERS VO, AS, BS, CS, DS, ES, A1, A2, C1, C2, C3, ATOMIC WT

SOL C 4.4444444444-001 8.30935837268-001 -1.39381809219+000 6.72569716021-001 -1.13537262508-001 6.49155882007-003
-2.26705345948-001 1.20516569525-001 8.31600000000-002 -1.75590000000-001 1.55310000000-001 1.20100000000+001

THE INPUT DETONATION PRODUCT ELEMENTAL COMPOSITION MATRIX

0.0+00	2.0+00	0.0+00	1.0+00	0.0+00	2.0+00	0.0+00	0.0+00	0.0+00	0.0+00	0.0+00	2.0+00
1.0+00	0.0+00	0.0+00	2.0+00	1.0+00	0.0+00	0.0+00	1.0+00	0.0+00	3.0+00	1.0+00	0.0+00
0.0+00	1.0+00	0.0+00	0.0+00	0.0+00	0.0+00	1.0+00	1.0+00	0.0+00	0.0+00	2.0+00	0.0+00
0.0+00	1.0+00	0.0+00	1.0+00	1.0+00	4.0+00	0.0+00	0.0+00	1.0+00	0.0+00	0.0+00	0.0+00

A STRETCH BRW CALCULATION FOR THE EXPLOSIVE
TETRYL TRINITROPHENYL METHYL NITRAMINE

THE COMPUTED CJ PRESSURE IS 2.18859420150-001 MEGABARS

THE COMPUTED DETONATION VELOCITY IS 7.28919281561-001 CM/MICROSECOND

THE COMPUTED CJ TEMPERATURE IS 3.05459943579+003 DEGREES KELVIN

THE COMPUTED CJ VOLUME IS 4.64096897672-001 CC/GRAM OF EXPLOSIVE

THE COMPUTED GAMMA IS 2.88430760653+000

THE VOLUME OF THE GAS IS 1.48071456924+001 CC/MOLE OF GAS AND THERE ARE 7.91683538757+000 MOLES OF GAS

SOLID VOLUME IN CC/GM
SOL C 3.27148901756-001

THE C-J COMPOSITION OF THE DETONATION PRODUCTS AND THE INPUT COEFFICIENTS TO THE THERMODYNAMIC FITS FOR EACH SPECIE

SPECIE	NO OF MOLES	COEFFICIENTS A,B,C,D,E, THE INTEGRATION CONSTANT, HEAT OF FORMATION IN CALORIES/MOLE, COVOLUME					
H2O	2.49763801924+000	4.2588420000+001	1.4808050000-002	-2.6391810000-006	1.9204530000-010	0.0000000000+000	
H2	8.6855051640-004	1.34282835156+003	-5.7107000000+004	2.5000000000+002			
O2	1.22754480094-005	2.9703470000+001	1.1438290000-002	-2.2012220000-006	1.6777610000-010	0.0000000000+000	
CO2	2.58435381128+000	1.17589615365+003	0.0000000000+000	1.8000000000+002			
CO	3.33229461481-001	4.7030900000+001	1.2871470000-002	-2.5002170000-006	1.9015700000-010	0.0000000000+000	
NH3	8.69325328051-004	1.03537647396+003	0.0000000000+000	3.5000000000+002			
H	3.37511213041-006	4.7481120000+001	1.9544630000-002	-3.7212960000-006	2.7703000000-010	0.0000000000+000	
NO	3.95628623464-004	7.46280968750+002	-9.3968000000+004	6.0000000000+002			
N2	2.49936752302+000	4.5330820000+001	1.2381610000-002	-2.4164030000-006	1.8281810000-010	0.0000000000+000	
OH	4.71718629445-006	1.12158830990+003	-2.7201000000+004	3.9000000000+002			
CH4	9.26957810608-005	4.2018160000+001	1.9116620000-002	-3.1643300000-006	2.1978010000-010	0.0000000000+000	
SOL C	4.08232403145+000	1.20696121615+003	-9.3680000000+003	4.7600000000+002			
		7.94631617188+002	8.1213720000-003	-1.6907400000-006	1.3168230000-010	0.0000000000+000	
		4.8414980000+001	1.2693860000-002	-2.4946000000-006	1.8932130000-010	0.0000000000+000	
		1.20924970573+003	2.1477000000+004	3.8600000000+002			
		4.3923400000+001	1.2225010000-002	-2.3790050000-006	1.7983220000-010	0.0000000000+000	
		1.13916134896+003	0.0000000000+000	3.8000000000+002			
		4.2417920000+001	1.1568470000-002	-2.2266390000-006	1.6891550000-010	0.0000000000+000	
		1.18351754427+003	3.5600000000+003	4.1300000000+002			
		3.8756860000+001	2.3640130000-002	-3.7079570000-006	2.4707140000-010	0.0000000000+000	
		1.04242791146+003	-1.6000000000+004	5.2800000000+002			
		-2.4615190000-001	7.1798550000-003	-1.2975500000-006	9.3499950000-011	0.0000000000+000	
		-2.58204389323+002	0.0000000000+000	0.0000000000+000			

A STRETCH BAW CALCULATION FOR THE EXPLOSIVE
TETRYL TRINITROPHENYL METHYL NITRAMINE

THE NUMBER OF ELEMENTS IS 4

THE NUMBER OF GAS SPECIES IS 11

THE NUMBER OF SOLID SPECIES IS 1

THE RW EQUATION OF STATE PARAMETERS ARE

ALPHA= 5.0000000000-001 BETA= 1.6000000000-001 THETA= 4.0000000000+002 KAPPA= 1.09097784436+001

THE COMPOSITION OF THE EXPLOSIVE IS

7.0000000000+000 MOLES OF C
5.0000000000+000 MOLES OF H
5.0000000000+000 MOLES OF N
8.0000000000+000 MOLES OF O

THE DENSITY OF THE EXPLOSIVE IS 1.4000000000+000 GRAMS/CC

THE MOLECULAR WEIGHT IS 2.8715000000+002 GRAMS

THE HEAT OF FORMATION AT 0 DEG K IS 8.0000000000+003 CALORIES PER FORMULA WEIGHT

THE SOLID (COWAN) EQUATION OF STATE PARAMETERS VO, AS, BS, CS, DS, ES, A1, A2, C1, C2, C3, ATOMIC WT

SOL C 4.4444444444-001 8.30935837268-001 -1.39381809219+000 6.72569716021-001 -1.13537262508-001 6.49155882007-003
-2.26705345948-001 1.20516569525-001 8.31600000000-002 -1.75590000000-001 1.55310000000-001 1.20100000000+001

THE INPUT DETONATION PRODUCT ELEMENTAL COMPOSITION MATRIX

0.0+00	2.0+00	0.0+00	1.0+00	0.0+00	2.0+00	0.0+00	0.0+00	0.0+00	0.0+00	0.0+00	2.0+00
1.0+00	0.0+00	0.0+00	2.0+00	1.0+00	0.0+00	0.0+00	1.0+00	0.0+00	3.0+00	1.0+00	0.0+00
0.0+00	1.0+00	0.0+00	0.0+00	0.0+00	0.0+00	1.0+00	1.0+00	0.0+00	0.0+00	2.0+00	0.0+00
0.0+00	1.0+00	0.0+00	1.0+00	1.0+00	4.0+00	0.0+00	0.0+00	1.0+00	0.0+00	0.0+00	0.0+00

A STRETCH BKM CALCULATION FOR THE EXPLOSIVE
TETRYL TRINITROPHENYL METHYL NITRAMINE

THE COMPUTED CJ PRESSURE IS 1.64560897250-001 MEGABARS

THE COMPUTED DETONATION VELOCITY IS 6.65573479221-001 CM/MICROSECOND

THE COMPUTED CJ TEMPERATURE IS 3.25666994138+003 DEGREES KELVIN

THE COMPUTED CJ VOLUME IS 5.24756606070-001 CC/GRAM OF EXPLOSIVE

THE COMPUTED GAMMA IS 2.76871595321+000

THE VOLUME OF THE GAS IS 1.64398999036+001 CC/MOLE OF GAS AND THERE ARE 8.20067240198+000 MOLES OF GAS

SOLID VOLUME IN CC/GM
SOL C 3.48073218518-001

THE C-J COMPOSITION OF THE DETONATION PRODUCTS AND THE INPUT COEFFICIENTS TO THE THERMODYNAMIC FITS FOR EACH SPECIE

SPECIE	NO OF MOLES	COEFFICIENTS A,B,C,D,E, THE INTEGRATION CONSTANT, HEAT OF FORMATION IN CALORIES/MOLE, CONVOLUME				
H2O	2.48798747993+000	4.2588420000+001	1.4808050000-002	-2.6391810000-006	1.9204530000-010	0.0000000000+000
H2	6.04066065593-003	1.34282835156+003	-5.7107000000+004	2.5000000000+002	1.6777610000-010	0.0000000000+000
O2	1.70331363324-005	2.9703470000+001	1.1438290000-002	-2.2012220000-006	1.9015700000-010	0.0000000000+000
CO2	2.30726903797+000	1.17589615365+003	0.0000000000+000	1.8000000000+002	2.7703000000-010	0.0000000000+000
CO	8.96739414024-001	4.7030900000+001	1.2871470000-002	-2.5002170000-006	1.8281810000-010	0.0000000000+000
NH3	3.00628629322-003	1.03537647396+003	0.0000000000+000	3.5000000000+002	2.1978010000-010	0.0000000000+000
H	3.24848783690-005	4.7481120000+001	1.9544630000-002	-3.7212960000-006	1.3168230000-010	0.0000000000+000
NO	6.62673589880-004	7.46280968750+002	-9.3968000000+004	6.0000000000+002	1.8932130000-010	0.0000000000+000
N2	2.49816552006+000	4.5330820000+001	1.2381610000-002	-2.4164030000-006	1.7983220000-010	0.0000000000+000
OH	3.82902325803-005	1.12158830990+003	-2.7201000000+004	3.9000000000+002	1.6891550000-010	0.0000000000+000
CH4	7.13521208682-004	4.2018160000+001	1.9116620000-002	-3.1643300000-006	2.4707140000-010	0.0000000000+000
SOL C	3.79527802679+000	1.20896121615+003	-9.3680000000+003	4.7600000000+002	9.3499990000-011	0.0000000000+000
		7.94631617188+002	5.1619000000+004	7.6000000000+001		
		4.8414980000+001	1.2693860000-002	-2.4946000000-006		
		1.20924970573+003	2.1477000000+004	3.8600000000+002		
		4.3923400000+001	1.2225010000-002	-2.3790090000-006		
		1.13916134896+003	0.0000000000+000	3.8000000000+002		
		4.2417920000+001	1.1368470000-002	-2.2268590000-006		
		1.18951734427+003	3.9600000000+003	4.1300000000+002		
		3.8756860000+001	2.3640130000-002	-3.7079570000-006		
		1.04242791146+003	-1.6000000000+004	5.2800000000+002		
		-2.4615190000-001	7.1798550000-003	-1.2973500000-006		
		-2.58204389323+002	0.0000000000+000	0.0000000000+000		

A STRETCH BAW CALCULATION FOR THE EXPLOSIVE
TETRYL TRINITROPHENYL METHYL NITRAMINE

THE NUMBER OF ELEMENTS IS 4

THE NUMBER OF GAS SPECIES IS 11

THE NUMBER OF SOLID SPECIES IS 1

THE KW EQUATION OF STATE PARAMETERS ARE

ALPHA= 5.0000000000-001 BETA= 1.6000000000-001 THETA= 4.0000000000+002 KAPPA= 1.09097784436+001

THE COMPOSITION OF THE EXPLOSIVE IS

7.0000000000+000 MOLES OF C
5.0000000000+000 MOLES OF H
5.0000000000+000 MOLES OF N
8.0000000000+000 MOLES OF O

THE DENSITY OF THE EXPLOSIVE IS 1.2000000000+000 GRAMS/CC

THE MOLECULAR WEIGHT IS 2.8715000000+002 GRAMS

THE HEAT OF FORMATION AT 0 DEG K IS 8.0000000000+003 CALORIES PER FORMULA WEIGHT

THE SOLID (COMAN)EQUATION OF STATE PARAMETERS VO, AS, BS, CS, DS, ES, A1, A2, C1, C2, C3, ATOMIC WT

SOL C 4.4444444444-001 8.30935837268-001 -1.39381809219+000 6.72589716021-001 -1.15537282308-001 6.49155882007-003
-2.26705345948-001 1.20516569325-001 8.31600000000-002 -1.75590000000-001 1.55310000000-001 1.20100000000+001

THE INPUT DETONATION PRODUCT ELEMENTAL COMPOSITION MATRIX

0.0+00	2.0+00	0.0+00	1.0+00	0.0+00	2.0+00	0.0+00	0.0+00	0.0+00	0.0+00	0.0+00	2.0+00
1.0+00	0.0+00	0.0+00	2.0+00	1.0+00	0.0+00	0.0+00	1.0+00	0.0+00	1.0+00	1.0+00	0.0+00
0.0+00	1.0+00	0.0+00	0.0+00	0.0+00	0.0+00	1.0+00	1.0+00	0.0+00	0.0+00	2.0+00	0.0+00
0.0+00	1.0+00	0.0+00	1.0+00	1.0+00	4.0+00	0.0+00	0.0+00	1.0+00	0.0+00	0.0+00	0.0+00

A STRETCH BWM CALCULATION FOR THE EXPLOSIVE
 TETRYL TRINITROPHENYL METHYL NITRANINE

THE COMPUTED CJ PRESSURE IS 1.21400677021-001 MEGABARS

THE COMPUTED DETONATION VELOCITY IS 6.07489416423-001 CM/MICROSECOND

THE COMPUTED CJ TEMPERATURE IS 3.36472258028+003 DEGREES KELVIN

THE COMPUTED CJ VOLUME IS 6.04890463727-001 CC/GRAM OF EXPLOSIVE

THE COMPUTED GAMMA IS 2.64785502146+000

THE VOLUME OF THE GAS IS 1.83735997734+001 CC/MOLE OF GAS AND THERE ARE 8.65543374467+000 MOLES OF GAS

SOLID VOLUME IN CC/GM
 SOL C 3.66523210001-001

THE C-J COMPOSITION OF THE DETONATION PRODUCTS AND THE INPUT COEFFICIENTS TO THE THERMODYNAMIC FITS FOR EACH SPECIE

SPECIE	NO OF MOLES	COEFFICIENTS A,B,C,D,E, THE INTEGRATION CONSTANT, HEAT OF FORMATION IN CALORIES/MOLE, COVOLUME				
H2O	2.45507727647+000	4.2588420000+001	1.4808050000-002	-2.6391810000-006	1.8204530000-010	0.0000000000+000
H2	2.69171380425-002	1.3428283156+003	-5.7107000000+004	2.5000000000+002		
O2	1.92263346363-005	2.9703470000+001	1.1438290000-002	-2.2012220000-006	1.6777610000-010	0.0000000000+000
CO2	1.87831879082+000	1.17589613365+003	0.0000000000+000	1.8000000000+002	1.9015700000-010	0.0000000000+000
CO	1.78733774258+000	4.7030900000+001	1.2871470000-002	-2.5002170000-006		
NH3	7.42389202077-003	1.03537647398+003	0.0000000000+000	3.5000000000+002	2.7703000000-010	0.0000000000+000
H	1.66039915360-004	4.7481120000+001	1.9544630000-002	-3.7212960000-006		
NO	7.65938902370-004	7.46280968750+002	-9.3968000000+004	6.0000000000+002	1.8281810000-010	0.0000000000+000
N2	2.49590508454+000	4.5350820000+001	1.2381610000-002	-2.4164030000-006		
OH	1.51007737818-004	1.12158830990+003	-2.7201000000+004	3.9000000000+002	1.6891550000-010	0.0000000000+000
CH4	3.35561331402-003	4.2018160000+001	1.9116620000-002	-3.1843300000-006		
SOL C	3.33098785329+000	1.20696121615+003	-9.3680000000+003	4.7600000000+002	9.3499950000-011	0.0000000000+000
		2.6391100000+001	8.1213720000-003	-1.6907400000-006		
		7.94631817188+002	5.1619000000+004	7.6000000000+001		
		4.8414980000+001	1.2893860000-002	-2.4948000000-006		
		1.20924970373+003	2.1477000000+004	3.8600000000+002		
		4.3923400000+001	1.2225010000-002	-2.3790050000-006		
		1.13916134896+003	0.0000000000+000	3.8000000000+002		
		4.2417920000+001	1.1568470000-002	-2.2266390000-006		
		1.18351754427+003	3.5608000000+003	4.1300000000+002		
		3.8756860000+001	2.3640130000-002	-3.7079570000-006		
		1.04242791146+003	-1.6000000000+004	5.2800000000+002		
		-2.4615190000-001	7.1798550000-003	-1.2975500000-006		
		-2.58204389323+002	0.0000000000+000	0.0000000000+000		

A STRETCH BKW CALCULATION FOR THE EXPLOSIVE
TETRYL TRINITROPHENYL METHYL NITRAMINE

THE NUMBER OF ELEMENTS IS 4

THE NUMBER OF GAS SPECIES IS 11

THE NUMBER OF SOLID SPECIES IS 1

THE KW EQUATION OF STATE PARAMETERS ARE

ALPHA= 5.0000000000-001 BETA= 1.6000000000-001 THETA= 4.0000000000+002 KAPPA= 1.09097784436+001

THE COMPOSITION OF THE EXPLOSIVE IS

7.0000000000+000 MOLES OF C
5.0000000000+000 MOLES OF H
5.0000000000+000 MOLES OF N
8.0000000000+000 MOLES OF O

THE DENSITY OF THE EXPLOSIVE IS 1.0000000000+000 GRAMS/CC

THE MOLECULAR WEIGHT IS 2.8715000000+002 GRAMS

THE HEAT OF FORMATION AT 0 DEG K IS 8.0000000000+003 CALORIES PER FORMULA WEIGHT

THE SOLID (CONAN) EQUATION OF STATE PARAMETERS VO, AS, BS, CS, DS, ES, A1, A2, C1, C2, CS, ATOMIC WT

SOL C 4.4444444444-001 8.30935837268-001 -1.39381809219+000 6.72569716021-001 -1.13537262508-001 6.49155882007-003
-2.26705345948-001 1.20516569525-001 8.31600000000-002 -1.75590000000-001 1.55310000000-001 1.20100000000+001

THE INPUT DETONATION PRODUCT ELEMENTAL COMPOSITION MATRIX

0.0+00	2.0+00	0.0+00	1.0+00	0.0+00	2.0+00	0.0+00	0.0+00	0.0+00	0.0+00	0.0+00	2.0+00
1.0+00	0.0+00	0.0+00	2.0+00	1.0+00	0.0+00	0.0+00	1.0+00	0.0+00	3.0+00	1.0+00	0.0+00
0.0+00	1.0+00	0.0+00	0.0+00	0.0+00	0.0+00	1.0+00	1.0+00	0.0+00	0.0+00	2.0+00	0.0+00
0.0+00	1.0+00	0.0+00	1.0+00	1.0+00	4.0+00	0.0+00	0.0+00	1.0+00	0.0+00	0.0+00	0.0+00

A STRETCH BWM CALCULATION FOR THE EXPLOSIVE
TETRYL TRINITROPHENYL METHYL NITRANINE

THE COMPUTED CJ PRESSURE IS 8.70078753941-002 MEGABARS

THE COMPUTED DETONATION VELOCITY IS 5.52961456743-001 CM/MICROSECOND

THE COMPUTED CJ TEMPERATURE IS 3.40145669786+003 DEGREES KELVIN

THE COMPUTED CJ VOLUME IS 7.15446552732-001 CC/GRAM OF EXPLOSIVE

THE COMPUTED GAMMA IS 2.51423789235+000

THE VOLUME OF THE GAS IS 2.0855324949+001 CC/MOLE OF GAS AND THERE ARE 9.25426301752+000 MOLES OF GAS

SOLID VOLUME IN CC/GM
SOL C 3.82811793340-001

THE C-J COMPOSITION OF THE DETONATION PRODUCTS AND THE INPUT COEFFICIENTS TO THE THERMODYNAMIC FITS FOR EACH SPECIE

SPECIE	NO OF MOLES	COEFFICIENTS A,B,C,D,E, THE INTEGRATION CONSTANT, HEAT OF FORMATION IN CALORIES/MOLE, COVOLUME				
M2O	2.35545649414+000	4.2588420000+001	1.4808050000-002	-2.6391810000-006	1.9204530000-010	0.0000000000+000
M2	9.49704074606-002	1.34282835156+003	-5.7107000000+004	2.5000000000+002	-2.2012220000-006	0.0000000000+000
O2	9.37919512033-006	1.17589615365+003	0.0000000000+000	1.8000000000+002	-2.5002170000-006	0.0000000000+000
CO2	1.36156946223+000	4.7030900000+001	1.2871470000-002	3.5000000000+002	-3.7212960000-006	0.0000000000+000
CO	2.92033838958+000	4.7481120000+001	1.9544630000-002	6.0000000000+002	-2.4164030000-006	0.0000000000+000
NH3	1.56976481354-002	7.46280968750+002	-9.3968000000+004	3.9000000000+002	-3.1643300000-006	0.0000000000+000
H	5.84843458170-004	4.2018180000+001	1.9116620000-002	4.7600000000+002	-1.6907400000-006	0.0000000000+000
NO	6.69839671315-004	2.6391100000+001	8.1213720000-003	7.6000000000+001	-2.4946000000-006	0.0000000000+000
N2	2.49181625610+000	4.8414980000+001	1.2693860000-002	3.8000000000+002	-2.3790050000-006	0.0000000000+000
OH	3.77593758646-004	1.20924970573+003	2.1477000000+004	3.8000000000+002	-2.2265590000-006	0.0000000000+000
CH4	1.27727037945-002	4.3923400000+001	1.2225010000-002	2.2865590000+002	-4.1300000000+002	0.0000000000+000
SOL C	2.70531944440+000	1.13916134896+003	0.0000000000+000	3.8000000000+002	-2.4707140000-010	0.0000000000+000
		4.2417920000+001	1.1568470000-002	2.2865590000+002	-1.2975500000-006	0.0000000000+000
		1.18351754427+003	3.5600000000+003	4.1300000000+002	-1.6000000000+004	0.0000000000+000
		3.8758860000+001	2.3640130000-002	5.2800000000+002	7.1798350000-004	0.0000000000+000
		1.04242791146+003	-1.6000000000+004	5.2800000000+002	-1.2975500000-006	0.0000000000+000
		-2.4615190000-001	7.1798350000-004	-1.2975500000-006	9.3499950000-011	0.0000000000+000
		-2.58204389323+002	0.0000000000+000	0.0000000000+000		

A STRETCH BKW CALCULATION FOR THE EXPLOSIVE
PICRIC ACID

THE NUMBER OF ELEMENTS IS 4

THE NUMBER OF GAS SPECIES IS 11

THE NUMBER OF SOLID SPECIES IS 1

THE RN EQUATION OF STATE PARAMETERS ARE

ALPHA= 5.000000000-001 BETA= 1.600000000-001 THETA= 4.000000000+002 KAPPA= 1.09097784436+001

THE COMPOSITION OF THE EXPLOSIVE IS

6.000000000+000 MOLES OF C
3.000000000+000 MOLES OF H
3.000000000+000 MOLES OF N
7.000000000+000 MOLES OF O

THE DENSITY OF THE EXPLOSIVE IS 1.760000000+000 GRAMS/CC

THE MOLECULAR WEIGHT IS 2.291080000+002 GRAMS

THE HEAT OF FORMATION AT 0 DEG K IS -3.850000000+003 CALORIES PER FORMULA WEIGHT

THE SOLID (COMAN)EQUATION OF STATE PARAMETERS VO, AS, BS, CS, DS, ES, A1, A2, C1, C2, C3, ATOMIC WT

SOL C 4.444444444-001 8.30935837268-001 -1.39381809219+000 6.72569716021-001 -1.13537262508-001 6.49155882007-003
-2.26705345948-001 1.20516569525-001 8.31600000000-002 -1.75590000000-001 1.55310000000-001 1.20100000000+001

THE INPUT DETONATION PRODUCT ELEMENTAL COMPOSITION MATRIX

0.0+00	2.0+00	0.0+00	1.0+00	0.0+00	2.0+00	0.0+00	0.0+00	0.0+00	0.0+00	0.0+00	2.0+00
1.0+00	0.0+00	0.0+00	2.0+00	1.0+00	0.0+00	0.0+00	1.0+00	0.0+00	3.0+00	1.0+00	0.0+00
0.0+00	1.0+00	0.0+00	0.0+00	0.0+00	0.0+00	1.0+00	1.0+00	0.0+00	0.0+00	2.0+00	0.0+00
0.0+00	1.0+00	0.0+00	1.0+00	1.0+00	4.0+00	0.0+00	0.0+00	1.0+00	0.0+00	0.0+00	0.0+00

A STRETCH BKM CALCULATION FOR THE EXPLOSIVE
PICRIC ACID

THE COMPUTED C-J PRESSURE IS 2.65276266738-001 MEGABARS

THE COMPUTED DETONATION VELOCITY IS 7.68353319523-001 CM/MICROSECOND

THE COMPUTED C-J TEMPERATURE IS 3.10552796940+003 DEGREES KELVIN

THE COMPUTED C-J VOLUME IS 4.23121214504-001 CC/GRAM OF EXPLOSIVE

THE COMPUTED GAMMA IS 2.91684345663+000

THE VOLUME OF THE GAS IS 1.45728651550+001 CC/MOLE OF GAS AND THERE ARE 5.83941308330+000 MOLES OF GAS

SOL ID VOLUME IN CC/GM
SOL C 3.12022936517-001

THE C-J COMPOSITION OF THE DETONATION PRODUCTS AND THE INPUT COEFFICIENTS TO THE THERMODYNAMIC FITS FOR EACH SPECIE

SPECIE	NO OF MOLES	COEFFICIENTS A,B,C,D,E, THE INTEGRATION CONSTANT, HEAT OF FORMATION IN CALORIES/MOLE, COVOLUME					
H2O	1.49934632915+000	4.2588420000+001	1.4808050000-002	-2.6391810000-006	1.9204530000-010	0.0000000000+000	
		1.34282833156+003	-5.7107000000+004	2.5000000000+002			
N2	1.85362306003-004	2.9703470000+001	1.1438290000-002	-2.2012220000-006	1.6777610000-010	0.0000000000+000	
		1.17589615363+003	0.0000000000+000	1.8000000000+002			
O2	1.68923332964-005	4.7030900000+001	1.2871470000-002	-2.5002170000-006	1.9015700000-010	0.0000000000+000	
		1.03537647396+003	0.0000000000+000	3.5000000000+002			
CO2	2.66073905727+000	4.7481120000+001	1.9544630000-002	-3.7212960000-006	2.7703000000-010	0.0000000000+000	
		7.46280968750+002	-9.3968000000+004	6.0000000000+002			
CO	1.78779621787-001	4.5330820000+001	1.2381610000-002	-2.4164030000-006	1.8281810000-010	0.0000000000+000	
		1.12158830990+003	-2.7201000000+004	3.9000000000+002			
NH3	2.82004863478-004	4.2018160000+001	1.9116620000-002	-3.1643300000-006	2.1978010000-010	0.0000000000+000	
		1.20696121615+003	-9.3680000000+003	4.7600000000+002			
H	8.76646141108-007	2.6391100000+001	8.1213720000-003	-1.6907400000-006	1.3168230000-010	0.0000000000+000	
		7.94631617188+002	5.1619000000+004	7.6000000000+001			
NO	3.60409923184-004	4.8414980000+001	1.2893860000-002	-2.4946000000-006	1.8932130000-010	0.0000000000+000	
		1.20924970573+003	2.1477000000+004	3.8600000000+002			
N2	1.49967879261+000	4.3923400000+001	1.2225010000-002	-2.3790900000-006	1.7983220000-010	0.0000000000+000	
		1.13916134896+003	0.0000000000+000	3.8000000000+002			
OH	1.73992866027-006	4.2417920000+001	1.1588470000-002	-2.2265900000-006	1.6891550000-010	0.0000000000+000	
		1.18351754427+003	3.5600000000+003	4.1300000000+002			
CH4	2.19964809985-005	3.8756860000+001	2.3640130000-002	-3.7079370000-006	2.4707140000-010	0.0000000000+000	
		1.04242791146+003	-1.6000000000+004	5.2800000000+002			
SOL C	3.16045932446+000	-2.4615190000-001	7.1798550000-003	-1.2975500000-006	9.3499950000-011	0.0000000000+000	
		-2.58204369323+002	0.0000000000+000	0.0000000000+000			

A STRETCH BW CALCULATION FOR THE EXPLOSIVE
PICRIC ACID

THE NUMBER OF ELEMENTS IS 4

THE NUMBER OF GAS SPECIES IS 11

THE NUMBER OF SOLID SPECIES IS 1

THE KW EQUATION OF STATE PARAMETERS ARE

ALPHA= 5.0000000000-001 BETA= 1.8000000000-001 THETA= 4.0000000000+002 KAPPA= 1.09097784436+001

THE COMPOSITION OF THE EXPLOSIVE IS

6.0000000000+000 MOLES OF C
3.0000000000+000 MOLES OF H
3.0000000000+000 MOLES OF N
7.0000000000+000 MOLES OF O

THE DENSITY OF THE EXPLOSIVE IS 1.6000000000+000 GRAMS/CC

THE MOLECULAR WEIGHT IS 2.2910800000+002 GRAMS

THE HEAT OF FORMATION AT 0 DEG K IS -3.8500000000+003 CALORIES PER FORMULA WEIGHT

THE SOLID (GOWAN) EQUATION OF STATE PARAMETERS VO, AS, BS, CS, DS, ES, A1, A2, C1, C2, C3, ATOMIC WT

SOL C 4.4444444444-001 8.30935837268-001 -1.39381809219+000 6.72569716021-001 -1.13537262508-001 6.49155842007-003
-2.26705345948-001 1.20516569525-001 8.3160000000-002 -1.7559000000-001 1.5531000000-001 1.2010000000+001

THE INPUT DETONATION PRODUCT ELEMENTAL COMPOSITION MATRIX

0.0+00	2.0+00	0.0+00	1.0+00	0.0+00	2.0+00	0.0+00	0.0+00	0.0+00	0.0+00	0.0+00	2.0+00
1.0+00	0.0+00	0.0+00	2.0+00	1.0+00	0.0+00	0.0+00	1.0+00	0.0+00	3.0+00	1.0+00	0.0+00
0.0+00	1.0+00	0.0+00	0.0+00	0.0+00	0.0+00	1.0+00	1.0+00	0.0+00	0.0+00	2.0+00	0.0+00
0.0+00	1.0+00	0.0+00	1.0+00	1.0+00	4.0+00	0.0+00	0.0+00	1.0+00	0.0+00	0.0+00	0.0+00

A STRETCH BKM CALCULATION FOR THE EXPLOSIVE
PICRIC ACID

THE COMPUTED CJ PRESSURE IS 2.14669180237-001 MEGABARS

THE COMPUTED DETONATION VELOCITY IS 7.17434330611-001 CM/MICROSECOND

THE COMPUTED CJ TEMPERATURE IS 3.31544299835+003 DEGREES KELVIN

THE COMPUTED CJ VOLUME IS 4.62084126944-001 CC/GRAM OF EXPLOSIVE

THE COMPUTED GAMMA IS 2.85631795246+000

THE VOLUME OF THE GAS IS 1.57060167754+001 CC/MOLE OF GAS AND THERE ARE 5.97858224869+000 MOLES OF GAS

SOLID VOLUME IN CC/GM
SOL C 3.29878991527-001

THE C-J COMPOSITION OF THE DETONATION PRODUCTS AND THE INPUT COEFFICIENTS TO THE THERMODYNAMIC FITS FOR EACH SPECIE

SPECIE	NO OF MOLES	COEFFICIENTS A,B,C,D,E, THE INTEGRATION CONSTANT, HEAT OF FORMATION IN CALORIES/MOLE, COVOLUME				
M2O	1.49740145315+000	4.2588420000+001	1.4808050000-002	-2.6391810000-006	1.9204530000-010	0.0000000000+000
		1.34282835196+003	-5.7107000000+004	2.5000000000+002		
H2	1.07228739183-003	2.9703470000+001	1.1438290000-002	-2.2012220000-006	1.6777610000-010	0.0000000000+000
		1.17589613365+003	0.0000000000+000	1.8000000000+002		
O2	2.68174226309-005	4.7030900000+001	1.2871470000-002	-2.5002170000-006	1.9015700000-010	0.0000000000+000
		1.03537647396+003	0.0000000000+000	3.5000000000+002		
CO2	2.52269979052+000	4.7481120000+001	1.9544630000-002	-3.7212960000-006	2.7703000000-010	0.0000000000+000
		7.46280968750+002	-9.3968000000+004	6.0000000000+002		
CO	4.56493577049-001	4.5330820000+001	1.2381610000-002	-2.4164030000-006	1.8281810000-010	0.0000000000+000
		1.12158830990+003	-2.7201000000+004	3.9000000000+002		
NH3	8.37290486196-004	4.2018160000+001	1.9116620000-002	-3.1643300000-006	2.1978010000-010	0.0000000000+000
		1.20696121615+003	-9.3680000000+004	4.7600000000+002		
H	7.27524440947-006	2.6391100000+001	8.1213720000-003	-1.6907400000-006	1.3168230000-010	0.0000000000+000
		7.94631617188+002	5.1619000000+004	7.6000000000+001		
NO	6.39023310372-004	4.8414980000+001	1.2693860000-002	-2.4946000000-006	1.8932130000-010	0.0000000000+000
		1.20924970973+003	2.1477000000+004	3.8600000000+002		
N2	1.49926184310+000	4.3923400000+001	1.2225010000-002	-2.3790050000-006	1.7983220000-010	0.0000000000+000
		1.13916134896+003	0.0000000000+000	3.8000000000+002		
OH	1.27306160720-005	4.2417920000+001	1.1568470000-002	-2.2265590000-006	1.6891550000-010	0.0000000000+000
		1.18351754427+003	3.5600000000+004	4.1300000000+002		
CH4	1.30160401197-004	3.8756860000+001	2.3640130000-002	-3.7079970000-006	2.4707140000-010	0.0000000000+000
		1.04242791148+003	-1.6000000000+004	5.2800000000+002		
SOL C	3.02067647203+000	-2.4615195000-001	7.1798550000-003	-1.2975300000-006	9.3499990000-011	0.0000000000+000
		-2.58204389323+002	0.0000000000+000	0.0000000000+000		

A STRETCH BKW CALCULATION FOR THE EXPLOSIVE
PICRIC ACID

THE NUMBER OF ELEMENTS IS 4

THE NUMBER OF GAS SPECIES IS 11

THE NUMBER OF SOLID SPECIES IS 1

THE KW EQUATION OF STATE PARAMETERS ARE

ALPHA= 5.0000000000-001 BETA= 1.6000000000-001 THETA= 4.0000000000+002 KAPPA= 1.09097784436+001

THE COMPOSITION OF THE EXPLOSIVE IS

6.0000000000+000 MOLES OF C
3.0000000000+000 MOLES OF H
3.0000000000+000 MOLES OF N
7.0000000000+000 MOLES OF O

THE DENSITY OF THE EXPLOSIVE IS 1.4000000000+000 GRAMS/CC

THE MOLECULAR WEIGHT IS 2.2910800000+002 GRAMS

THE HEAT OF FORMATION AT 0 DEG K IS -3.8500000000+003 CALORIES PER FORMULA WEIGHT

THE SOLID (COMAN) EQUATION OF STATE PARAMETERS VO, AS, BS, CS, DS, ES, A1, A2, C1, C2, C3, ATOMIC WT

SOL C 4.4444444444-001 8.30935837268-001 -1.39381809219+000 6.72569716021-001 -1.15537262508-001 6.49155882007-003
-2.26705345948-001 1.20516569525-001 8.31600000000-002 -1.75590000000-001 1.95310000000-001 1.20100000000+001

THE INPUT DETONATION PRODUCT ELEMENTAL COMPOSITION MATRIX

0.0+00	2.0+00	0.0+00	1.0+00	0.0+00	2.0+00	0.0+00	0.0+00	0.0+00	0.0+00	0.0+00	2.0+00
1.0+00	0.0+00	0.0+00	2.0+00	1.0+00	0.0+00	0.0+00	1.0+00	0.0+00	3.0+00	1.0+00	0.0+00
0.0+00	1.0+00	0.0+00	0.0+00	0.0+00	0.0+00	1.0+00	1.0+00	0.0+00	0.0+00	2.0+00	0.0+00
0.0+00	1.0+00	0.0+00	1.0+00	1.0+00	4.0+00	0.0+00	0.0+00	1.0+00	0.0+00	0.0+00	0.0+00

A STRETCH BKM CALCULATION FOR THE EXPLOSIVE
PICRIC ACID

THE COMPUTED CJ PRESSURE IS 1.63455004385-001 NEGABARS

THE COMPUTED DETONATION VELOCITY IS 6.59359257827-001 CM/MICROSECOND

THE COMPUTED CJ TEMPERATURE IS 3.48191688632+003 DEGREES KELVIN

THE COMPUTED CJ VOLUME IS 5.22465100375-001 CC/GRAM OF EXPLOSIVE

THE COMPUTED GAMMA IS 2.72369439239+000

THE VOLUME OF THE GAS IS 1.72441720236+001 CC/MOLE OF GAS AND THERE ARE 6.27995881055+000 MOLES OF GAS

SOLID VOLUME IN CC/GM
SOL C 3.49590013583-001

THE C-J COMPOSITION OF THE DETONATION PRODUCTS AND THE INPUT COEFFICIENTS TO THE THERMODYNAMIC FITS FOR EACH SPECIE

SPECIE	NO OF MOLES	COEFFICIENTS A,B,C,D,E, THE INTEGRATION CONSTANT, HEAT OF FORMATION IN CALORIES/MOLE, CONVOLUME					
H2O	1.48991992332+000	4.25884200000+001	1.48080500000-002	-2.63918100000-006	1.92045300000-010	0.00000000000+000	
		1.34282835156+003	-5.71070000000+004	2.50000000000+002			
H2	5.53500107177-003	2.97034700000+001	1.14382900000-002	-2.20122200000-006	1.67776100000-010	0.00000000000+000	
		1.17589615365+003	0.00000000000+000	1.80000000000+002			
O2	3.20907815336-005	4.70309000000+001	1.28714700000-002	-2.50021700000-006	1.90157000000-010	0.00000000000+000	
		1.05537647396+003	0.00000000000+000	3.50000000000+002			
CO2	2.22684707727+000	4.74811200000+001	1.95446300000-002	-3.72129600000-006	2.77030000000-010	0.00000000000+000	
		7.46280968750+002	-9.39680000000+004	6.00000000000+002			
CO	1.05534476533+000	4.53308200000+001	1.23816100000-002	-2.41640300000-006	1.82818100000-010	0.00000000000+000	
		1.12158430990+003	-2.72010000000+004	3.90000000000+002			
NH3	2.13979155895-003	4.20181600000+001	1.91166200000-002	-3.16433000000-006	2.19780100000-010	0.00000000000+000	
		1.20696121615+003	-9.36800000000+004	4.76000000000+002			
H	4.90269202766-005	2.63911000000+001	8.12137200000-003	-1.69074000000-006	1.31682300000-010	0.00000000000+000	
		7.94631617188+002	5.16190000000+004	7.60000000000+001			
NO	9.08555056359-004	4.84149800000+001	1.26938600000-002	-2.49460000000-006	1.89321300000-010	0.00000000000+000	
		1.20924970573+003	2.14770000000+004	3.86000000000+002			
N2	1.49847582669+000	4.39234000000+001	1.22250100000-002	-2.37900500000-006	1.79832200000-010	0.00000000000+000	
		1.13916134896+003	0.00000000000+000	3.80000000000+002			
OH	6.84201819739-005	4.24179200000+001	1.13884700000-002	-2.22665900000-006	1.68915500000-010	0.00000000000+000	
		1.18351754427+003	3.56000000000+003	4.13000000000+002			
CH4	6.36332359845-004	3.87568600000+001	2.36401300000-002	-3.70795700000-006	2.47071400000-010	0.00000000000+000	
		1.04242791146+003	-1.80000000000+004	5.28000000000+002			
SOL C	2.71716982503+000	-2.46151900000-001	7.17985500000-003	-1.29755000000-006	9.34999500000-011	0.00000000000+000	
		-2.58204389323+002	0.00000000000+000	0.00000000000+000			

A STRETCH BKW CALCULATION FOR THE EXPLOSIVE
PICRIC ACID

THE NUMBER OF ELEMENTS IS 4

THE NUMBER OF GAS SPECIES IS 11

THE NUMBER OF SOLID SPECIES IS 1

THE KW EQUATION OF STATE PARAMETERS ARE

ALPHA= 5.0000000000-001 BETA= 1.6000000000-001 THETA= 4.0000000000+002 KAPPA= 1.09097784436+001

THE COMPOSITION OF THE EXPLOSIVE IS

6.0000000000+000 MOLES OF C
3.0000000000+000 MOLES OF H
3.0000000000+000 MOLES OF N
7.0000000000+000 MOLES OF O

THE DENSITY OF THE EXPLOSIVE IS 1.2000000000+000 GRAMS/CC

THE MOLECULAR WEIGHT IS 2.2910800000+002 GRAMS

THE HEAT OF FORMATION AT 0 DEG K IS -3.8500000000+003 CALORIES PER FORMULA WEIGHT

THE SOLID (GOWAN) EQUATION OF STATE PARAMETERS VO, AS, BS, CS, DS, ES, A1, A2, C1, C2, C3, ATOMIC WT

SOL C 4.4444444444-001 8.30935837268-001 -1.39381809219+000 6.72569716021-001 -1.13537262508-001 6.49155882007-003
-2.26705345948-001 1.20518569525-001 8.31600000000-002 -1.75590000000-001 1.55310000000-001 1.20100000000+001

THE INPUT DETONATION PRODUCT ELEMENTAL COMPOSITION MATRIX

0.0+00	2.0+00	0.0+00	1.0+00	0.0+00	2.0+00	0.0+00	0.0+00	0.0+00	0.0+00	0.0+00	2.0+00
1.0+00	0.0+00	0.0+00	2.0+00	1.0+00	0.0+00	0.0+00	1.0+00	0.0+00	3.0+00	1.0+00	0.0+00
0.0+00	1.0+00	0.0+00	0.0+00	0.0+00	0.0+00	1.0+00	1.0+00	0.0+00	0.0+00	2.0+00	0.0+00
0.0+00	1.0+00	0.0+00	1.0+00	1.0+00	4.0+00	0.0+00	0.0+00	1.0+00	0.0+00	0.0+00	0.0+00

A STRETCH BKW CALCULATION FOR THE EXPLOSIVE
PICRIC ACID

THE COMPUTED CJ PRESSURE IS 1.21864104905-001 MEGABARS

THE COMPUTED DETONATION VELOCITY IS 6.05792799383-001 CM/MICROSECOND

THE COMPUTED CJ TEMPERATURE IS 3.55366169834+003 DEGREES KELVIN

THE COMPUTED CJ VOLUME IS 6.02732149078-001 CC/GRAM OF EXPLOSIVE

THE COMPUTED GAMMA IS 2.61371299026+000

THE VOLUME OF THE GAS IS 1.90621283244+001 CC/MOLE OF GAS AND THERE ARE 6.71818390425+000 MOLES OF GAS

SOLID VOLUME IN CC/GM
SOL C 3.67220796372-001

THE C-J COMPOSITION OF THE DETONATION PRODUCTS AND THE INPUT COEFFICIENTS TO THE THERMODYNAMIC FITS FOR EACH SPECIE

SPECIE	NO OF MOLES	COEFFICIENTS A,B,C,D,E, THE INTEGRATION CONSTANT, HEAT OF FORMATION IN CALORIES/MOLE, CONVOLUME				
H2O	1.46837498134+000	4.2588420000+001	1.4808050000-002	-2.6391810000-006	1.9204530000-010	0.0000000000+000
		1.34282835156+003	-5.7107000000+004	2.5000000000+002		
H2	2.04701754132-002	2.9703470000+001	1.1438290000-002	-2.2012220000-006	1.6777610000-010	0.0000000000+000
		1.17589615365+003	0.0000000000+000	1.8000000000+002		
O2	2.58836424263-005	4.7030900000+001	1.2871470000-002	-2.5002170000-006	1.9015700000-010	0.0000000000+000
		1.03537847398+003	0.0000000000+000	3.5000000000+002		
CO2	1.80638362667+000	4.7481120000+001	1.9544630000-002	-3.7212980000-006	2.7703000000-010	0.0000000000+000
		7.46280988750+002	-9.3968000000+004	6.0000000000+002		
CO	1.91765852063+000	4.5330620000+001	1.2381610000-002	-2.4164030000-006	1.8281810000-010	0.0000000000+000
		1.12158830990+003	-2.7201000000+004	3.9000000000+002		
NH3	4.32808907840-003	4.2018160000+001	1.9116620000-002	-3.1843300000-006	2.1978010000-010	0.0000000000+000
		1.20696121615+003	-9.3680000000+003	4.7600000000+002		
H	1.99501479773-004	2.6391100000+001	8.1213720000-003	-1.8907400000-006	1.3168230000-010	0.0000000000+000
		7.94631617188+002	5.1619000000+004	7.6000000000+001		
NO	9.39667856193-004	4.8414980000+001	1.2693860000-002	-2.4946000000-006	1.8932130000-010	0.0000000000+000
		1.20924970573+003	2.1477000000+004	3.8600000000+002		
N2	1.49736612153+000	4.3923400000+001	1.2225010000-002	-2.3790050000-006	1.7983220000-010	0.0000000000+000
		1.13916134896+003	0.0000000000+000	3.8000000000+002		
OH	2.07809541731-004	4.2417920000+001	1.1568470000-002	-2.2268390000-006	1.6891550000-010	0.0000000000+000
		1.18351754427+003	3.5600000000+003	4.1300000000+002		
CH4	2.22952705922-003	3.8756860000+001	2.3640130000-002	-3.7079370000-006	2.4707140000-010	0.0000000000+000
		1.04242791146+003	-1.6000000000+004	5.2800000000+002		
SOL C	2.27372832564+000	-2.4613190000-001	7.1798550000-003	-1.2975300000-006	9.3499950000-011	0.0000000000+000
		-2.58204389323+002	0.0000000000+000	0.0000000000+000		

A STRETCH BAW CALCULATION FOR THE EXPLOSIVE
PICRIC ACID

THE NUMBER OF ELEMENTS IS 4

THE NUMBER OF GAS SPECIES IS 11

THE NUMBER OF SOLID SPECIES IS 1

THE KW EQUATION OF STATE PARAMETERS ARE
ALPHA= 5.000000000-001 BETA= 1.600000000-001 THETA= 4.000000000+002 KAPPA= 1.09097784436+001

THE COMPOSITION OF THE EXPLOSIVE IS
6.000000000+000 MOLES OF C
3.000000000+000 MOLES OF H
3.000000000+000 MOLES OF N
7.000000000+000 MOLES OF O

THE DENSITY OF THE EXPLOSIVE IS 1.000000000+000 GRAMS/CC

THE MOLECULAR WEIGHT IS 2.291080000+002 GRAMS

THE HEAT OF FORMATION AT 0 DEG K IS -3.850000000+003 CALORIES PER FORMULA WEIGHT

THE SOLID (COWAN) EQUATION OF STATE PARAMETERS VO, AS, BS, CS, DS, ES, A1, A2, C1, C2, C3, ATOMIC WT

SOL C 4.444444444-001 8.30935837268-001 -1.39381809219+000 6.72569716021-001 -1.13537262508-001 6.49155882007-003
-2.26705345948-001 1.20516569525-001 8.31600000000-002 -1.75590000000-001 1.55310000000-001 1.20100000000+001

THE INPUT DETONATION PRODUCT ELEMENTAL COMPOSITION MATRIX

0.0+00	2.0+00	0.0+00	1.0+00	0.0+00	2.0+00	0.0+00	0.0+00	0.0+00	0.0+00	0.0+00	2.0+00
1.0+00	0.0+00	0.0+00	2.0+00	1.0+00	0.0+00	0.0+00	1.0+00	0.0+00	3.0+00	1.0+00	0.0+00
0.0+00	1.0+00	0.0+00	0.0+00	0.0+00	0.0+00	1.0+00	1.0+00	0.0+00	0.0+00	2.0+00	0.0+00
0.0+00	1.0+00	0.0+00	1.0+00	1.0+00	4.0+00	0.0+00	0.0+00	1.0+00	0.0+00	0.0+00	0.0+00

A STRETCH BKW CALCULATION FOR THE EXPLOSIVE
PICRIC ACID

THE COMPUTED C_J PRESSURE IS 8.78983578453-002 MEGABARS

THE COMPUTED DETONATION VELOCITY IS 5.54587364371-001 CM/MICROSECOND

THE COMPUTED C_J TEMPERATURE IS 3.55861497434+003 DEGREES KELVIN

THE COMPUTED C_J VOLUME IS 7.14217336428-001 CC/GRAM OF EXPLOSIVE

THE COMPUTED GAMMA IS 2.49912276247+000

THE VOLUME OF THE GAS IS 2.14360212377+001 CC/MOLE OF GAS AND THERE ARE 7.26582847900+000 MOLES OF GAS

SOLID VOLUME IN CC/GM
SOL C 3.83117272854-001

THE C-J COMPOSITION OF THE DETONATION PRODUCTS AND THE INPUT COEFFICIENTS TO THE THERMODYNAMIC FITS FOR EACH SPECIE

SPECIE	NO OF MOLES	COEFFICIENTS A,B,C,D,E, THE INTEGRATION CONSTANT, HEAT OF FORMATION IN CALORIES/MOLE, COVOLUME				
H2O	1.40888584417+000	4.25884200000+001	1.48080500000-002	-2.63918100000-006	1.92045300000-010	0.00000000000+000
H2	6.45971363255-002	1.34282835156+003	-5.71070000000+004	2.50000000000+002	1.67776100000-010	0.00000000000+000
O2	1.48560223139-005	2.97034700000+001	1.14382900000-002	-2.20122200000-006	1.90157000000-010	0.00000000000+000
CO2	1.30997258174+000	1.17589615365+003	0.00000000000+000	1.80000000000+002	2.77030000000-010	0.00000000000+000
CO	2.96993488041+000	4.70309000000+001	1.28714700000-002	-2.50021700000-006	1.82818100000-010	0.00000000000+000
NH3	8.02411856956-003	1.03537647396+003	0.00000000000+000	3.50000000000+002	2.19780100000-010	0.00000000000+000
H	6.10657606777-004	4.74811200000+001	1.95446300000-002	-3.72129600000-006	1.31682300000-010	0.00000000000+000
NO	7.62371630304-004	7.46280968750+002	-9.39680000000+004	6.00000000000+002	1.89321300000-010	0.00000000000+000
N2	1.49560675490+000	4.53308200000+001	1.23816100000-002	-2.41640300000-006	1.79832200000-010	0.00000000000+000
OH	4.42028259467-004	1.12158830990+003	-2.72010000000+004	3.90000000000+002	1.68915500000-010	0.00000000000+000
CH4	6.97724936079-003	4.20181600000+001	1.91166200000-002	-3.16433000000-006	2.47071400000-010	0.00000000000+000
SOL C	1.71311528848+000	1.20696121615+003	-9.36800000000+003	4.76000000000+002	9.34999500000-011	0.00000000000+000
		7.94631617188+002	5.16190000000+004	7.60000000000+001		
		4.84149800000+001	1.26938600000-002	-2.49460000000-006		
		1.20924970573+003	2.14770000000+004	3.86000000000+002		
		4.39234000000+001	1.22250100000-002	-2.37909000000-006		
		1.13916134896+003	0.00000000000+000	3.80000000000+002		
		4.24179200000+001	1.15684700000-002	-2.22659000000-006		
		1.18351754427+003	3.96000000000+003	4.13000000000+002		
		3.87568600000+001	2.36401300000-002	-3.70795700000-006		
		1.04242791146+003	-1.60000000000+004	5.28000000000+002		
		-2.46151900000-001	7.17985500000-003	-1.29755000000-006		
		-2.58204389323+002	0.00000000000+000	0.00000000000+000		

A STRETCH BKW CALCULATION FOR THE EXPLOSIVE
OCTOL 76.3/23.7 HMX/TNT

THE NUMBER OF ELEMENTS IS 4

THE NUMBER OF GAS SPECIES IS 11

THE NUMBER OF SOLID SPECIES IS 1

THE KW EQUATION OF STATE PARAMETERS ARE

ALPHA= 5.0000000000-001 BETA= 1.6000000000-001 THETA= 4.0000000000+002 KAPPA= 1.09097784436+001

THE COMPOSITION OF THE EXPLOSIVE IS

6.8350000000+000 MOLES OF C
1.0025000000+001 MOLES OF H
9.2150000000+000 MOLES OF N
1.0430000000+001 MOLES OF O

THE DENSITY OF THE EXPLOSIVE IS 1.8090000000+000 GRAMS/CC

THE MOLECULAR WEIGHT IS 3.8816300000+002 GRAMS

THE HEAT OF FORMATION AT 0 DEG K IS 4.2880000000+004 CALORIES PER FORMULA WEIGHT

THE SOLID (COMAN)EQUATION OF STATE PARAMETERS VO, AS, BS, CS, DS, ES, A1, A2, C1, C2, C3, ATOMIC WT

SOL C 4.4444444444-001 8.30935837268-001 -1.39381808219+000 6.72569716021-001 -1.13537262508-001 6.49155882007-003
-2.26705345948-001 1.20518569525-001 8.31600000000-002 -1.75590000000-001 1.55310000000-001 1.20100000000+001

THE INPUT DETONATION PRODUCT ELEMENTAL COMPOSITION MATRIX

0.0+00	2.0+00	0.0+00	1.0+00	0.0+00	2.0+00	0.0+00	0.0+00	0.0+00	0.0+00	0.0+00	2.0+00
1.0+00	0.0+00	0.0+00	2.0+00	1.0+00	0.0+00	0.0+00	1.0+00	0.0+00	3.0+00	1.0+00	0.0+00
0.0+00	1.0+00	0.0+00	0.0+00	0.0+00	0.0+00	1.0+00	1.0+00	0.0+00	0.0+00	2.0+00	0.0+00
0.0+00	1.0+00	0.0+00	1.0+00	1.0+00	4.0+00	0.0+00	0.0+00	1.0+00	0.0+00	0.0+00	0.0+00

A STRETCH BAR CALCULATION FOR THE EXPLOSIVE
 OCTOL 76.3/23.7 HMX/TNT

THE COMPUTED C_J PRESSURE IS 3.32990391354-001 MEGABARS

THE COMPUTED DETONATION VELOCITY IS 8.55586859986-001 CM/MICROSECOND

THE COMPUTED C_J TEMPERATURE IS 2.57801301239+003 DEGREES KELVIN

THE COMPUTED C_J VOLUME IS 4.13788316459-001 CC/GRAM OF EXPLOSIVE

THE COMPUTED GAMMA IS 2.97681215202+000

THE VOLUME OF THE GAS IS 1.18532343019+001 CC/MOLE OF GAS AND THERE ARE 1.23493987289+001 MOLES OF GAS

SOLID VOLUME IN CC/GM
 SOL C 2.88734593481-001

THE C-J COMPOSITION OF THE DETONATION PRODUCTS AND THE INPUT COEFFICIENTS TO THE THERMODYNAMIC FITS FOR EACH SPECIE

SPECIE	NO OF MOLES	COEFFICIENTS A,B,C,D,E, THE INTEGRATION CONSTANT, HEAT OF FORMATION IN CALORIES/MOLE, COVOLUME					
H2O	5.01239111540+000	4.2588420000+001	1.4808050000-002	-2.6391810000-006	1.9204530000-010	0.0000000000+000	
H2	1.98376724320-005	1.34282835156+003	-5.7107000000+004	2.5000000000+002	-2.2012220000-006	1.6777610000-010	0.0000000000+000
O2	4.30520924972-006	2.9703470000+001	1.1438290000-002	-2.2012220000-006	1.8000000000+002	1.9015700000-010	0.0000000000+000
CO2	2.68809003450+000	1.17389615363+003	0.0000000000+000	-2.5002170000-006	3.5000000000+002	2.7703000000-010	0.0000000000+000
CO	4.13067422800-002	1.03337647396+003	0.0000000000+000	-3.7212960000-006	6.0000000000+002	1.8281810000-010	0.0000000000+000
NH3	5.82466993365-005	7.46280968750+002	-9.3968000000+004	-2.4164030000-006	3.9000000000+002	2.1978010000-010	0.0000000000+000
H	6.33869000703-010	4.5330820000+001	1.2381610000-002	-1.6907400000-006	4.7600000000+002	1.3168230000-010	0.0000000000+000
NO	1.13462296768-004	1.12158830990+003	-2.7201000000+004	-2.4948000000-006	3.8600000000+002	1.8932130000-010	0.0000000000+000
N2	4.60741414550+000	4.2018160000+001	1.9116620000-002	-2.3790050000-006	3.8000000000+002	1.7983220000-010	0.0000000000+000
OH	6.02117362978-010	1.20896121613+003	-9.3680000000+003	-2.2265900000-006	4.1300000000+002	1.6891550000-010	0.0000000000+000
CH4	8.38131202712-007	2.6391100000+001	8.1213720000-003	-3.7079570000-006	5.2800000000+002	2.4707140000-010	0.0000000000+000
SOL C	4.10560238509+000	7.94631617188+002	5.1619000000+004	-1.2975500000-006	0.0000000000+000	9.3499950000-011	0.0000000000+000
		4.8414980000+001	1.2693860000-002	0.0000000000+000	0.0000000000+000		
		1.20924970973+003	2.1477000000+004	-2.3790050000-006	3.8600000000+002		
		4.3923400000+001	1.2225010000-002	-2.3790050000-006	3.8000000000+002		
		1.13916134896+003	0.0000000000+000	-2.2265900000-006	4.1300000000+002		
		4.2417920000+001	1.1568470000-002	-2.2265900000-006	4.1300000000+002		
		1.18351754427+003	3.5600000000+003	-3.7079570000-006	5.2800000000+002		
		3.8756860000+001	2.3640130000-002	-1.6000000000+004	5.2800000000+002		
		1.04242791146+003	-1.6000000000+004	-1.2975500000-006	0.0000000000+000		
		-2.4615190000-001	7.1798550000-003	-1.2975500000-006	0.0000000000+000		
		-2.58204389323+002	0.0000000000+000	0.0000000000+000	0.0000000000+000		

THE BKW HUGONIOT FOR THE DETONATION PRODUCTS OF
OCTOL 76.3/23.7 HMX/TNT

PRESSURE = 5.000000000-001 VOLUME = 3.61445201079-001 TEMPERATURE = 2.89187232307+003
 H2O 5.01247300686+000
 H2 3.27805739596-006
 O2 5.75908712412-005
 CO2 2.69595674265+000
 CO 2.49499608188-002
 NH3 1.56775770033-005
 H 5.57850783791-010
 NO 5.48364780366-004
 N2 4.60721797882+000
 OH 4.90389118237-010
 CH4 9.90966961794-008
 SOL C 4.11409319743+000

PRESSURE = 4.500000000-001 VOLUME = 3.74337322344-001 TEMPERATURE = 2.77511842403+003
 H2O 5.01246540257+000
 H2 4.57358703707-006
 O2 2.58025181151-005
 CO2 2.69540854006+000
 CO 2.63407131208-002
 NH3 1.98187110636-005
 H 5.48728118547-010
 NO 3.25198659480-004
 N2 4.60732749131+000
 OH 4.90827931536-010
 CH4 1.47630034266-007
 SOL C 4.11325059919+000

PRESSURE = 4.000000000-001 VOLUME = 3.89244874804-001 TEMPERATURE = 2.67724036623+003
 H2O 5.01244919767+000
 H2 7.52733130300-006
 O2 1.17044364363-005
 CO2 2.69367450060+000
 CO 2.99787676093-002
 NH3 2.84936602902-005
 H 5.63783780761-010
 NO 1.99624120267-004
 N2 4.60738594111+000
 OH 5.16269021941-010
 CH4 2.6698272919-007
 SOL C 4.11134646480+000

PRESSURE = 3.500000000-001 VOLUME = 4.06937836763-001 TEMPERATURE = 2.59951234804+003
 H2O 5.01241284073+000
 H2 1.49734835382-005
 O2 5.49758224080-006
 CO2 2.69002310329+000
 CO 3.74005817579-002
 NH3 4.73209185705-005
 H 6.09609741613-010
 NO 1.29375223387-004
 N2 4.60741165193+000
 OH 5.73619919933-010
 CH4 6.01906503860-007
 SOL C 4.10757571304+000

PRESSURE = 3.000000000-001 VOLUME = 4.28629675146-001 TEMPERATURE = 2.54406966663+003
 H2O 5.01232113842+000
 H2 3.68954478079-005
 O2 2.75005151572-006
 CO2 2.68273059278+000
 CO 5.21210809285-002
 NH3 9.20310997766-005
 H 5.16993815558-008
 NO 9.06503517674-005
 N2 4.60740865927+000
 OH 4.46310406278-008
 CH4 1.73565805661-006
 SOL C 4.10014659063+000

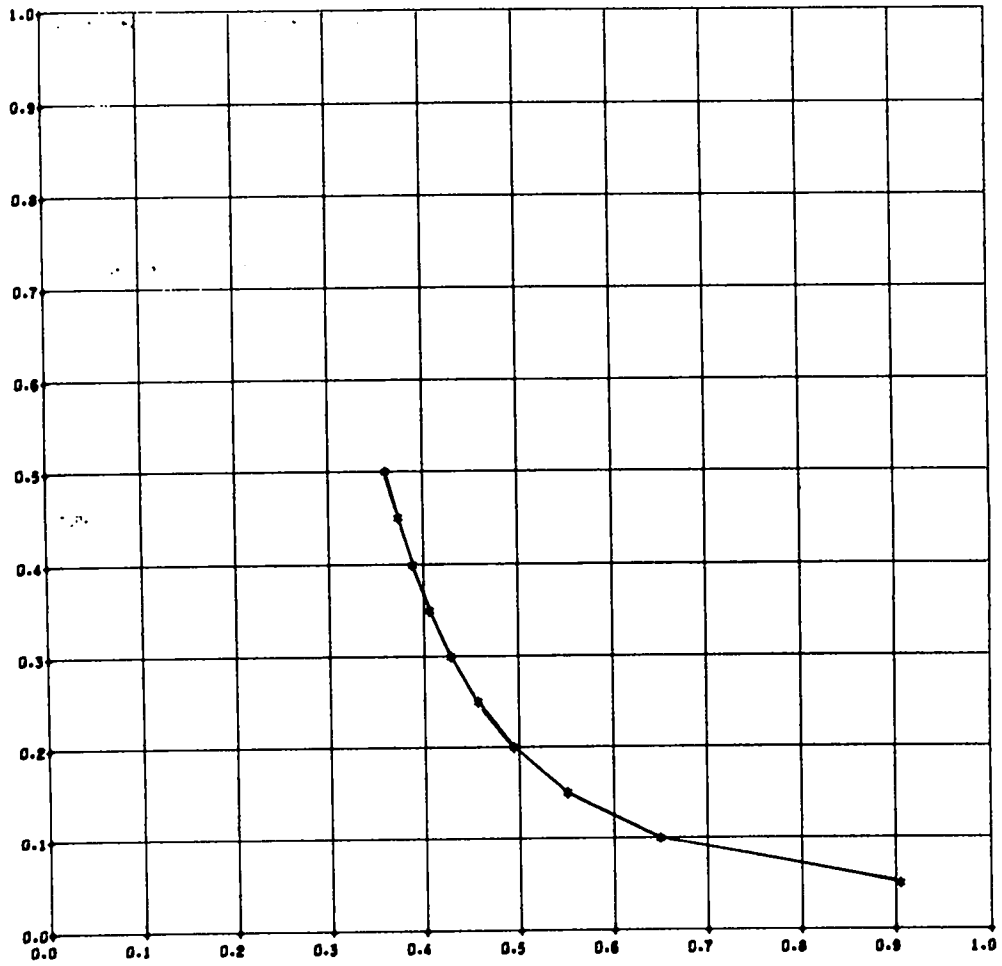
PRESSURE = 2.500000000-001 VOLUME = 4.56394389213-001 TEMPERATURE = 2.51416252719+003
 H2O 5.01205326840+000
 H2 1.15495821827-004
 O2 1.51518734732-006
 CO2 2.66748015514+000
 CO 8.29126805396-002
 NH3 2.11989527128-004
 H 1.23152836959-007
 NO 7.05935152179-005
 N2 4.60735870848+000
 OH 1.16881208248-007
 CH4 6.56573333466-006
 SOL C 4.08460059858+000

PRESSURE = 2.000000000-001 VOLUME = 4.94166486633-001 TEMPERATURE = 2.51411189048+003
H2O 5.01108859804+000
H2 4.70918357710-004
O2 9.49953071237-007
CO2 2.63236856562+000
CO 1.54109191589-001
NH3 5.82225428495-004
H 4.16446117278-007
NO 6.27563656906-005
N2 4.60717750910+000
OH 4.22872100860-007
CH4 3.33629018890-005
SOL C 4.04848887989+000

PRESSURE = 1.500000000-001 VOLUME = 5.50631156952-001 TEMPERATURE = 2.54750040215+003
H2O 5.00661030511+000
H2 2.56252713426-003
O2 6.80477575098-007
CO2 2.54096709340+000
CO 3.41387898738-001
NH3 1.90602961260-003
H 2.08943758673-006
NO 6.41205113081-005
N2 4.60651492494+000
OH 2.12787729783-006
CH4 2.33007337316-004
SOL C 3.95241200052+000

PRESSURE = 1.000000000-001 VOLUME = 6.50294406190-001 TEMPERATURE = 2.60784229028+003
H2O 4.97737640956+000
H2 1.92917902434-002
O2 4.90706571520-007
CO2 2.27530066980+000
CO 9.01937870483-001
NH3 7.42826575683-003
H 1.47722298041-005
NO 6.94533474482-005
N2 4.60379114045+000
OH 1.39456043242-005
CH4 2.33727132287-003
SOL C 3.65542418840+000

PRESSURE = 5.000000000-002 VOLUME = 9.05552763399-001 TEMPERATURE = 2.64152071670+003
H2O 4.64641024636+000
H2 2.29808389068-001
O2 1.85124418286-007
CO2 1.53319887561+000
CO 2.71704755128+000
NH3 3.59513936912-002
H 1.70526878841-004
NO 5.26691192218-005
N2 4.58949796859+000
OH 9.14117586098-005
CH4 4.11116523562-002
SOL C 2.54364192075+000



OCTOL 76.3/23.7 HMX/TNT

PRESSURE-VOLUME HUGONIOT

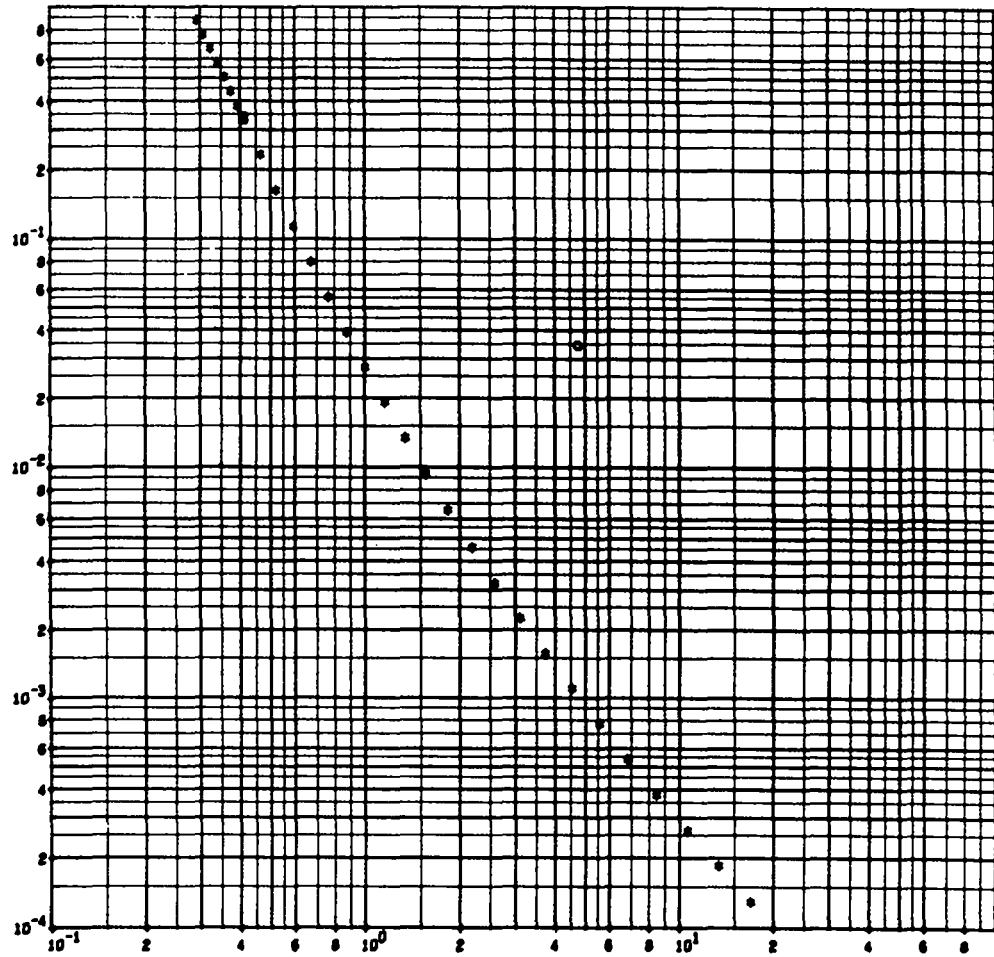
BKW ISENTROPE THRU BKW CJ PRESSURE FOR
OCTOL 76.3/23.7 HMX/TNT

LN(P)=-3.5584845311+GGG -2.55786000484+DOOLNV 2.63787465514-001 LNV#2 2.48024116547-002LNV#3 -1.31137637265-002LNV#4
LN(T)= 7.42106830780+000 -4.68006394247-001LNV 4.54216919664-002 LNV#2 2.65484699273-002LNV#3 -9.04303127933-003LNV#4
LN(E)=-1.59480159323+000 5.31006193332-001LNP 7.69426509260-002 LNP#2 5.79502177784-003LNP#3 1.79707465863-004LNP#4

THE CONSTANT ADDED TO ENERGIES WAS 1.0000000000-001

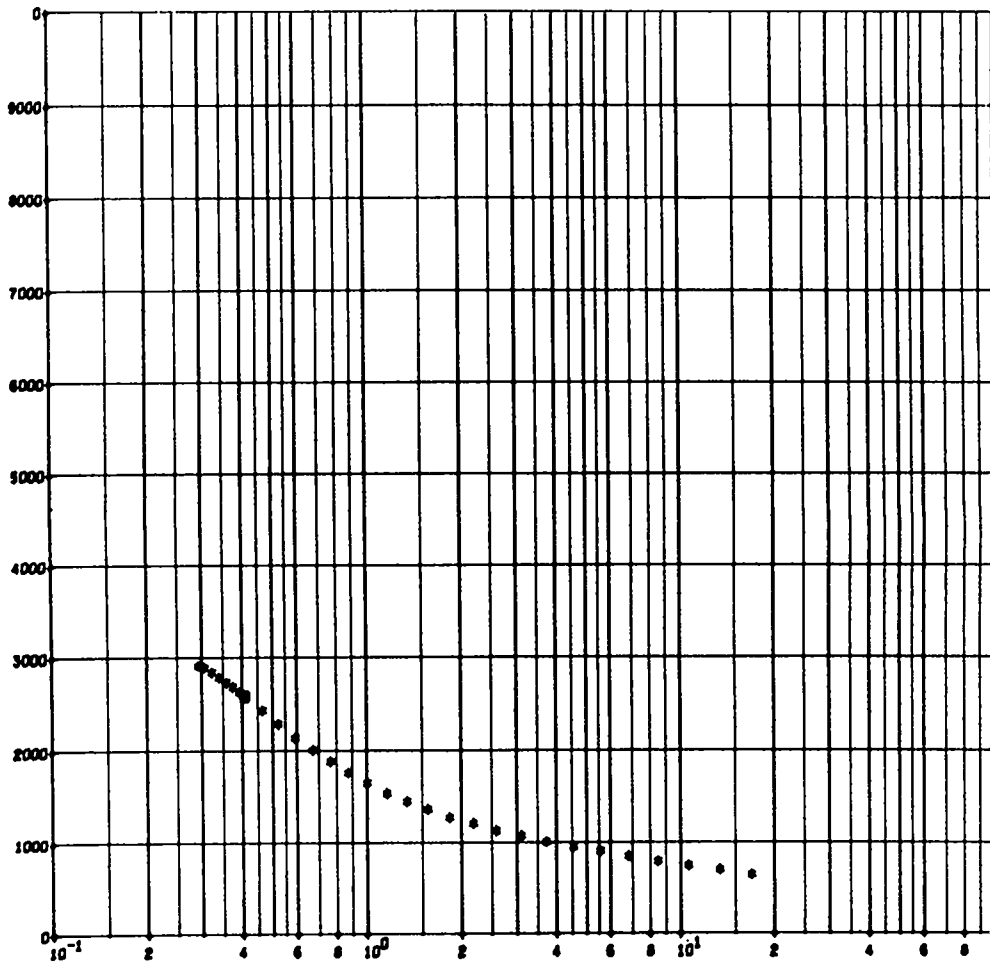
Table with 7 columns: PRESSURE (MBARS), VOLUME (CC/GM), TEMPERATURE (DEG K), ENERGY+0 (MB-CC/GM), GAMMA (-DLNP/DLNV), PARTICLE VELOCITY. It contains multiple rows of numerical data.

THE ISENTROPE STATE VARIABLES AS COMPUTED FROM THE LEAST SQUARE FIT
BKW PRESSURE FIT PRESSURE FROM TEMPERATURE FIT TEMPERATURE BKW ENERGY PLUS CONSTANT FIT ENERGY
Table with 7 columns: BKW PRESSURE, FIT PRESSURE, FROM TEMPERATURE, FIT TEMPERATURE, BKW ENERGY PLUS CONSTANT, FIT ENERGY. It contains multiple rows of numerical data.



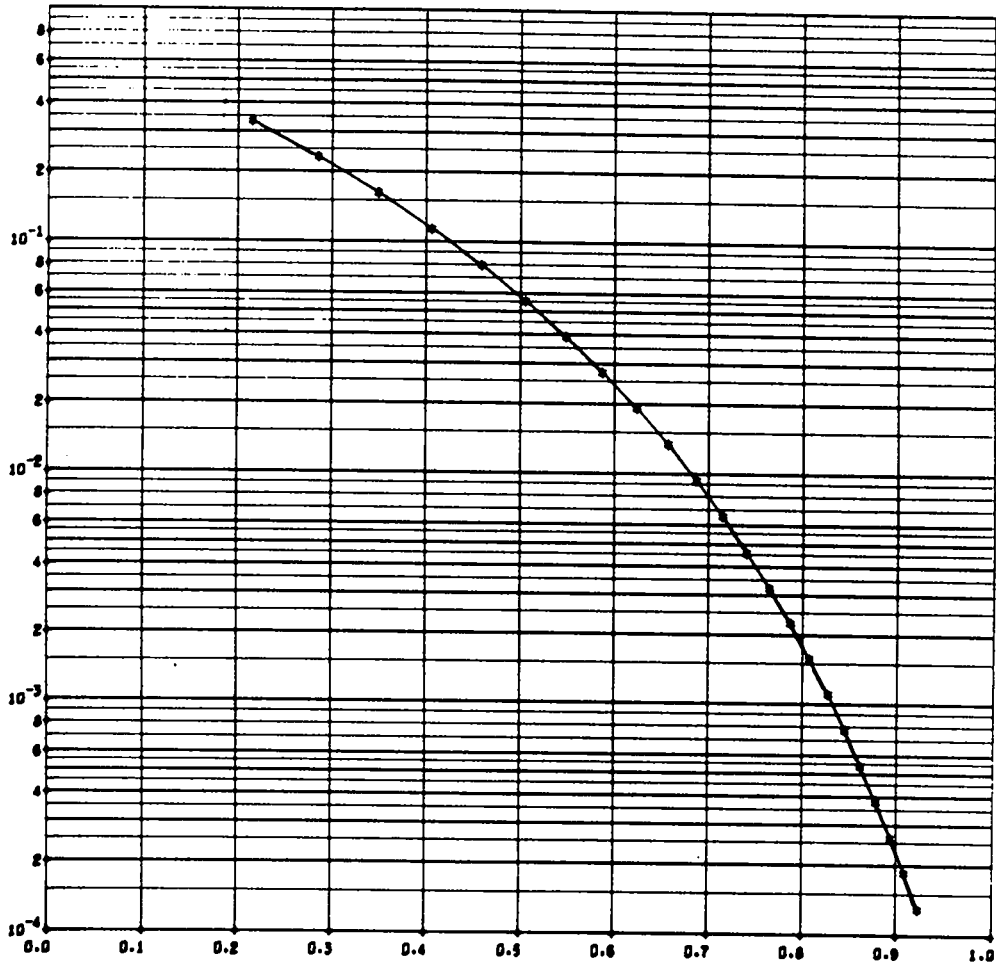
OCTOL 76.3/23.7 HNR/TNT

PRESSURE-VOLUME ISENTROPE THRU THE C-J VALUE



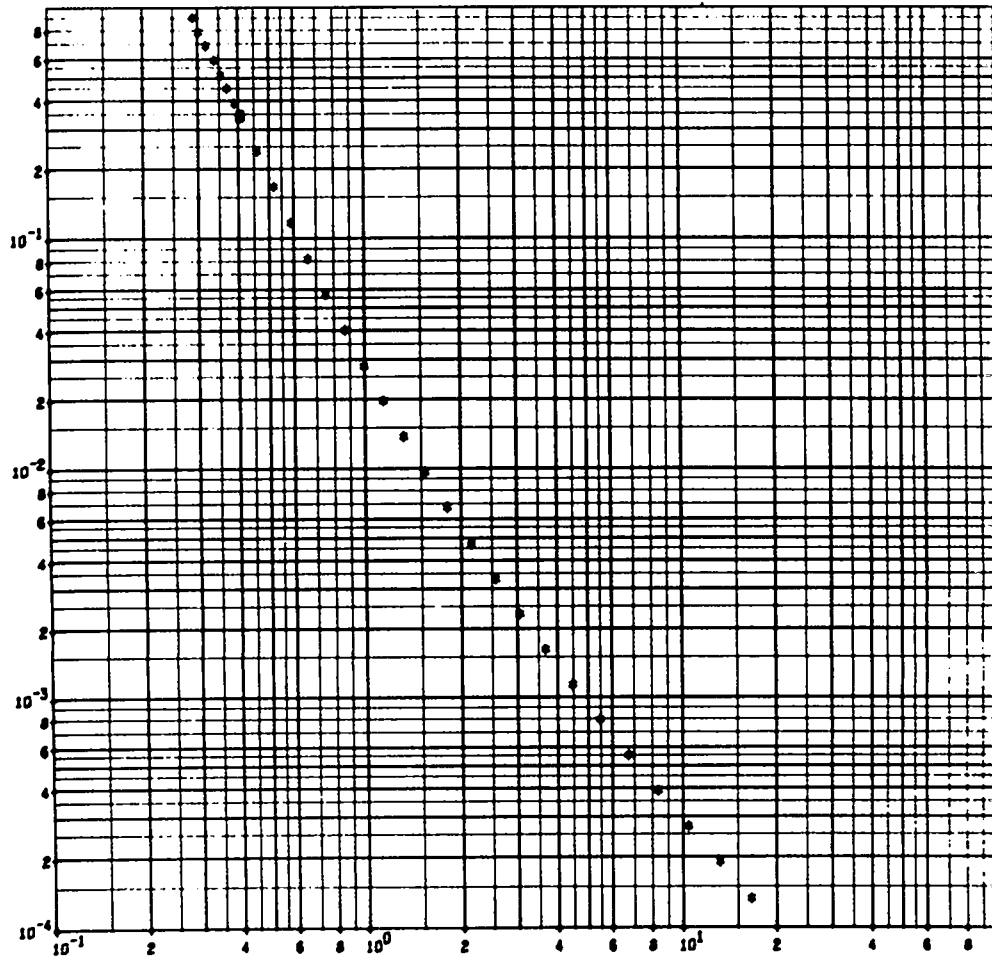
OCTOL 76.3/23.7 NHK/TNT

TEMPERATURE-VOLUME ISENTROPE THRU THE C-J VALUE



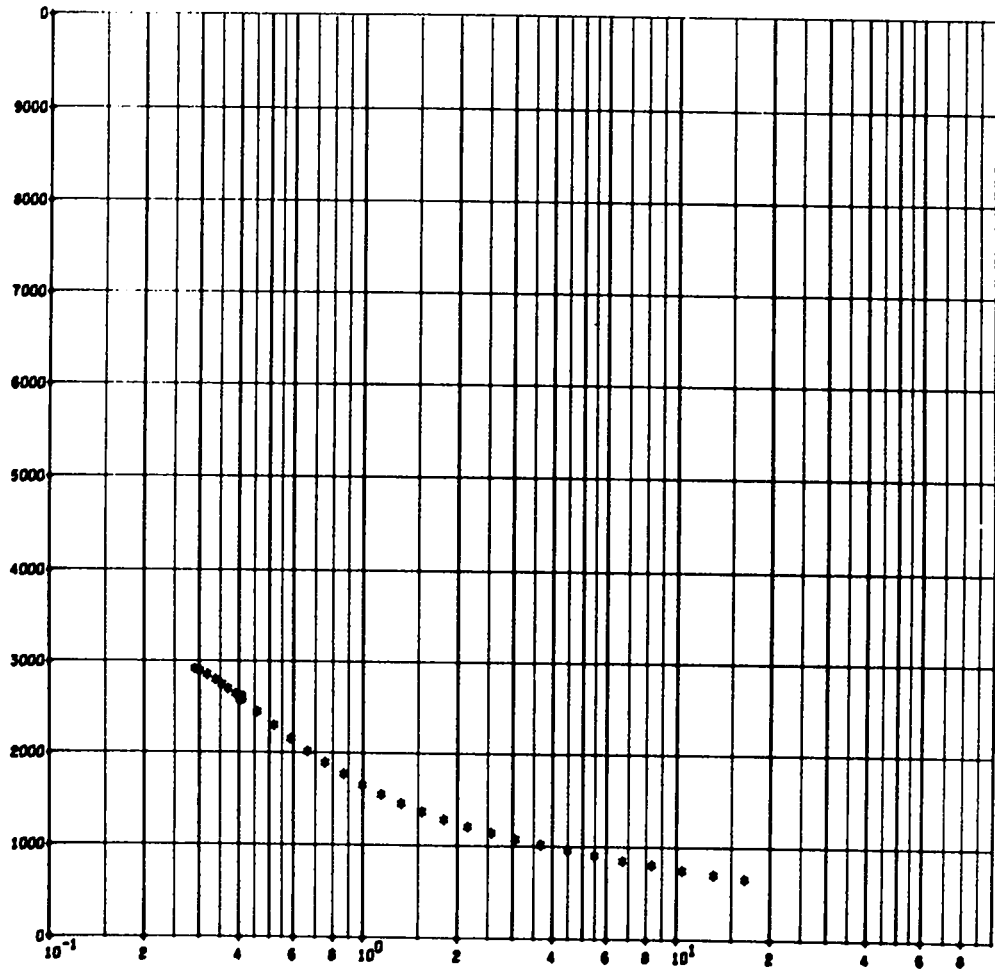
OCTOL 78.3/23.7 HMX/TNT

PRESSURE-PARTICLE VELOCITY



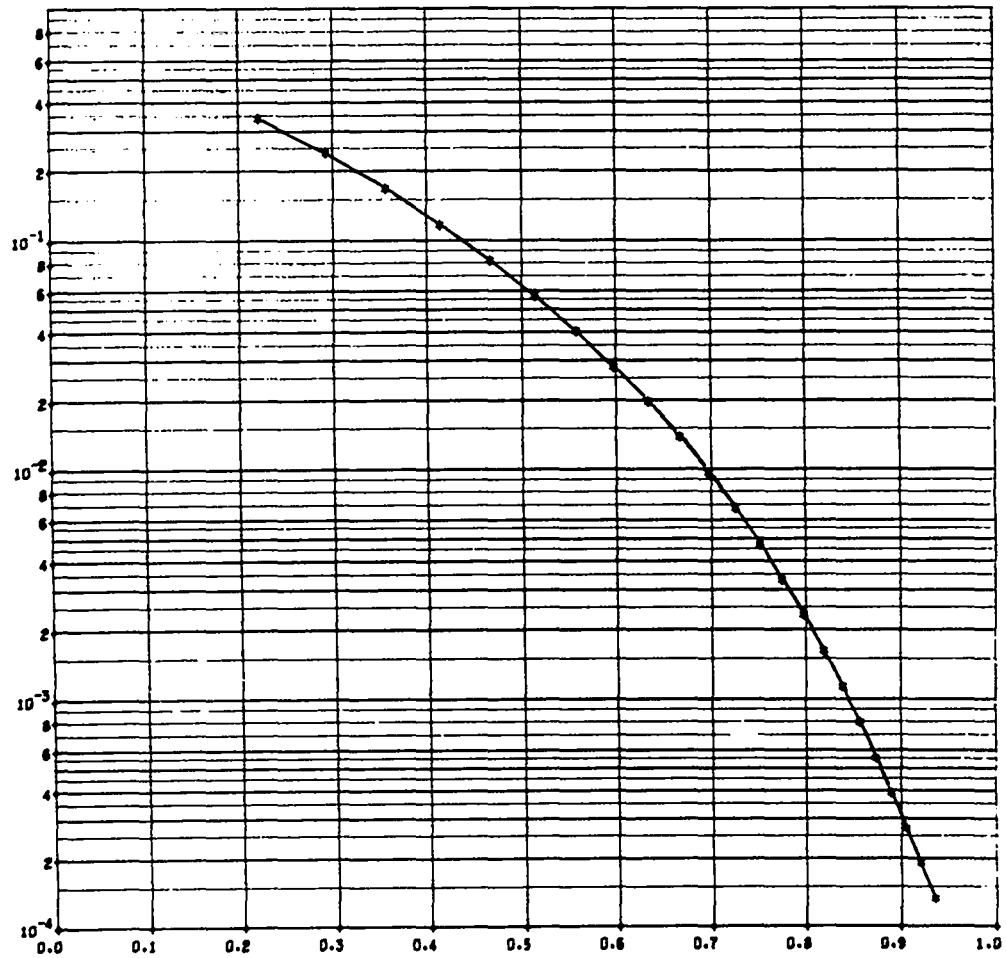
OCTOL 76.3/23.7 HMX/TNT

PRESSURE-VOLUME ISENTROPE THRU THE C-J VALUE



OCTOL 76.3/23.7 H₂O/TNT

TEMPERATURE-VOLUME ISENTROPE THRU THE C-J VALUE



OCTOL 76.3/25.7 MKR/TNT
 PRESSURE-PARTICLE VELOCITY

A STRETCH BAW CALCULATION FOR THE EXPLOSIVE
OCTOL 76.3/23.7 HMX/TNT

THE NUMBER OF ELEMENTS IS 4

THE NUMBER OF GAS SPECIES IS 11

THE NUMBER OF SOLID SPECIES IS 1

THE RW EQUATION OF STATE PARAMETERS ARE

ALPHA= 9.0000000000-001 BETA= 1.8000000000-001 THETA= 4.0000000000+002 KAPPA= 1.09097784436+001

THE COMPOSITION OF THE EXPLOSIVE IS

6.8350000000+000 MOLES OF C
1.0025000000+001 MOLES OF H
9.2150000000+000 MOLES OF N
1.0430000000+001 MOLES OF O

THE DENSITY OF THE EXPLOSIVE IS 1.6000000000+000 GRAMS/CC

THE MOLECULAR WEIGHT IS 3.8816300000+002 GRAMS

THE HEAT OF FORMATION AT 0 DEG K IS 4.2880000000+004 CALORIES PER FORMULA WEIGHT

THE SOLID (COMAN) EQUATION OF STATE PARAMETERS VO, AS, BS, CS, DS, ES, A1, A2, C1, C2, C3, ATOMIC WT

SOL C 4.4444444444-001 8.30935837268-001 -1.39381809218+000 6.72569716021-001 -1.15537282908-001 6.49155882007-003
-2.26705345948-001 1.20516969525-001 8.31600000000-002 -1.75590000000-001 1.55310000000-001 1.20100000000+001

THE INPUT DETONATION PRODUCT ELEMENTAL COMPOSITION MATRIX

0.0+00	2.0+00	0.0+00	1.0+00	0.0+00	2.0+00	0.0+00	0.0+00	0.0+00	0.0+00	0.0+00	2.0+00
1.0+00	0.0+00	0.0+00	2.0+00	1.0+00	0.0+00	0.0+00	1.0+00	0.0+00	3.0+00	1.0+00	0.0+00
0.0+00	1.0+00	0.0+00	0.0+00	0.0+00	0.0+00	1.0+00	1.0+00	0.0+00	0.0+00	2.0+00	0.0+00
0.0+00	1.0+00	0.0+00	1.0+00	1.0+00	4.0+00	0.0+00	0.0+00	1.0+00	0.0+00	0.0+00	0.0+00

A STRETCH BKN CALCULATION FOR THE EXPLOSIVE
 OCTOL 76.3/23.7 HMX/TNT

THE COMPUTED CJ PRESSURE IS 2.49755561950-001 MEGABARS

THE COMPUTED DETONATION VELOCITY IS 7.77592732844-001 CM/MICROSECOND

THE COMPUTED CJ TEMPERATURE IS 2.94599167149+003 DEGREES KELVIN

THE COMPUTED CJ VOLUME IS 4.63633358518-001 CC/GRAM OF EXPLOSIVE

THE COMPUTED GAMMA IS 2.87315179775+000

THE VOLUME OF THE GAS IS 1.32261615026+001 CC/MOLE OF GAS AND THERE ARE 1.24597541980+001 MOLES OF GAS

SOL10 VOLUME IN CC/GM
 SOL C 3.16229396267-001

THE C-J COMPOSITION OF THE DETONATION PRODUCTS AND THE INPUT COEFFICIENTS TO THE THERMODYNAMIC FITS FOR EACH SPECIE

SPECIE	NO OF MOLES	COEFFICIENTS A,B,C,D,E, THE INTEGRATION CONSTANT, HEAT OF FORMATION IN CALORIES/MOLE, COVOLUME					
H2O	5.01031130336+000	4.2588420000+001	1.4808050000+002	-2.8391810000-006	1.9204530000-010	0.0000000000+000	
H2	7.16223521082-004	1.34282835156+003	-5.7107000000+004	2.5000000000+002	1.6777610000-010	0.0000000000+000	
O2	1.23289954075-005	2.9703470000+001	1.1438290000+002	-2.2012220000-006	1.9015700000-010	0.0000000000+000	
CO2	2.57874889449+000	1.17589615365+003	0.0000000000+000	1.8000000000+002	2.7703000000-010	0.0000000000+000	
CO	2.61737467635-001	4.7050900000+001	1.2871470000+002	-2.5002170000-006	1.8281810000-010	0.0000000000+000	
NH3	8.99641086491-004	1.03537647396+003	0.0000000000+000	3.5000000000+002	2.1978010000-010	0.0000000000+000	
H	2.32834620870-006	4.7481120000+001	1.9544630000+002	-3.7212960000-006	1.3168230000-010	0.0000000000+000	
NO	4.26716430434-004	7.46280968750+002	-9.3968000000+004	6.0000000000+002	1.8932130000-010	0.0000000000+000	
N2	4.60683682124+000	4.5330820000+001	1.2381610000+002	-2.4164030000-006	1.7983220000-010	0.0000000000+000	
OH	2.06561128900-006	1.12158830990+003	-2.7201000000+004	3.9000000000+002	1.6891550000-010	0.0000000000+000	
CH4	6.04072542240-005	4.2018160000+001	1.9116620000+002	-3.1643300000-006	2.4707140000-010	0.0000000000+000	
SOL C	3.99445323063+000	1.20696121615+003	-9.3680000000+003	4.7600000000+002	9.3499950000-011	0.0000000000+000	
		7.94631617188+002	5.1619000000+004	7.6000000000+001			
		4.8414980000+001	1.2693860000+002	-2.4946000000-006			
		1.20924970573+003	2.1477000000+004	3.8600000000+002			
		4.3923400000+001	1.2223010000+002	-2.3790000000-006			
		1.13916134896+003	0.0000000000+000	3.8000000000+002			
		4.2417920000+001	1.1568470000+002	-2.2266590000-006			
		1.18351754427+003	3.5800000000+003	4.1300000000+002			
		3.8756860000+001	2.3640130000+002	-3.7079570000-006			
		1.04242791146+003	-1.6000000000+004	5.2800000000+002			
		-2.4615190000-001	7.1798550000+003	-1.2975500000-006			
		-2.58204389323+002	0.0000000000+000	0.0000000000+000			

A STRETCH BKM CALCULATION FOR THE EXPLOSIVE
OCTOL 76.5/23.7 HMX/TNT

THE NUMBER OF ELEMENTS IS 4

THE NUMBER OF GAS SPECIES IS 11

THE NUMBER OF SOLID SPECIES IS 1

THE KM EQUATION OF STATE PARAMETERS ARE
ALPHA= 5.000000000-001 BETA= 1.600000000-001 THETA= 4.000000000+002 KAPPA= 1.0909778458+001

THE COMPOSITION OF THE EXPLOSIVE IS
6.835000000+000 MOLES OF C
1.002500000+001 MOLES OF H
9.215000000+000 MOLES OF N
1.043000000+001 MOLES OF O

THE DENSITY OF THE EXPLOSIVE IS 1.400000000+000 GRAMS/CC

THE MOLECULAR WEIGHT IS 3.881630000+002 GRAMS

THE HEAT OF FORMATION AT 0 DEG K IS 4.288000000+004 CALORIES PER FORMULA WEIGHT

THE SOLID (COHAN) EQUATION OF STATE PARAMETERS VO, AS, BS, CS, DS, ES, A1, A2, C1, C2, C3, ATOMIC WT

SOL C 4.444444444-001 8.30935837268-001 -1.39381809219+000 6.72569716021-001 -1.15537262508-001 6.49155882007-003
-2.26705345948-001 1.20516569525-001 6.316000000-002 -1.755900000-001 1.553100000-001 1.201000000+001

THE INPUT DETONATION PRODUCT ELEMENTAL COMPOSITION MATRIX

0.0+00	2.0+00	0.0+00	1.0+00	0.0+00	2.0+00	0.0+00	0.0+00	0.0+00	0.0+00	0.0+00	2.0+00
1.0+00	0.0+00	0.0+00	2.0+00	1.0+00	0.0+00	0.0+00	1.0+00	0.0+00	3.0+00	1.0+00	0.0+00
0.0+00	1.0+00	0.0+00	0.0+00	0.0+00	0.0+00	1.0+00	1.0+00	0.0+00	0.0+00	2.0+00	0.0+00
0.0+00	1.0+00	0.0+00	1.0+00	1.0+00	4.0+00	0.0+00	0.0+00	1.0+00	0.0+00	0.0+00	0.0+00

A STRETCH BKW CALCULATION FOR THE EXPLOSIVE
 OCTOL 76.5/23.7 HWX/TNT

THE COMPUTED CJ PRESSURE IS 1.87364205502-001 MEGABARS

THE COMPUTED DETONATION VELOCITY IS 7.09605389124-001 CM/MICROSECOND

THE COMPUTED CJ TEMPERATURE IS 3.21340995732+003 DEGREES KELVIN

THE COMPUTED CJ VOLUME IS 5.24442785039-001 CC/GRAM OF EXPLOSIVE

THE COMPUTED GAMMA IS 2.7624883662+000

THE VOLUME OF THE GAS IS 1.47802500200+001 CC/MOLE OF GAS AND THERE ARE 1.27549999039+001 MOLES OF GAS

SOLID VOLUME IN CC/GH
 SOL C 3.39187213709-001

THE C-J COMPOSITION OF THE DETONATION PRODUCTS AND THE INPUT COEFFICIENTS TO THE THERMODYNAMIC FITS FOR EACH SPECIE

SPECIE	NO OF MOLES	COEFFICIENTS A,B,C,D,E, THE INTEGRATION CONSTANT, HEAT OF FORMATION IN CALORIES/MOLE, COVOLUME					
H2O	4.99576317627+000	4.25884200000+001	1.48080500000-002	-2.63918100000-006	1.92045300000-010	0.00000000000+000	
HE	7.56030590871-003	1.34282835156+003	-5.71070000000+004	2.50000000000+002	1.67776100000-010	0.00000000000+000	
OE	2.03164969274-005	2.97034700000+001	1.14382900000-002	-2.20122200000-006	1.90157000000-010	0.00000000000+000	
COE	2.29298366514+000	1.17598615385+003	0.00000000000+000	1.80000000000+002	3.50000000000+002	0.00000000000+000	
CO	6.47318525866-001	4.70309000000+001	1.28714700000-002	-2.50021700000-006	1.82818100000-010	0.00000000000+000	
NH3	4.89594702569-003	1.03537647396+003	0.00000000000+000	1.95446300000-002	6.00000000000+002	0.00000000000+000	
H	3.61301386378-005	7.46280968730+002	-9.39680000000+004	-3.72129600000-006	7.80000000000+001	0.00000000000+000	
NO	8.80825768801-004	4.53508200000+001	1.23816100000-002	-2.41640300000-006	1.89321300000-010	0.00000000000+000	
NE	4.60461181360+000	1.12158430980+003	-2.72010000000+004	3.90000000000+002	1.79832200000-010	0.00000000000+000	
OH	2.95088262751-005	4.20181600000+001	1.91188200000-002	-3.18435000000-006	1.68915500000-010	0.00000000000+000	
CH4	8.99888950778-004	1.20696121615+003	-9.36800000000+004	4.78000000000+002	2.47071400000-010	0.00000000000+000	
SOL C	3.69379792005+000	2.63911000000+001	8.12137800000-003	-1.69074000000-006	9.34999500000-011	0.00000000000+000	
		7.94631617188+002	5.18180000000+004	7.80000000000+001			
		4.84149800000+001	1.28938600000-002	-2.49440000000-006			
		1.20924970573+003	2.14770000000+004	3.80000000000+002			
		4.39234000000+001	1.22230100000-002	-2.37900500000-006			
		1.13918134898+003	0.00000000000+000	3.80000000000+002			
		4.24179200000+001	1.15684700000-002	-2.22865900000-006			
		1.18351754427+003	3.98000000000+003	4.13000000000+002			
		3.87588600000+001	2.36401300000-002	-3.70795700000-006			
		1.04242791148+003	-1.60000000000+004	5.28000000000+002			
		-2.46151900000-001	7.17985500000-003	-1.29755000000-006			
		-2.58204389323+002	0.00000000000+000	0.00000000000+000			

A STRETCH BKW CALCULATION FOR THE EXPLOSIVE
OCTOL 76.3/23.7 HMX/TNT

THE NUMBER OF ELEMENTS IS 4

THE NUMBER OF GAS SPECIES IS 11

THE NUMBER OF SOLID SPECIES IS 1

THE KW EQUATION OF STATE PARAMETERS ARE

ALPHA= 5.000000000-001 BETA= 1.600000000-001 THETA= 4.000000000+002 KAPPA= 1.0909778436+001

THE COMPOSITION OF THE EXPLOSIVE IS

6.835000000+000 MOLES OF C
1.002500000+001 MOLES OF H
9.215000000+000 MOLES OF N
1.043000000+001 MOLES OF O

THE DENSITY OF THE EXPLOSIVE IS 1.200000000+000 GRAMS/CC

THE MOLECULAR WEIGHT IS 3.881630000+002 GRAMS

THE HEAT OF FORMATION AT 0 DEG K IS 4.288000000+004 CALORIES PER FORMULA WEIGHT

THE SOLID (COMAN) EQUATION OF STATE PARAMETERS VO, AS, BS, CS, DS, ES, A1, A2, C1, C2, C3, ATOMIC WT

SOL C 4.444444444-001 8.30935837268-001 -1.39381808218+000 6.72968716021-001 -1.13557262308-001 6.49155882007-003
-2.26705345948-001 1.20516569525-001 8.3160000000-002 -1.7559000000-001 1.5531000000-001 1.2010000000+001

THE INPUT DETONATION PRODUCT ELEMENTAL COMPOSITION MATRIX

0.0+00	2.0+00	0.0+00	1.0+00	0.0+00	2.0+00	0.0+00	0.0+00	0.0+00	0.0+00	0.0+00	2.0+00
1.0+00	0.0+00	0.0+00	2.0+00	1.0+00	0.0+00	0.0+00	1.0+00	0.0+00	3.0+00	1.0+00	0.0+00
0.0+00	1.0+00	0.0+00	0.0+00	0.0+00	0.0+00	1.0+00	1.0+00	0.0+00	0.0+00	2.0+00	0.0+00
0.0+00	1.0+00	0.0+00	1.0+00	1.0+00	4.0+00	0.0+00	0.0+00	1.0+00	0.0+00	0.0+00	0.0+00

A STRETCH BKW CALCULATION FOR THE EXPLOSIVE
 OCTOL 76.3/23.7 HMX/TNT

THE COMPUTED C-J PRESSURE IS 1.38444705185-001 MEGABARS

THE COMPUTED DETONATION VELOCITY IS 6.47656220806-001 CM/MICROSECOND

THE COMPUTED C-J TEMPERATURE IS 3.38941038191+003 DEGREES KELVIN

THE COMPUTED C-J VOLUME IS 6.04129625414-001 CC/GRAM OF EXPLOSIVE

THE COMPUTED GAMMA IS 2.63574970776+000

THE VOLUME OF THE GAS IS 1.66345098953+001 CC/MOLE OF GAS AND THERE ARE 1.32815053910+001 MOLES OF GAS

SOLID VOLUME IN CC/GM
 SOL C 3.59295070194-001

THE C-J COMPOSITION OF THE DETONATION PRODUCTS AND THE INPUT COEFFICIENTS TO THE THERMODYNAMIC FITS FOR EACH SPECIE

SPECIE	NO OF MOLES	COEFFICIENTS A,B,C,D,E, THE INTEGRATION CONSTANT, HEAT OF FORMATION IN CALORIES/MOLE, COVOLUME				
HEO	4.93030110592+000	4.25884200000+001	1.48080500000-002	-2.63918100000-006	1.96049300000-010	0.00000000000+000
HE	4.40142343226-002	1.34282835156+003	-5.71070000000+004	2.50000000000+002	1.67776100000-010	0.00000000000+000
OE	2.09956110143-005	2.97034700000+001	1.14382900000-002	-2.20122200000-006	1.90157000000-010	0.00000000000+000
COE	1.81450079453+000	1.17589615363+003	0.00000000000+000	1.80000000000+002	2.77030000000-010	0.00000000000+000
CO	1.86928808981+000	4.70309000000+001	1.28714700000-002	-2.50021700000-006	1.82818100000-010	0.00000000000+000
NHS	1.65200974396-002	1.03537647396+003	0.00000000000+000	3.50000000000+002	2.19780100000-010	0.00000000000+000
H	2.55997516568-004	4.74811200000+001	1.95446300000-002	-3.72129600000-006	1.31682300000-010	0.00000000000+000
NO	1.19820388241-003	7.46280988730+002	-9.39680000000+004	6.00000000000+002	1.79832200000-010	0.00000000000+000
NE	4.59864084934+000	4.53308200000+001	1.23816100000-002	-2.41640300000-006	1.68915500000-010	0.00000000000+000
OH	1.69020511938-004	1.12158430990+003	-2.72010000000+004	3.90000000000+002	2.47071400000-010	0.00000000000+000
CH4	6.59608249216-003	4.20181800000+001	1.91166200000-002	-3.18433000000-006	9.34989500000-011	0.00000000000+000
SOL C	3.14461511317+000	1.20896121615+003	-9.36800000000+004	4.78000000000+002	0.00000000000+000	0.00000000000+000
		7.94631617188+002	5.16190000000+004	7.60000000000+002		
		4.84149800000+001	1.26938800000-002	-2.49480000000-006		
		1.20924970573+003	2.14770000000+004	3.86000000000+002		
		4.39234000000+001	1.22250100000-002	-2.37900500000-006		
		1.13916134896+003	0.00000000000+000	3.80000000000+002		
		4.24179200000+001	1.15684700000-002	-2.22443900000-006		
		1.18351794427+003	3.56000000000+003	4.13000000000+002		
		3.87568600000+001	2.36401300000-002	-3.70795700000-006		
		1.04242791146+003	-1.60000000000+004	5.28000000000+002		
		-2.46151900000-001	7.17985000000-003	-1.29735000000-006		
		-2.58204389323+002	0.00000000000+000	0.00000000000+000		

A STRETCH BKW CALCULATION FOR THE EXPLOSIVE
OCTOL 76.3/23.7 HMX/TNT

THE NUMBER OF ELEMENTS IS 4

THE NUMBER OF GAS SPECIES IS 11

THE NUMBER OF SOLID SPECIES IS 1

THE KW EQUATION OF STATE PARAMETERS ARE

ALPHA= 5.0000000000-001 BETA= 1.6000000000-001 THETA= 4.0000000000+002 KAPPA= 1.09097784436+001

THE COMPOSITION OF THE EXPLOSIVE IS

6.8350000000+000 MOLES OF C
1.0025000000+001 MOLES OF H
9.2150000000+000 MOLES OF N
1.0430000000+001 MOLES OF O

THE DENSITY OF THE EXPLOSIVE IS 1.0000000000+000 GRAMS/CC

THE MOLECULAR WEIGHT IS 3.8816300000+002 GRAMS

THE HEAT OF FORMATION AT 0 DEG K IS 4.2880000000+004 CALORIES PER FORMULA WEIGHT

THE SOLID (COWAN) EQUATION OF STATE PARAMETERS VO, AS, BS, CS, DS, ES, A1, A2, C1, C2, C3, ATOMIC WT

SOL C 4.4444444444-001 8.30935837268-001 -1.39381809219+000 6.72569716021-001 -1.13537262508-001 6.49155882007-003
-2.26705345948-001 1.20516569525-001 8.3160000000-002 -1.75590000000-001 1.55310000000-001 1.2010000000+001

THE INPUT DETONATION PRODUCT ELEMENTAL COMPOSITION MATRIX

0.0+00	2.0+00	0.0+00	1.0+00	0.0+00	2.0+00	0.0+00	0.0+00	0.0+00	0.0+00	0.0+00	2.0+00
1.0+00	0.0+00	0.0+00	2.0+00	1.0+00	0.0+00	0.0+00	1.0+00	0.0+00	3.0+00	1.0+00	0.0+00
0.0+00	1.0+00	0.0+00	0.0+00	0.0+00	0.0+00	1.0+00	1.0+00	0.0+00	0.0+00	2.0+00	0.0+00
0.0+00	1.0+00	0.0+00	1.0+00	1.0+00	4.0+00	0.0+00	0.0+00	1.0+00	0.0+00	0.0+00	0.0+00

A STRETCH BKW CALCULATION FOR THE EXPLOSIVE
 OCTOL 76.3/23.7 MMX/TNT

THE COMPUTED C-J PRESSURE IS 9.97126825694-D02 MEGABARS

THE COMPUTED DETONATION VELOCITY IS 5.90520874557-D01 CM/MICROSECOND

THE COMPUTED C-J TEMPERATURE IS 3.48622706008+003 DEGREES KELVIN

THE COMPUTED C-J VOLUME IS 7.14059589569-D01 CC/GRAM OF EXPLOSIVE

THE COMPUTED GAMMA IS 2.49719708970+000

THE VOLUME OF THE GAS IS 1.90233789199+001 CC/MOLE OF GAS AND THERE ARE 1.40155216407+001 MOLES OF GAS

SOLID VOLUME IN CC/GM
 SOL C 3.77040107791-D01

THE C-J COMPOSITION OF THE DETONATION PRODUCTS AND THE INPUT COEFFICIENTS TO THE THERMODYNAMIC FITS FOR EACH SPECIE

SPECIE	NO OF MOLES	COEFFICIENTS A,B,C,D,E, THE INTEGRATION CONSTANT, HEAT OF FORMATION IN CALORIES/MOLE, COVOLUME					
H2O	4.69474368849+000	4.25884200000+001	1.48080500000-002	-2.63918100000-006	1.92045300000-010	0.00000000000+000	
H2	1.83870313916-D01	1.34282835156+003	-5.71070000000+004	2.50000000000+002	1.87778100000-010	0.00000000000+000	
O2	1.44704649737-005	2.97034700000+001	1.14382900000-002	-2.20122200000-006	1.90157000000-010	0.00000000000+000	
CO2	1.26203468004+000	1.17589615363+003	0.00000000000+000	1.80000000000+002	2.77030000000-010	0.00000000000+000	
CO	3.20943099646+000	4.70309000000+001	1.28714700000-002	-2.50021700000-006	1.82818100000-010	0.00000000000+000	
NH3	4.34321144601-002	1.03537647396+003	0.00000000000+000	3.50000000000+002	2.19780100000-010	0.00000000000+000	
H	1.12489560185-003	7.46280968750+002	1.95446300000-002	-3.72129600000-006	1.31682300000-010	0.00000000000+000	
NO	1.18564428295-003	4.53308200000+001	1.23816100000-002	-2.41640300000-006	1.89321300000-010	0.00000000000+000	
N2	4.58519112063+000	1.12158830990+003	-2.72010000000+004	3.90000000000+002	1.79832200000-010	0.00000000000+000	
OH	5.41369758524-004	4.20181600000+001	1.91166200000-002	-3.16433000000-006	1.68915500000-010	0.00000000000+000	
CH4	3.39523468096-002	1.20696121615+003	-9.36800000000+003	4.76000000000+002	2.47071400000-010	0.00000000000+000	
SOL C	2.32958197689+000	7.94631617188+002	5.16190000000+004	7.60000000000+001	9.34999500000-011	0.00000000000+000	
		4.84149800000+001	1.26938600000-002	-2.49460000000-006			
		1.20924970573+003	2.14770000000+004	3.86000000000+002			
		4.39234000000+001	1.22250100000-002	-2.37900500000-006			
		1.13916134896+003	0.00000000000+000	3.80000000000+002			
		4.24179200000+001	1.15684700000-002	-2.22665900000-006			
		1.18351754427+003	3.56000000000+003	4.13000000000+002			
		3.87568600000+001	2.38401300000-002	-3.70795700000-006			
		1.04242791146+003	-1.60000000000+004	5.28000000000+002			
		-2.46191900000-001	7.17985500000-003	-1.29755000000-006			
		-2.58204389323+002	0.00000000000+000	0.00000000000+000			

A STRETCH BRW CALCULATION FOR THE EXPLOSIVE
CYCLOTOL 77/23 RDX/TNT

THE NUMBER OF ELEMENTS IS 4

THE NUMBER OF GAS SPECIES IS 11

THE NUMBER OF SOLID SPECIES IS 1

THE RW EQUATION OF STATE PARAMETERS ARE

ALPHA= 5.0000000000-001 BETA= 1.6000000000-001 THETA= 4.0000000000+002 KAPPA= 1.00097784436+001

THE COMPOSITION OF THE EXPLOSIVE IS

9.0447000000+000 MOLES OF C
7.4609000000+000 MOLES OF H
6.8763000000+000 MOLES OF N
7.7526000000+000 MOLES OF O

THE DENSITY OF THE EXPLOSIVE IS 1.7430000000+000 GRAMS/CC

THE MOLECULAR WEIGHT IS 2.8847500000+002 GRAMS

THE HEAT OF FORMATION AT 0 DEG K IS 3.3550000000+004 CALORIES PER FORMULA WEIGHT

THE SOLID (COMAN)EQUATION OF STATE PARAMETERS VO, AS, BS, CS, DS, ES, A1, A2, C1, C2, C3, ATOMIC WT

SOL C 4.4444444444-001 8.30935837268-001 -1.39381809219+000 6.72569716021-001 -1.13537282508-001 6.49199882007-003
-2.26705349948-001 1.20916969525-001 8.3160000000-002 -1.7599000000-001 1.5531000000-001 1.2010000000+001

THE INPUT DETONATION PRODUCT ELEMENTAL COMPOSITION MATRIX

0.0+00	2.0+00	0.0+00	1.0+00	0.0+00	2.0+00	0.0+00	0.0+00	0.0+00	0.0+00	0.0+00	2.0+00
1.0+00	0.0+00	0.0+00	2.0+00	1.0+00	0.0+00	0.0+00	1.0+00	0.0+00	3.0+00	1.0+00	0.0+00
0.0+00	1.0+00	0.0+00	0.0+00	0.0+00	0.0+00	1.0+00	1.0+00	0.0+00	0.0+00	2.0+00	0.0+00
0.0+00	1.0+00	0.0+00	1.0+00	1.0+00	4.0+00	0.0+00	0.0+00	1.0+00	0.0+00	0.0+00	0.0+00

A STRETCH BRM CALCULATION FOR THE EXPLOSIVE
CYCLOTOL 77/23 RDX/TNT

THE COMPUTED CJ PRESSURE IS 3.04693407610-001 MEGABARS

THE COMPUTED DETONATION VELOCITY IS 8.31198627750-001 CM/MICROSECOND

THE COMPUTED CJ TEMPERATURE IS 2.71107036705+003 DEGREES KELVIN

THE COMPUTED CJ VOLUME IS 4.28580034695-001 CC/GRAM OF EXPLOSIVE

THE COMPUTED GAMMA IS 2.95224596156+000

THE VOLUME OF THE GAS IS 1.22567762651+001 CC/MOLE OF GAS AND THERE ARE 9.21026315825+000 MOLES OF GAS

SOLID VOLUME IN CC/GM
SOL C 2.97828530038-001

THE C-J COMPOSITION OF THE DETONATION PRODUCTS AND THE INPUT COEFFICIENTS TO THE THERMODYNAMIC FITS FOR EACH SPECIE

SPECIE	NO OF MOLES	COEFFICIENTS A,B,C,D,E, THE INTEGRATION CONSTANT, HEAT OF FORMATION IN CALORIES/MOLE, COVOLUME					
NEO	3.73000333055+000	4.25884200000+001	1.48090500000-002	-2.63918100000-006	1.92045300000-010	0.00000000000+000	
		1.34282835156+003	-5.71070000000+004	2.50000000000+002			
N2	5.61180468299-005	2.97034700000+001	1.14382900000-002	-2.20122200000-006	1.67776100000-010	0.00000000000+000	
		1.17589615365+003	0.00000000000+000	1.80000000000+002			
OE	4.93789935499-006	4.70309000000+001	1.28714700000-002	-2.50021700000-006	1.90157000000-010	0.00000000000+000	
		1.03537647396+003	0.00000000000+000	3.50000000000+002			
COE	1.58053119327+000	4.74811200000+001	1.95446300000-002	-3.72129600000-006	2.77030000000-010	0.00000000000+000	
		7.46280968750+002	-9.39680000000+004	6.00000000000+002			
CO	6.13813028253-002	4.53308200000+001	1.23816100000-002	-2.41640300000-006	1.82818100000-010	0.00000000000+000	
		1.12158830990+003	-2.72010000000+004	3.90000000000+002			
NH3	1.22768510227-004	4.20181600000+001	1.91166200000-002	-3.16433000000-006	2.19780100000-010	0.00000000000+000	
		1.20696121615+003	-9.36800000000+003	4.76000000000+002			
H	1.24631105177-007	2.63911000000+001	8.12137200000-003	-1.69074000000-006	1.31682300000-010	0.00000000000+000	
		7.94631617188+002	5.16190000000+004	7.60000000000+001			
NO	1.42998412726-004	4.84149800000+001	1.26938600000-002	-2.49460000000-006	1.89321300000-010	0.00000000000+000	
		1.20924970573+003	2.14770000000+004	3.86000000000+002			
N2	3.43801711654+000	4.39234000000+001	1.22250100000-002	-2.37900500000-006	1.79832200000-010	0.00000000000+000	
		1.13916134896+003	0.00000000000+000	3.80000000000+002			
OH	1.05874291904-007	4.24179200000+001	1.15684700000-002	-2.22665900000-006	1.68915500000-010	0.00000000000+000	
		1.18351754427+003	3.56000000000+003	4.13000000000+002			
CH4	3.14169038663-006	3.87568600000+001	2.36401300000-002	-3.70795700000-006	2.47071400000-010	0.00000000000+000	
		1.04242791146+003	-1.60000000000+004	5.28000000000+002			
SOL C	3.00278436222+000	-2.46151900000-001	7.17985500000-003	-1.29755000000-006	9.34999500000-011	0.00000000000+000	
		-2.58204389323+002	0.00000000000+000	0.00000000000+000			

THE BKW HUGONIOT FOR THE DETONATION PRODUCTS OF
CYCLOTOL 77/23 RDX/TNT

PRESSURE = 5.0000000000-001 VOLUME = 3.63405677947-001 TEMPERATURE = 3.17802428765+003
H2O 3.73018152070+000
H2 1.00387640837-005
O2 1.09422936200-004
CO2 1.99029039817+000
CO 4.06036806986-002
NH3 3.82943514541-005
H 1.02454272814-007
NO 1.01509115494-003
N2 3.43762330726+000
OH 6.52491115938-008
CH4 4.57577362050-007
SOL C 3.01380546355+000

PRESSURE = 4.5000000000-001 VOLUME = 3.76300627708-001 TEMPERATURE = 3.02608574143+003
H2O 3.73017266278+000
H2 1.21772299357-005
O2 4.89252269073-005
CO2 1.99072930699+000
CO 4.02842314637-002
NH3 4.26475092456-005
H 8.33220645315-008
NO 5.86585218241-004
N2 3.43783538364+000
OH 5.61138295653-008
CH4 5.59506092295-007
SOL C 3.01368590204+000

PRESSURE = 4.0000000000-001 VOLUME = 3.91290025294-001 TEMPERATURE = 2.89983748718+003
H2O 3.73015067550+000
H2 1.72313320221-005
O2 2.17745300534-005
CO2 1.98964938595+000
CO 4.27609509633-002
NH3 5.35878414015-005
H 7.89451951695-008
NO 3.45995511218-004
N2 3.43795020832+000
OH 5.70552517810-008
CH4 8.21701307668-007
SOL C 3.01228884138+000

PRESSURE = 3.5000000000-001 VOLUME = 4.09020220444-001 TEMPERATURE = 2.78805090918+003
H2O 3.73010187967+000
H2 2.91753636723-005
O2 9.82986893660-006
CO2 1.98645349568+000
CO 4.93594230404-002
NH3 7.72579621443-005
H 9.04037858882-008
NO 2.11979249167-004
N2 3.43800538139+000
OH 7.09396489015-008
CH4 1.49067707596-006
SOL C 3.00888559060+000

PRESSURE = 3.0000000000-001 VOLUME = 4.30825418147-001 TEMPERATURE = 2.70429068851+003
H2O 3.72998758737+000
H2 6.06973801504-005
O2 4.61079668781-006
CO2 1.97966674122+000
CO 6.31318117579-002
NH3 1.29814361496-004
H 1.30463575345-007
NO 1.37785091315-004
N2 3.43801620027+000
OH 1.11749037212-007
CH4 3.43630065062-006
SOL C 3.00189801072+000

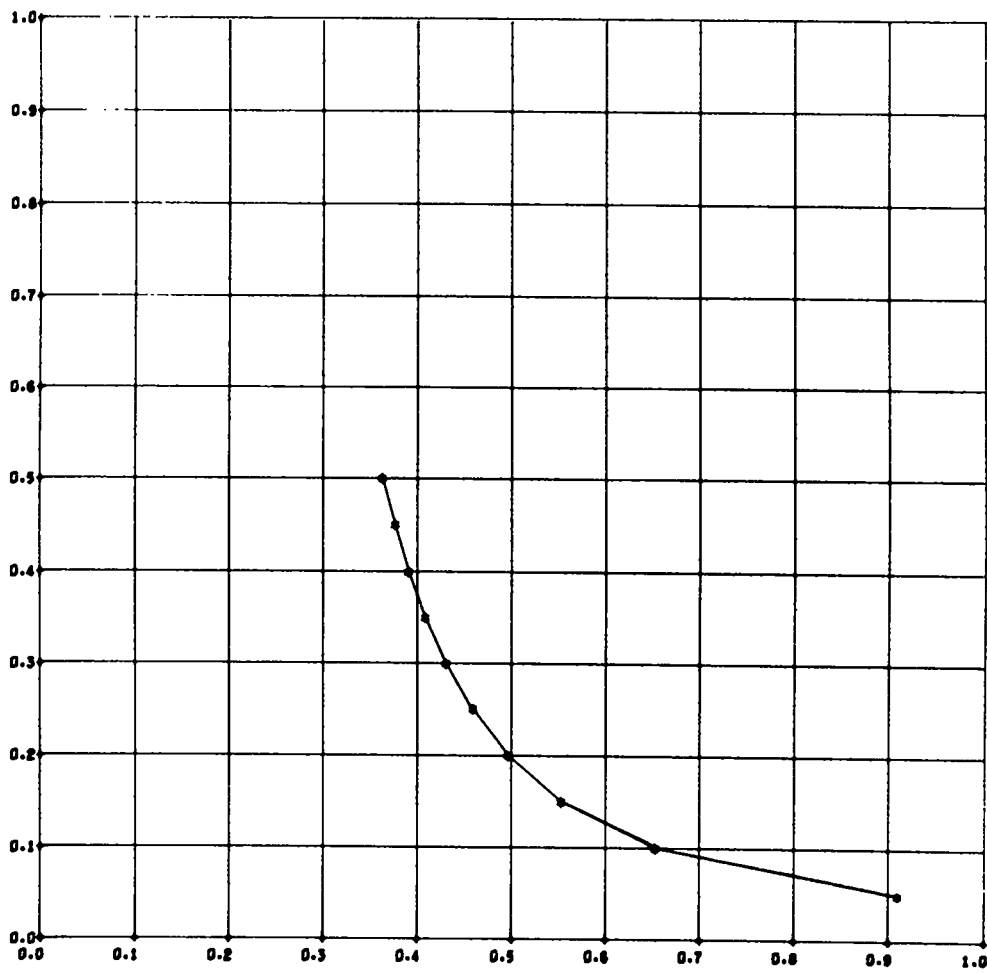
PRESSURE = 2.5000000000-001 VOLUME = 4.58747308973-001 TEMPERATURE = 2.64715706138+003
H2O 3.72968173829+000
H2 1.59864296464-004
O2 2.31688484923-006
CO2 1.96964107049+000
CO 9.15337057965-002
NH3 2.58253204881-004
H 2.49571753897-007
NO 9.75489248862-005
N2 3.43797209894+000
OH 2.32233596089-007
CH4 1.03883509183-005
SOL C 2.98751483536+000

PRESSURE = 2.0000000000-001 VOLUME = 4.96742498437-001 TEMPERATURE = 2.62020411668+003
H2O 3.72869045511+000
H2 5.49937835541-004
O2 1.28545353090-006
CO2 1.93476746910+000
CO 1.54294150778-001
NH3 6.15928127023-004
H 6.69064250822-007
NO 7.72247175290-005
N2 3.43780342358+000
OH 6.60285239463-007
CH4 4.23250997335-005
SOL C 2.95559589502+000

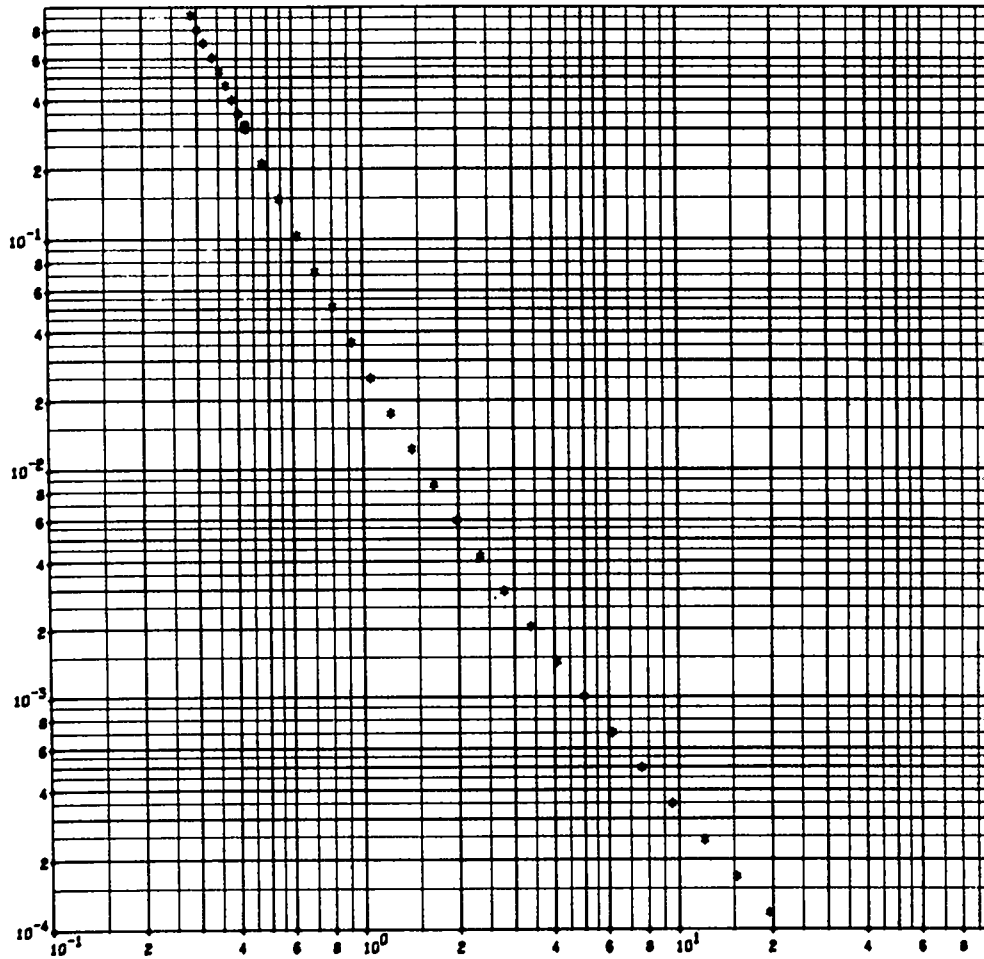
PRESSURE = 1.5000000000-001 VOLUME = 5.53553176972-001 TEMPERATURE = 2.62619190187+003
H2O 3.72454158566+000
H2 2.55537880547-003
O2 7.91464233157-007
CO2 1.85916101557+000
CO 3.09663210801-001
NH3 1.77483627801-003
H 2.65318142830-006
NO 6.89961946155-005
N2 3.43722808376+000
OH 2.61327653280-006
CH4 2.44083946328-004
SOL C 2.87563168968+000

PRESSURE = 1.0000000000-001 VOLUME = 6.53830145352-001 TEMPERATURE = 2.65853991701+003
H2O 3.69983311349+000
H2 1.64563877143-002
O2 4.81647278823-007
CO2 1.65315209090+000
CO 7.46383145114-001
NH3 6.24426427260-003
H 1.60886391206-005
NO 6.48383413077-005
N2 3.43499544869+000
OH 1.37579642100-005
CH4 2.08958954361-003
SOL C 2.64307517444+000

PRESSURE = 5.0000000000-002 VOLUME = 9.10546157916-001 TEMPERATURE = 2.66628712188+003
H2O 3.43933546962+000
H2 1.82655714262-001
O2 1.55718922227-007
CO2 1.10842247151+000
CO 2.09629951720+000
NH3 2.81629808643-002
H 1.46238664752-004
NO 4.34462449015-005
N2 3.42404678645+000
OH 7.63124689872-005
CH4 3.29515346257-002
SOL C 1.80702647666+000

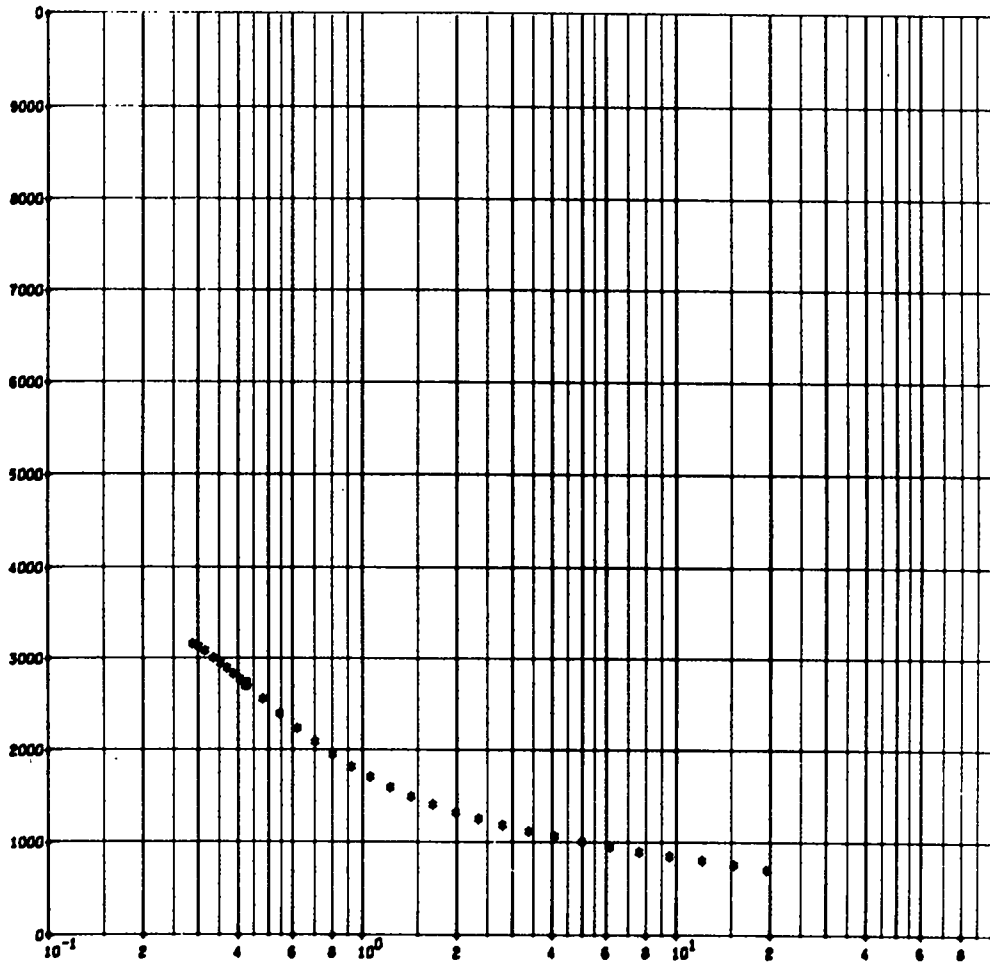


CYCLOTOL 77/23 RDX/TNT
PRESSURE-VOLUME HUGONIOT



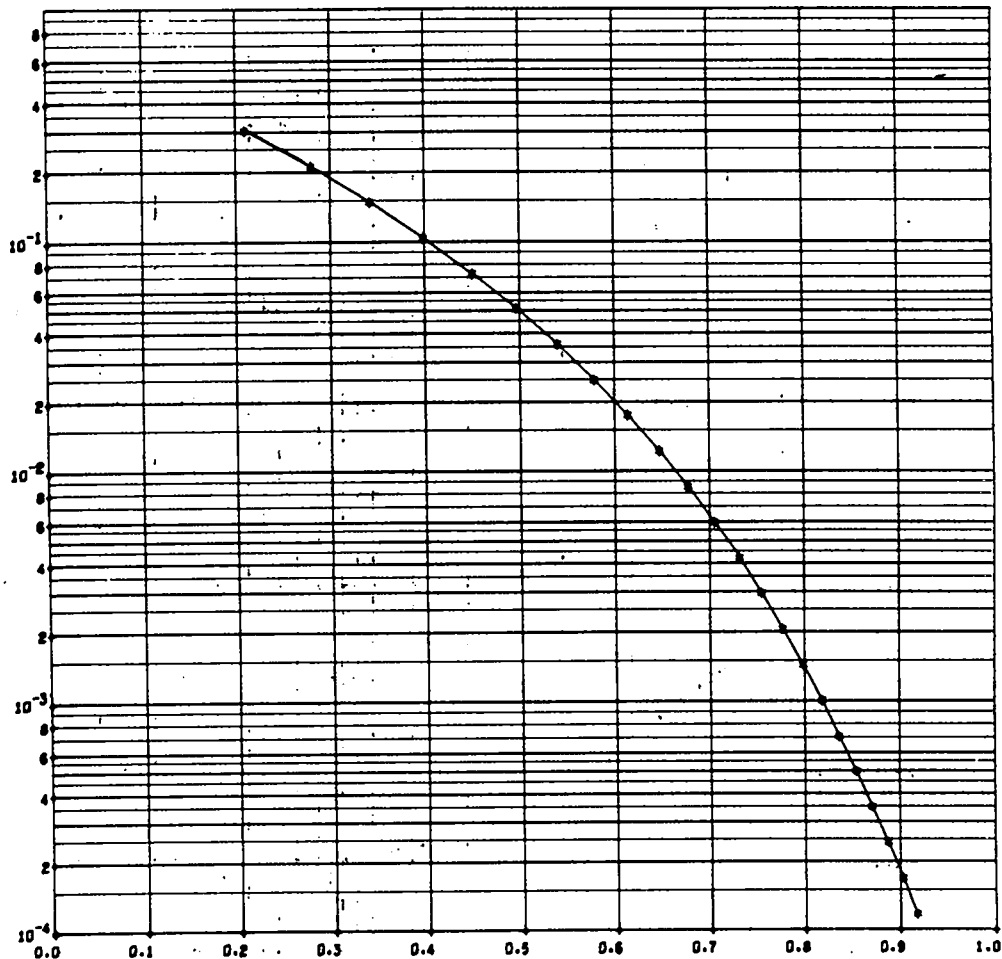
CYCLOTOL 77/23 ROR/TNT

PRESSURE-VOLUME ISENTROPE THRU THE C-J VALUE



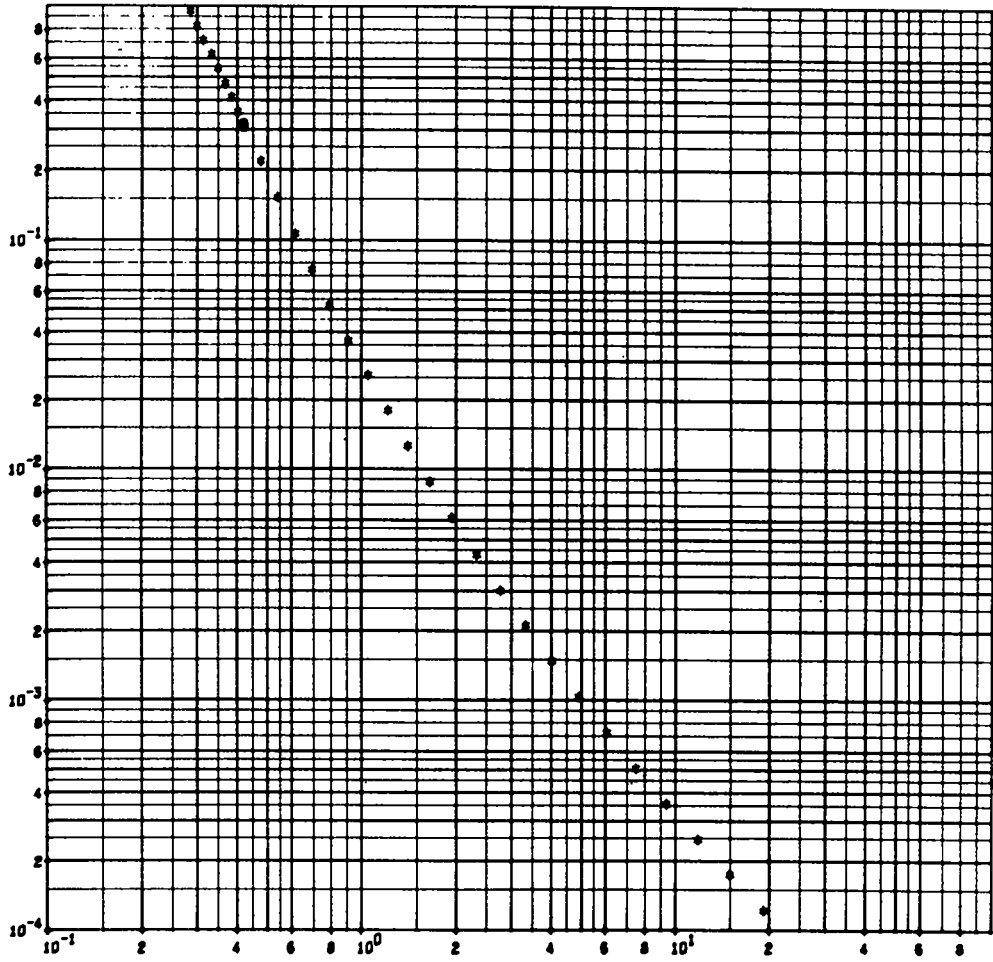
CYCLOTOL 77/23 RDX/TNT

TEMPERATURE-VOLUME ISENTROPE THRU THE C-J VALUE



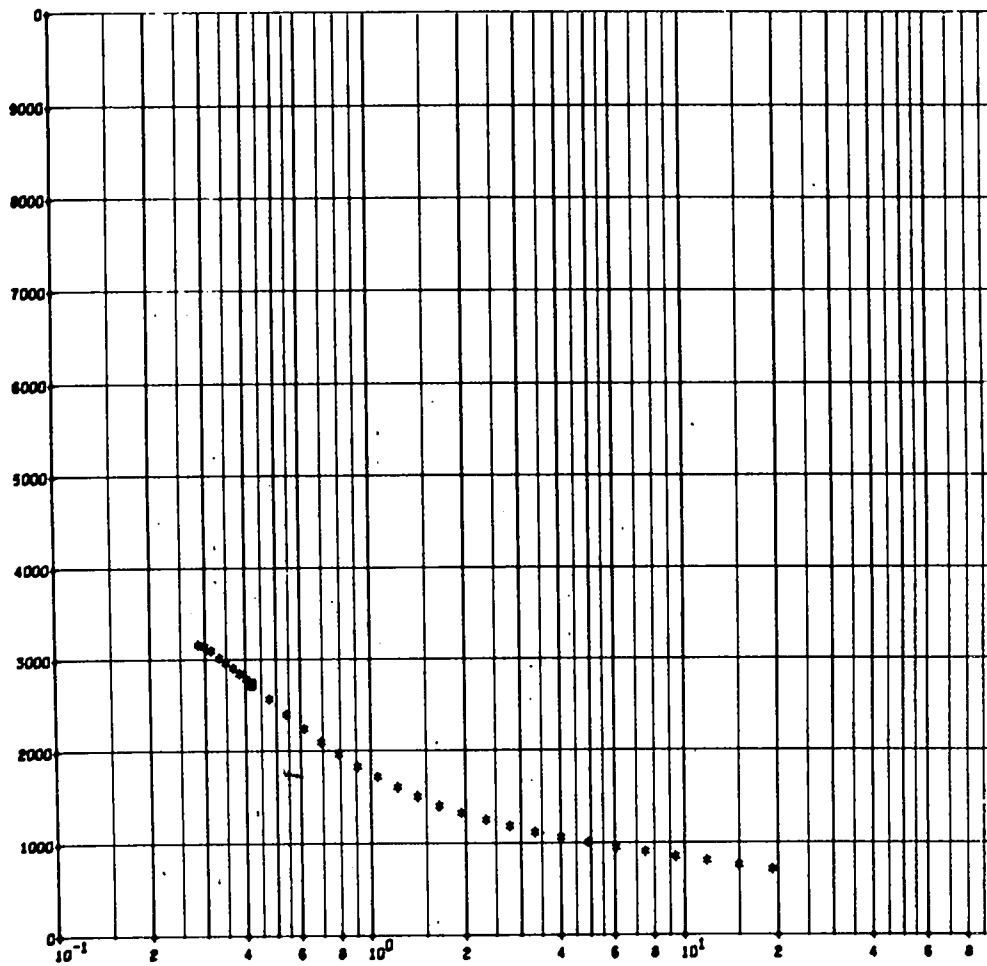
CycLOTOL 77/25 RDX/TNT

PRESSURE-PARTICLE VELOCITY



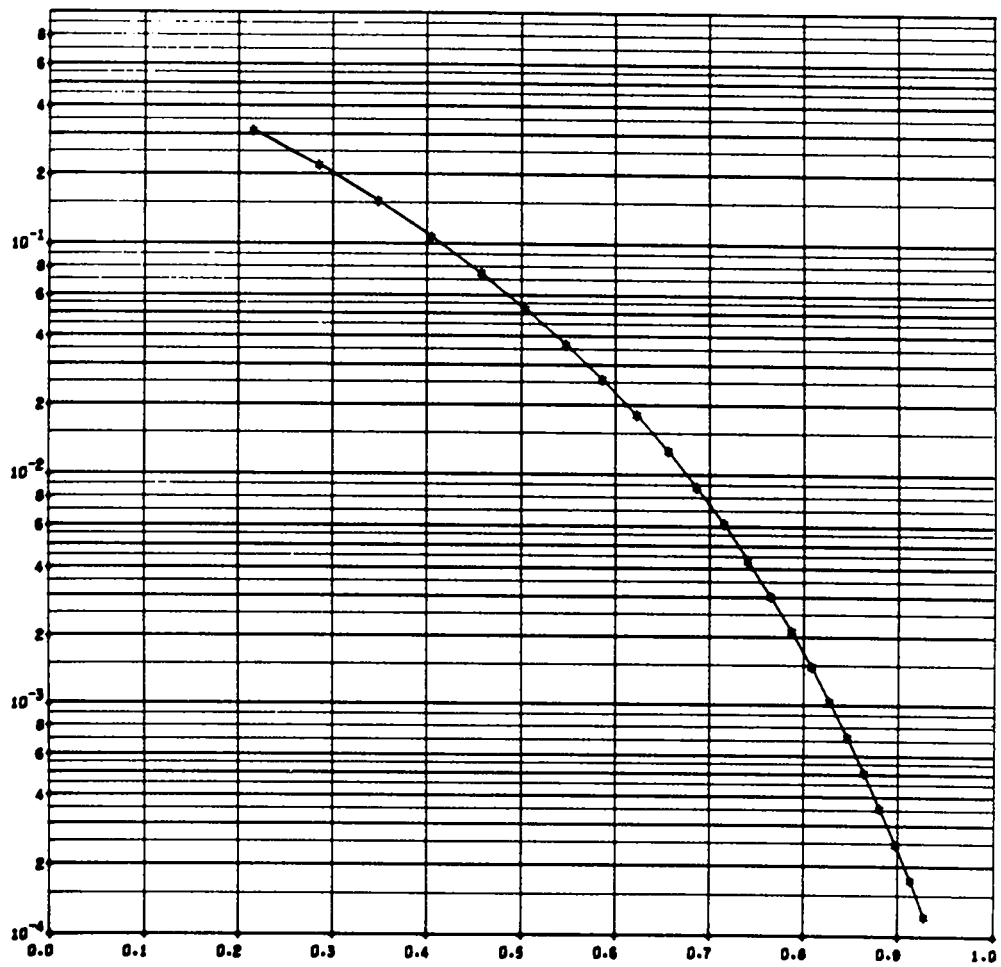
CYCLOTOL 77/23 RDX/TNT

PRESSURE-VOLUME ISENTROPE THRU THE C-J VALUE



CYCLOTOL 77/23 RDX/TNT

TEMPERATURE-VOLUME ISENTROPE THRU THE C-J VALUE



CYCLOTOL 77/23 HSE/TNT

PRESSURE-PARTICLE VELOCITY

A STRETCH BWK CALCULATION FOR THE EXPLOSIVE
CYCLOTOL 77/23 RDX/TNT

THE NUMBER OF ELEMENTS IS 4

THE NUMBER OF GAS SPECIES IS 11

THE NUMBER OF SOLID SPECIES IS 1

THE KW EQUATION OF STATE PARAMETERS ARE

ALPHA= 5.0000000000-001 BETA= 1.6000000000-001 THETA= 4.0000000000+002 KAPPA= 1.09097784436+001

THE COMPOSITION OF THE EXPLOSIVE IS

5.0447000000+000 MOLES OF C
7.4605000000+000 MOLES OF H
6.8763000000+000 MOLES OF N
7.7526000000+000 MOLES OF O

THE DENSITY OF THE EXPLOSIVE IS 1.6000000000+000 GRAMS/CC

THE MOLECULAR WEIGHT IS 2.8847500000+002 GRAMS

THE HEAT OF FORMATION AT 0 DEG K IS 3.3550000000+004 CALORIES PER FORMULA WEIGHT

THE SOLID (COWAN)EQUATION OF STATE PARAMETERS VO, AS, BS, CS, DS, ES, A1, A2, C1, C2, C3, ATOMIC WT

SOL C 4.4444444444-001 8.30935837268-001 -1.39381809219+000 6.72569716021-001 -1.13537262508-001 6.49155882007-003
-2.26705345948-001 1.20516569525-001 8.31600000000-002 -1.75590000000-001 1.55310000000-001 1.2010000000+001

THE INPUT DETONATION PRODUCT ELEMENTAL COMPOSITION MATRIX

0.0+00	2.0+00	0.0+00	1.0+00	0.0+00	2.0+00	0.0+00	0.0+00	0.0+00	0.0+00	0.0+00	2.0+00
1.0+00	0.0+00	0.0+00	2.0+00	1.0+00	3.0+00	0.0+00	1.0+00	0.0+00	3.0+00	1.0+00	0.0+00
0.0+00	1.0+00	0.0+00	0.0+00	0.0+00	0.0+00	1.0+00	1.0+00	0.0+00	0.0+00	2.0+00	0.0+00
0.0+00	1.0+00	0.0+00	1.0+00	1.0+00	4.0+00	0.0+00	0.0+00	1.0+00	0.0+00	0.0+00	0.0+00

A STRETCH BRW CALCULATION FOR THE EXPLOSIVE
CYCLOTOL 77/23 RDX/TNT

THE COMPUTED CJ PRESSURE IS 2.50204976875-001 MEGABARS

THE COMPUTED DETONATION VELOCITY IS 7.78600949902-001 CM/MICROSECOND

THE COMPUTED CJ TEMPERATURE IS 2.95606852872+003 DEGREES KELVIN

THE COMPUTED CJ VOLUME IS 4.63777970259-001 CC/GRAM OF EXPLOSIVE

THE COMPUTED GAMMA IS 2.87682593613+000

THE VOLUME OF THE GAS IS 1.32183177099+001 CC/MOLE OF GAS AND THERE ARE 9.27878793897+000 MOLES OF GAS

SOLID VOLUME IN CC/GM
SOL C 3.16132621485-001

THE C-J COMPOSITION OF THE DETONATION PRODUCTS AND THE INPUT COEFFICIENTS TO THE THERMODYNAMIC FITS FOR EACH SPECIE

SPECIE	NO OF MOLES	COEFFICIENTS A,B,C,D,E, THE INTEGRATION CONSTANT, HEAT OF FORMATION IN CALORIES/MOLE, COVOLUME				
M2O	3.72857977815+000	4.25884200000+001	1.48080500000-002	-2.63918100000-006	1.92045300000-010	0.00000000000+000
		1.34282835156+003	-5.71070000000+004	2.50000000000+002		
N2	5.47759544188-004	2.97034700000+001	1.14382900000-002	-2.20122200000-006	1.67776100000-010	0.00000000000+000
		1.17589615365+003	0.00000000000+000	1.80000000000+002		
O2	9.57951454221-006	4.70309000000+001	1.28714700000-002	-2.50021700000-006	1.90157000000-010	0.00000000000+000
		1.03537647396+003	0.00000000000+000	3.50000000000+002		
CO2	1.91274639298+000	4.74811200000+001	1.95446300000-002	-3.72129600000-006	2.77030000000-010	0.00000000000+000
		7.46280968750+002	-9.39680000000+004	6.00000000000+002		
CO	1.98177183468-001	4.53308200000+001	1.23818100000-002	-2.41640300000-006	1.82818100000-010	0.00000000000+000
		1.12158830990+003	-2.72010000000+004	3.90000000000+002		
NH3	6.85211241714-004	4.20181600000+001	1.91166200000-002	-3.18433000000-006	2.19780100000-010	0.00000000000+000
		1.20696121615+003	-9.36800000000+004	4.78000000000+002		
H	1.82347677653-006	2.63911000000+001	8.12137200000-003	-1.69074000000-006	1.31682300000-010	0.00000000000+000
		7.94631617188+002	5.16190000000+004	7.60000000000+001		
NO	3.29482729113-004	4.84149800000+001	1.26939800000-002	-2.49460000000-006	1.89321300000-010	0.00000000000+000
		1.20924970573+003	2.14770000000+004	3.86000000000+002		
N2	3.43764265301+000	4.39234000000+001	1.22250100000-002	-2.37900500000-006	1.79832200000-010	0.00000000000+000
		1.13918134896+003	0.00000000000+000	3.80000000000+002		
OH	1.61065761613-006	4.24179200000+001	1.15684700000-002	-2.22665900000-006	1.88915500000-010	0.00000000000+000
		1.18351754427+003	3.58000000000+003	4.13000000000+002		
CH4	4.64641887791-005	3.87568600000+001	2.36401300000-002	-3.70795700000-006	2.47071400000-010	0.00000000000+000
		1.04242791146+003	-1.60000000000+004	5.28000000000+002		
SOL C	2.93372995936+000	-2.46151900000-001	7.17985500000-003	-1.29755000000-006	9.34999500000-011	0.00000000000+000
		-2.58204389323+002	0.00000000000+000	0.00000000000+000		

A STRETCH BRW CALCULATION FOR THE EXPLOSIVE
CYCLOTOL 77/23 RDX/TNT

THE NUMBER OF ELEMENTS IS 4

THE NUMBER OF GAS SPECIES IS 11

THE NUMBER OF SOLID SPECIES IS 1

THE KW EQUATION OF STATE PARAMETERS ARE

ALPHA= 5.0000000000-001 BETA= 1.6000000000-001 THETA= 4.0000000000+002 KAPPA= 1.09097784436+001

THE COMPOSITION OF THE EXPLOSIVE IS

5.0447000000+000 MOLES OF C
7.4605000000+000 MOLES OF H
6.8763000000+000 MOLES OF N
7.7526000000+000 MOLES OF O

THE DENSITY OF THE EXPLOSIVE IS 1.4000000000+000 GRAMS/CC

THE MOLECULAR WEIGHT IS 2.8847500000+002 GRAMS

THE HEAT OF FORMATION AT 0 DEG K IS 3.3550000000+004 CALORIES PER FORMULA WEIGHT

THE SOLID (CO)AN(E)QUATION OF STATE PARAMETERS VO, AS, BS, CS, DS, ES, A1, A2, C1, C2, C3, ATOMIC WT

SOL C 4.4444444444-001 8.30935837268-001 -1.39361809219+000 6.72569716021-001 -1.13337262508-001 6.49155882007-003
-2.26705345948-001 1.20516369925-001 8.31600000000-002 -1.73590000000-001 1.95310000000-001 1.20100000000+001

THE INPUT DETONATION PRODUCT ELEMENTAL COMPOSITION MATRIX

0.0+00	2.0+00	0.0+00	1.0+00	0.0+00	2.0+00	0.0+00	0.0+00	0.0+00	0.0+00	0.0+00	2.0+00
1.0+00	0.0+00	0.0+00	2.0+00	1.0+00	0.0+00	0.0+00	1.0+00	0.0+00	3.0+00	1.0+00	0.0+00
0.0+00	1.0+00	0.0+00	0.0+00	0.0+00	0.0+00	1.0+00	1.0+00	0.0+00	0.0+00	2.0+00	0.0+00
0.0+00	1.0+00	0.0+00	1.0+00	1.0+00	4.0+00	0.0+00	0.0+00	1.0+00	0.0+00	0.0+00	0.0+00

A STRETCH BAW CALCULATION FOR THE EXPLOSIVE
CYCLOTOL 77/23 RDX/TNT

THE COMPUTED CJ PRESSURE IS 1.88069547098-001 MEGABARS

THE COMPUTED DETONATION VELOCITY IS 7.10746426164-001 CM/MICROSECOND

THE COMPUTED CJ TEMPERATURE IS 3.22521283110+003 DEGREES KELVIN

THE COMPUTED CJ VOLUME IS 5.24339462120-001 CC/GRAM OF EXPLOSIVE

THE COMPUTED GAMMA IS 2.76044227330+000

THE VOLUME OF THE GAS IS 1.47609602662+001 CC/MOLE OF GAS AND THERE ARE 9.50030369967+000 MOLES OF GAS

SOLID VOLUME IN CC/GM
SOL C 3.38983375098-001

THE C-J COMPOSITION OF THE DETONATION PRODUCTS AND THE INPUT COEFFICIENTS TO THE THERMODYNAMIC FITS FOR EACH SPECIE

SPECIE	NO OF MOLES	COEFFICIENTS A,B,C,D,E, THE INTEGRATION CONSTANT, HEAT OF FORMATION IN CALORIES/MOLE, COMVOLUME						
H2O	3.71758336457+000	4.25884200000+001	1.48040500000-002	-2.63918100000-006	1.92045300000-010	0.00000000000+000		
H2	5.71941789502-003	1.34282835156+003	-5.71070000000+004	2.50000000000+002				
O2	1.58132633725-005	2.97034700000+001	1.14382900000-002	-2.20122200000-006	1.67776100000-010	0.00000000000+000		
CO2	1.69837302078+000	1.17589613365+003	0.00000000000+000	1.80000000000+002	1.90157000000-010	0.00000000000+000		
CO	6.37536298552-001	4.70309000000+001	1.28714700000-002	-2.50021700000-006	2.77030000000-010	0.00000000000+000		
NH3	3.70262575559-003	1.03537647396+003	0.00000000000+000	3.50000000000+002	1.62818100000-010	0.00000000000+000		
H	2.80130161299-005	4.74811200000+001	1.95448300000-002	-3.72129600000-006	2.19780100000-010	0.00000000000+000		
NO	6.79916308788-004	7.46280968750+002	-9.39680000000+004	6.00000000000+002	1.31682300000-010	0.00000000000+000		
N2	3.43595872897+000	4.53308200000+001	1.23816100000-002	-2.41840300000-006	1.89321300000-010	0.00000000000+000		
OH	2.27524812017-005	1.12158830990+003	-2.72010000000+004	3.90000000000+002	1.79832200000-010	0.00000000000+000		
CH4	6.83948076554-004	4.20181600000+001	1.91166200000-002	-3.18433000000-006	1.68915500000-010	0.00000000000+000		
SOL C	2.70810673259+000	1.20696121615+003	-9.36800000000+003	4.76000000000+002	9.34999500000-011	0.00000000000+000		
		2.63911000000+001	8.12137200000-003	-1.69074000000-006				
		4.84149800000+001	1.26938600000-002	-2.49460000000-006				
		1.20924970573+003	2.14770000000+004	3.86000000000+002				
		4.39234000000+001	1.22250100000-002	-2.37900900000-006				
		1.13916134896+003	0.00000000000+000	3.80000000000+002				
		4.24179200000+001	1.15684700000-002	-2.22665900000-006				
		1.18351754427+003	3.56000000000+003	4.13000000000+002				
		3.87568600000+001	2.36401300000-002	-3.70795700000-006				
		1.04242791146+003	-1.60000000000+004	5.28000000000+002				
		-2.46151900000-001	7.17985500000-003	-1.29755000000-006				
		-2.58204389323+002	0.00000000000+000	0.00000000000+000				

A STRETCH BKW CALCULATION FOR THE EXPLOSIVE
CYCLOTOL 77/23 RDX/TNT

THE NUMBER OF ELEMENTS IS 4

THE NUMBER OF GAS SPECIES IS 11

THE NUMBER OF SOLID SPECIES IS 1

THE KW EQUATION OF STATE PARAMETERS ARE

ALPHA= 5.0000000000-001 BETA= 1.8000000000-001 THETA= 4.0000000000+002 KAPPA= 1.09097784436+001

THE COMPOSITION OF THE EXPLOSIVE IS

5.0447000000+000 MOLES OF C
7.4605000000+000 MOLES OF H
6.8763000000+000 MOLES OF N
7.7526000000+000 MOLES OF O

THE DENSITY OF THE EXPLOSIVE IS 1.2000000000+000 GRAMS/CC

THE MOLECULAR WEIGHT IS 2.8847500000+002 GRAMS

THE HEAT OF FORMATION AT 0 DEG K IS 3.3550000000+004 CALORIES PER FORMULA WEIGHT

THE SOLID (COMAN) EQUATION OF STATE PARAMETERS VO, A5, B5, C5, D5, E5, A1, A2, C1, C2, C3, ATOMIC WT

SOL C 4.4444444444-001 8.30935837268-001 -1.39381809219+000 6.72569716021-001 -1.13537262508-001 6.49155982007-003
-2.26705345948-001 1.20516569525-001 8.31600000000-002 -1.75590000000-001 1.55310000000-001 1.20100000000+001

THE INPUT DETONATION PRODUCT ELEMENTAL COMPOSITION MATRIX

0.0+00	2.0+00	0.0+00	1.0+00	0.0+00	2.0+00	0.0+00	0.0+00	0.0+00	0.0+00	0.0+00	2.0+00
1.0+00	0.0+00	0.0+00	2.0+00	1.0+00	0.0+00	0.0+00	1.0+00	0.0+00	3.0+00	1.0+00	0.0+00
0.0+00	1.0+00	0.0+00	0.0+00	0.0+00	0.0+00	1.0+00	1.0+00	0.0+00	0.0+00	2.0+00	0.0+00
0.0+00	1.0+00	0.0+00	1.0+00	1.0+00	4.0+00	0.0+00	0.0+00	1.0+00	0.0+00	0.0+00	0.0+00

A STRETCH BKM CALCULATION FOR THE EXPLOSIVE
CYCLOTOL 77/23 RDX/TNT

THE COMPUTED CJ PRESSURE IS 1.39031555656-001 MEGABARS

THE COMPUTED DETONATION VELOCITY IS 6.48887283184-001 CM/MICROSECOND

THE COMPUTED CJ TEMPERATURE IS 3.40193671369+003 DEGREES KELVIN

THE COMPUTED CJ VOLUME IS 6.04030595367-001 CC/GRAM OF EXPLOSIVE

THE COMPUTED GAMMA IS 2.63417963030+000

THE VOLUME OF THE GAS IS 1.66099419895+001 CC/MOLE OF GAS AND THERE ARE 9.89409190653+000 MOLES OF GAS

SOLID VOLUME IN CC/GM
SOL C 3.59108647964-001

THE C-J COMPOSITION OF THE DETONATION PRODUCTS AND THE INPUT COEFFICIENTS TO THE THERMODYNAMIC FITS FOR EACH SPECIE

SPECIE	NO OF MOLES	COEFFICIENTS A,B,C,D,E, THE INTEGRATION CONSTANT, HEAT OF FORMATION IN CALORIES/MOLE, CONVOLUME				
H2O	3.66815110390+000	4.25884200000+001	1.48080500000-002	-2.63918100000-006	1.92045300000-010	0.00000000000+000
H2	3.32106602007-002	1.34282835156+003	-5.71070000000+004	2.50000000000+002		
O2	1.62877653874-005	2.97034700000+001	1.14382900000-002	-2.20122200000-006	1.67776100000-010	0.00000000000+000
CO2	1.34083082007+000	1.17589615363+003	0.00000000000+000	1.80000000000+002		
CO	1.40170236705+000	4.70309000000+001	1.28714700000-002	-2.50021700000-006	1.90157000000-010	0.00000000000+000
NH3	1.24812974622-002	1.03537647396+003	0.00000000000+000	3.50000000000+002		
H	1.97719587771-004	4.74811200000+001	1.95446300000-002	-3.72129600000-006	2.77030000000-010	0.00000000000+000
NO	9.22603051538-004	4.53308200000+001	1.23816100000-002	-2.41640300000-006	1.82818100000-010	0.00000000000+000
N2	3.43144804974+000	1.12158830990+003	-2.72010000000+004	3.90000000000+002		
OH	1.29710312222-004	4.20181600000+001	1.91166200000-002	-3.16433000000-006	2.19780100000-010	0.00000000000+000
CH4	5.00128737596-003	1.20696121615+003	-9.36800000000+003	4.76000000000+002		
SOL C	2.2971652350+000	2.63911000000+001	8.12137200000-003	-1.69074000000-006	1.31682300000-010	0.00000000000+000
		7.94631617188+002	5.18190000000+004	7.60000000000+001		
		4.84149800000+001	1.26938600000-002	-2.49460000000-006	1.89321300000-010	0.00000000000+000
		1.20924970573+003	2.14770000000+004	3.86000000000+002		
		4.39234000000+001	1.22250100000-002	-2.37900500000-006	1.79832200000-010	0.00000000000+000
		1.13916134896+003	0.00000000000+000	3.80000000000+002		
		4.24179200000+001	1.15684700000-002	-2.22663900000-006	1.68915500000-010	0.00000000000+000
		1.18351754427+003	3.56000000000+003	4.13000000000+002		
		3.87568600000+001	2.36401300000-002	-3.70795700000-006	2.47071400000-010	0.00000000000+000
		1.04242791146+003	-1.60000000000+004	5.28000000000+002		
		-2.46151900000-001	7.17985500000-003	-1.29755000000-006	9.34999500000-011	0.00000000000+000
		-2.58204389323+002	0.00000000000+000	0.00000000000+000		

A STRETCH BKW CALCULATION FOR THE EXPLOSIVE
CYCLOTOL 77/23 RDX/TNT

THE NUMBER OF ELEMENTS IS 4

THE NUMBER OF GAS SPECIES IS 11

THE NUMBER OF SOLID SPECIES IS 1

THE KW EQUATION OF STATE PARAMETERS ARE

ALPHA= 5.0000000000-001 BETA= 1.6000000000-001 THETA= 4.0000000000+002 KAPPA= 1.09097784436+001

THE COMPOSITION OF THE EXPLOSIVE IS

5.04470000000+000 MOLES OF C
7.46050000000+000 MOLES OF H
6.87630000000+000 MOLES OF N
7.75260000000+000 MOLES OF O

THE DENSITY OF THE EXPLOSIVE IS 1.0000000000+000 GRAMS/CC

THE MOLECULAR WEIGHT IS 2.8847500000+002 GRAMS

THE HEAT OF FORMATION AT 0 DEG K IS 3.3550000000+004 CALORIES PER FORMULA WEIGHT

THE SOLID (COMAN)EQUATION OF STATE PARAMETERS VO, AS, BS, CS, DS, ES, A1, A2, C1, C2, C3, ATOMIC WT

SOL C 4.4444444444-001 8.30935837268-001 -1.39381808219+000 6.72569716021-001 -1.13537262508-001 6.49155882007-003
-2.26705345948-001 1.20516369525-001 8.31600000000-002 -1.75590000000-001 1.55310000000-001 1.20100000000+001

THE INPUT DETONATION PRODUCT ELEMENTAL COMPOSITION MATRIX

0.0+00	2.0+00	0.0+00	1.0+00	0.0+00	2.0+00	0.0+00	0.0+00	0.0+00	0.0+00	0.0+00	2.0+00
1.0+00	0.0+00	0.0+00	2.0+00	1.0+00	0.0+00	0.0+00	1.0+00	0.0+00	3.0+00	1.0+00	0.0+00
0.0+00	1.0+00	0.0+00	0.0+00	0.0+00	0.0+00	1.0+00	1.0+00	0.0+00	0.0+00	2.0+00	0.0+00
0.0+00	1.0+00	0.0+00	1.0+00	1.0+00	4.0+00	0.0+00	0.0+00	1.0+00	0.0+00	0.0+00	0.0+00

A STRETCH BKW CALCULATION FOR THE EXPLOSIVE
CYCLOTOL 77/23 RDX/TNT

THE COMPUTED CJ PRESSURE IS 1.00198460653-001 MEGABARS

THE COMPUTED DETONATION VELOCITY IS 5.91832969195-001 CM/MICROSECOND

THE COMPUTED CJ TEMPERATURE IS 3.49966846152+003 DEGREES KELVIN

THE COMPUTED CJ VOLUME IS 7.13939162532-001 CC/GRAM OF EXPLOSIVE

THE COMPUTED GAMMA IS 2.49572499562+000

THE VOLUME OF THE GAS IS 1.89924987596+001 CC/MOLE OF GAS AND THERE ARE 1.04415683737+001 MOLES OF GAS

SOLID VOLUME IN CC/GM
SOL C 3.76873564955-001

THE C-J COMPOSITION OF THE DETONATION PRODUCTS AND THE INPUT COEFFICIENTS TO THE THERMODYNAMIC FITS FOR EACH SPECIE

SPECIE	NO OF MOLES	COEFFICIENTS A,B,C,D,E, THE INTEGRATION CONSTANT, HEAT OF FORMATION IN CALORIES/MOLE, CONVOLUME					
H2O	3.49044430068+000	4.25884200000+001	1.48080500000-002	-2.63918100000-006	1.82045300000-010	0.00000000000+000	
		1.34282855156+003	-5.71070000000+004	2.50000000000+002			
H2	1.38519554702-001	2.97034700000+001	1.14382900000-002	-2.20122200000-006	1.67776100000-010	0.00000000000+000	
		1.17589615365+003	0.00000000000+000	1.80000000000+002			
O2	1.12153342162-005	4.70309000000+001	1.28714700000-002	-2.50021700000-006	1.90157000000-010	0.00000000000+000	
		1.03537647398+003	0.00000000000+000	3.50000000000+002			
CO2	9.30221066681-001	4.74811200000+001	1.95446300000-002	-3.72129800000-006	2.77030000000-010	0.00000000000+000	
		7.46280968750+002	-9.39680000000+004	6.00000000000+002			
CO	2.40036404657+000	4.53508200000+001	1.23818100000-002	-2.41840300000-006	1.82818100000-010	0.00000000000+000	
		1.12158830990+003	-2.72010000000+004	3.90000000000+002			
NH3	3.28109327767-002	4.20181600000+001	1.91186200000-002	-3.18433000000-006	2.19780100000-010	0.00000000000+000	
		1.20696121815+003	-9.36800000000+003	4.78000000000+002			
H	8.67550305905-004	2.63911000000+001	8.12137200000-003	-1.69074000000-006	1.31682300000-010	0.00000000000+000	
		7.94631817188+002	5.16190000000+004	7.60000000000+001			
NO	9.12514558739-004	4.84149800000+001	1.26938800000-002	-2.49460000000-006	1.89321300000-010	0.00000000000+000	
		1.20924970373+003	2.14770000000+004	3.88000000000+002			
N2	3.42128827633+000	4.39234000000+001	1.22250100000-002	-2.37900500000-006	1.79832200000-010	0.00000000000+000	
		1.13916134896+003	0.00000000000+000	3.80000000000+002			
OH	4.14574167555-004	4.24179200000+001	1.15684700000-002	-2.22865900000-006	1.68915500000-010	0.00000000000+000	
		1.18351754427+003	3.56000000000+003	4.13000000000+002			
CH4	2.57143416098-002	3.87568600000+001	2.36401300000-002	-3.70795700000-006	2.47071400000-010	0.00000000000+000	
		1.04242791146+003	-1.60000000000+004	5.28000000000+002			
SOL C	1.68840054514+000	-2.46151900000-001	7.17985500000-003	-1.29755000000-006	9.34999500000-011	0.00000000000+000	
		-2.58204389323+002	0.00000000000+000	0.00000000000+000			

A STRETCH BKW CALCULATION FOR THE EXPLOSIVE
COMPOSITION B 64/36 RDX/TNT

THE NUMBER OF ELEMENTS IS 4

THE NUMBER OF GAS SPECIES IS 11

THE NUMBER OF SOLID SPECIES IS 1

THE KW EQUATION OF STATE PARAMETERS ARE

ALPHA= 5.000000000-001 BETA= 1.600000000-001 THETA= 4.000000000+002 KAPPA= 1.0909778436+001

THE COMPOSITION OF THE EXPLOSIVE IS

6.8506000000+000 MOLES OF C
8.7504000000+000 MOLES OF H
7.6502000000+000 MOLES OF N
9.3005000000+000 MOLES OF O

THE DENSITY OF THE EXPLOSIVE IS 1.7150000000+000 GRAMS/CC

THE MOLECULAR WEIGHT IS 3.4707100000+002 GRAMS

THE HEAT OF FORMATION AT 0 DEG K IS 3.3180000000+004 CALORIES PER FORMULA WEIGHT

THE SOLID (COMAN)EQUATION OF STATE PARAMETERS VO, AS, BS, CS, DS, ES, A1, A2, C1, C2, C3, ATOMIC WT

SOL C 4.444444444-001 8.30935837268-001 -1.39381808219+000 6.72569716021-001 -1.13537262508-001 6.49155882007-003
-2.26705345948-001 1.20516569525-001 8.31600000000-002 -1.75590000000-001 1.55310000000-001 1.20100000000+001

THE INPUT DETONATION PRODUCT ELEMENTAL COMPOSITION MATRIX

0.0+00	2.0+00	0.0+00	1.0+00	0.0+00	2.0+00	0.0+00	0.0+00	0.0+00	0.0+00	0.0+00	2.0+00
1.0+00	0.0+00	0.0+00	2.0+00	1.0+00	0.0+00	0.0+00	1.0+00	0.0+00	3.0+00	1.0+00	0.0+00
0.0+00	1.0+00	0.0+00	0.0+00	0.0+00	0.0+00	1.0+00	1.0+00	0.0+00	0.0+00	2.0+00	0.0+00
0.0+00	1.0+00	0.0+00	1.0+00	1.0+00	4.0+00	0.0+00	0.0+00	1.0+00	0.0+00	0.0+00	0.0+00

A STRETCH BKM CALCULATION FOR THE EXPLOSIVE
COMPOSITION B 64/36 RDX/TNT

THE COMPUTED CJ PRESSURE IS 2.84433669733-001 MEGABARS

THE COMPUTED DETONATION VELOCITY IS 8.08413241203-001 CM/MICROSECOND

THE COMPUTED CJ TEMPERATURE IS 2.76247360131+003 DEGREES KELVIN

THE COMPUTED CJ VOLUME IS 4.35116727035-001 CC/GRAM OF EXPLOSIVE

THE COMPUTED GAMMA IS 2.94048752075+000

THE VOLUME OF THE GAS IS 1.2615623646+001 CC/MOLE OF GAS AND THERE ARE 1.07144689413+001 MOLES OF GAS

SOLID VOLUME IN CC/GM
SOL C 3.04282417500-001

THE C-J COMPOSITION OF THE DETONATION PRODUCTS AND THE INPUT COEFFICIENTS TO THE THERMODYNAMIC FITS FOR EACH SPECIE

SPECIE	NO OF MOLES	COEFFICIENTS A,B,C,D,E, THE INTEGRATION CONSTANT, HEAT OF FORMATION IN CALORIES/MOLE, COVOLUME				
H2O	4.37469329254+000	4.2588420000+001	1.4808050000-002	-2.6391810000-006	1.9204530000-010	0.0000000000+000
H2	1.30352181134-004	1.34282835156+003	-5.7107000000+004	2.5000000000+002	1.6777610000-010	0.0000000000+000
O2	6.47055872480-006	2.9703470000+001	1.1438290000-002	-2.2012220000-006	1.9015700000-010	0.0000000000+000
CO2	2.41128498454+000	1.17589613363+003	0.0000000000+000	1.8000000000+002	2.7703000000-010	0.0000000000+000
CO	1.03026616205-001	4.7030900000+001	1.2871470000-002	-2.5002170000-006	2.7703000000-010	0.0000000000+000
NH3	2.39366457672-004	1.03537647396+003	0.0000000000+000	3.5000000000+002	2.1978010000-010	0.0000000000+000
N	3.05529081781-007	4.7481120000+001	1.9544630000-002	-3.7212960000-006	1.3168230000-010	0.0000000000+000
NO	1.96902661801-004	7.46280968750+002	-9.3968000000+004	6.0000000000+002	1.8932130000-010	0.0000000000+000
N2	3.82488186544+000	4.5350820000+001	1.2381610000-002	-2.4164030000-006	1.7983220000-010	0.0000000000+000
OH	2.78396135443-007	1.12158830990+003	-2.7201000000+004	3.9000000000+002	1.6891550000-010	0.0000000000+000
CH4	8.50681347022-006	4.2018160000+001	1.9116620000-002	-3.1643300000-006	2.4707140000-010	0.0000000000+000
SOL C	4.33627989244+000	1.20696121615+003	-9.3680000000+003	4.7600000000+002	9.3499950000-011	0.0000000000+000
		2.6391100000+001	8.1213720000-003	-1.6907400000-006		
		7.94631617188+002	5.1619000000+004	7.6000000000+001		
		4.8414980000+001	1.2693860000-002	-2.4946000000-006		
		1.20924970573+003	2.1477000000+004	3.8600000000+002		
		4.3923400000+001	1.2225010000-002	-2.3790050000-006		
		1.13916134896+003	0.0000000000+000	3.8000000000+002		
		4.2417920000+001	1.1568470000-002	-2.2266590000-006		
		1.18351754427+003	3.5600000000+003	4.1300000000+002		
		3.8756860000+001	2.3640130000-002	-3.7079570000-006		
		1.04242791146+003	-1.6000000000+004	5.2800000000+002		
		-2.4615190000-001	7.1798550000-003	-1.2975500000-006		
		-2.58204389323+002	0.0000000000+000	0.0000000000+000		

THE BRW HUGONIOT FOR THE DETONATION PRODUCTS OF
COMPOSITION B 64/36 RDX/TNT

PRESSURE = 5.000000000-001 VOLUME = 3.60523276636-001 TEMPERATURE = 3.34928817616+003
H2O 4.37505100007+000
H2 2.39361650465-005
O2 2.1353029260-004
CO2 2.42561063788+000
CO 7.19191848811-002
NH3 8.13476937306-005
H 3.12809888328-007
NO 1.88114094573-003
N2 3.82411875568+000
OH 2.12278252666-007
CH4 1.38983793351-006
SOL C 4.35306878740+000

PRESSURE = 4.500000000-001 VOLUME = 3.73348912098-001 TEMPERATURE = 3.17395526340+003
H2O 4.37504273706+000
H2 2.69614460915-005
O2 9.52656548345-005
CO2 2.42756746950+000
CO 6.90602813102-002
NH3 8.46927181700-005
H 2.35800673381-007
NO 1.07134300048-003
N2 3.82452198214+000
OH 1.68313627331-007
CH4 1.53018070459-006
SOL C 4.35397071901+000

PRESSURE = 4.000000000-001 VOLUME = 3.88190430784-001 TEMPERATURE = 3.02168529940+003
H2O 4.37501264554+000
H2 3.50865126248-005
O2 4.17976619261-005
CO2 2.42713367664+000
CO 7.05197232280-002
NH3 9.87236395458-005
H 2.03928370217-007
NO 6.16527479135-004
N2 3.82474237443+000
OH 1.55140682698-007
CH4 2.00145938893-006
SOL C 4.35294459867+000

PRESSURE = 3.500000000-001 VOLUME = 4.05791236181-001 TEMPERATURE = 2.89310637026+003
H2O 4.37494244826+000
H2 5.4187314105-005
O2 1.83426629779-005
CO2 2.42365898591+000
CO 7.78384118572-002
NH3 1.31182751232-004
H 2.09928949191-007
NO 3.64310643729-004
N2 3.82485225330+000
OH 1.72094401282-007
CH4 3.20593480468-006
SOL C 4.34909939830+000

PRESSURE = 3.000000000-001 VOLUME = 4.27327255791-001 TEMPERATURE = 2.78938329906+003
H2O 4.37478104295+000
H2 1.02205459548-004
O2 8.23171888588-006
CO2 2.41539177439+000
CO 9.46931186960-002
NH3 2.02357637505-004
H 2.68616102624-007
NO 2.25587411302-004
N2 3.82488602748+000
OH 2.38725264454-007
CH4 6.48073420098-006
SOL C 4.34030862618+000

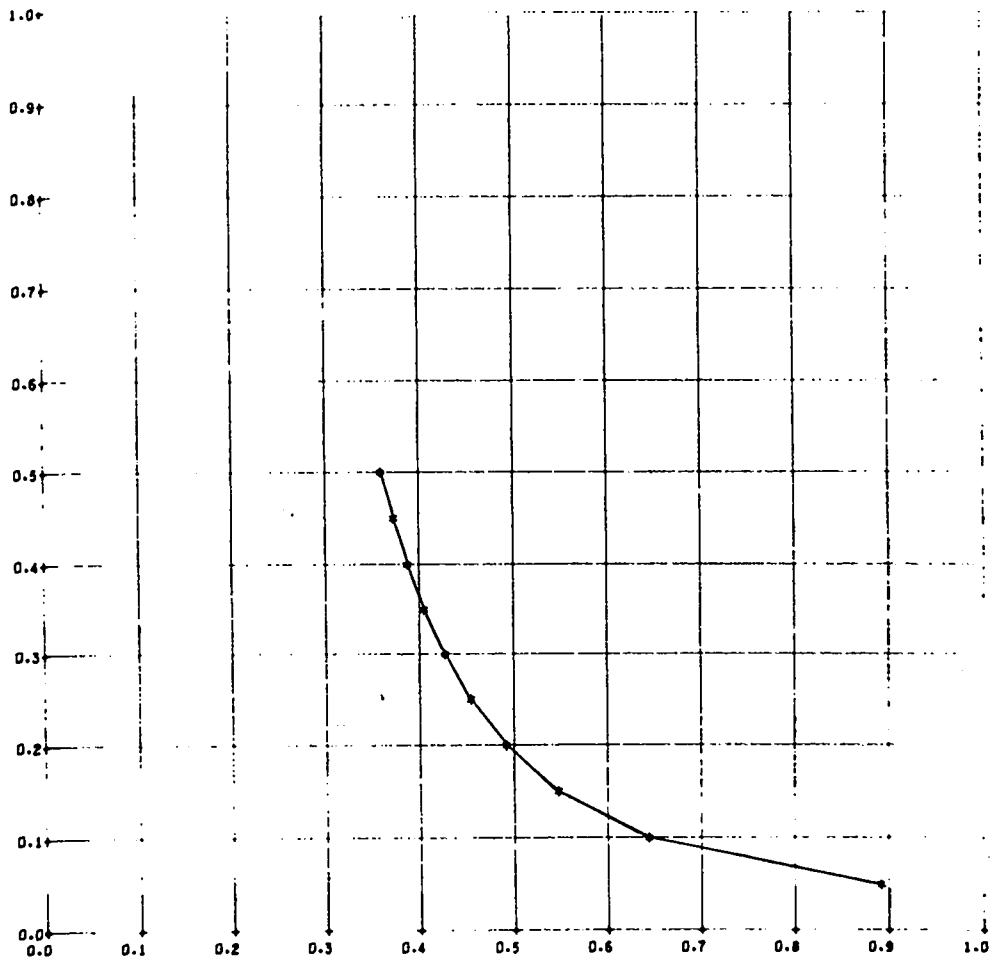
PRESSURE = 2.500000000-001 VOLUME = 4.54811590732-001 TEMPERATURE = 2.71265140133+003
H2O 4.37436903398+000
H2 2.43158409947-004
O2 3.88317785954-006
CO2 2.39802107705+000
CO 1.29930609473-001
NH3 3.68731155467-004
H 4.49479157119-007
NO 1.50004643727-004
N2 3.82484063210+000
OH 4.31447138508-007
CH4 1.71352061651-005
SOL C 4.32263117827+000

PRESSURE = 2.000000000-001 VOLUME = 4.92065667162-001 TEMPERATURE = 2.66594744365+003
H2O 4.37310930141+000
H2 7.56205324193-004
O2 1.982469048397-006
CO2 2.36032585021+000
CO 2.06628007822-001
NH3 8.06938264694-004
H 1.04389822198-006
NO 1.09966661185-004
N2 3.82464154754+000
OH 1.05875506554-006
CH4 6.15172715901-005
SOL C 4.28358662470+000

PRESSURE = 1.500000000-001 VOLUME = 5.47519477684-001 TEMPERATURE = 2.65167395657+003
H2O 4.36814561084+000
H2 3.20088377959-003
O2 1.10382830223-006
CO2 2.27032843766+000
CO 3.91601713458-001
NH3 2.14910205557-003
H 3.57939362914-006
NO 8.99703982545-005
N2 3.82398046377+000
OH 3.62233284621-006
CH4 3.13123715559-004
SOL C 4.18835672317+000

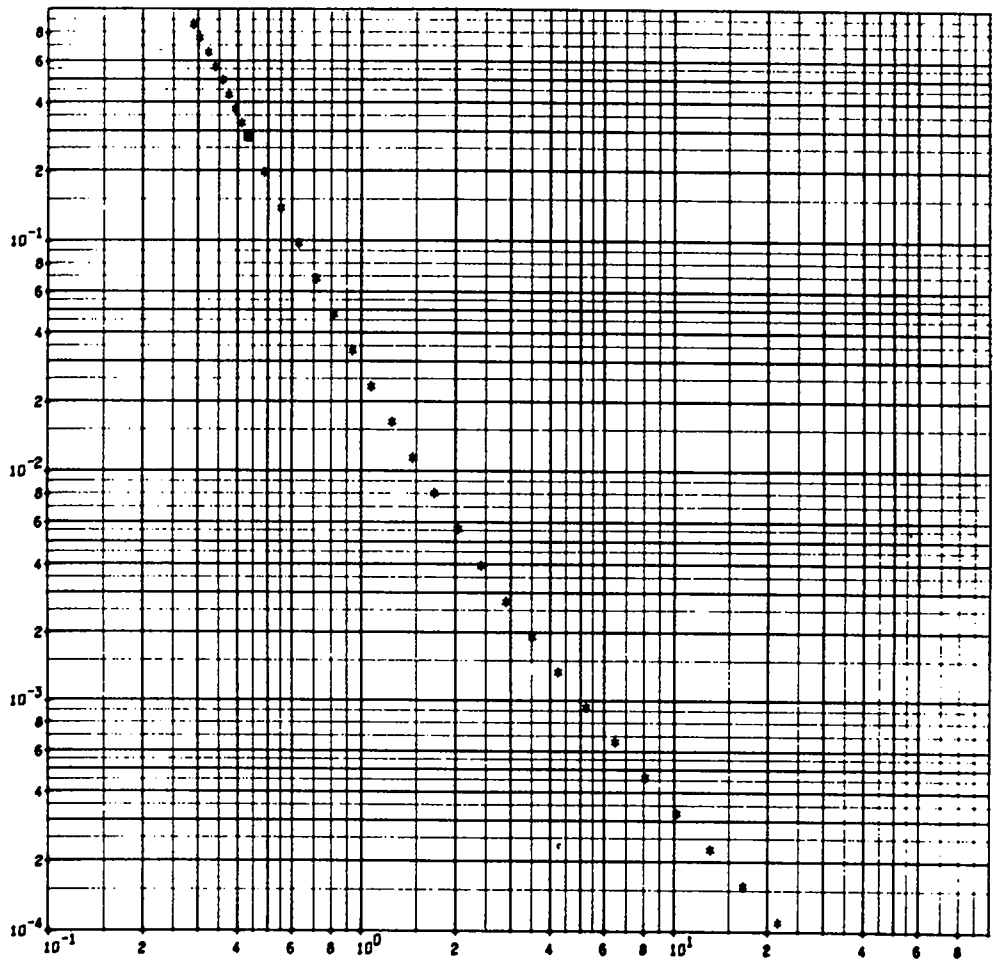
PRESSURE = 1.000000000-001 VOLUME = 6.44901380049-001 TEMPERATURE = 2.66378845902+003
H2O 4.34013452024+000
H2 1.95636788585-002
O2 6.04891141995-007
CO2 2.03018960323+000
CO 8.99890895108-001
NH3 7.08400480581-003
H 1.90182992057-005
NO 7.73715265875-005
N2 3.82151931183+000
OH 1.67968884414-005
CH4 2.42894304907-003
SOL C 3.91809055862+000

PRESSURE = 5.000000000-002 VOLUME = 8.92751008889-001 TEMPERATURE = 2.65413822291+003
H2O 4.05528312045+000
H2 2.02190303159-001
O2 1.80555811320-007
CO2 1.38849605092+000
CO 2.46809026655+000
NH3 3.05561689844-002
H 1.57084893305-004
NO 4.83963706246-005
N2 3.80979771732+000
OH 8.57536823366-005
CH4 3.58854518151-002
SOL C 2.95812823071+000



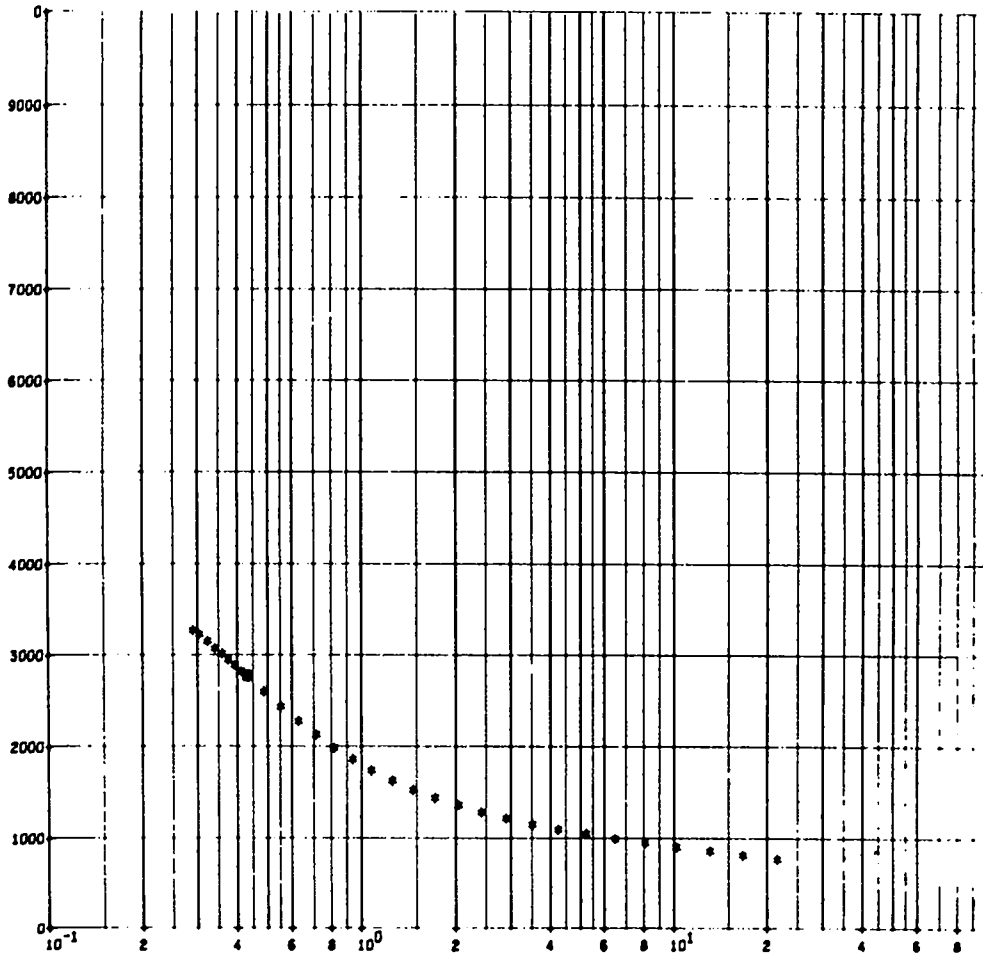
COMPOSITION B 64/36 RDX/TNT

PRESSURE-VOLUME HUGONIOT



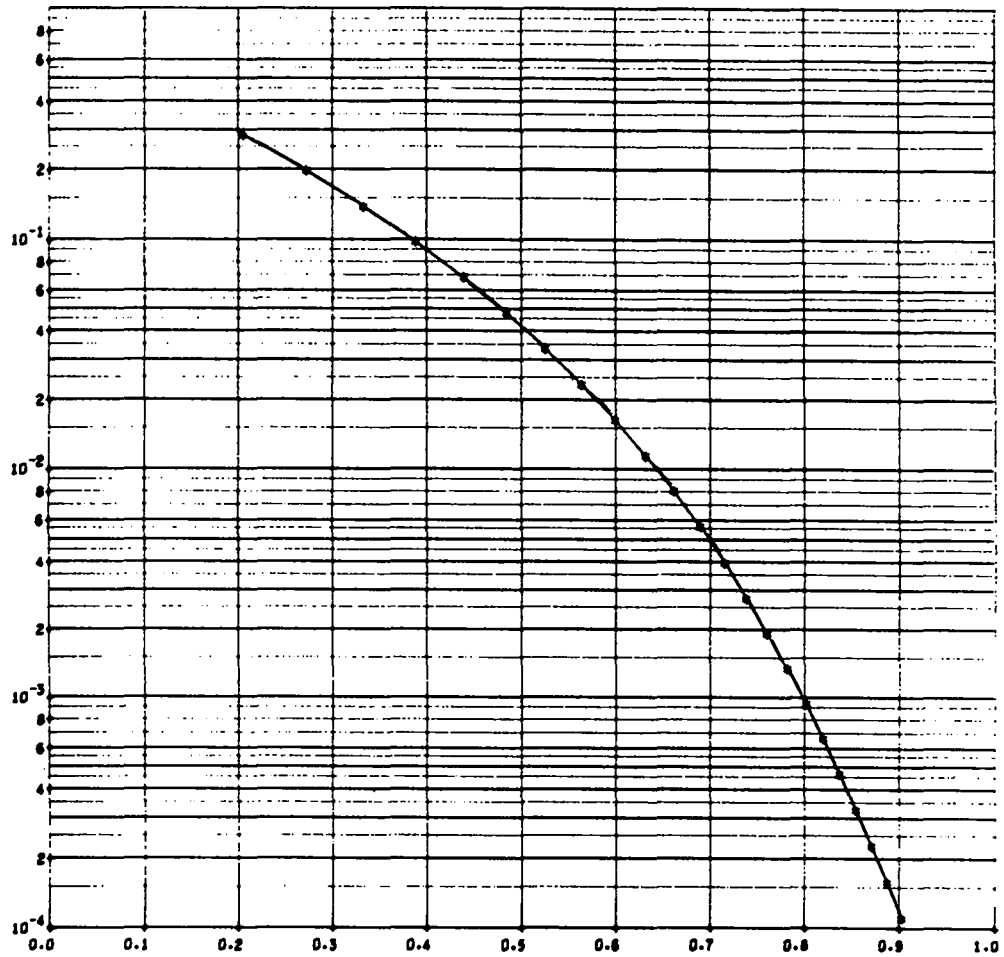
COMPOSITION 8 64/36 RDX/TNT

PRESSURE-VOLUME ISENTROPE THRU THE C-J VALUE



COMPOSITION B 64/36 RDX/TNT

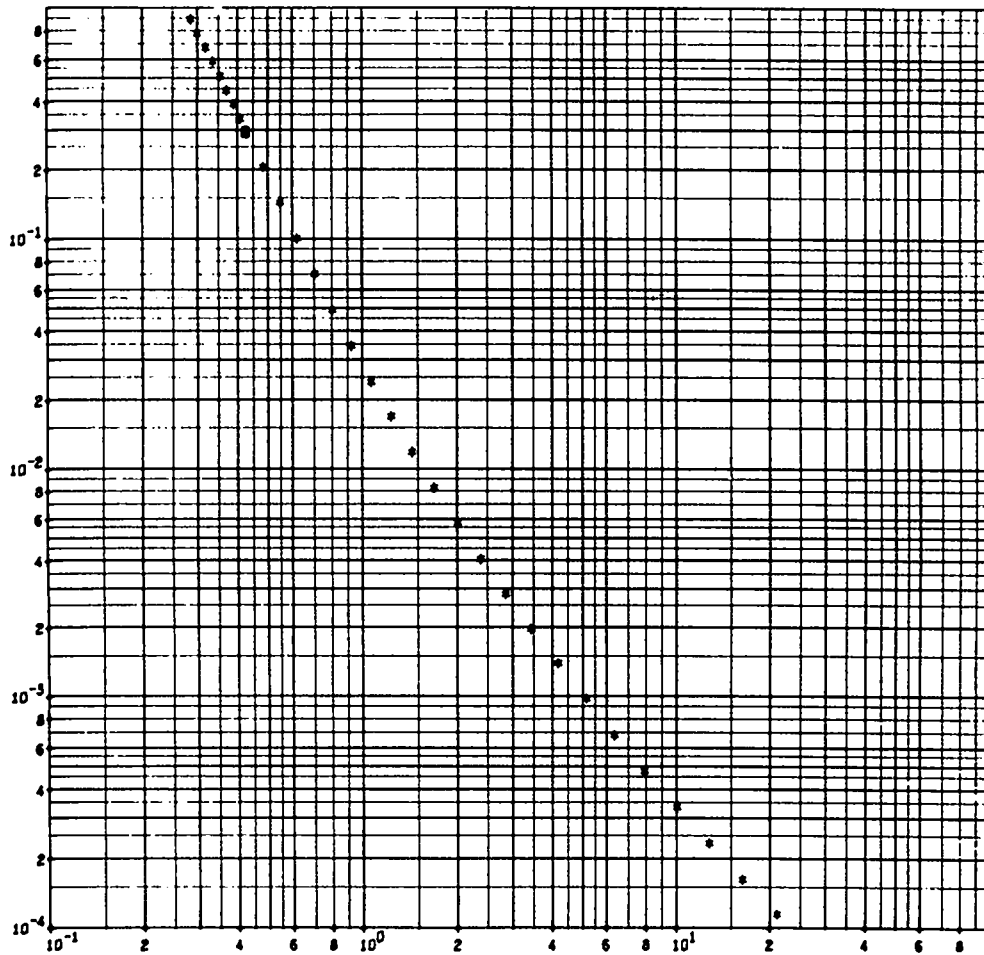
TEMPERATURE-VOLUME ISENTROPE THRU THE C-J VALUE



COMPOSITION B 64/36 RDX/TNT

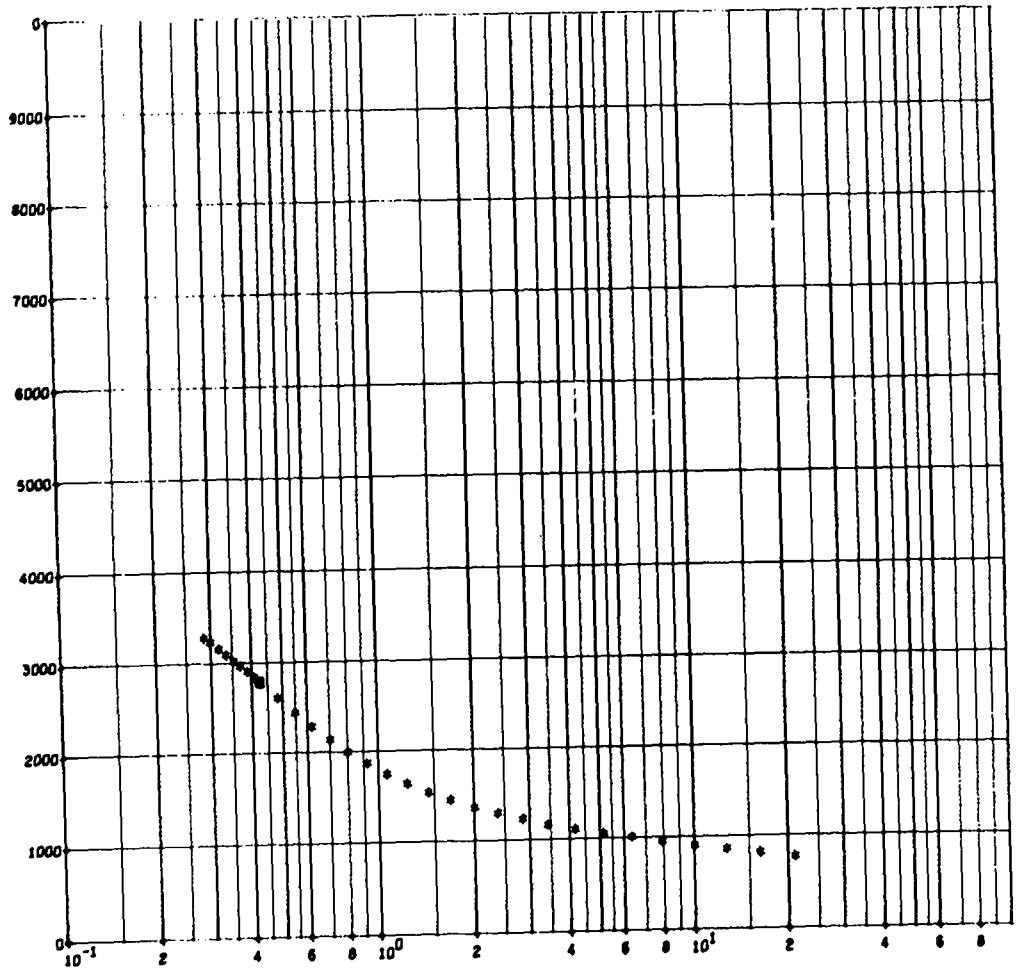
PRESSURE-PARTICLE VELOCITY

THE ISENTROPE PRESSURE AND COMPOSITION OF DETONATION PRODUCTS				SOL C																						
M20	H2	O2	CO2	CO	NH3	H	NO	N2	OH	CH4	M20	H2	O2	CO2	CO	NH3	H	NO	N2	OH	CH4					
2.940000000000-001	4.37475026536+000	2.81363072100-007	1.11938990533-004	2.13869715373-004	7.49715248796-006	2.41392051500+000	9.76795881284-002	2.15454138669-004	2.81363072100-007	1.11938990533-004	2.13869715373-004	3.82488533807+000	2.52483544592-007	7.17375690687-006	4.33899272311+000	4.37369134234+000	5.16909263565-004	6.76968719099-005	1.57178109693-006	2.38007085988+000	6.39924557604-007	1.66575457533-001	3.94215181052-005			
2.050000000000-001	4.37369134234+000	5.16909263565-004	6.76968719099-005	1.57178109693-006	2.38007085988+000	6.39924557604-007	1.66575457533-001	3.94215181052-005	4.33899272311+000	4.37369134234+000	5.16909263565-004	6.76968719099-005	1.57178109693-006	2.38007085988+000	6.39924557604-007	1.66575457533-001	3.94215181052-005	4.33899272311+000	4.37369134234+000	5.16909263565-004	6.76968719099-005	1.57178109693-006	2.38007085988+000	6.39924557604-007	1.66575457533-001	3.94215181052-005



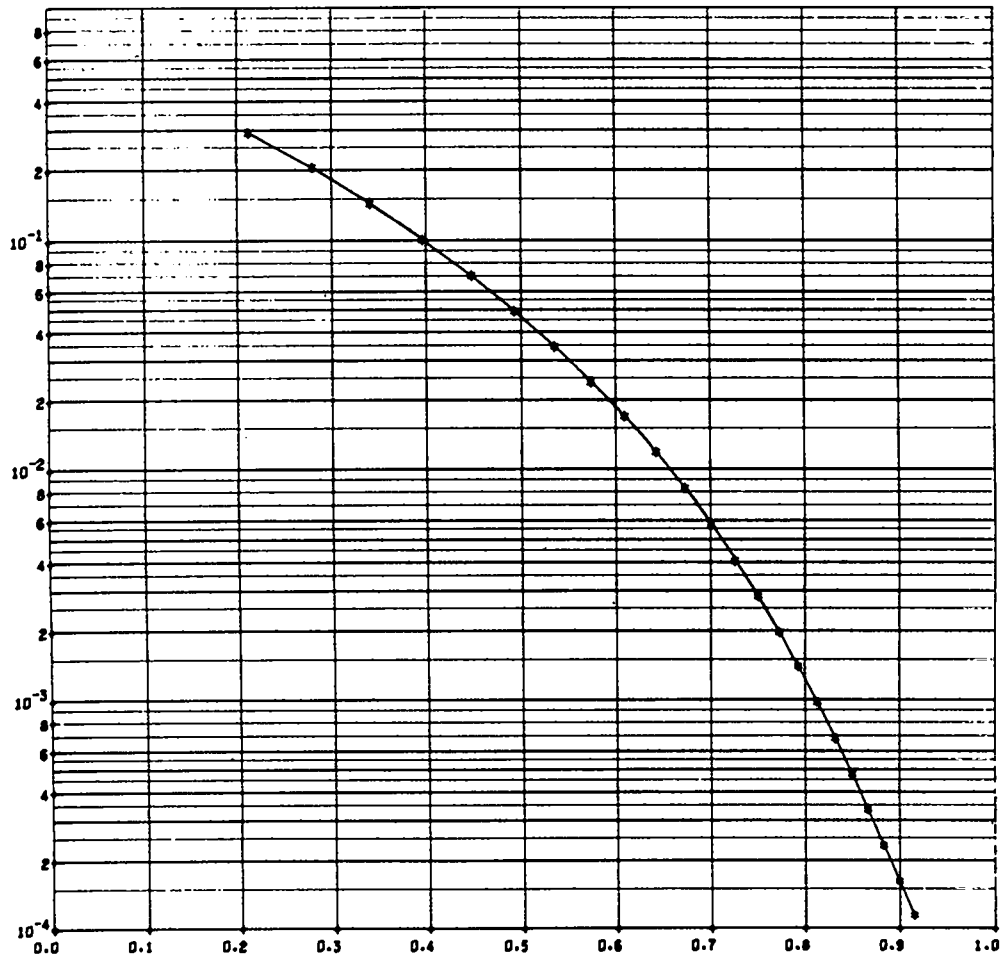
COMPOSITION 64/36 RDX/TNT

PRESSURE-VOLUME ISENTROPE THRU THE C-J VALUE



COMPOSITION 8 64/36 RDX/TNT

TEMPERATURE-VOLUME ISENTROPE THRU THE C-J VALUE



COMPOSITION B 84/38 RDX/TNT

PRESSURE-PARTICLE VELOCITY

A STRETCH BKW CALCULATION FOR THE EXPLOSIVE
COMPOSITION B 64/36 RDX/TNT

THE NUMBER OF ELEMENTS IS 4

THE NUMBER OF GAS SPECIES IS 11

THE NUMBER OF SOLID SPECIES IS 1

THE KW EQUATION OF STATE PARAMETERS ARE

ALPHA= 5.0000000000-001 BETA= 1.6000000000-001 THETA= 4.0000000000+002 KAPPA= 1.09097784436+001

THE COMPOSITION OF THE EXPLOSIVE IS

6.8506000000+000 MOLES OF C
8.7504000000+000 MOLES OF H
7.8502000000+000 MOLES OF N
9.3005000000+000 MOLES OF O

THE DENSITY OF THE EXPLOSIVE IS 1.6000000000+000 GRAMS/CC

THE MOLECULAR WEIGHT IS 3.4707100000+002 GRAMS

THE HEAT OF FORMATION AT 0 DEG K IS 3.3180000000+004 CALORIES PER FORMULA WEIGHT

THE SOLID (COMAN) EQUATION OF STATE PARAMETERS VO, AS, BS, CS, DS, ES, A1, A2, C1, C2, C3, ATOMIC WT

SOL C 4.4444444444-001 8.30935837268-001 -1.39381809219+000 6.72569716021-001 -1.13537262508-001 6.49155882007-003
-2.26705345948-001 1.20516569525-001 8.3160000000-002 -1.7559000000-001 1.9531000000-001 1.2010000000+001

THE INPUT DETONATION PRODUCT ELEMENTAL COMPOSITION MATRIX

0.0+00	2.0+00	0.0+00	1.0+00	0.0+00	2.0+00	0.0+00	0.0+00	0.0+00	0.0+00	0.0+00	2.0+00
1.0+00	0.0+00	0.0+00	2.0+00	1.0+00	0.0+00	0.0+00	1.0+00	0.0+00	3.0+00	1.0+00	0.0+00
0.0+00	1.0+00	0.0+00	0.0+00	0.0+00	0.0+00	1.0+00	1.0+00	0.0+00	0.0+00	2.0+00	0.0+00
0.0+00	1.0+00	0.0+00	1.0+00	1.0+00	4.0+00	0.0+00	0.0+00	1.0+00	0.0+00	0.0+00	0.0+00

A STRETCH BKW CALCULATION FOR THE EXPLOSIVE
COMPOSITION B 64/36 RDX/TNT

THE COMPUTED CJ PRESSURE IS 2.39962299489-001 MEGABARS

THE COMPUTED DETONATION VELOCITY IS 7.66697653096-001 CM/MICROSECOND

THE COMPUTED CJ TEMPERATURE IS 2.94129849720+003 DEGREES KELVIN

THE COMPUTED CJ VOLUME IS 4.65539554854-001 CC/GRAM OF EXPLOSIVE

THE COMPUTED GAMMA IS 2.91945096386+000

THE VOLUME OF THE GAS IS 1.34601461584+001 CC/MOLE OF GAS AND THERE ARE 1.07896787143+001 MOLES OF GAS

SOLID VOLUME IN CC/GM
SOL C 3.19434756081-001

THE C-J COMPOSITION OF THE DETONATION PRODUCTS AND THE INPUT COEFFICIENTS TO THE THERMODYNAMIC FITS FOR EACH SPECIE

SPECIE	NO OF MOLES	COEFFICIENTS A,B,C,D,E, THE INTEGRATION CONSTANT, HEAT OF FORMATION IN CALORIES/MOLE, COVOLUME					
M2O	4.37298138294+000	4.25884200000+001	1.48080500000-002	-2.63918100000-006	1.92045300000-010	0.00000000000+000	
		1.34282835156+003	-5.71070000000+004	2.30000000000+002			
M2	7.57296928212-004	2.97034700000+001	1.14382900000-002	-2.20122200000-006	1.67776100000-010	0.00000000000+000	
		1.17589615365+003	0.00000000000+000	1.80000000000+002			
O2	1.00677372382-005	4.70309000000+001	1.28714700000-002	-2.50021700000-006	1.90157000000-010	0.00000000000+000	
		1.03537647396+003	0.00000000000+000	3.50000000000+002			
CO2	2.33700142821+000	4.74811200000+001	1.95448300000-002	-3.72129800000-006	2.77030000000-010	0.00000000000+000	
		7.46280968750+002	-9.39680000000+004	6.00000000000+002			
CO	2.53137513544-001	4.53308200000+001	1.23816100000-002	-2.41640300000-006	1.82818100000-010	0.00000000000+000	
		1.12158830990+003	-2.72010000000+004	3.90000000000+002			
NH3	8.84032488227-004	4.20181600000+001	1.91166200000-002	-3.16433000000-006	2.19780100000-010	0.00000000000+000	
		1.20696121615+003	-9.36800000000+003	4.76000000000+002			
H	2.35956920527-006	2.63911000000+001	8.12137200000-003	-1.69074000000-006	1.31682300000-010	0.00000000000+000	
		7.94631617188+002	5.18190000000+004	7.60000000000+001			
NO	3.55921411672-004	4.84149800000+001	1.26938600000-002	-2.49480000000-006	1.89321300000-010	0.00000000000+000	
		1.20924970573+003	2.14770000000+004	3.86000000000+002			
N2	3.82448002305+000	4.39234000000+001	1.22250100000-002	-2.37900500000-006	1.79832200000-010	0.00000000000+000	
		1.13916134896+003	0.00000000000+000	3.80000000000+002			
OH	2.19020655514-006	4.24179200000+001	1.15684700000-002	-2.22683900000-006	1.68915500000-010	0.00000000000+000	
		1.18351754427+003	3.58000000000+003	4.13000000000+002			
CH4	6.64982541492-005	3.87568600000+001	2.36401300000-002	-3.70795700000-006	2.47071400000-010	0.00000000000+000	
		1.04242791146+003	-1.60000000000+004	5.28000000000+002			
SOL C	4.26039455999+000	-2.46151900000-001	7.17985500000-003	-1.29755000000-006	9.34999500000-011	0.00000000000+000	
		-2.58204389323+002	0.00000000000+000	0.00000000000+000			

THE BAW HUGONIOT FOR THE DETONATION PRODUCTS OF
COMPOSITION B 64/36 RDX/TNT

PRESSURE = 5.000000000-001 VOLUME = 3.64863452563-001 TEMPERATURE = 3.94127809809+003
H2O 4.37429450837+000
H2 1.86470742993-004
O2 8.28375955152-004
CO2 2.34915611800+000
CO 2.19314012498-001
NH3 4.50623418850-004
H 5.04873952239-006
NO 6.95897860086-003
N2 3.82139519899+000
OH 3.51262221049-006
CH4 1.94025413720-005
SOL C 4.28213046696+000

PRESSURE = 4.500000000-001 VOLUME = 3.77531467750-001 TEMPERATURE = 3.69120445961+003
H2O 4.37437159730+000
H2 1.80214021065-004
O2 3.80980803738-004
CO2 2.36149564613+000
CO 1.98423338186-001
NH3 4.07394718773-004
H 3.30821530144-006
NO 3.94941652836-003
N2 3.82292159438+000
OH 2.39410786794-006
CH4 1.71227190415-005
SOL C 4.29066389296+000

PRESSURE = 4.000000000-001 VOLUME = 3.92271647525-001 TEMPERATURE = 3.46837040350+003
H2O 4.37437044686+000
H2 1.93523065206-004
O2 1.66437237307-004
CO2 2.36852075498+000
CO 1.86559074283-001
NH3 3.9977337284-004
H 2.35074590562-006
NO 2.19430636672-003
N2 3.82380296013+000
OH 1.78805468780-006
CH4 1.71503058950-005
SOL C 4.29550302043+000

PRESSURE = 3.500000000-001 VOLUME = 4.09836379535-001 TEMPERATURE = 3.26844525811+003
H2O 4.37426200932+000
H2 2.39429136868-004
O2 7.00808039810-005
CO2 2.38948161864+000
CO 1.85919944883-001
NH3 4.37425554043-004
H 1.89531280955-006
NO 1.21311713086-003
N2 3.82427472866+000
OH 1.52977672600-006
CH4 2.03553348846-005
SOL C 4.29517808114+000

PRESSURE = 3.000000000-001 VOLUME = 4.31403952781-001 TEMPERATURE = 3.10184230961+003
H2O 4.37396417793+000
H2 3.53926397230-004
O2 2.89492125918-005
CO2 2.36257409871+000
CO 2.00648426549-001
NH3 5.47017977000-004
H 1.81934223671-006
NO 6.79732192011-004
N2 3.82448662492+000
OH 1.56748538366-006
CH4 2.98376446051-005
SOL C 4.28734763710+000

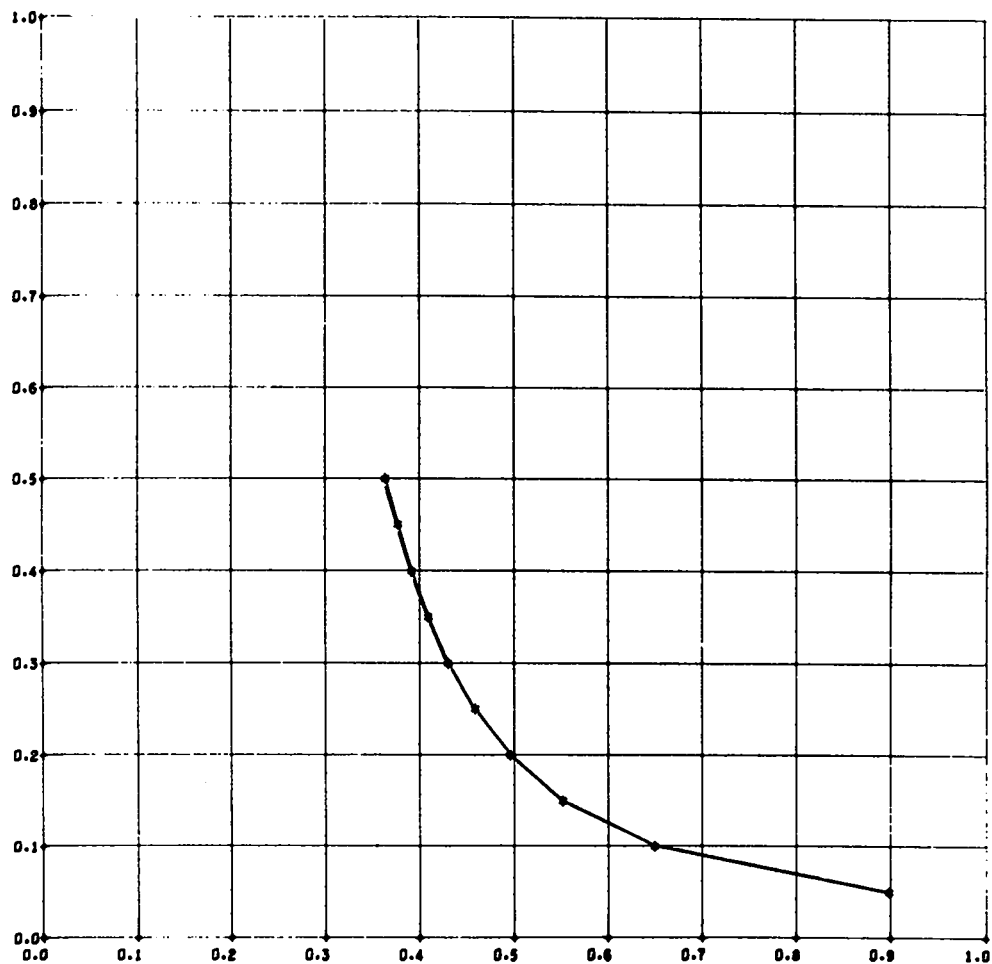
PRESSURE = 2.500000000-001 VOLUME = 4.58989840306-001 TEMPERATURE = 2.96493023046+003
H2O 4.37323232311+000
H2 6.50346252844-004
O2 1.19880118570-005
CO2 2.34320653687+000
CO 2.40434126075-001
NH3 8.01505895878-004
H 2.19739401404-006
NO 3.94484197158-004
N2 3.82450200495+000
OH 2.01686604225-006
CH4 5.64823332310-005
SOL C 4.26690285473+000

PRESSURE = 2.000000000-001 VOLUME = 4.9642497460-001 TEMPERATURE = 2.86052367579+003
H2O 4.37123349022+000
H2 1.55490450252-003
O2 5.09331336544-006
CO2 2.29968392952+000
CO 3.29642181958-001
NH3 1.41165370169-003
H 3.56723698735-006
NO 2.42856626693-004
N2 3.82427274484+000
OH 3.42551829605-006
CH4 1.45314172231-004
SOL C 4.22112857435+000

PRESSURE = 1.500000000-001 VOLUME = 5.52164893578-001 TEMPERATURE = 2.78984721476+003
H2O 4.36438829666+000
H2 5.11501221759-003
O2 2.23591100779-006
CO2 2.20041158694+000
CO 5.35115096518-001
NH3 3.07035417158-003
H 8.40344808094-006
NO 1.60938260676-004
N2 3.82348435378+000
OH 8.02285582140-006
CH4 5.41473355761-004
SOL C 4.11453184319+000

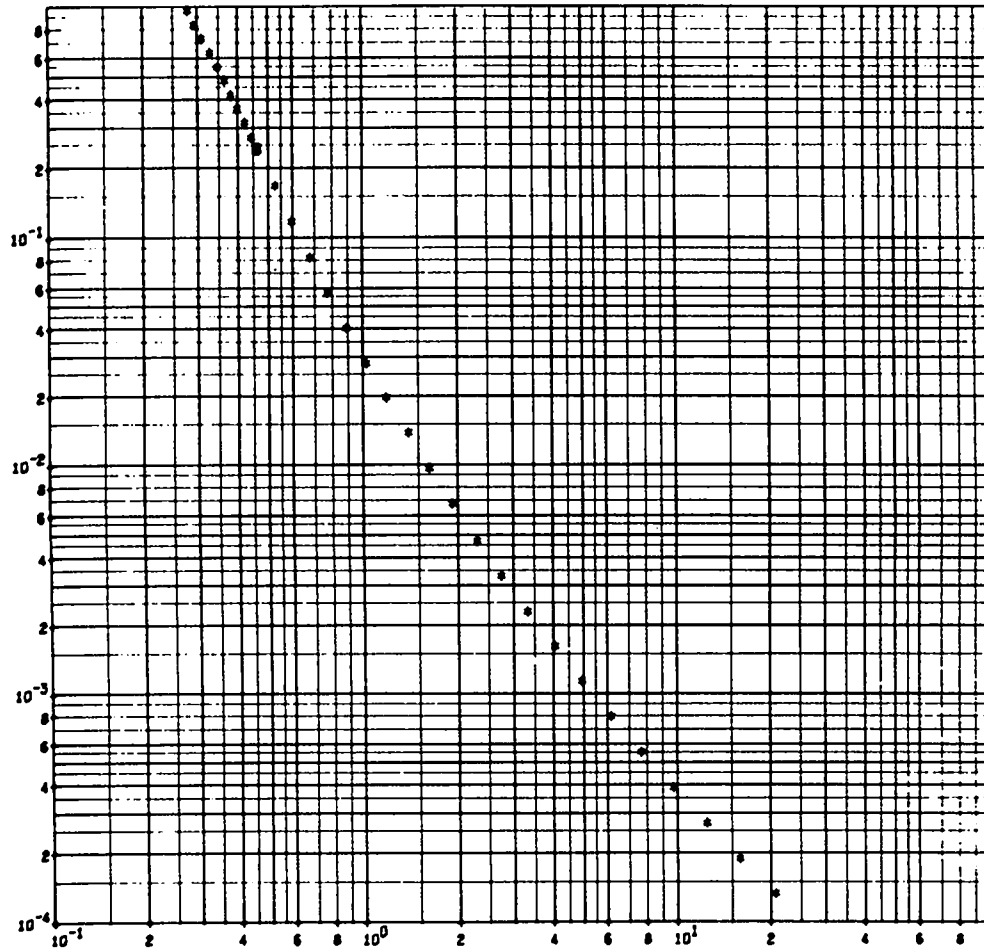
PRESSURE = 1.000000000-001 VOLUME = 6.49978271827-001 TEMPERATURE = 2.74710967186+003
H2O 4.33078889784+000
H2 2.51366219532-002
O2 9.30242714847-007
CO2 1.95425957247+000
CO 1.06110419424+000
NH3 8.55035826836-003
H 3.11088345269-005
NO 1.09849961049-004
N2 3.82076989589+000
OH 2.60325295588-005
CH4 3.23518106051-003
SOL C 3.83200105223+000

PRESSURE = 5.000000000-002 VOLUME = 8.98441937627-001 TEMPERATURE = 2.68854078956+003
H2O 4.02588700230+000
H2 2.20936845463-001
O2 2.14237627488-007
CO2 1.33874122910+000
CO 2.59697392235+000
NH3 3.26573027652-002
H 1.90620073194-004
NO 5.57169011836-005
N2 3.80874349017+000
OH 1.00471772040-004
CH4 3.96223260814-002
SOL C 2.87526252247+000



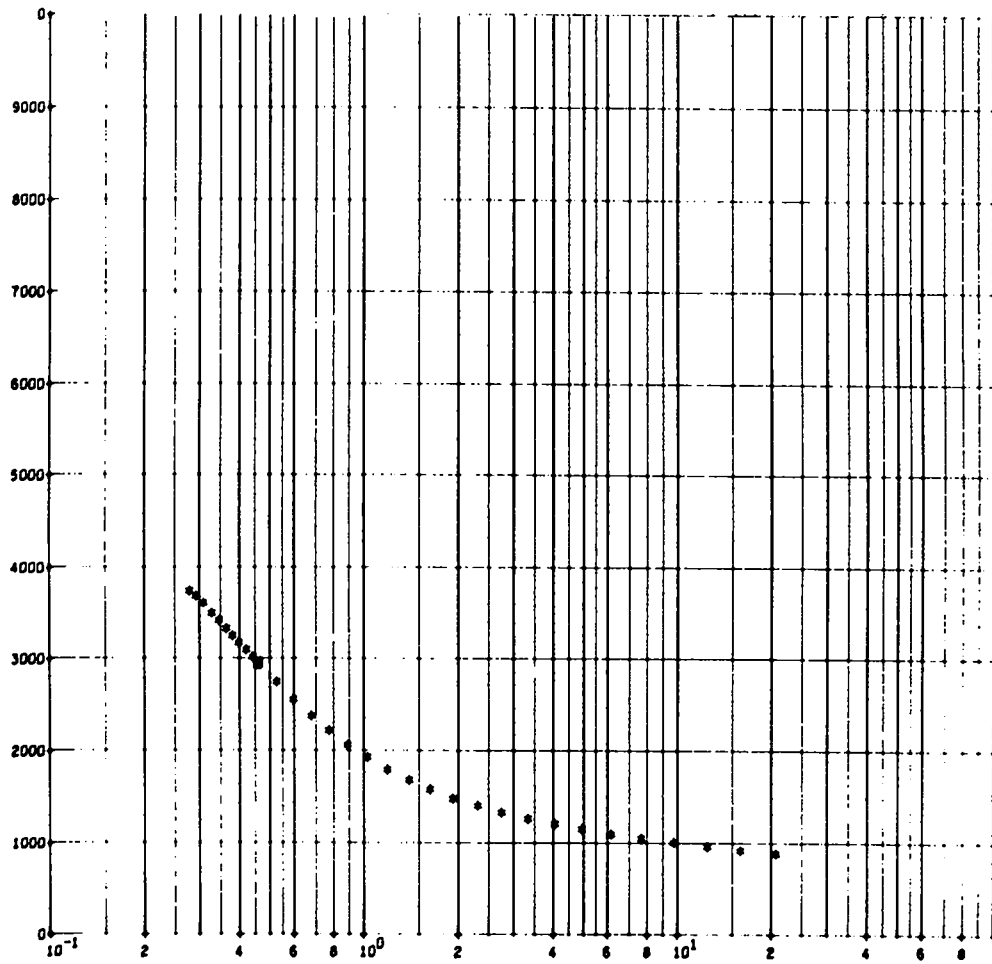
COMPOSITION 8 64/36 RDX/TNT

PRESSURE-VOLUME HUGONIOT



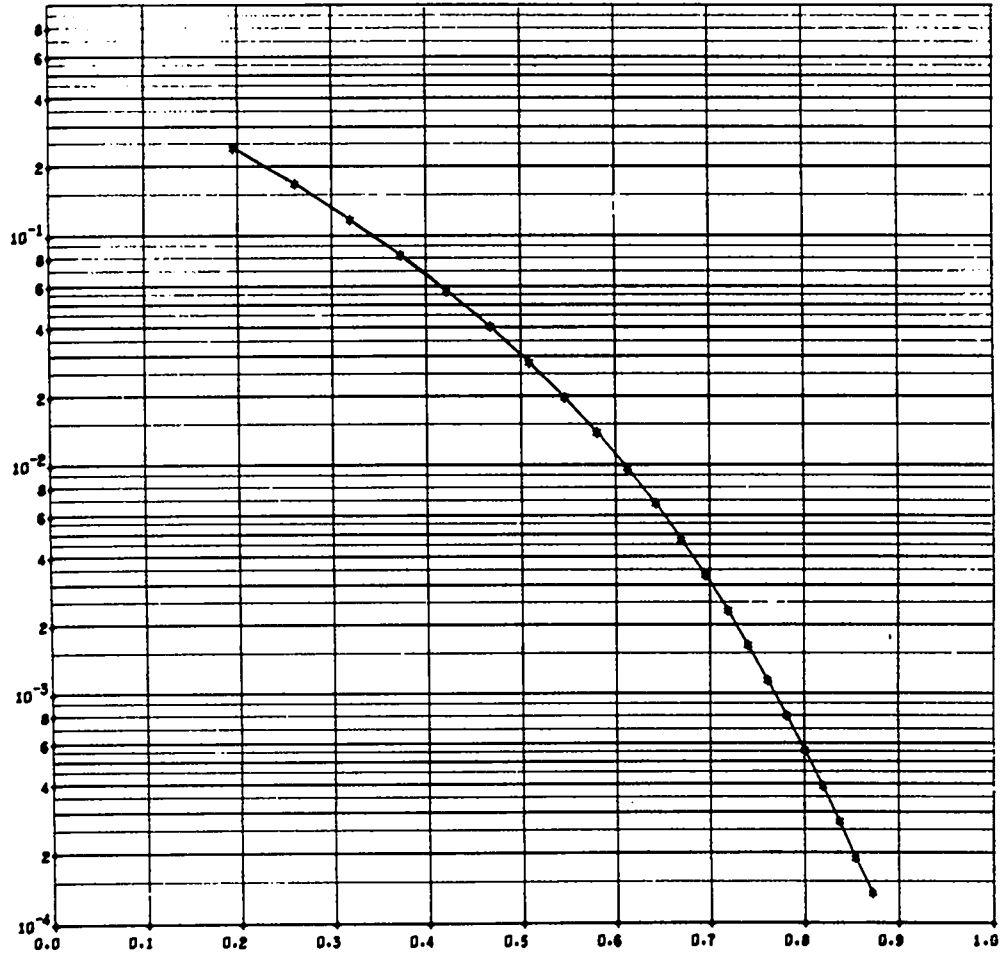
COMPOSITION 64/36 RDX/TNT

PRESSURE-VOLUME ISENTROPE THRU THE C-J VALUE



COMPOSITION 8 64/36 RDX/TNT

TEMPERATURE-VOLUME ISENTROPE THRU THE C-J VALUE



COMPOSITION B 66/36 RDX/TNT

PRESSURE-PARTICLE VELOCITY

A STRETCH BAW CALCULATION FOR THE EXPLOSIVE
COMPOSITION 6 64/36 RDX/TNT

THE NUMBER OF ELEMENTS IS 4

THE NUMBER OF GAS SPECIES IS 11

THE NUMBER OF SOLID SPECIES IS 1

THE KW EQUATION OF STATE PARAMETERS ARE

ALPHA= 5.000000000-001 BETA= 1.600000000-001 THETA= 4.000000000+002 KAPPA= 1.09097784436+001

THE COMPOSITION OF THE EXPLOSIVE IS

6.850600000+000 MOLES OF C
8.750400000+000 MOLES OF H
7.650200000+000 MOLES OF N
9.300900000+000 MOLES OF O

THE DENSITY OF THE EXPLOSIVE IS 1.400000000+000 GRAMS/CC

THE MOLECULAR WEIGHT IS 3.4707100000+002 GRAMS

THE HEAT OF FORMATION AT 0 DEG K IS 3.318000000+004 CALORIES PER FORMULA WEIGHT

THE SOLID (COWAN) EQUATION OF STATE PARAMETERS VO, AS, BS, CS, DS, ES, A1, A2, C1, C2, C3, ATOMIC WT

SOL C 4.444444444-001 8.30935837268-001 -1.39381809219+000 6.72569716021-001 -1.13537262508-001 6.49155882007-003
-2.26705345948-001 1.20516569525-001 8.31600000000-002 -1.75590000000-001 1.55310000000-001 1.20100000000+001

THE INPUT DETONATION PRODUCT ELEMENTAL COMPOSITION MATRIX

0.0+00	2.0+00	0.0+00	1.0+00	0.0+00	2.0+00	0.0+00	0.0+00	0.0+00	0.0+00	0.0+00	2.0+00
1.0+00	0.0+00	0.0+00	2.0+00	1.0+00	0.0+00	0.0+00	1.0+00	0.0+00	3.0+00	1.0+00	0.0+00
0.0+00	1.0+00	0.0+00	0.0+00	0.0+00	0.0+00	1.0+00	1.0+00	0.0+00	0.0+00	2.0+00	0.0+00
0.0+00	1.0+00	0.0+00	1.0+00	1.0+00	4.0+00	0.0+00	0.0+00	1.0+00	0.0+00	0.0+00	0.0+00

A STRETCH BRW CALCULATION FOR THE EXPLOSIVE
COMPOSITION B 64/36 RDX/TNT

THE COMPUTED CJ PRESSURE IS 1.81254998163-001 MEGABARS

THE COMPUTED DETONATION VELOCITY IS 6.98973595441-001 CM/MICROSECOND

THE COMPUTED CJ TEMPERATURE IS 3.19727163388+003 DEGREES KELVIN

THE COMPUTED CJ VOLUME IS 5.25003423151-001 CC/GRAM OF EXPLOSIVE

THE COMPUTED GAMMA IS 2.77363233099+000

THE VOLUME OF THE GAS IS 1.50015432858+001 CC/MOLE OF GAS AND THERE ARE 1.10560474931+001 MOLES OF GAS

SOL ID VOLUME IN CC/GM
SOL C 3.41387429496-001

THE C-J COMPOSITION OF THE DETONATION PRODUCTS AND THE INPUT COEFFICIENTS TO THE THERMODYNAMIC FITS FOR EACH SPECIE

SPECIE	NO OF MOLES	COEFFICIENTS A,B,C,D,E; THE INTEGRATION CONSTANT, HEAT OF FORMATION IN CALORIES/MOLE, COVOLUME				
H2O	4.35965597957+000	4.2588420000+001	1.4808050000-002	-2.6391810000-006	1.9204530000-010	0.0000000000+000
		1.34282835156+003	-5.7107000000+004	2.5000000000+002		
H2	7.18884940743-003	2.9703470000+001	1.1438290000-002	-2.2012220000-006	1.6777610000-010	0.0000000000+000
		1.17589613365+003	0.0000000000+000	1.8000000000+002		
O2	1.64228817837-005	4.7030900000+001	1.2871470000-002	-2.5002170000-006	1.9015700000-010	0.0000000000+000
		1.03537647398+003	0.0000000000+000	3.5000000000+002		
CO2	2.07946274210+000	4.7481120000+001	1.9544630000-002	-3.7212960000-006	2.7703000000-010	0.0000000000+000
		7.46280988730+002	-9.3968000000+004	6.0000000000+002		
CO	7.81141531950-001	4.5330820000+001	1.2381610000-002	-2.4164030000-006	1.8281810000-010	0.0000000000+000
		1.12158830990+003	-2.7201000000+004	3.9000000000+002		
NH3	4.39683020391-003	4.2018160000+001	1.9116620000-002	-3.1643300000-006	2.1978010000-010	0.0000000000+000
		1.20696121615+003	-9.3680000000+004	4.7600000000+002		
H	3.27844799622-005	2.6391100000+001	8.1213720000-003	-1.6907400000-006	1.3168230000-010	0.0000000000+000
		7.94631617188+002	5.1619000000+004	7.6000000000+001		
NO	7.16472128806-004	4.8414980000+001	1.2693860000-002	-2.4946000000-006	1.8932130000-010	0.0000000000+000
		1.20924970573+003	2.1477000000+004	3.8600000000+002		
N2	3.82254334883+000	4.3923400000+001	1.2225010000-002	-2.3790050000-006	1.7983220000-010	0.0000000000+000
		1.13916134896+003	0.0000000000+000	3.8000000000+002		
OH	2.76863749824-005	4.2417920000+001	1.1568470000-002	-2.2266590000-006	1.6891550000-010	0.0000000000+000
		1.18351754427+003	3.5600000000+003	4.1300000000+002		
CH4	8.64845143136-004	3.8756860000+001	2.3640130000-002	-3.7079570000-006	2.4707140000-010	0.0000000000+000
		1.04242791146+003	-1.6000000000+004	5.2800000000+002		
SOL C	3.98913088080+000	-2.4615190000-001	7.1798550000-003	-1.2975500000-006	9.3499950000-011	0.0000000000+000
		-2.58204389323+002	0.0000000000+000	0.0000000000+000		

THE BRW HUGONIOT FOR THE DETONATION PRODUCTS OF
COMPOSITION B 64/36 RDX/TNT

PRESSURE = 5.000000000-001 VOLUME = 3.75668431929-001 TEMPERATURE = 5.07264389204+003
 H2O 4.36510480032+000
 H2 2.64437718999-003
 O2 4.32606135447-003
 CO2 2.02105621368+000
 CO 8.49713202489-001
 NH3 4.09329835133-003
 H 1.82592656326-004
 NO 3.47991026315-002
 N2 3.80565379951+000
 OH 1.18344486106-004
 CH4 5.80203206864-004
 SOL C 3.97925038062+000

PRESSURE = 4.500000000-001 VOLUME = 3.88564826487-001 TEMPERATURE = 4.75081373875+003
 H2O 4.36601151397+000
 H2 2.57200558251-003
 O2 2.40270930980-003
 CO2 2.05290869435+000
 CO 8.01119571374-001
 NH3 3.66669364420-003
 H 1.32532968406-004
 NO 2.26574657784-002
 N2 3.81193792029+000
 OH 8.86415687983-005
 CH4 5.02926358430-004
 SOL C 3.99606880792+000

PRESSURE = 4.000000000-001 VOLUME = 4.03258572070-001 TEMPERATURE = 4.41686798927+003
 H2O 4.36693423769+000
 H2 2.48261151225-003
 O2 1.19259140947-003
 CO2 2.08806405541+000
 CO 7.41420156043-001
 NH3 3.23550890949-003
 H 9.00706379109-005
 NO 1.35696509033-002
 N2 5.81669742009+000
 OH 6.26617322157-005
 CH4 4.26760826432-004
 SOL C 4.02068902792+000

PRESSURE = 3.500000000-001 VOLUME = 4.20610770544-001 TEMPERATURE = 4.08826399595+003
 H2O 4.36754889199+000
 H2 2.48035132196-003
 O2 5.26905409823-004
 CO2 2.11945443622+000
 CO 6.85440119330-001
 NH3 2.91289715376-003
 H 5.98017413687-005
 NO 7.50466201137-003
 N2 3.81989124042+000
 OH 4.36034172934-005
 CH4 3.74884189773-004
 SOL C 4.04533054026+000

PRESSURE = 3.000000000-001 VOLUME = 4.41948433831-001 TEMPERATURE = 3.78180870337+003
 H2O 4.36751101096+000
 H2 2.71704478031-003
 O2 2.08964878244-004
 CO2 2.13910224639+000
 CO 6.50442908679-001
 NH3 2.80094167350-003
 H 4.14178230533-005
 NO 3.89184416228-003
 N2 3.82179360708+000
 OH 3.18136375106-005
 CH4 3.66938003681-004
 SOL C 4.06068768692+000

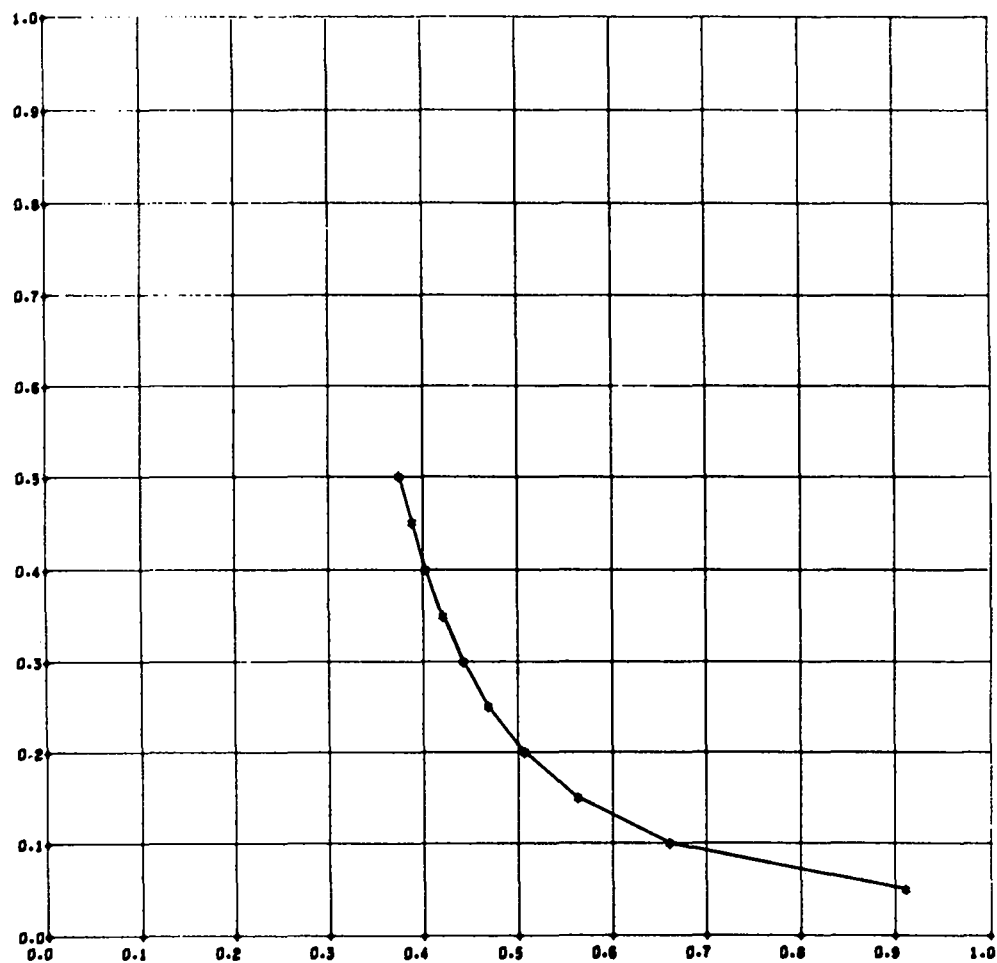
PRESSURE = 2.500000000-001 VOLUME = 4.69408858716-001 TEMPERATURE = 3.50873707811+003
 H2O 4.36629659567+000
 H2 3.48011611244-003
 O2 7.55200780377-005
 CO2 2.13863392827+000
 CO 6.54825143849-001
 NH3 3.01821097111-003
 H 3.23259824699-005
 NO 1.93322436875-003
 N2 3.82262428233+000
 OH 2.61394115792-005
 CH4 4.33369531773-004
 SOL C 4.05670755835+000

PRESSURE = 2.0000000000-001 VOLUME = 5.06902075340-001 TEMPERATURE = 3.27458746074+0G3
H2O 4.36250905370+000
H2 5.58763614724-003
O2 2.52403763717-005
CO2 2.10530595248+000
CO 7.26362200522-001
NH3 3.82151730996-003
H 3.09765073289-005
NO 9.40348347618-004
N2 3.82271906717+000
OH 2.60117125601-005
CH4 6.71270037326-004
SQL C 4.01826057696+000

PRESSURE = 1.5000000000-001 VOLUME = 5.62942065331-001 TEMPERATURE = 3.08085939704+0G3
H2O 4.35094085099+000
H2 1.22257307735-002
O2 7.80742885349-006
CO2 2.01033478308+000
CO 9.28385519652-001
NH3 9.98713285040-003
H 4.03079773200-005
NO 4.54749019520-004
N2 3.82187905917+000
OH 3.36993236032-005
CH4 1.50785780334-003
SQL C 3.91037183947+000

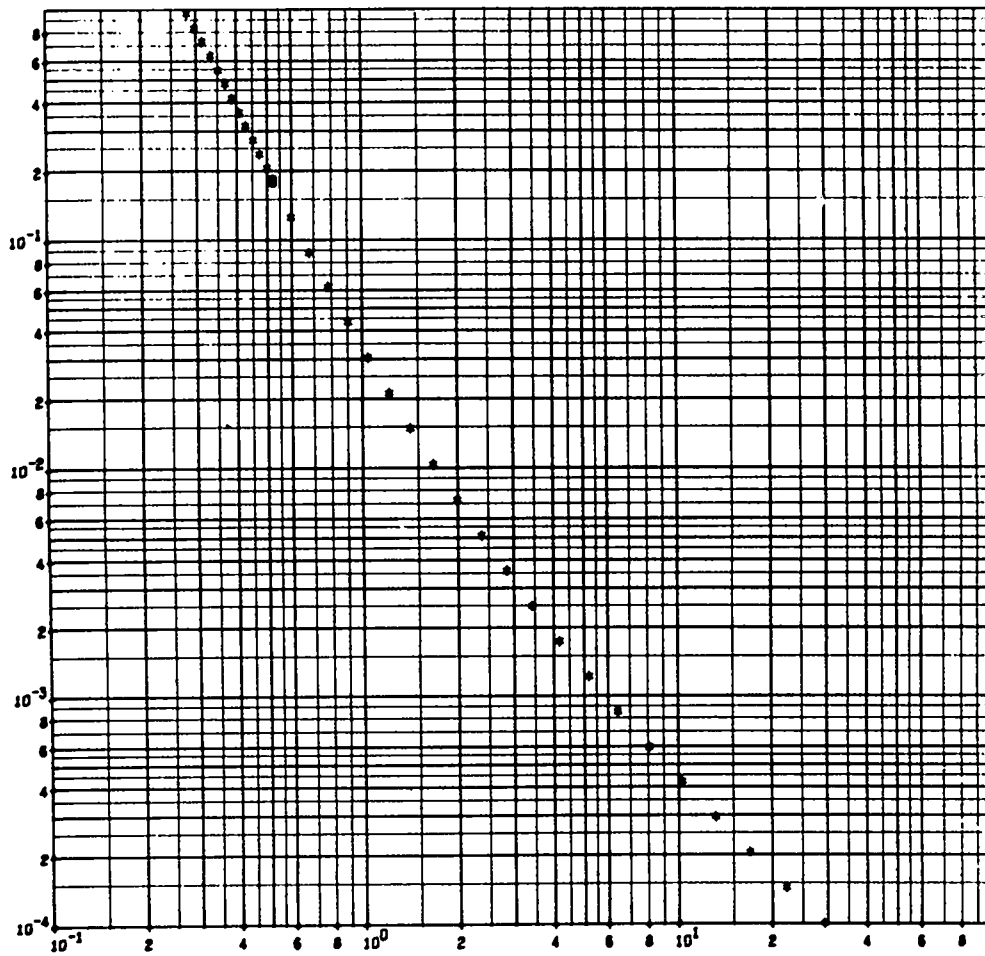
PRESSURE = 1.0000000000-001 VOLUME = 6.61358707672-001 TEMPERATURE = 2.92253920767+0G3
H2O 4.30390620533+000
H2 4.11400072354-002
O2 2.08167066873-006
CO2 1.77759008198+000
CO 1.44113630927+000
NH3 1.24331591023-002
H 8.07503169148-005
NO 2.12975414439-004
N2 3.8187693274+000
OH 6.01826752312-005
CH4 5.71679114253-003
SQL C 3.62615681760+000

PRESSURE = 5.0000000000-002 VOLUME = 9.10839588242-001 TEMPERATURE = 2.76169924658+0G3
H2O 3.95647466238+000
H2 2.65094366008-001
O2 3.02071456489-007
CO2 1.23531798909+000
CO 2.87317612953+000
NH3 3.74609909580-002
H 2.83329959314-004
NO 7.40782099546-005
N2 3.80633246542+000
OH 1.38547345678-004
CH4 4.86142731620-002
SQL C 2.69349160820+000



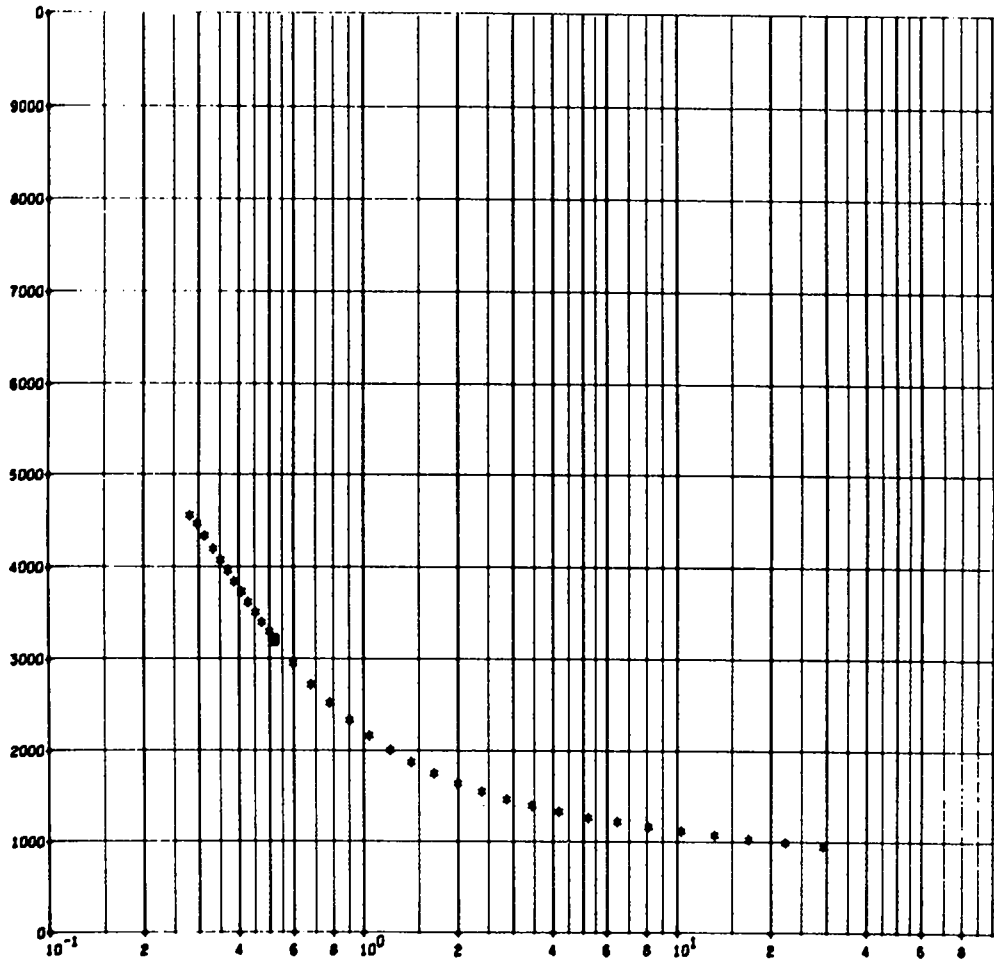
COMPOSITION S 64/36 RDX/TNT

PRESSURE-VOLUME HUGONIOT



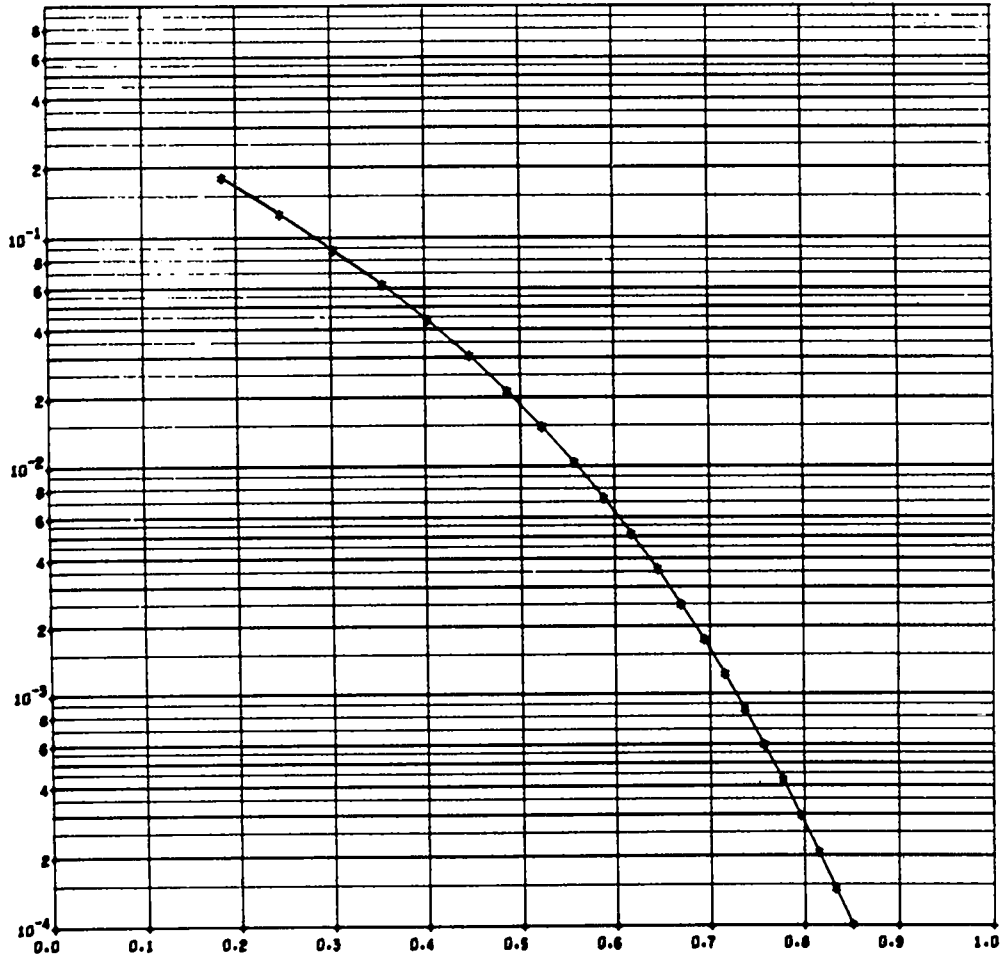
COMPOSITION B 84/36 RDX/TNT

PRESSURE-VOLUME ISENTROPE THRU THE C-J VALUE



COMPOSITION B 64/36 RDX/TNT

TEMPERATURE-VOLUME ISENTROPE THRU THE C-J VALUE



COMPOSITION B 64/36 RDX/TNT

PRESSURE-PARTICLE VELOCITY

A STRETCH BAW CALCULATION FOR THE EXPLOSIVE
COMPOSITION B 64/36 RDX/TNT

THE NUMBER OF ELEMENTS IS 4

THE NUMBER OF GAS SPECIES IS 11

THE NUMBER OF SOLID SPECIES IS 1

THE KW EQUATION OF STATE PARAMETERS ARE
ALPHA= 5.000000000-001 BETA= 1.600000000-001 THETA= 4.000000000+002 KAPPA= 1.09097784436+001

THE COMPOSITION OF THE EXPLOSIVE IS
6.850600000+000 MOLES OF C
8.750400000+000 MOLES OF H
7.650200000+000 MOLES OF N
9.300500000+000 MOLES OF O

THE DENSITY OF THE EXPLOSIVE IS 1.200000000+000 GRAMS/CC

THE MOLECULAR WEIGHT IS 3.470710000+002 GRAMS

THE HEAT OF FORMATION AT 0 DEG K IS 3.318000000+004 CALORIES PER FORMULA WEIGHT

THE SOLID (COMAN) EQUATION OF STATE PARAMETERS VO, AS, BS, CS, DS, ES, A1, A2, C1, C2, C3, ATOMIC WT

SOL C 4.444444444-001 8.30935837268-001 -1.39381809219+000 6.72569716021-001 -1.13537262508-001 6.49155882007-003
-2.26705345948-001 1.20516569525-001 8.31600000000-002 -1.75590000000-001 1.55310000000-001 1.20100000000+001

THE INPUT DETONATION PRODUCT ELEMENTAL COMPOSITION MATRIX

0.0+00	2.0+00	0.0+00	1.0+00	0.0+00	2.0+00	0.0+00	0.0+00	0.0+00	0.0+00	0.0+00	0.0+00	2.0+00
1.0+00	0.0+00	0.0+00	2.0+00	1.0+00	0.0+00	0.0+00	1.0+00	0.0+00	3.0+00	1.0+00	0.0+00	0.0+00
0.0+00	1.0+00	0.0+00	0.0+00	0.0+00	0.0+00	1.0+00	1.0+00	0.0+00	0.0+00	2.0+00	0.0+00	0.0+00
0.0+00	1.0+00	0.0+00	1.0+00	1.0+00	4.0+00	0.0+00	0.0+00	1.0+00	0.0+00	0.0+00	0.0+00	0.0+00

A STRETCH BKW CALCULATION FOR THE EXPLOSIVE
COMPOSITION B 64/36 RDX/TNT

THE COMPUTED CJ PRESSURE IS 1.33619686480-001 MEGABARS

THE COMPUTED DETONATION VELOCITY IS 6.37025169942-001 CM/MICROSECOND

THE COMPUTED CJ TEMPERATURE IS 3.35859073568+003 DEGREES KELVIN

THE COMPUTED CJ VOLUME IS 6.04672637209-001 CC/GRAM OF EXPLOSIVE

THE COMPUTED GAMMA IS 2.64438275073+000

THE VOLUME OF THE GAS IS 1.68915596485+001 CC/MOLE OF GAS AND THERE ARE 1.15253953292+001 MOLES OF GAS

SOL ID VOLUME IN CC/GM
SOL C 3.61189433987-001

THE C-J COMPOSITION OF THE DETONATION PRODUCTS AND THE INPUT COEFFICIENTS TO THE THERMODYNAMIC FITS FOR EACH SPECIE

SPECIE	NO OF MOLES	COEFFICIENTS A,B,C,D,E, THE INTEGRATION CONSTANT, HEAT OF FORMATION IN CALORIES/MOLE, COVOLUME				
M2O	4.30166877969+000	4.2588420000+001	1.4808050000-002	-2.6391810000-006	1.9204530000-010	0.0000000000+000
M2	4.00785527778-002	1.34282835136+003	-5.7107000000+004	2.5000000000+002	1.6777610000-010	0.0000000000+000
O2	1.63905313618-005	2.9703470000+001	1.1438290000-002	-2.2012220000-006	1.9015700000-010	0.0000000000+000
CO2	1.65309454396+000	1.17589613343+003	0.0000000000+000	1.8000000000+002	2.7703000000-010	0.0000000000+000
CO	1.69151754345+000	1.03537647396+003	0.0000000000+000	3.5000000000+002	1.8281810000-010	0.0000000000+000
NH3	1.42159267667-002	4.7481120000+001	1.9544630000-002	-3.7212960000-006	2.1978010000-010	0.0000000000+000
H	2.18754506297-004	7.46280968750+002	-9.3968000000+004	6.0000000000+002	1.3168230000-010	0.0000000000+000
NO	9.43020426672-004	4.5330820000+001	1.2381610000-002	-2.4164030000-006	1.8932130000-010	0.0000000000+000
N2	3.81752052640+000	1.12158830990+003	-2.7201000000+004	3.9000000000+002	1.7983220000-010	0.0000000000+000
OH	1.48787449068-004	4.2018180000+001	1.9116620000-002	-3.1643300000-006	1.6891550000-010	0.0000000000+000
CH4	5.97250320424-003	1.20696121615+003	-9.3680000000+003	4.7600000000+002	2.4707140000-010	0.0000000000+000
SOL C	3.50001540938+000	2.6391100000+001	0.1213720000-003	-1.6907400000-006	9.3499950000-011	0.0000000000+000
		7.94631617188+002	5.1619000000+004	7.6000000000+001		
		4.8414980000+001	1.2693860000-002	-2.4946000000-006		
		1.20924970573+003	2.1477000000+004	3.8600000000+002		
		4.3923400000+001	1.2225010000-002	-2.3790050000-006		
		1.13916134896+003	0.0000000000+000	3.8000000000+002		
		4.2417920000+001	1.1568470000-002	-2.2268590000-006		
		1.18551754427+003	3.5600000000+003	4.1300000000+002		
		3.8756860000+001	-2.3640130000-002	-3.7079570000-006		
		1.04242781148+003	-1.6000000000+004	5.2800000000+002		
		-2.4615190000-001	7.1798550000-003	-1.2975500000-006		
		-2.58204389323+002	0.0000000000+000	0.0000000000+000		

A STRETCH BWK CALCULATION FOR THE EXPLOSIVE
COMPOSITION B 64/36 RDX/TNT

THE NUMBER OF ELEMENTS IS 4

THE NUMBER OF GAS SPECIES IS 11

THE NUMBER OF SOLID SPECIES IS 1

THE KW EQUATION OF STATE PARAMETERS ARE

ALPHA= 5.000000000-001 BETA= 1.600000000-001 THETA= 4.000000000+002 KAPPA= 1.0909778436+001

THE COMPOSITION OF THE EXPLOSIVE IS

6.8506000000+000 MOLES OF C
8.7504000000+000 MOLES OF H
7.6502000000+000 MOLES OF N
9.3005000000+000 MOLES OF O

THE DENSITY OF THE EXPLOSIVE IS 1.000000000+000 GRAMS/CC

THE MOLECULAR WEIGHT IS 3.4707100000+002 GRAMS

THE HEAT OF FORMATION AT 0 DEG K IS 3.3180000000+004 CALORIES PER FORMULA WEIGHT

THE SOLID (COHAN) EQUATION OF STATE PARAMETERS VO, AS, BS, CS, DS, ES, A1, A2, C1, C2, C3, ATOMIC WT

SOL C 4.4444444444-001 8.30935837268-001 -1.39381809219+000 6.72569716021-001 -1.13537262508-001 6.49155882007-003
-2.26705345948-001 1.20516569525-001 8.31600000000-002 -1.75590000000-001 1.55310000000-001 1.20100000000+001

THE INPUT DETONATION PRODUCT ELEMENTAL COMPOSITION MATRIX

0.0+00	2.0+00	0.0+00	1.0+00	0.0+00	2.0+00	0.0+00	0.0+00	0.0+00	0.0+00	0.0+00	0.0+00	2.0+00
1.0+00	0.0+00	0.0+00	2.0+00	1.0+00	0.0+00	0.0+00	1.0+00	0.0+00	3.0+00	1.0+00	0.0+00	0.0+00
0.0+00	1.0+00	0.0+00	0.0+00	0.0+00	0.0+00	1.0+00	1.0+00	0.0+00	0.0+00	2.0+00	0.0+00	0.0+00
0.0+00	1.0+00	0.0+00	1.0+00	1.0+00	4.0+00	0.0+00	0.0+00	1.0+00	0.0+00	0.0+00	0.0+00	0.0+00

A STRETCH BRN CALCULATION FOR THE EXPLOSIVE
COMPOSITION B 64/36 RDX/TNT

THE COMPUTED C-J PRESSURE IS 9.58282425797-002 MEGABARS

THE COMPUTED DETONATION VELOCITY IS 5.79795981083-001 CM/MICROSECOND

THE COMPUTED C-J TEMPERATURE IS 3.44121029973+003 DEGREES KELVIN

THE COMPUTED C-J VOLUME IS 7.14938484166-001 CC/GRAM OF EXPLOSIVE

THE COMPUTED GAMMA IS 2.50797813495+000

THE VOLUME OF THE GAS IS 1.93393383901+001 CC/MOLE OF GAS AND THERE ARE 1.21768434322+001 MOLES OF GAS

SOLID VOLUME IN CC/GM
SOL C 3.78683934305-001

THE C-J COMPOSITION OF THE DETONATION PRODUCTS AND THE INPUT COEFFICIENTS TO THE THERMODYNAMIC FITS FOR EACH SPECIE

SPECIE	NO OF MOLES	COEFFICIENTS A,B,C,D,E, THE INTEGRATION CONSTANT, HEAT OF FORMATION IN CALORIES/MOLE, COVOLUME				
H2O	4.09786688731+000	4.25884200000+001	1.48080500000-002	-2.63918100000-006	1.92045300000-010	0.00000000000+000
H2	1.63056082195-001	1.34282835156+003	-5.71070000000+004	2.50000000000+002	1.67776100000-010	0.00000000000+000
O2	1.09224229042-005	2.97034700000+001	1.14382900000-002	-2.20122200000-006	1.90157000000-010	0.00000000000+000
CO2	1.15999474065+000	1.17589615365+003	0.00000000000+000	1.80000000000+002	3.50000000000+002	0.00000000000+000
CO	2.88126006871+000	4.70309000000+001	1.28714700000-002	-2.50021700000-006	2.77030000000-010	0.00000000000+000
NH3	3.62752208001-002	1.03537647396+003	0.00000000000+000	3.50000000000+002	6.00000000000+002	0.00000000000+000
H	9.20206606581-004	4.74811200000+001	1.95448300000-002	-3.72129600000-006	1.82818100000-010	0.00000000000+000
NO	9.05689980021-004	7.46280968750+002	-9.39680000000+004	6.00000000000+002	2.19780100000-010	0.00000000000+000
N2	3.80650954461+000	4.53308200000+001	1.23816100000-002	-2.41640300000-006	1.31682300000-010	0.00000000000+000
OH	4.56027850572-004	1.12158830990+003	-2.72010000000+004	3.90000000000+002	1.89321300000-010	0.00000000000+000
CH4	2.95880410341-002	4.20181600000+001	1.91166200000-002	-3.16433000000-006	1.68915500000-010	0.00000000000+000
SOL C	2.77975714960+000	1.20696121615+003	-9.36800000000+003	4.76000000000+002	2.47071400000-010	0.00000000000+000
		2.65911000000+001	8.12137200000-003	-1.69074000000-006	9.34999500000-011	0.00000000000+000
		7.94651617188+002	5.16190000000+004	7.60000000000+001		
		4.84149800000+001	1.26938600000-002	-2.49460000000-006		
		1.20924970573+003	2.14770000000+004	3.86000000000+002		
		4.39234000000+001	1.22250100000-002	-2.37900500000-006		
		1.13916134896+003	0.00000000000+000	3.80000000000+002		
		4.24179200000+001	1.15684700000-002	-2.22665900000-006		
		1.18351754427+003	3.56000000000+003	4.13000000000+002		
		3.87569600000+001	2.36401300000-002	-3.70795700000-006		
		1.04242791146+003	-1.60000000000+004	5.28000000000+002		
		-2.46151900000-001	7.17985500000-003	-1.29753000000-006		
		-2.58204389323+002	0.00000000000+000	0.00000000000+000		

A STRETCH BKW CALCULATION FOR THE EXPLOSIVE
 94G4 94/3/3 HMX/NITROCELLULOSE/TRIS-B-CHLOROETHYLPHOSPHATE

THE NUMBER OF ELEMENTS IS 6

THE NUMBER OF GAS SPECIES IS 16

THE NUMBER OF SOLID SPECIES IS 1

THE KW EQUATION OF STATE PARAMETERS ARE
 ALPHA= 5.000000000-001 BETA= 1.600000000-001 THETA= 4.000000000+002 KAPPA= 1.09097784436+001

THE COMPOSITION OF THE EXPLOSIVE IS
 4.4236000000+000 MOLES OF C
 8.6597000000+000 MOLES OF H
 8.0750000000+000 MOLES OF N
 8.4699000000+000 MOLES OF O
 9.9300000000-002 MOLES OF CL
 3.3100000000-002 MOLES OF P

THE DENSITY OF THE EXPLOSIVE IS 1.8440000000+000 GRAMS/CC

THE MOLECULAR WEIGHT IS 3.1507400000+002 GRAMS

THE HEAT OF FORMATION AT 0 DEG K IS 3.880000000+004 CALORIES PER FORMULA WEIGHT

THE SOLID (COMAN) EQUATION OF STATE PARAMETERS VO, AS, BS, CS, DS, ES, A1, A2, C1, C2, C3, ATOMIC WT

SOL C 4.444444444-001 8.30935837268-001 -1.39381809219+000 6.72569716021-001 -1.13537262508-001 6.49155882007-003
 -2.26705345948-001 1.20516569525-001 8.3160000000-002 -1.7559000000-001 1.5531000000-001 1.2010000000+001

THE INPUT DETONATION PRODUCT ELEMENTAL COMPOSITION MATRIX

0.0+00	2.0+00	0.0+00	1.0+00	0.0+00	0.0+00	0.0+00	2.0+00	0.0+00	0.0+00	0.0+00	0.0+00
0.0+00	0.0+00	0.0+00	2.0+00	0.0+00	0.0+00	1.0+00	0.0+00	0.0+00	2.0+00	0.0+00	0.0+00
1.0+00	0.0+00	0.0+00	1.0+00	0.0+00	0.0+00	0.0+00	3.0+00	1.0+00	0.0+00	0.0+00	0.0+00
0.0+00	1.0+00	0.0+00	0.0+00	0.0+00	0.0+00	0.0+00	0.0+00	1.0+00	1.0+00	0.0+00	0.0+00
0.0+00	0.0+00	2.0+00	0.0+00	0.0+00	0.0+00	0.0+00	1.0+00	0.0+00	1.0+00	0.0+00	0.0+00
1.0+00	4.0+00	0.0+00	0.0+00	0.0+00	0.0+00	0.0+00	1.0+00	0.0+00	0.0+00	1.0+00	0.0+00
1.0+00	0.0+00	0.0+00	0.0+00	4.0+00	0.0+00	0.0+00	0.0+00	0.0+00	0.0+00	2.0+00	0.0+00
0.0+00	0.0+00	0.0+00	0.0+00	3.0+00	1.0+00	0.0+00	0.0+00	0.0+00	0.0+00	3.0+00	1.0+00
1.0+00	0.0+00	0.0+00	0.0+00	0.0+00	0.0+00	0.0+00	0.0+00	0.0+00	1.0+00	3.0+00	1.0+00

A STRETCH BAW CALCULATION FOR THE EXPLOSIVE
 9404 94/5/3 HNR/NITROCELLULOSE/TRIS-B-CHLOROETHYLPHOSPHATE

THE COMPUTED CJ PRESSURE IS 3.62773402544-D01 MEGABARS

THE COMPUTED DETONATION VELOCITY IS 8.87975876067-D01 CM/MICROSECOND

THE COMPUTED CJ TEMPERATURE IS 2.46644098866+D03 DEGREES KELVIN

THE COMPUTED CJ VOLUME IS 4.06995829294-D01 CC/GRAM OF EXPLOSIVE

THE COMPUTED GAMMA IS 3.00800995113+D00

THE VOLUME OF THE GAS IS 1.14989497118+D01 CC/MOLE OF GAS AND THERE ARE 1.04622222873+D01 MOLES OF GAS

SOLID VOLUME IN CC/GM
 SOL C 2.79535885714-D01

THE C-J COMPOSITION OF THE DETONATION PRODUCTS AND THE INPUT COEFFICIENTS TO THE THERMODYNAMIC FITS FOR EACH SPECIE

SPECIE	NO OF MOLES	COEFFICIENTS A,B,C,D,E, THE INTEGRATION CONSTANT, HEAT OF FORMATION IN CALORIES/MOLE, COVOLUME				
H2O	4.32981487860+D00	4.25884200000+D01	1.48080500000-D02	-2.63918100000-D06	1.92045300000-D10	0.00000000000+D00
H2	4.68689177632-D06	1.34282835156+D03	-5.71070000000+D04	2.50000000000+D02	1.67776100000-D10	0.00000000000+D00
OE	2.28738806045-D06	2.97034700000+D01	1.14382900000-D02	-2.20122200000-D06	1.90157000000-D10	0.00000000000+D00
CO2	2.04516420065+D00	1.17589615365+D03	0.00000000000+D00	1.80000000000+D02	2.77030000000-D10	0.00000000000+D00
CO	1.65946159415-D02	4.70309000000+D01	1.28714700000-D02	-2.50021700000-D06	1.82818100000-D10	0.00000000000+D00
NH3	1.94468169810-D05	1.03537647396+D03	0.00000000000+D00	3.50000000000+D02	2.19780100000-D10	0.00000000000+D00
N	1.00000000000-D07	4.74811200000+D01	1.95446300000-D02	-3.72129600000-D06	1.31682300000-D10	0.00000000000+D00
NO	5.75587568109-D05	7.46280968750+D02	-9.39680000000+D04	6.00000000000+D02	1.89321300000-D10	0.00000000000+D00
N2	4.03746149721+D00	4.53308200000+D01	1.23816100000-D02	-2.41640300000-D06	1.79832200000-D10	0.00000000000+D00
CH4	1.58711167329-D07	1.12158830990+D03	-2.72010000000+D04	3.90000000000+D02	2.47071400000-D10	0.00000000000+D00
HCL	2.27706906490-D06	4.20181600000+D01	1.91166200000-D02	-3.16433000000-D06	1.72780700000-D10	0.00000000000+D00
CCL4	1.00000000000-D07	1.20696121615+D03	-9.36800000000+D04	4.76000000000+D02	6.13624400000-D10	0.00000000000+D00
CL2	1.00000000000-D07	2.63911000000+D01	8.12137200000-D03	-1.69074000000-D06	2.34987200000-D10	0.00000000000+D00
POCL3	1.00000000000-D07	7.94631617188+D02	5.16190000000+D04	7.60000000000+D02	4.99224600000-D10	0.00000000000+D00
POCL3	3.31001792415-D02	4.84149800000+D01	1.26938600000-D02	-2.49460000000-D06	6.12091300000-D10	0.00000000000+D00
SOL C	2.36184159002+D00	1.20924970573+D03	2.14770000000+D04	3.86000000000+D02	0.00000000000+D00	0.00000000000+D00
		4.39234000000+D01	1.22250100000-D02	-2.37900500000-D06	0.00000000000+D02	0.00000000000+D00
		1.13916134896+D03	0.00000000000+D00	3.80000000000+D02	2.22665900000-D06	0.00000000000+D00
		4.24179200000+D01	1.15684700000-D02	-2.22665900000-D06	1.68915500000-D10	0.00000000000+D00
		1.18351754427+D03	3.56000000000+D04	4.13000000000+D02	2.47071400000-D10	0.00000000000+D00
		3.87568600000+D01	2.36401300000-D02	-3.70795700000-D06	0.00000000000+D02	0.00000000000+D00
		4.29264000000+D01	-1.60000000000-D04	5.28000000000+D02	1.07242791146+D03	0.00000000000+D00
		1.17374859635+D03	1.18744000000-D02	-2.28640600000-D06	1.72780700000-D10	0.00000000000+D00
		6.79474800000+D01	3.94821400000-D02	-7.99415600000-D06	0.00000000000+D02	0.00000000000+D00
		8.24032489583+D02	-2.55000000000+D04	2.00000000000+D02	6.13624400000-D10	0.00000000000+D00
		5.13210000000+D01	1.43956300000-D02	-2.96388300000-D06	2.34987200000-D10	0.00000000000+D00
		9.90222875000+D02	0.00000000000+D00	9.56000000000+D02	4.99224600000-D10	0.00000000000+D00
		7.01728200000+D01	3.14312200000-D02	-6.45543800000-D06	6.12091300000-D10	0.00000000000+D00
		1.18112563021+D03	-6.25000000000+D04	2.50000000000+D02	0.00000000000+D02	0.00000000000+D00
		7.17753000000+D01	3.93958700000-D02	-7.97406800000-D06	0.00000000000+D02	0.00000000000+D00
		1.00148527865+D03	-1.28700000000+D04	2.50000000000+D02	0.00000000000+D02	0.00000000000+D00
		-2.46151900000-D01	7.17985500000-D03	-1.29755000000-D06	9.34999500000-D11	0.00000000000+D00
		-2.58204389323+D02	0.00000000000+D00	0.00000000000+D02		

THE BAW HUGONIOT FOR THE DETONATION PRODUCTS OF
 9454 94/3/3 HMX/NITROCELLULOSE/TRIS-B-CHLOROETHYLPHOSPHATE

PRESSURE = 5.0000000000-001 VOLUME = 3.66202419334-001 TEMPERATURE = 2.67273346872+003
 H2O 4.32984148688+000
 H2 8.31698905648-007
 O2 1.84962026802-005
 CO2 2.64848350407+000
 CO 9.75983777050-003
 NH3 5.19211105031-006
 H 1.00000000000-007
 NO 1.94576627061-004
 N2 4.03740011563+000
 OH 1.00000000000-007
 CH4 1.00000000000-007
 HCL 6.02266910241-007
 CCL4 1.00000000000-007
 CL2 1.00000000000-007
 PCL3 1.00000000000-007
 POCL3 3.31004022040-002
 SOL C 2.36535691614+000

PRESSURE = 4.5000000000-001 VOLUME = 3.79085458970-001 TEMPERATURE = 2.58193964372+003
 H2O 4.32983732592+000
 H2 1.33128940717-006
 O2 8.35568342481-006
 CO2 2.04792790928+000
 CO 1.09711572986-002
 NH3 7.42924418945-006
 H 1.00000000000-007
 NO 1.18938644920-004
 N2 4.03743681606+000
 OH 1.00000000000-007
 CH4 1.00000000000-007
 HCL 9.63606666384-007
 CCL4 1.00000000000-007
 CL2 1.00000000000-007
 PCL3 1.00000000000-007
 POCL3 3.31003414905-002
 SOL C 2.36470121514+000

PRESSURE = 4.0000000000-001 VOLUME = 3.94047080481-001 TEMPERATURE = 2.50864647193+003
 H2O 4.32982845414+000
 H2 2.54463674489-006
 O2 3.89582930405-006
 CO2 2.04674022341+000
 CO 1.34068567641-002
 NH3 1.21972108356-005
 H 1.00000000000-007
 NO 7.64442457936-005
 N2 4.03745567927+000
 OH 1.00000000000-007
 CH4 1.00000000000-007
 HCL 1.58386031318-006
 CCL4 1.00000000000-007
 CL2 1.00000000000-007
 PCL3 1.00000000000-007
 POCL3 3.31002579399-002
 SOL C 2.36345326057+000

PRESSURE = 3.5000000000-001 VOLUME = 4.11885328187-001 TEMPERATURE = 2.45458938824+003
 H2O 4.32980759069+000
 H2 5.93996402790-006
 O2 1.92407766608-006
 CO2 2.04441242389+000
 CO 1.81109483745-002
 NH3 2.32918815852-005
 H 1.00000000000-007
 NO 5.28067604546-005
 N2 4.03746195068+000
 OH 1.00000000000-007
 CH4 2.11204579598-007
 HCL 2.56819133957-006
 CCL4 1.00000000000-007
 CL2 1.00000000000-007
 PCL3 1.00000000000-007
 POCL3 3.31001487339-002
 SOL C 2.36107704548+000

PRESSURE = 3.0000000000-001 VOLUME = 4.33862258221-001 TEMPERATURE = 2.42245109535+003
 H2O 4.3297508012+000
 H2 1.73051682143-005
 O2 1.03926769418-006
 CO2 2.03972818010+000
 CO 2.75505859432-002
 NH3 5.22954264733-005
 H 1.00000000000-007
 NO 4.02356840888-005
 N2 4.03743373444+000
 OH 1.00000000000-007
 CH4 7.5873583085-007
 HCL 3.99182436605-006
 CCL4 1.00000000000-007
 CL2 1.00000000000-007
 PCL3 1.00000000000-007
 POCL3 3.31000112232-002
 SOL C 2.35632141328+000

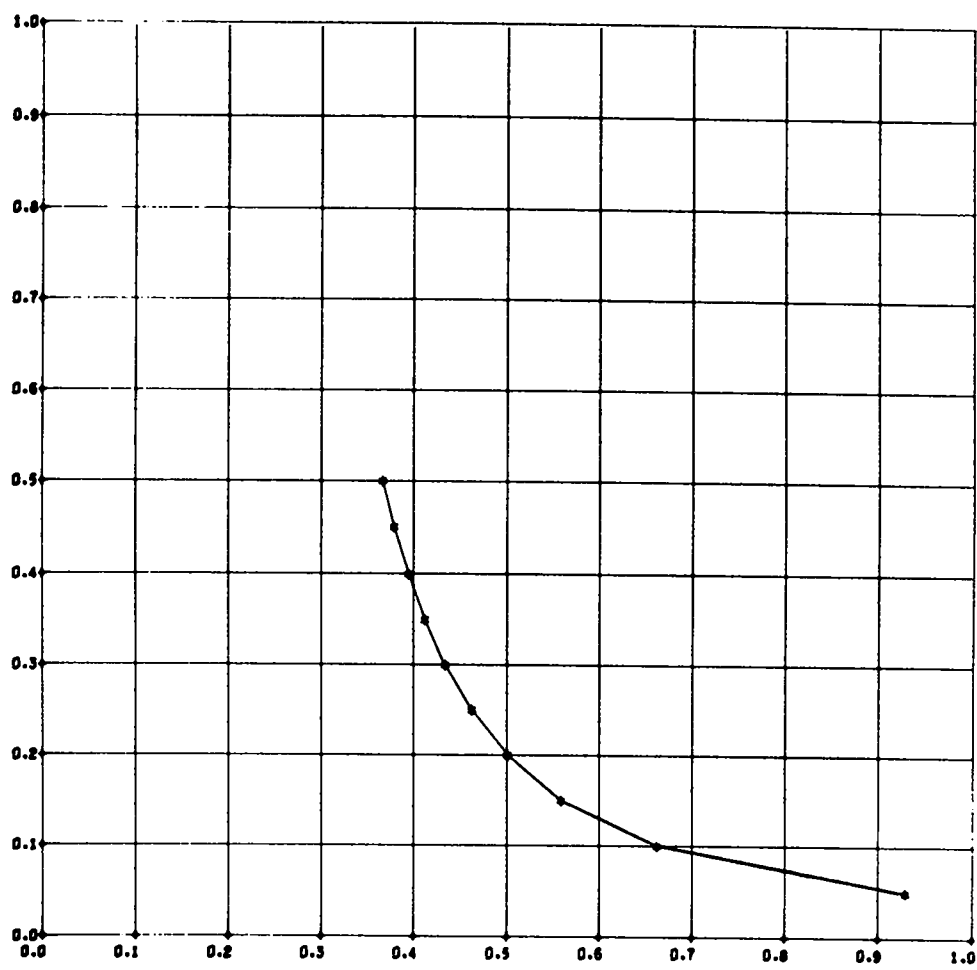
PRESSURE = 2.5000000000-001 VOLUME = 4.62139475680-001 TEMPERATURE = 2.41617686264+003
H2O 4.32956709851+000
H2 6.42445688007-005
O2 6.37113310774-007
CO2 2.62951309000+000
CO 4.81707870257-002
NH3 1.39029218412-004
H 1.00000000000-007
NO 3.48190249350-005
N2 4.03741307588+000
OH 1.00000000000-007
CH4 3.57378190914-006
HCL 5.88574102567-006
CCL4 1.00000000000-007
CL2 1.00000000000-007
PCL3 1.76807349443-007
POCL3 3.3098231927-002
SOL C 2.34591389604+000

PRESSURE = 2.0000000000-001 VOLUME = 5.60823645551-001 TEMPERATURE = 2.4410665509+003
H2O 4.32883431224+000
H2 3.09545389758-004
O2 4.58845709244-007
CO2 2.00455039985+000
CO 9.88299271251-002
NH3 4.38002976316-004
H 2.07445450537-007
NO 3.51559269496-005
N2 4.03726342055+000
OH 2.03424070947-007
CH4 2.24045998476-005
HCL 8.24653869757-006
CCL4 1.00000000000-007
CL2 1.00000000000-007
PCL3 1.31610230847-006
POCL3 3.30986838977-002
SOL C 2.32019912339+000

PRESSURE = 1.5000000000-001 VOLUME = 5.58994130571-001 TEMPERATURE = 2.50157294537+003
H2O 4.32506889309+000
H2 1.96398804111-003
O2 3.88628691685-007
CO2 1.9351792980+000
CO 2.41341302270-001
NH3 1.62156820521-003
H 1.32424608736-006
NO 4.1339960833-005
N2 4.03666844620+000
OH 1.30191608705-006
CH4 1.88962896757-004
HCL 1.10553748758-003
CCL4 1.00000000000-007
CL2 1.00000000000-007
PCL3 1.36735257930-003
POCL3 3.30863264742-002
SOL C 2.24689226388+000

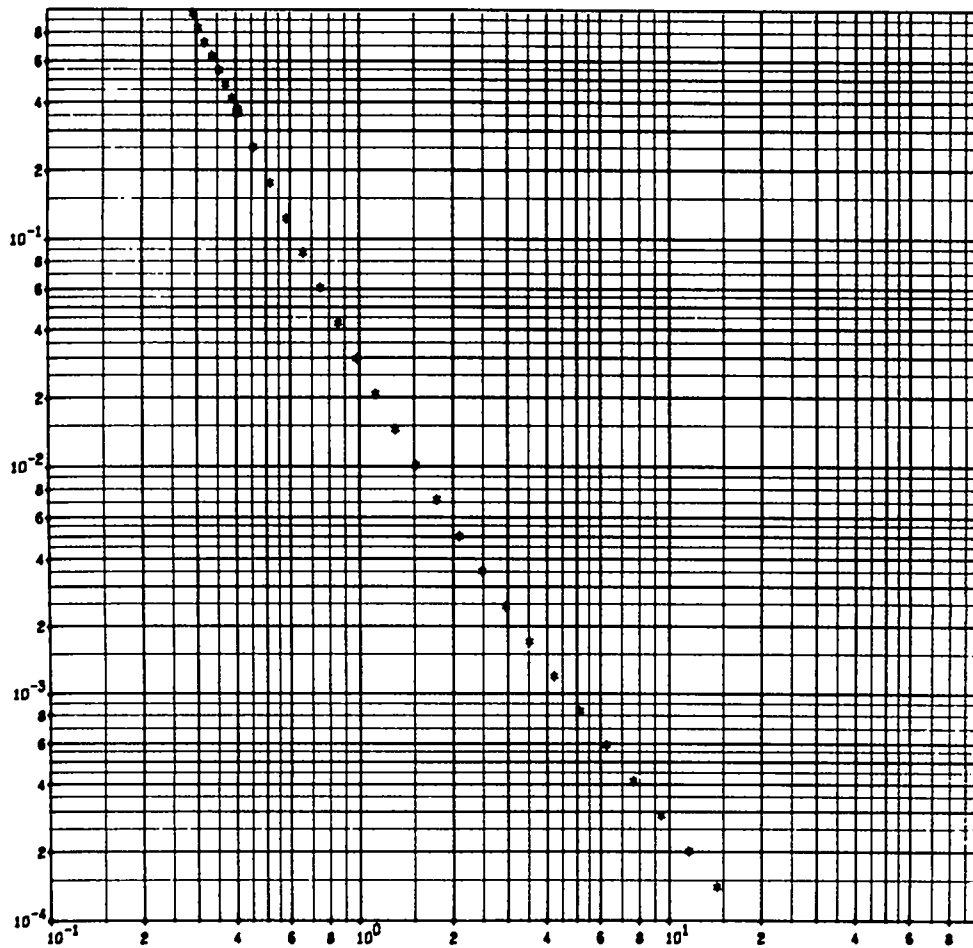
PRESSURE = 1.0000000000-001 VOLUME = 6.62335591074-001 TEMPERATURE = 2.59146153220+003
H2O 4.29816893474+000
H2 1.67756443314-002
O2 3.34762645123-007
CO2 1.72283525457+000
CO 6.93096436730-001
NH3 6.98162801478-003
H 1.24719716667-005
NO 5.21921668895-005
N2 4.03398308991+000
OH 1.05468196692-003
CH4 2.20715240641-003
HCL 1.43293913480-005
CCL4 1.00000000000-007
CL2 1.00000000000-007
PCL3 1.99289116392-004
POCL3 3.29007108836-002
SOL C 2.00546431823+000

PRESSURE = 5.0000000000-002 VOLUME = 9.29305305106-001 TEMPERATURE = 2.65175297018+003
H2O 3.97663498644+000
H2 2.14921035978-001
O2 1.45269175980-007
CO2 1.13766784492+000
CO 2.18893691431+000
NH3 3.5750225584-002
H 1.57556381393-004
NO 4.44296405528-003
N2 4.01960267250+000
OH 7.93145526762-005
CH4 4.22705122028-002
HCL 1.83593435792-003
CCL4 1.00000000000-007
CL2 1.00000000000-007
PCL3 4.23162532637-003
POCL3 2.88683746736-002
SOL C 1.05472875188+000



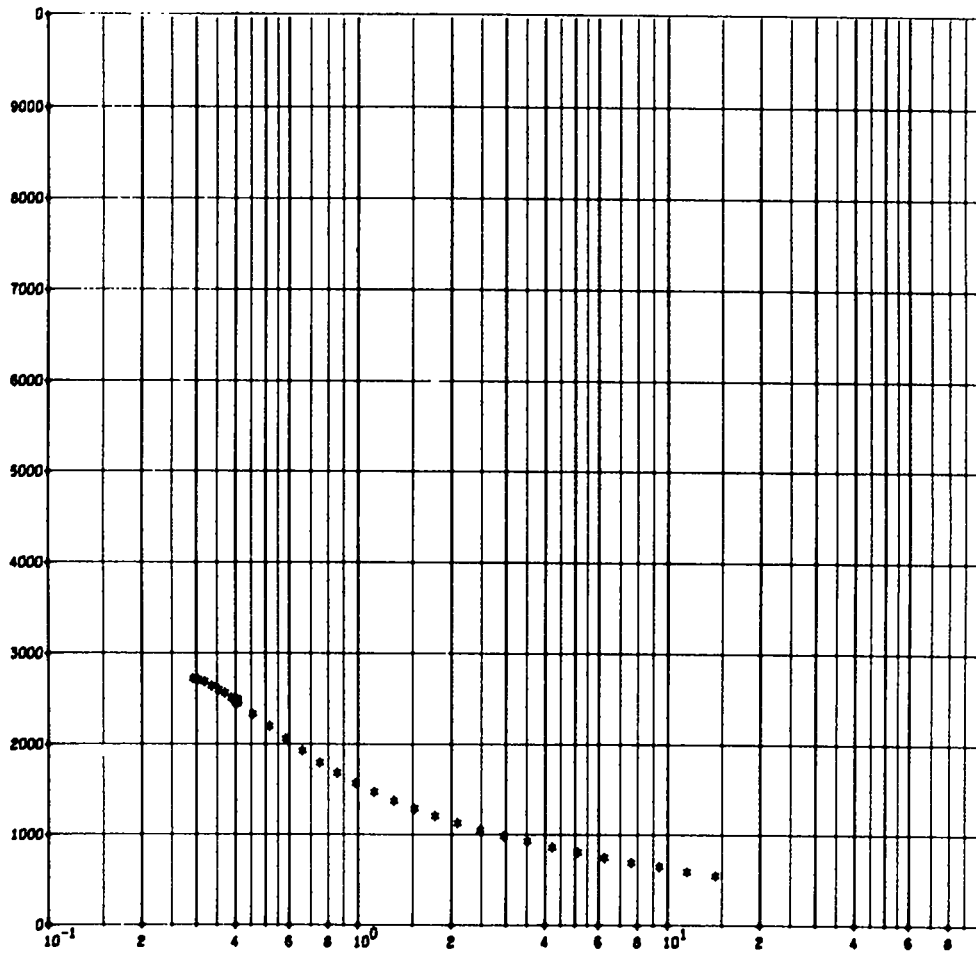
9404 94/9/3 NBR/NITROCELLULOSE/TRIS-B-CHLOROETHYLPHOSPHATE

PRESSURE-VOLUME MUSHIOT



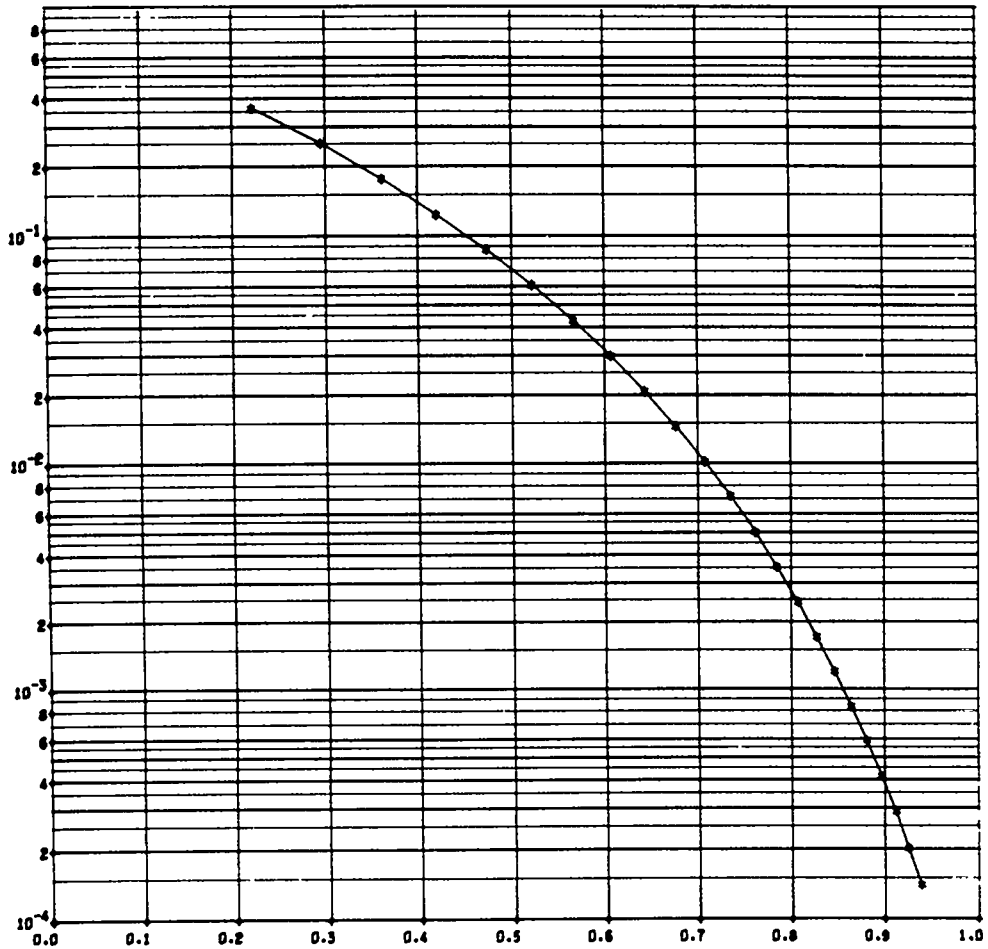
9404 94/3/3 HNI/NITROCELLULOSE/TRIS-B-CHLOROETHYLPHOSPHATE

PRESSURE-VOLUME ISENTROPE THRU THE C-J VALUE



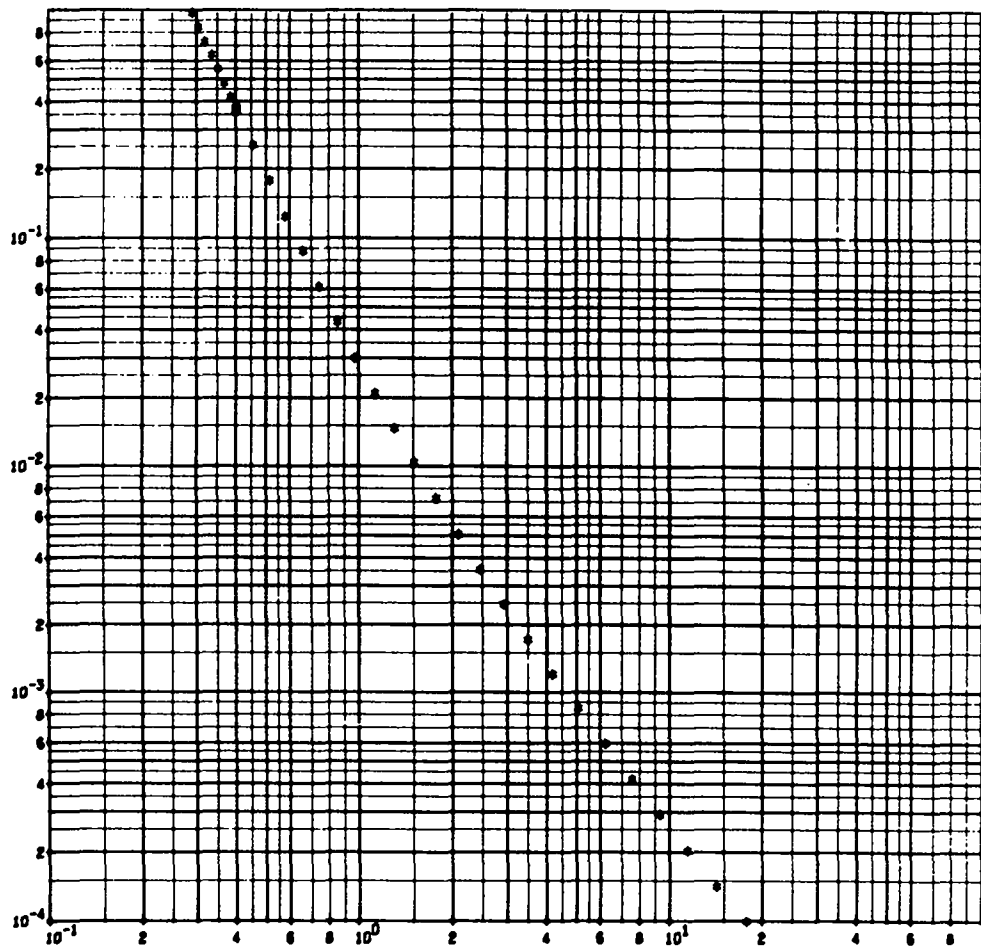
9404 94/3/3 NHX/NITROCELLULOSE/TRIS-B-CHLOROETHYLPHOSPHATE

TEMPERATURE-VOLUME ISENTROPE THRU THE C-J VALUE



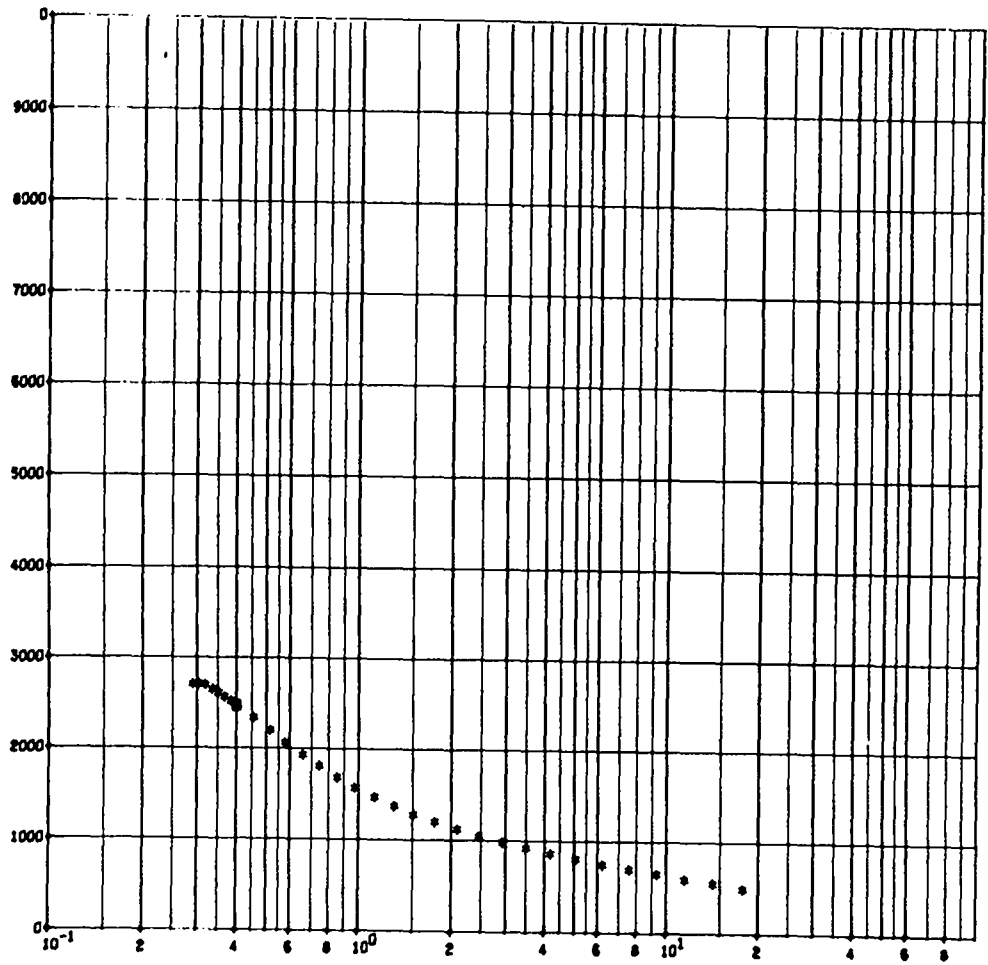
9404 94/3/3 NH₂/NITROCELLULOSE/TRIS-B-CHLOROETHYLPHOSPHATE

PRESSURE-PARTICLE VELOCITY



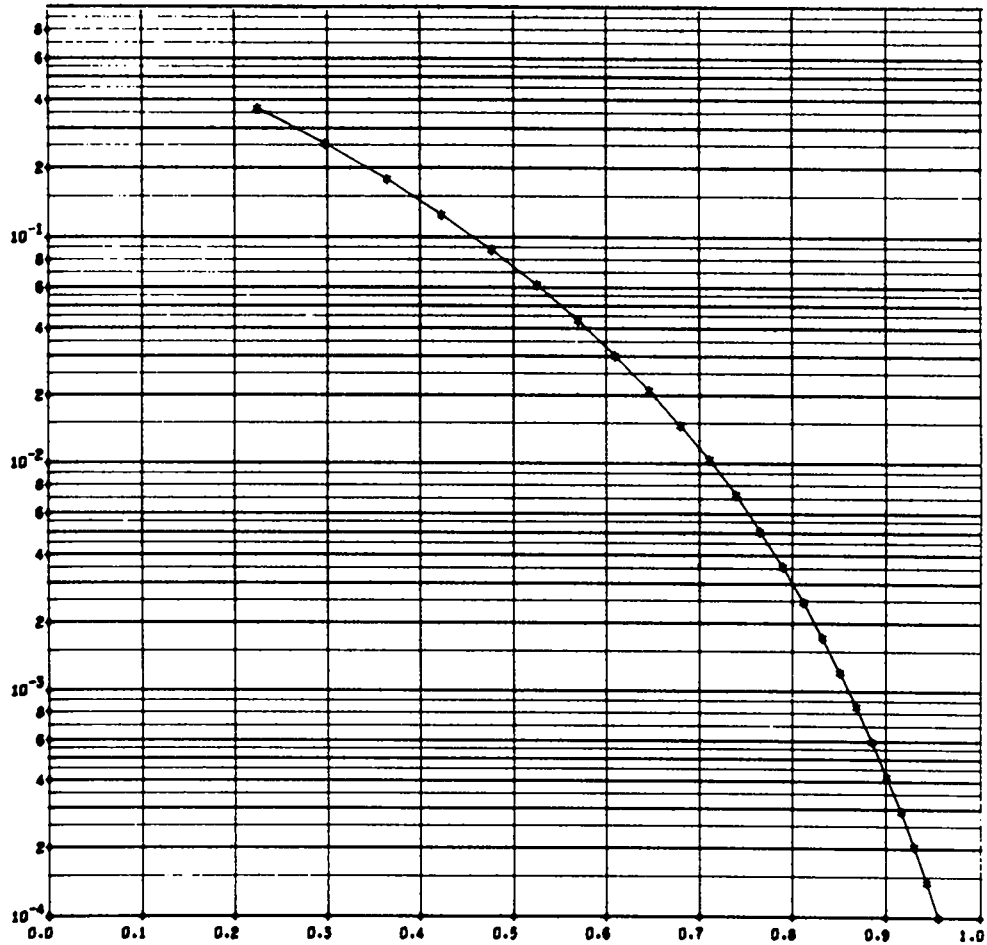
9404 94/3/3 HMX/NITROCELLULOSE/TRIS-B-CHLOROETHYLPHOSPHATE

PRESSURE-VOLUME ISENTROPE THRU THE C-J VALUE



9404 94/3/3 NMIX/NITROCELLULOSE/TRIS-B-CHLOROETHYLPHOSPHATE

TEMPERATURE-VOLUME ISENTROPE THRU THE C-J VALUE



9404 94/3/3 NI/NITROCELLULOSE/TRIS-B-CHLOROETHYLPHOSPHATE

PRESSURE-PARTICLE VELOCITY

1 STRETCH BAW CALCULATION FOR THE EXPLOSIVE
9515 96/15 RDX/KEL-F

THE NUMBER OF ELEMENTS IS 6

THE NUMBER OF GAS SPECIES IS 18

THE NUMBER OF SOLID SPECIES IS 1

THE RW EQUATION OF STATE PARAMETERS ARE

ALPHA= 5.000000000-001 BETA= 1.600000000-001 THETA= 4.000000000+002 KAPPA= 1.09097784436+001

THE COMPOSITION OF THE EXPLOSIVE IS

3.42360000000+000 MOLES OF C
6.00000000000+000 MOLES OF H
6.00000000000+000 MOLES OF N
6.00000000000+000 MOLES OF O
6.35400000000-001 MOLES OF F
2.11880000000-001 MOLES OF CL

THE DENSITY OF THE EXPLOSIVE IS 1.7810000000+000 GRAMS/CC

THE MOLECULAR WEIGHT IS 2.4680600000+002 GRAMS

THE HEAT OF FORMATION AT 0 DEG K IS 3.250000000+003 CALORIES PER FORMULA WEIGHT

THE SOLID (COMAN) EQUATION OF STATE PARAMETERS VO, AS, BS, CS, DS, ES, A1, A2, C1, C2, C3, ATOMIC WT

SOL C 4.4444444444-001 8.3093583726d-001 -1.39381809219+000 6.72569716021-001 -1.13537262508-001 6.49155982007-003
-2.26705345948-001 1.20516569525-001 8.3160000000-002 -1.7559000000-001 1.5531000000-001 1.2010000000+001

THE INPUT DETONATION PRODUCT ELEMENTAL COMPOSITION MATRIX

0.0+00	1.0+00	0.0+00	0.0+00	1.0+00	0.0+00	1.0+00	0.0+00	0.0+00	0.0+00	4.0+00	0.0+00
0.0+00	0.0+00	0.0+00	0.0+00	2.0+00	0.0+00	0.0+00	2.0+00	0.0+00	1.0+00	0.0+00	0.0+00
0.0+00	2.0+00	0.0+00	0.0+00	0.0+00	0.0+00	0.0+00	0.0+00	0.0+00	2.0+00	0.0+00	0.0+00
1.0+00	0.0+00	0.0+00	2.0+00	0.0+00	0.0+00	1.0+00	0.0+00	0.0+00	1.0+00	0.0+00	0.0+00
0.0+00	3.0+00	1.0+00	0.0+00	0.0+00	0.0+00	0.0+00	1.0+00	0.0+00	0.0+00	0.0+00	0.0+00
0.0+00	0.0+00	1.0+00	1.0+00	0.0+00	0.0+00	0.0+00	0.0+00	2.0+00	0.0+00	0.0+00	0.0+00
0.0+00	1.0+00	0.0+00	1.0+00	0.0+00	0.0+00	1.0+00	4.0+00	0.0+00	0.0+00	0.0+00	0.0+00
1.0+00	0.0+00	0.0+00	1.0+00	2.0+00	0.0+00	0.0+00	1.0+00	0.0+00	0.0+00	0.0+00	1.0+00
1.0+00	0.0+00	0.0+00	0.0+00	0.0+00	4.0+00	0.0+00	0.0+00	0.0+00	0.0+00	0.0+00	2.0+00
1.0+00	0.0+00	0.0+00	0.0+00	0.0+00	0.0+00	0.0+00	0.0+00	0.0+00	0.0+00	0.0+00	0.0+00

A STRETCH BRW CALCULATION FOR THE EXPLOSIVE
9G10 9G/10 ROX/KEL-F

THE COMPUTED CJ PRESSURE IS 3.13277870585-001 MEGABARS
 THE COMPUTED DETONATION VELOCITY IS 8.37110492169-001 CM/MICROSECOND
 THE COMPUTED CJ TEMPERATURE IS 2.49028023264+003 DEGREES KELVIN
 THE COMPUTED CJ VOLUME IS 4.20542100703-001 CC/GRAM OF EXPLOSIVE
 THE COMPUTED GAMMA IS 2.98382059065+000
 THE VOLUME OF THE GAS IS 1.26467750804+001 CC/MOLE OF GAS AND THERE ARE 7.73160857852+000 MOLES OF GAS

SOLID VOLUME IN CC/GM
 SOL C 2.94103322200-001

THE C-J COMPOSITION OF THE DETONATION PRODUCTS AND THE INPUT COEFFICIENTS TO THE THERMODYNAMIC FITS FOR EACH SPECIE

SPECIE	NO OF MOLES	COEFFICIENTS A,B,C,D,E, THE INTEGRATION CONSTANT, HEAT OF FORMATION IN CALORIES/MOLE, COVOLUME				
HF	1.75022820689-002	4.00007100000+001	1.14458200000-002	-2.21043000000-006	1.68170500000-010	0.00000000000+000
CF4	1.54474024975-001	5.56808600000+001	3.56363400000-002	-6.89817200000-006	5.16953400000-010	0.00000000000+000
F2	7.14352254696-007	2.03729692709+002	-2.18000000000+003	-2.80475800000-006	2.15833800000-010	0.00000000000+000
H2O	2.99066701363+000	4.63724900000+001	1.39582500000-002	-2.63918100000-006	1.92045300000-010	0.00000000000+000
H2	1.29826540682-005	9.56070057292+002	0.00000000000+000	-2.50000000000+002	1.67776100000-010	0.00000000000+000
O2	9.95787988775-007	4.25884200000+001	1.48080500000-002	-2.20122200000-006	1.90157000000-010	0.00000000000+000
CO2	1.49457789741+000	1.3428285156+003	0.00000000000+000	1.80000000000+002	2.77030000000-010	0.00000000000+000
CO	2.01360727622-002	1.03537647396+003	0.00000000000+000	-3.72129600000-006	1.82818100000-010	0.00000000000+000
NH3	5.75114554712-005	4.74811200000+001	1.95446300000-002	-2.41640300000-006	2.19780100000-010	0.00000000000+000
H	4.96586978223-010	7.46280968750+002	-9.39680000000+004	6.00000000000+002	1.31682300000-010	0.00000000000+000
NO	3.90320549616-005	4.53308200000+001	1.23816100000-002	-2.49460000000-006	1.89321300000-010	0.00000000000+000
N2	2.99995172824+000	1.12158830990+003	-2.72010000000+004	3.90000000000+002	1.79832200000-010	0.00000000000+000
OH	4.95416857755-010	4.20181600000+001	1.91166200000-002	-3.16433000000-006	1.68915500000-010	0.00000000000+000
CH4	9.64021004610-007	1.20696121613+003	-9.36800000000+003	4.76000000000+002	2.47071400000-010	0.00000000000+000
COF2	9.46634065479-008	2.63911000000+001	8.12137200000-003	-1.69074000000-006	3.83331300000-010	0.00000000000+000
HCL	9.61333925970-004	7.94631617188+002	5.16190000000+004	7.60000000000+001	1.72780700000-010	0.00000000000+000
CCL4	5.22334035148-002	4.84149800000+001	1.26938600000-002	-2.49460000000-006	6.13624400000-010	0.00000000000+000
CL2	9.92526007338-004	1.20924970573+003	2.14770000000+004	3.86000000000+002	2.34987200000-010	0.00000000000+000
SOL C	1.70217754265+000	4.39234000000+001	1.22250100000-002	-2.37900500000-006	9.34999500000-011	0.00000000000+000
		1.13916134896+003	0.00000000000+000	3.80000000000+002		
		4.24179200000+001	1.15684700000-002	-2.22665900000-006		
		1.18351754427+003	3.56000000000+003	4.13000000000+002		
		3.87568600000+001	2.36401300000-002	-3.70795700000-006		
		1.04242791146+003	-1.60000000000+004	5.28000000000+002		
		5.67523300000+001	2.67670700000-002	-5.13590100000-006		
		5.64431820312+002	-1.50000000000+005	1.33000000000+003		
		4.29366400000+001	1.18744000000-002	-2.28640600000-006		
		1.17374859635+003	-2.20000000000+004	6.37000000000+002		
		6.79474800000+001	3.94821400000-002	-7.99415600000-006		
		8.24032489583+002	-2.55000000000+004	2.00000000000+003		
		5.13210000000+001	1.43956300000-002	-2.96388300000-006		
		9.90228075000+002	0.00000000000+000	9.16000000000+002		
		-2.46151900000-001	7.17988500000-003	-1.29755000000-006		
		-2.58204389323+002	0.00000000000+000	0.00000000000+000		

THE BRW HUGONIOT FOR THE DETONATION PRODUCTS OF
 J010 90/10 RDX/KEL-F

PRESSURE = 5.0000000000-001 VOLUME = 3.60887752747-001 TEMPERATURE = 2.87963497121+003
 HF 2.71692293892-003
 CF4 1.58157643588-001
 F2 2.62509951276-005
 H2O 2.99858401669+000
 H2 2.03033180341-006
 O2 2.28874960995-005
 CO2 1.49427031519+000
 CO 1.25497239127-002
 NH3 1.64228265655-005
 H 4.54815312029-010
 NO 2.79853249261-004
 N2 2.99985186196+000
 OH 4.18749399513-010
 CH4 1.21013822945-007
 COF2 3.58666379378-010
 HCL 6.12296027881-005
 CCL4 5.28001647505-002
 CL2 3.09055697539-004
 SOL C 1.70582203119+000

PRESSURE = 4.5000000000-001 VOLUME = 3.73414297541-001 TEMPERATURE = 2.74657435677+003
 HF 3.76759881482-003
 CF4 1.57903238743-001
 F2 9.72269431224-006
 H2O 2.99803475539+000
 H2 2.58022665571-006
 O2 9.60146505782-006
 CO2 1.49459533692+000
 CO 1.25998039622-002
 NH3 1.89880202227-005
 H 4.31138860533-010
 NO 1.55563054381-004
 N2 2.99991272446+000
 OH 4.03142186499-010
 CH4 1.57568404841-007
 COF2 4.12988192602-010
 HCL 1.00134781564-004
 CCL4 5.27631409293-002
 CL2 3.63650750577-004
 SOL C 1.70573832146+000

PRESSURE = 4.0000000000-001 VOLUME = 3.87964832347-001 TEMPERATURE = 2.63401911328+003
 HF 5.87871847782-003
 CF4 1.57379018635-001
 F2 3.60698613659-006
 H2O 2.99892276879+000
 H2 3.89636340800-006
 O2 4.05414178479-006
 CO2 1.49464796428+000
 CO 1.36840206603-002
 NH3 2.50056413743-005
 H 4.29618536457-010
 NO 8.91727930080-005
 N2 2.99994291078+000
 OH 4.10436481142-010
 CH4 2.49952736928-007
 COF2 4.04220727250-010
 HCL 1.93933639005-004
 CCL4 5.26849222153-002
 CL2 4.73188749856-004
 SOL C 1.70520382575+000

PRESSURE = 3.5000000000-001 VOLUME = 4.05314058944-001 TEMPERATURE = 2.54279868783+003
 HF 1.04612111115-002
 CF4 1.56233986818-001
 F2 1.38323312977-006
 H2O 2.99447737089+000
 H2 7.18568401728-006
 O2 1.76522639711-006
 CO2 1.49454080785+000
 CO 1.63835618555-002
 NH3 3.81414970178-005
 H 8.12463018707-009
 NO 5.38739107049-005
 N2 2.9999399230+000
 OH 7.62001083807-009
 CH4 4.37034230246-007
 COF2 3.75760126431-008
 HCL 4.53247371290-004
 CCL4 5.25108773997-002
 CL2 6.91621514866-004
 SOL C 1.70393023147+000

PRESSURE = 3.000000000-001 VOLUME = 4.26727313538-001 TEMPERATURE = 2.47448748165+003
HF 2.15126907457-002
CF4 1.53471473194-001
F2 5.70360915034-007
H2O 2.98847317734+000
H2 1.66124536154-005
O2 8.18990872111-007
CO2 1.49470020838+000
CO 2.20894265715-002
NH3 6.82323160274-005
H 5.17333668480-010
NO 3.52029476398-005
N2 2.99994828237+000
OH 5.19306779498-010
CH4 1.26956183122-006
COF2 1.37879181073-007
MCL 1.29795342522-003
CCL4 5.20693007983-002
CL2 1.15242169088-003
SOL C 1.70126818362+000

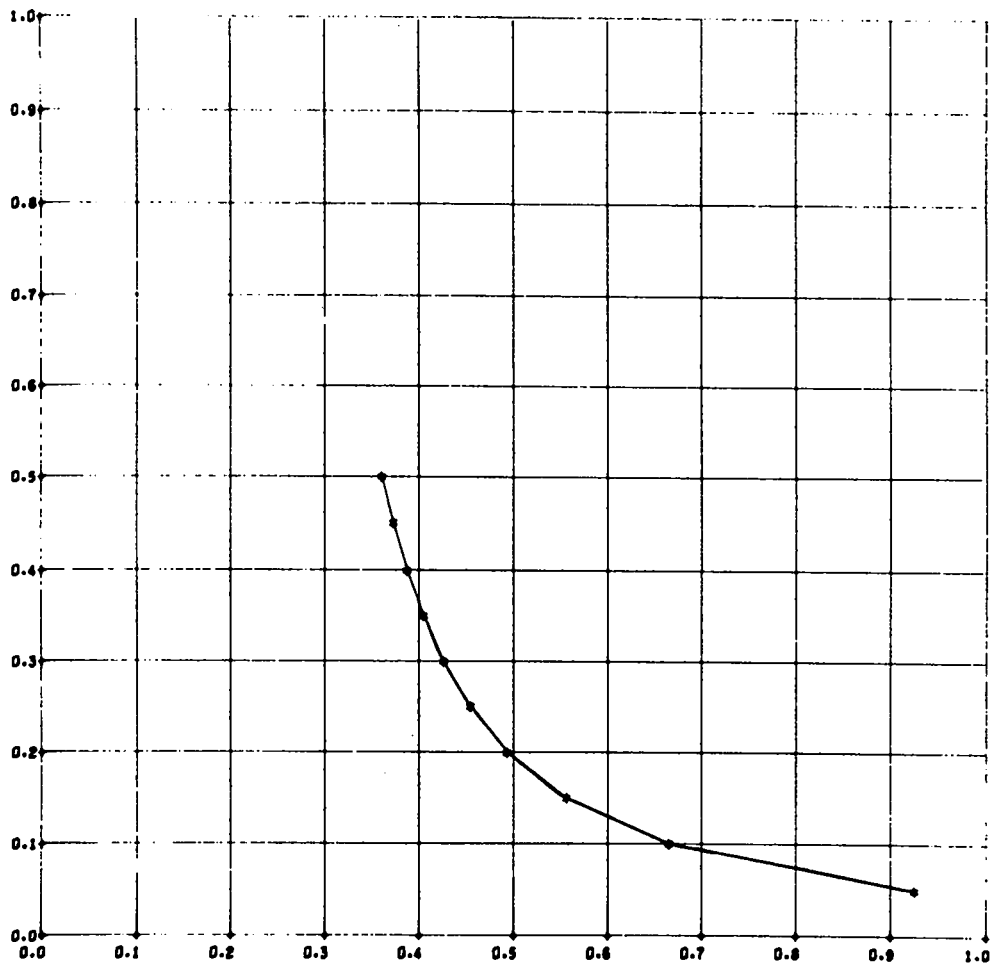
PRESSURE = 2.500000000-001 VOLUME = 4.54505945119-001 TEMPERATURE = 2.43122191090+003
HF 5.14244432123-002
CF4 1.45993413930-001
F2 2.63912502520-007
H2O 2.97171912188+000
H2 4.92252369860-005
O2 4.19402941107-007
CO2 1.49694434949+000
CO 3.43650402860-002
NH3 1.43559992759-004
H 6.29478422546-010
NO 2.56111254114-005
N2 2.99991541444+000
OH 2.50693358869-009
CH4 4.22480557119-006
COF2 6.86421288390-007
MCL 4.59127822140-003
CCL4 5.07164000488-002
CL2 2.21156079161-003
SOL C 1.69557588542+000

PRESSURE = 2.000000000-001 VOLUME = 4.93549752269-001 TEMPERATURE = 2.41455743936+003
HF 1.40764768858-001
CF4 1.23656528860-001
F2 1.38978161941-007
H2O 2.91898216523+000
H2 1.88274978011-004
O2 2.45580399473-007
CO2 1.50880417545+000
CO 6.33831973541-002
NH3 3.46382226229-004
H 1.04206866344-007
NO 2.12554855011-005
N2 2.99981618114+000
OH 1.20893221363-007
CH4 1.79743045618-005
COF2 4.41897276621-006
MCL 1.97830818234-002
CCL4 4.56173737191-002
CL2 4.81371160009-003
SOL C 1.68211633134+000

PRESSURE = 1.500000000-001 VOLUME = 5.56260051640-001 TEMPERATURE = 2.42486737649+003
HF 3.95564673056-001
CF4 5.89443671219-002
F2 7.02812895195-008
H2O 2.75335299489+000
H2 9.15253867219-004
O2 1.68399456489-007
CO2 1.55129012982+000
CO 1.44016827991-001
NH3 8.86882948934-004
H 4.72875990961-007
NO 2.03893179745-005
N2 2.99954636587+000
OH 5.44409103292-007
CH4 9.09041745141-005
COF2 2.89589671895-005
MCL 9.28751486117-002
CCL4 2.48424683743-002
CL2 9.81749354561-003
SOL C 1.64338704895+000

PRESSURE = 1.0000000000-001 VOLUME = 6.65440351757-001 TEMPERATURE = 2.49325324654+003
HF 6.30960281756-001
CF4 1.08312742119-003
F2 4.71839590481-010
H2O 2.56884734577+000
H2 7.04240709809-003
O2 1.45196214671-007
CO2 1.49856163201+000
CO 4.33946462776-001
NH3 3.01336934460-003
H 4.13674627288-006
NO 2.48786707043-003
N2 2.99848087599+000
OH 4.11455583429-006
CH4 7.74934648935-004
COF2 5.36038078749-005
HCL 2.05112114579-001
CCL4 1.89405119075-004
CL2 3.00513247214-003
SOL C 1.48899081421+000

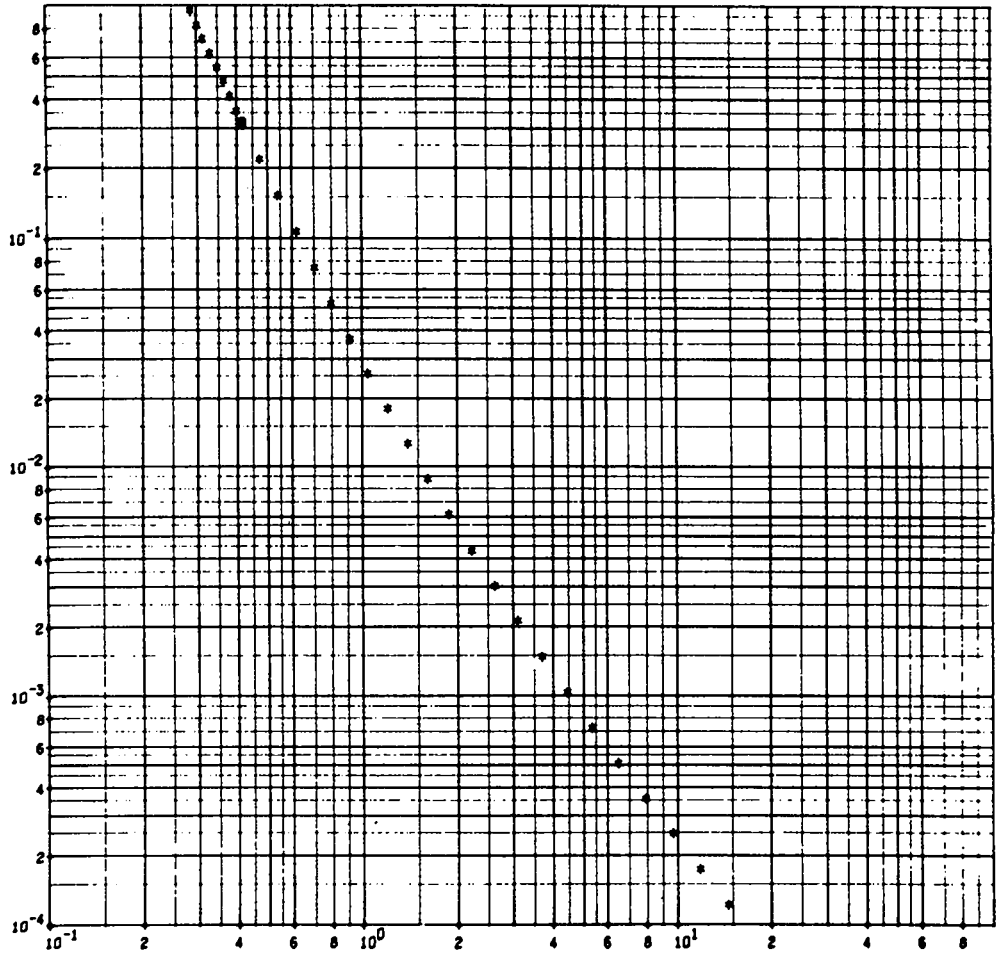
PRESSURE = 5.0000000000-002 VOLUME = 9.25957935744-001 TEMPERATURE = 2.57479527008+003
HF 6.35357206090-001
CF4 6.03769613731-007
F2 1.32947350494-010
H2O 2.41809282543+000
H2 1.02194576585-001
O2 7.73754605343-008
CO2 1.02305589111+000
CO 1.53571219637+000
NH3 1.60870121158-002
H 6.56475429035-005
NO 2.46513294948-005
N2 2.99194416828+000
OH 3.82006100293-005
CH4 1.60045750324-002
COF2 2.01892831165-005
HCL 2.11684605253-001
CCL4 4.65771226264-010
CL2 9.76964418674-005
SOL C 8.48806543966-001



90/10 90/10 RDX/REL-F

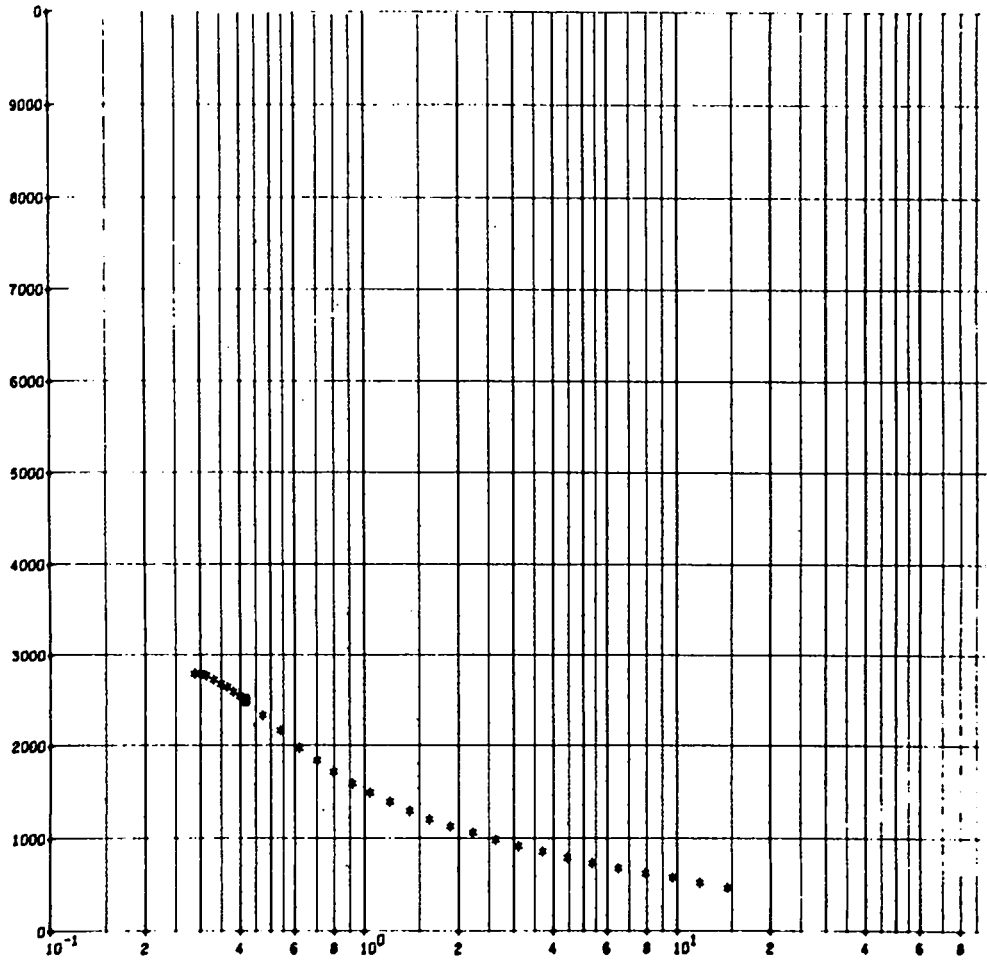
PRESSURE-VOLUME MUGNIOT

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2.99774596249+000 1.0000000000-011 8.92702053586-002 4.19709203596-010 2.11880000982-001 1.0000000000-011
1.0000000000-011 1.49601504468+000 1.0000000000-011 1.0000000000-011 2.32860750997+000 4.28201143528-002
1.04111417221-003 6.35400000780-001 1.0000000000-011 1.0000000000-011 1.0000000000-011 1.0000000000-011
1.06000000000-011 1.83101045120+000 9.37158813714-003 3.78615659817-003 2.11880001139-001 1.0000000000-011
2.99810692177+000 1.0000000000-011 9.96263699343-002 1.0000000000-011 1.0000000000-011 1.0000000000-011
1.0000000000-011 1.48359139077+000 1.0000000000-011 1.0000000000-011 2.32662218790+000 3.39690030687-002
7.28779920350-004 6.35400001163-001 4.44604421612-003 3.05564060015-003 1.0000000000-011 1.0000000000-011
1.0000000000-011 1.83446588432+000 1.05592673484-001 2.20478564752-010 2.11880001304-001 1.0000000000-011
2.9984721979+000 1.0000000000-011 1.47909539817+000 1.0000000000-011 1.0000000000-011 1.0000000000-011
1.0000000000-011 1.47909539817+000 1.0000000000-011 1.0000000000-011 2.33517918997+000 2.48553755280-002
5.10145944385-004 6.35400001538-001 1.0000000000-011 1.0000000000-011 2.36286911227-003 1.0000000000-011
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2.99881856555+000 1.0000000000-011 1.06390567214-001 1.37555270565-010 1.0000000000-011 1.0000000000-011
1.0000000000-011 1.48388312931+000 1.0000000000-011 1.0000000000-011 2.35373023984+000 1.65759330055-002
3.57102161070-004 6.35400001901-001 1.0000000000-011 1.0000000000-011 1.74086109197-003 1.0000000000-011
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2.49971512749-004 6.35400002248-001 1.0000000000-011 1.0000000000-011 1.21100141317-003 1.0000000000-011
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2.9993449945+000 1.0000000000-011 9.18269968935-002 1.0000000000-011 1.0000000000-011 1.0000000000-011
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1.22486041247-004 6.35400002953-001 6.23588723135-006 1.0000000000-011 2.11880002381-001 1.0000000000-011
1.0000000000-011 1.77367566536+000 6.03815284489-002 1.0000000000-011 2.99537876765+000 5.68490806918-006
2.99976791839+000 1.0000000000-011 1.58953657103+000 1.52115909238-006 4.30815907425-010 5.51363210585-005
1.0000000000-011 1.58953657103+000 8.78102185501-003 1.48092368199-002 3.21317749762-005 3.52161805840-004 5.25800315582-002
3.60269551173-001 1.49487649311+000 1.56653983659-001 4.78761045172-007 5.95632412513-010 2.99784223533+000 2.25556500248-006
1.91988556560-006 4.19578719808-010 1.48092368199-002 3.78761045172-007 1.52115909238-006 4.30815907425-010 5.51363210585-005
2.99995635595+000 1.70467986950+000 4.14329037809-003 1.57812554983-001 3.24443734470-006 2.99784223533+000 2.25556500248-006
6.03855980739-004 4.14329037809-003 1.49583185862+000 1.04099503670-002 1.64066689855-005 3.59155464224-010 7.66742660124-005
4.14309983849-001 1.49583185862+000 3.38732279865-010 1.29292597374-007 4.07787269059-010 1.17989954573-004 5.27650130221-002
3.71102357400-006 3.38732279865-010 1.70678049331+000 1.70678049331+000 7.03704411885-006 2.99905652811+000 7.99251763709-007
2.99993345953+000 1.70678049331+000 1.82682859134-003 1.58389773675-001 7.53378386288-006 2.01094341521-009 1.05622157492-004
3.50978978538-004 1.82682859134-003 1.49694256346+000 6.9381142167-003 1.30942382211-009 3.57634012765-005 5.28635668050-002
4.76456481426-001 1.49694256346+000 1.52171256415-009 3.70997699441-008 1.58055448597-001 2.99961705597+000 2.47927618698-007
7.30427539671-006 1.52171256415-009 1.70846594622+000 1.58055448597-001 2.08502375855-010 1.45663297918-004
2.99994342203+000 1.70846594622+000 7.46594257787-004 4.33206576616-003 9.67850318670-006 5.29156857519-002
1.94984689347-004 7.46594257787-004 1.49793763921+000 1.49793763921+000 2.99961705597+000 2.47927618698-007
5.47924953640-001 1.49793763921+000 1.77105734240-010 4.41959647968-010 1.11465033239-010 1.45663297918-004
1.49681282343-005 1.77105734240-010 1.70975916012+000 1.70975916012+000 9.67850318670-006 5.29156857519-002
2.99992564880+000 1.70975916012+000 2.81637173766-004 1.58760591453-001 2.99985638613+000 6.59707606846-008
1.03789244546-004 2.81637173766-004 1.49868771839+000 2.49541698954-003 1.37451271753-010 2.0598327817-004
6.30113696886-001 1.49868771839+000 1.07166012248-010 2.51349781050-010 2.99618937611-011 2.32085313125-006 5.29425650477-002
3.33883609927-005 1.07166012248-010 1.71071370784+000 1.71071370784+000 1.06516661931-004 2.99994933020+000 5.14025475668-010
2.99989648562+000 1.71071370784+000 9.99512739237-005 1.58771753850-001 2.93589789322-007 7.82036131961-011 3.22423480467-004
5.37094779746-005 9.99512739237-005 1.49912602107+000 1.29197223126-003 1.0000000000-011 5.06026856025-007 5.29554144167-002
7.24630751189-001 1.49912602107+000 5.52973523260-011 9.27724567260-011 1.0000000000-011 2.9999646927+000 2.43901824823-010
2.89181531038-005 5.52973523260-011 1.71145483834+000 1.71145483834+000 1.0000000000-011 1.0000000000-011 7.74414378612-004
8.33325363867-001 1.71145483834+000 2.93643883556-005 1.58684240036-001 3.16837759051-004 8.33218839075-008 5.29627639248-002
2.86230589924-004 2.93643883556-005 1.49920023446+000 1.49920023446+000 5.57364582794-008 2.99998519022+000 2.83841434440-009
2.99974831619+000 1.49920023446+000 1.71180295676-011 1.0000000000-011 1.0000000000-011 2.99998519022+000 2.83841434440-009
1.44304899351-005 1.71180295676-011 7.12221419377+000 1.0000000000-011 1.0000000000-011 8.33218839075-008 5.29627639248-002
9.58324168447-001 7.12221419377+000 7.02861389257-006 1.58341481794-001 1.01352216196-003 2.9999646927+000 2.43901824823-010
9.66857989027-004 7.02861389257-006 1.49853370932+000 1.87981793067-004 7.45825152880-009 1.0000000000-011 7.74414378612-004
2.99961278908+000 1.49853370932+000 1.0000000000-011 1.0000000000-011 1.0000000000-011 1.00972848836-008 5.29668077154-002
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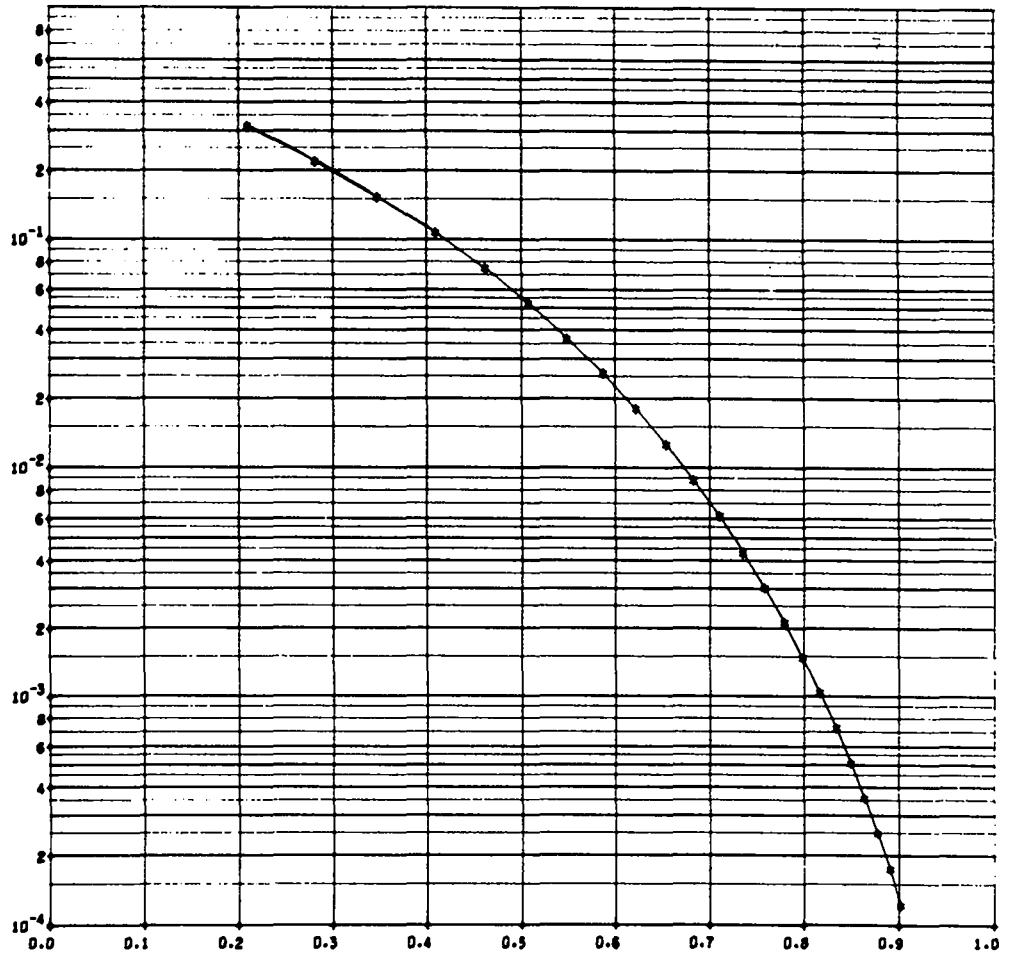
9010 90/10 RDX/KEL-F

PRESSURE-VOLUME ISENTROPE THRU THE C-J VALUE



9010 90/10 ROX/REL-F

TEMPERATURE-VOLUME ISENTROPE THRU THE C-J VALUE



9010 90/10 RDX/KEL-F

PRESSURE-PARTICLE VELOCITY

DISPLACED BKW ISENTROPE THRU EXPERIMENTAL CJ PRESSURE FOR
90IG 90/10 RDX/KEL-F

LN(P) = -3.5285805G175+GGG -5.7273735O403+O00LNV 2.22150331552-001 LNV*2 1.92216053326-002LNV*3 -1.080G15478G1-002LNV*4

LN(T) = 7.34675213866+000 -5.29485329309-001LNV 3.64458226438-002 LNV*2 3.57108602247-002LNV*3 -1.38858207811-002LNV*4

LN(E) = -1.60451947313+000 4.97767905905-001LNP 5.90185954035-002 LNP*2 2.80439418595-003LNP*3 2.69348093062-003LNP*4

THE CONSTANT ADDED TO ENERGIES WAS 1.0000000000-001

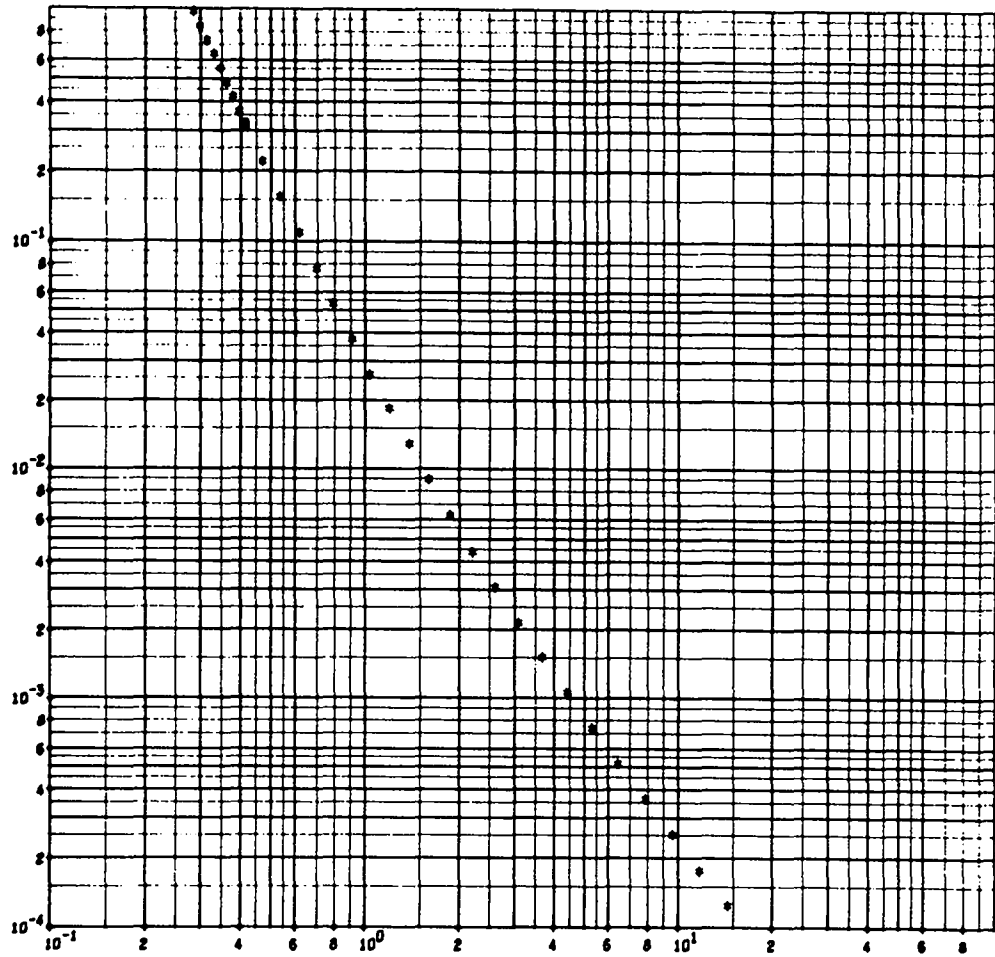
Table with 7 columns: PRESSURE (MBARS), VOLUME (CC/GM), TEMPERATURE (DEG K), ENERGY*E (MB-CC/GM), GAMMA (1-DLNP/DLNV), PARTICLE VELOCITY. Rows contain numerical data for various conditions.

Table with 7 columns: THE ISENTROPE STATE VARIABLES AS COMPUTED FROM BKW PRESSURE, FIT PRESSURE, THE LEAST SQUARE FIT BKW TEMPERATURE, FIT TEMPERATURE, BKW ENERGY PLUS CONSTANT, FIT ENERGY. Rows contain numerical data for various conditions.

THE ISENTROPE PRESSURE AND COMPOSITION OF DETONATION PRODUCTS
 HF CF4 F2 H2O N2 O2 CO2 CO NH3 H NO N2 OH CH4 COF2 HCL CCL4 CL2
 SOL C

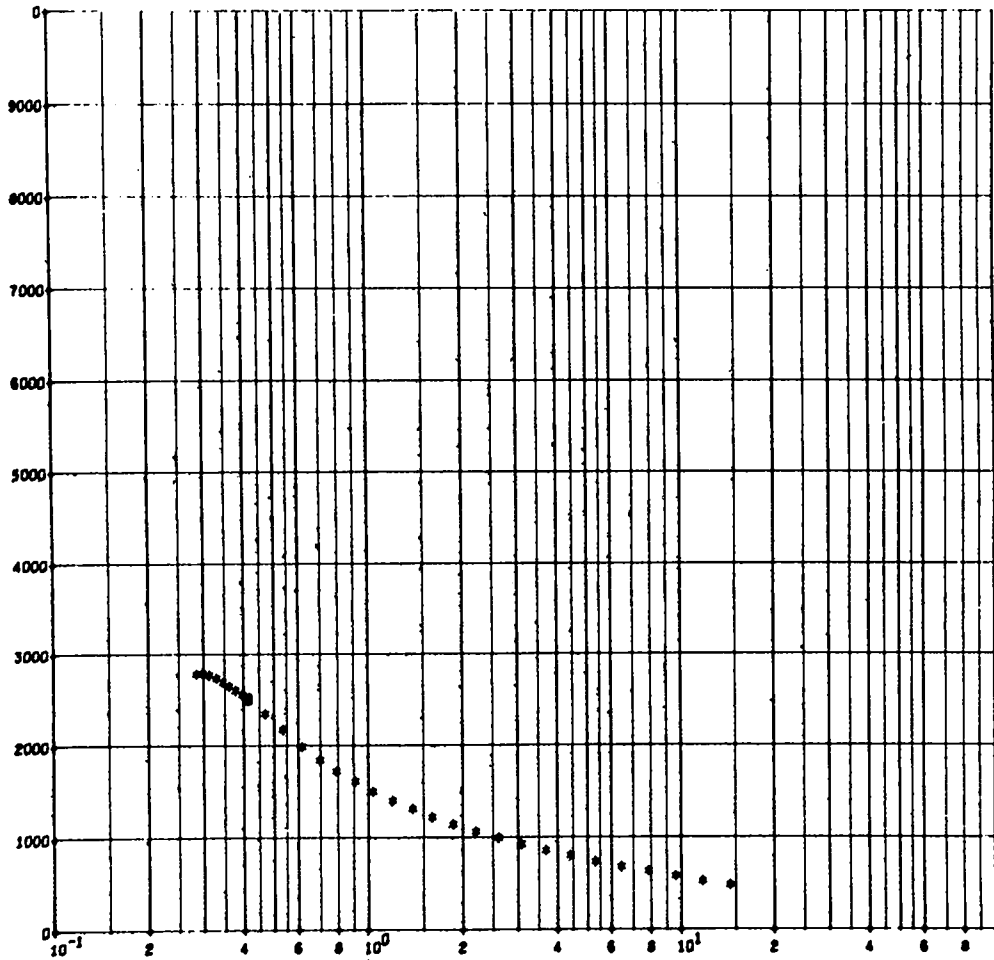
3.19999999999999-001	1.60706682269-002	1.54831897628-001	7.895189888961-007	2.99144627464-000	1.17437686085-005
1.08611456333-006	1.49454840801+000	1.94137349931-002	5.36475381636-005	4.88774490430-010	4.09205265276-005
2.99995271597-000	4.86283431423-010	8.61817281742-007	8.11106072526-008	8.48904096589-004	5.22908788569-002
9.33790237831-004	1.70251413759+000				
2.23300000000-001	7.42041298478-002	1.40298319356-001	1.06185737488-007	2.95857545558+000	6.79059520336-005
1.92342348321-007	1.50252113632+000	3.63653970362-002	1.72756227926-004	6.21230657640-010	1.52992410052-005
2.99990597227-000	6.43200459718-010	5.85170374302-006	1.19017897636-006	7.96747032967-003	4.96105477196-002
2.73516939666-003	1.69479755769+000				
1.56310000000-001	2.41814354779-001	9.83925141252-002	9.90937676358-009	2.85458662133+000	2.40832975502-004
2.71495413635-008	1.54518719862+000	5.50265929797-002	3.58977481250-004	4.56798350270-008	4.49120811078-006
2.99981826566+000	5.84943492738-008	2.14894770611-005	7.78445056971-006	4.73677420921-002	3.83359160557-002
5.58429684254-003	1.68662890429+000				
1.09417000000-001	5.17646326540-001	2.94280555371-002	3.12274053139-010	2.65889797474+000	5.90306011503-004
1.01230597751-009	1.63510976364+000	7.08607078042-002	5.38161616141-004	4.00569818402-008	1.00814650703-006
2.99973041512+000	5.46632896996-008	5.13608027185-005	2.07253435212-005	1.61557089175-001	9.91314433048-003
5.33516675170-003	1.67821624254+000				
7.65919000000-002	6.30724193411-001	1.16009367231-003	1.00000000000-011	2.57652563492+000	1.48857215797-003
3.15833970283-010	1.66620129338+000	9.10537663327-002	9.05553163827-004	3.80732176711-008	2.43606061716-007
2.99954710162+000	5.18002783460-008	1.49488034775-004	1.77159418379-005	2.09932690929-001	7.83095750862-005
8.17035385200-004	1.66493933306+000				
5.36143300000-002	6.35259130707-001	3.02475417379-005	1.00000000000-011	2.56984006236+000	3.49272684794-003
3.58103783644-011	1.65959736318+000	1.10991171319-001	1.52836758205-003	3.11725412704-009	5.73643081451-008
2.99923578753+000	4.29379926894-008	4.46720787013-004	9.93959670500-006	2.11703258930-001	3.79706864736-007
8.76111212301-005	1.65254217787+000				
3.75300310000-002	6.35384793400-001	1.13778419399-006	1.00000000000-011	2.56342211662+000	7.09507911582-003
1.00000000000-011	1.65551673256+000	1.25539089368-001	2.33379741241-003	5.78350497473-010	4.87146115089-010
2.99883310105+000	6.05214815619-010	1.18029371147-003	5.32780621847-006	2.11858246863-001	3.25239285140-010
1.08759181058-005	1.64135741845+000				
2.62710217000-002	6.35394182712-001	5.95127715299-008	1.00000000000-011	2.55321871112+000	1.26994697535-002
1.00000000000-011	1.65715776612+000	1.32462963770-001	3.25858706351-003	2.19193983101-009	9.06992757949-010
2.99837070601+000	2.27524257696-009	2.77919006380-003	2.78973375185-006	2.11876929618-001	3.94567566476-011
1.53511196630-006	1.63119723076-000				
1.83897151900-002	6.35397128649-001	3.55779955742-010	1.00000000000-011	2.53798499696+000	2.03280776459-002
1.00000000000-011	1.66557961661+000	1.30854334240-001	4.20067452442-003	4.19758612015-010	1.48366202767-010
2.99789966266-000	4.16939377523-010	5.87379456854-003	1.43511970259-006	2.11879519447-001	1.00000000000-011
2.40308696713-007	1.62129081913+000				
1.28728006330-002	6.35398544579-001	3.46601140695-010	1.00000000000-011	2.51696580392+000	2.94381831570-002
1.00000000000-011	1.68088945734+000	1.21254552312-001	5.03653293079-003	2.18753710926-009	6.40200024796-011
2.99748173350+000	1.96362597464-009	1.12009899408-002	7.27213862506-007	2.11879918570-001	1.00000000000-011
4.08209619938-008	1.61025427290+000				
9.01096044310-003	6.35399274470-001	3.46783247821-011	1.00000000000-011	2.49020446358+000	3.89323100699-002
1.00000000000-011	1.70217892421+000	1.05437325048-001	5.65203618295-003	2.29301008512-010	1.00000000000-011
2.99717398190+000	2.07034185018-010	1.93727674335-002	3.62933438947-007	2.11879999501-001	1.00000000000-011
4.23844953135-010	1.59661062042+000				
6.50767231017-003	6.35399644775-001	1.00000000000-011	1.00000000000-011	2.45885305638+000	4.73927808224-002
1.00000000000-011	1.72760858877+000	8.59295883625-002	5.97211351336-003	1.41362462396-010	1.00000000000-011
2.99701394325+000	1.17109484700-010	3.057808950103-002	1.77887626490-007	2.11879999986-001	1.00000000000-011
2.46377087055-010	1.57948356009+000				
4.41537067172-003	6.35399830377-001	1.00000000000-011	1.00000000000-011	2.42520063556+000	5.34510876132-002
1.00000000000-011	1.75468162091+000	6.54360377559-002	5.97635127052-003	6.94753944004-011	1.00000000000-011
2.99701182438+000	4.94766902107-011	4.43719172470-002	8.51688328975-008	2.11880003060-001	1.00000000000-011
1.21112707161-010	1.55911033908+000				
3.09075943198-003	6.35399921824-001	1.00000000000-011	1.00000000000-011	2.39232820286+000	5.61349349449-002
1.00000000000-011	1.78067481984+000	4.63221183787-002	5.69531055069-003	2.29162038388-011	1.00000000000-011
2.99715234475+000	1.23508895084-011	5.96769675654-002	3.95279246455-008	2.11880000620-001	1.00000000000-011
5.09137883206-011	1.53692605491+000				
2.16353160239-003	6.35399999973-001	1.00000000000-011	1.00000000000-011	2.36351683318+000	5.50722415011-002
1.00000000000-011	1.80311328259+000	3.02566016583-002	5.19284763580-003	1.00000000000-011	1.00000000000-011
2.99740357622+000	1.00000000000-011	7.49908267369-002	5.37046715237-010	2.11880000821-001	1.00000000000-011
1.00000000000-011	1.51523928874+000				
1.51447212167-003	6.3540000369-001	1.00000000000-011	1.00000000000-011	2.34166006993+000	5.05234633991-002

1.0000000000-011	1.82014291617+000	1.80540979726-002	4.54517729968-003	1.0000000000-011	1.0000000000-011
2.9972741140+000	1.0000000000-011	8.86793500342-002	4.25325120054-010	2.11880000974-001	1.0000000000-011
1.0000000000-011	1.49672363571+000				
1.06013048517-003	6.35400000759-001	1.0000000000-011	1.0000000000-011	2.32887337232+000	4.32789119174-002
1.0000000000-011	1.83070509370+000	9.71644077787-003	3.82506192044-003	1.0000000000-011	1.0000000000-011
2.998808746911+000	1.0000000000-011	9.92350609886-002	3.20723795815-010	2.11880001131-001	1.0000000000-011
1.0000000000-011	1.48394340458+000				
7.42091339619-004	6.35400001143-001	1.0000000000-011	1.0000000000-011	2.32634640589+000	3.44700699579-002
1.0000000000-011	1.83450620579+000	4.64118327072-003	3.09360208006-003	1.0000000000-011	1.0000000000-011
2.99845319995+000	1.0000000000-011	1.05451559941-001	2.25156723664-010	2.11880001295-001	1.0000000000-011
1.0000000000-011	1.47900105118+000				
5.19463937733-004	6.35400001518-001	1.0000000000-011	1.0000000000-011	2.33437149604+000	2.53356625502-002
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2.99880107554+000	1.0000000000-011	1.06528033151-001	1.41517904228-010	2.11880001470-001	1.0000000000-011
1.0000000000-011	1.48329387985+000				
3.63624756413-004	6.35400001883-001	1.0000000000-011	1.0000000000-011	2.35243895976+000	1.69853592228-002
1.0000000000-011	1.82344168870+000	6.77664099468-004	1.77146115125-003	1.0000000000-011	1.0000000000-011
2.99911426955+000	1.0000000000-011	1.02139245473-001	7.38601089469-011	2.11880001659-001	1.0000000000-011
1.0000000000-011	1.49734140217+000				
2.54537329489-004	6.35400002230-001	1.0000000000-011	1.0000000000-011	2.37930213772+000	1.02077380452-002
1.0000000000-011	1.81025173114+000	1.94401533239-004	1.23637590098-003	1.0000000000-011	1.0000000000-011
2.99938181220+000	1.0000000000-011	9.24977792530-002	2.74117748932-011	2.11880001867-001	1.0000000000-011
1.0000000000-011	1.52065608862+000				
1.78176130643-004	6.35400002563-001	1.0000000000-011	1.0000000000-011	2.41295984283+000	5.36149855128-003
1.0000000000-011	1.79349845271+000	4.32535591044-005	8.04434532754-004	1.0000000000-011	1.0000000000-011
2.99959778291+000	1.0000000000-011	7.84160023483-002	1.0000000000-011	2.11880002100-001	1.0000000000-011
1.0000000000-011	1.55164229202+000				
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4.05015992001-006	1.49597110257+000	9.91718091776-003	1.49459936732-005	3.49788485617-010	8.00338257691-005
2.99959251005+000	3.28290457066-010	1.11368954391-007	3.85076300856-010	1.01792372612-004	5.27813929247-002
3.26317964246-004	1.70701800269+000				
4.85159125000-001	1.63552851887-003	1.58437215068-001	7.80538198055-006	2.99915618564+000	6.93405514429-007
8.00120191044-006	1.49707910433+000	6.55941512565-003	6.75971700420-006	2.74391873416-010	1.10187701917-004
2.99994152829+000	2.46067476478-010	6.18924885643-010	2.23290459389-010	3.04312372554-005	5.28722665452-002
1.80251690991-004	1.70865199829+000				
5.57932993750-001	6.61566136473-004	1.58675787725-001	1.76413837949-005	2.99966093598+000	2.11097122355-007
1.6520687047-005	1.49804847137+000	4.05692050699-003	2.67615864702-006	1.99090940001-010	1.52159176383-004
2.9992258233+000	1.67517817425-010	4.16492157306-010	9.79278117570-011	8.10919375915-006	5.29202556955-002
9.54740120856-005	1.70989858419+000				
6.41622942812-001	2.47332763305-004	1.58766662882-001	4.30078314213-005	2.99987396793+000	5.50509146954-008
3.75169780835-005	1.49876143710+000	2.31129980199-003	9.00730368062-007	1.29194449817-010	2.16823992947-004
2.99989113764+000	9.94630648946-011	2.28832037104-010	2.37880026123-011	1.91793214212-006	5.29448160767-002
4.94088804698-005	1.71081578389+000				
7.37866384234-001	8.62923352104-005	1.58767270364-001	1.22333007210-004	2.99995630687+000	4.84544763921-010
1.06250675101-004	1.49916156887+000	1.16598113818-003	2.41650431701-007	7.07335725895-011	3.42072859770-004
2.99982884274+000	4.92571217236-011	7.57991894520-011	1.0000000000-011	4.07384690156-007	5.29566005613-002
2.65951890112-005	1.71154857900+000				
8.48546341870-001	2.47055791800-005	1.58660497092-001	3.66653054794-004	2.99998754737+000	1.74659637130-009
3.33451234079-004	1.49916904378+000	4.74839533230-004	4.38471266839-008	2.40207606154-011	5.32823035123-004
2.99973366656+000	1.39090579436-011	1.0000000000-011	1.0000000000-011	6.45826323509-008	5.29634431055-002
1.30814977454-005	1.71233217651+000				
9.75828293150-001	5.69195988178-006	1.58254512623-001	1.18812883542-003	2.99999714203+000	1.73949939292-010
1.13936469875-003	1.49837473638+000	1.60433530368-004	5.46274744060-009	1.0000000000-011	8.14222351380-004
2.9993288609+000	1.0000000000-011	1.0000000000-011	1.0000000000-011	7.38120637920-009	5.29671714527-002
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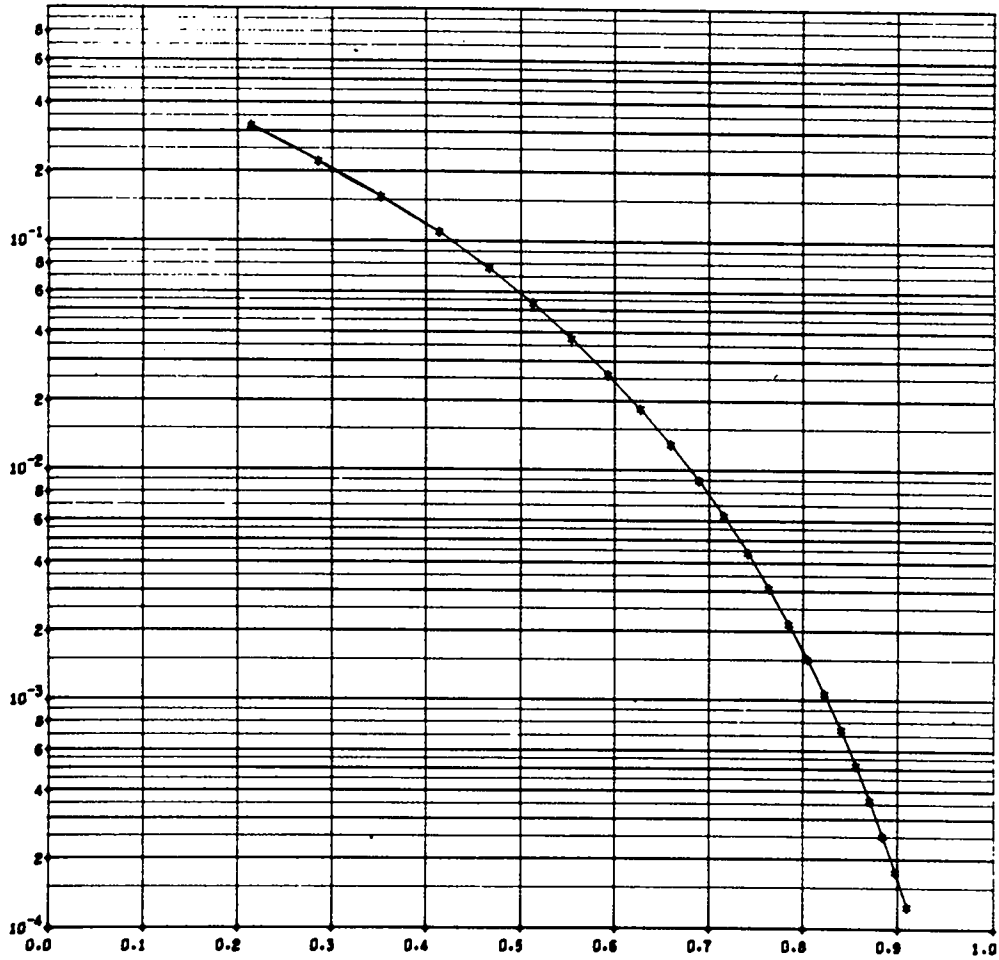
9010 90/10 ROX/KEL-F

PRESSURE-VOLUME ISENTROPE THRU THE C-J VALUE



9010 90/10 R03/AEL-F

TEMPERATURE-VOLUME ISENTROPE THRU THE C-J VALUE



9010 90/10 RDX/KEL-F

PRESSURE-PARTICLE VELOCITY

A STRETCH BKW CALCULATION FOR THE EXPLOSIVE
LIQUID TNT TRINITROTOLUENE

THE NUMBER OF ELEMENTS IS 4

THE NUMBER OF GAS SPECIES IS 11

THE NUMBER OF SOLID SPECIES IS 1

THE KW EQUATION OF STATE PARAMETERS ARE

ALPHA= 5.000000000+001 BETA= 9.585000000+002 THETA= 4.000000000+002 KAPPA= 1.26847111054+001

THE COMPOSITION OF THE EXPLOSIVE IS

7.000000000+000 MOLES OF C
5.000000000+000 MOLES OF H
3.000000000+000 MOLES OF N
6.000000000+000 MOLES OF O

THE DENSITY OF THE EXPLOSIVE IS 1.447000000+000 GRAMS/CC

THE MOLECULAR WEIGHT IS 2.271300000+002 GRAMS

THE HEAT OF FORMATION AT 0 DEG K IS 3.410000000+003 CALORIES PER FORMULA WEIGHT

THE SOLID (COMAN)EQUATION OF STATE PARAMETERS VO, AS, BS, CS, DS, ES, A1, A2, C1, C2, C3, ATOMIC WT

SOL C 4.444444444+001 8.30935837268+001 -1.39381809219+000 6.72569716021+001 -1.13537262508+001 6.49155882007+003
-2.26705345948+001 1.20516569525+001 8.31600000000+002 -1.75590000000+001 1.55310000000+001 1.20100000000+001

THE INPUT DETONATION PRODUCT ELEMENTAL COMPOSITION MATRIX

0.0+00	2.0+00	0.0+00	1.0+00	0.0+00	2.0+00	0.0+00	0.0+00	0.0+00	0.0+00	0.0+00	2.0+00
1.0+00	0.0+00	0.0+00	2.0+00	1.0+00	0.0+00	0.0+00	1.0+00	0.0+00	3.0+00	1.0+00	0.0+00
0.0+00	1.0+00	0.0+00	0.0+00	0.0+00	0.0+00	1.0+00	1.0+00	0.0+00	0.0+00	2.0+00	0.0+00
0.0+00	1.0+00	0.0+00	1.0+00	1.0+00	4.0+00	0.0+00	0.0+00	1.0+00	0.0+00	0.0+00	0.0+00

A STRETCH BWX CALCULATION FOR THE EXPLOSIVE
LIQUID TNT TRINITROTOLUENE

THE COMPUTED CJ PRESSURE IS 1.57468523633-001 MEGABARS

THE COMPUTED DETONATION VELOCITY IS 6.40630644952-001 CM/MICROSECOND

THE COMPUTED CJ TEMPERATURE IS 3.12597079105+003 DEGREES KELVIN

THE COMPUTED CJ VOLUME IS 5.07837310209-001 CC/GRAM OF EXPLOSIVE

THE COMPUTED GAMMA IS 2.77129230111+000

THE VOLUME OF THE GAS IS 1.57392197843+001 CC/MOLE OF GAS AND THERE ARE 5.99132013849+000 MOLES OF GAS

SOLID VOLUME IN CC/GM
SOL C 3.50248608789-001

THE C-J COMPOSITION OF THE DETONATION PRODUCTS AND THE INPUT COEFFICIENTS TO THE THERMODYNAMIC FITS FOR EACH SPECIE

SPECIE	NO OF MOLES	COEFFICIENTS A,B,C,D,E, THE INTEGRATION CONSTANT, HEAT OF FORMATION IN CALORIES/MOLE, COVOLUME					
M2D	2.48769794753+000	4.2588420000+001	1.4808050000-002	-2.6391810000-006	1.9204530000-010	0.0000000000+000	
M2	5.02389234384-003	1.34282835156+003	-5.7107000000+004	2.5000000000+002	-2.2012220000-006	1.6777610000-010	
O2	6.10439233001-006	2.9703470000+001	1.1438290000-002	1.8000000000+002	-2.5002170000-006	0.0000000000+000	
CO2	1.51633946366+000	1.7589615365+003	0.0000000000+000	3.5000000000+002	0.0000000000+000	0.0000000000+000	
CO	4.79323262674-001	1.03537647396+003	1.2871470000-002	-3.7212960000-006	2.7703000000-010	0.0000000000+000	
NH3	3.48040530806-003	4.7481120000+001	1.9544630000-002	6.0000000000+002	1.8281810000-010	0.0000000000+000	
H	1.53979091743-005	7.46280968750+002	-9.3968000000+004	-2.4164030000-006	2.1978010000-010	0.0000000000+000	
NO	2.67198197765-004	4.5330820000+001	1.2381610000-002	3.9000000000+002	1.3168230000-010	0.0000000000+000	
N2	1.49812619825+000	1.12158830990+003	-2.7201000000+004	-2.4946000000-006	1.8932130000-010	0.0000000000+000	
OH	2.04554982260-005	4.2018160000+001	1.9116620000-002	3.8600000000+002	1.7983220000-010	0.0000000000+000	
CH4	1.01981272916-003	1.20696121615+003	-9.3680000000+003	-1.6907400000-006	1.6891550000-010	0.0000000000+000	
SOL C	5.00331746094+000	7.94631617188+002	5.1619000000+004	7.6000000000+001	2.4707140000-010	0.0000000000+000	
		4.8414980000+001	1.2693860000-002	-2.4946000000-006	1.8932130000-010	0.0000000000+000	
		1.20924970573+003	2.1477000000+004	3.8600000000+002	1.7983220000-010	0.0000000000+000	
		4.3923400000+001	1.2225010000-002	-2.3790050000-006	1.7983220000-010	0.0000000000+000	
		1.13916134896+003	0.0000000000+000	3.8000000000+002	1.6891550000-010	0.0000000000+000	
		4.2417920000+001	1.1568470000-002	-2.2265900000-006	1.6891550000-010	0.0000000000+000	
		1.18351754427+003	3.5600000000+003	4.1300000000+002	2.4707140000-010	0.0000000000+000	
		3.8756860000+001	2.3640130000-002	-3.7079570000-006	2.4707140000-010	0.0000000000+000	
		1.04242791146+003	-1.6000000000+004	5.2800000000+002	9.3499950000-011	0.0000000000+000	
		-2.4615190000-001	7.1798550000-003	-1.2975500000-006			
		-2.58204389323+002	0.0000000000+000	0.0000000000+000			

THE BKM HUGONIOT FOR THE DETONATION PRODUCTS OF
LIQUID TNT TRINITROTOLUENE

PRESSURE = 5.0000000000-001 VOLUME = 3.46340291754-001 TEMPERATURE = 5.24933829384+003
 H2O 2.48994162876+000
 H2 1.78408355688-003
 O2 2.71521099710-003
 CO2 1.48163732499+000
 CO 5.21760580037-001
 NH3 4.17005068216-003
 H 1.02046235552-004
 NO 1.94803637293-002
 N2 1.48817479279+000
 OH 1.12355508070-004
 CH4 9.56005405133-004
 SOL C 4.99564608957+000

PRESSURE = 4.5000000000-001 VOLUME = 3.58726081336-001 TEMPERATURE = 4.93053774376+003
 H2O 2.49076029470+000
 H2 1.77842284851-003
 O2 1.57166984632-003
 CO2 1.49670278170+000
 CO 4.99489146994-001
 NH3 3.79069233304-003
 H 7.78051574606-005
 NO 1.31138981843-002
 N2 1.49154770474+000
 OH 6.77570247176-005
 CH4 8.46231431839-004
 SOL C 5.00296183987+000

PRESSURE = 4.0000000000-001 VOLUME = 3.72581783611-001 TEMPERATURE = 4.59040036215+003
 H2O 2.49172256428+000
 H2 1.73804358599-003
 O2 8.10994180176-004
 CO2 1.51575957150+000
 CO 4.66981840456-001
 NH3 3.35830984304-003
 H 5.47680011746-005
 NO 8.09073448194-003
 N2 1.49427546794+000
 OH 6.37894854356-005
 CH4 7.21324479061-004
 SOL C 5.01653726357+000

PRESSURE = 3.5000000000-001 VOLUME = 3.88665895139-001 TEMPERATURE = 4.24407919707+003
 H2O 2.49257882347+000
 H2 1.71417345345-003
 O2 3.68891788933-004
 CO2 1.53541975217+000
 CO 4.31243500726-001
 NH3 2.86089117131-003
 H 3.65136155901-005
 NO 4.55615669147-003
 N2 1.49624147607+000
 OH 4.42312027097-005
 CH4 6.12646955152-004
 SOL C 5.03272410015+000

PRESSURE = 3.0000000000-001 VOLUME = 4.08195304709-001 TEMPERATURE = 3.90973152885+003
 H2O 2.49305508320+000
 H2 1.79064632023-003
 O2 1.48241503167-004
 CO2 1.55093851711+000
 CO 4.02379415607-001
 NH3 2.68726293886-003
 H 2.43220388988-005
 NO 2.36122795730-003
 N2 1.49747375455+000
 OH 3.07580023026-005
 CH4 5.47918526200-004
 SOL C 5.04613414875+000

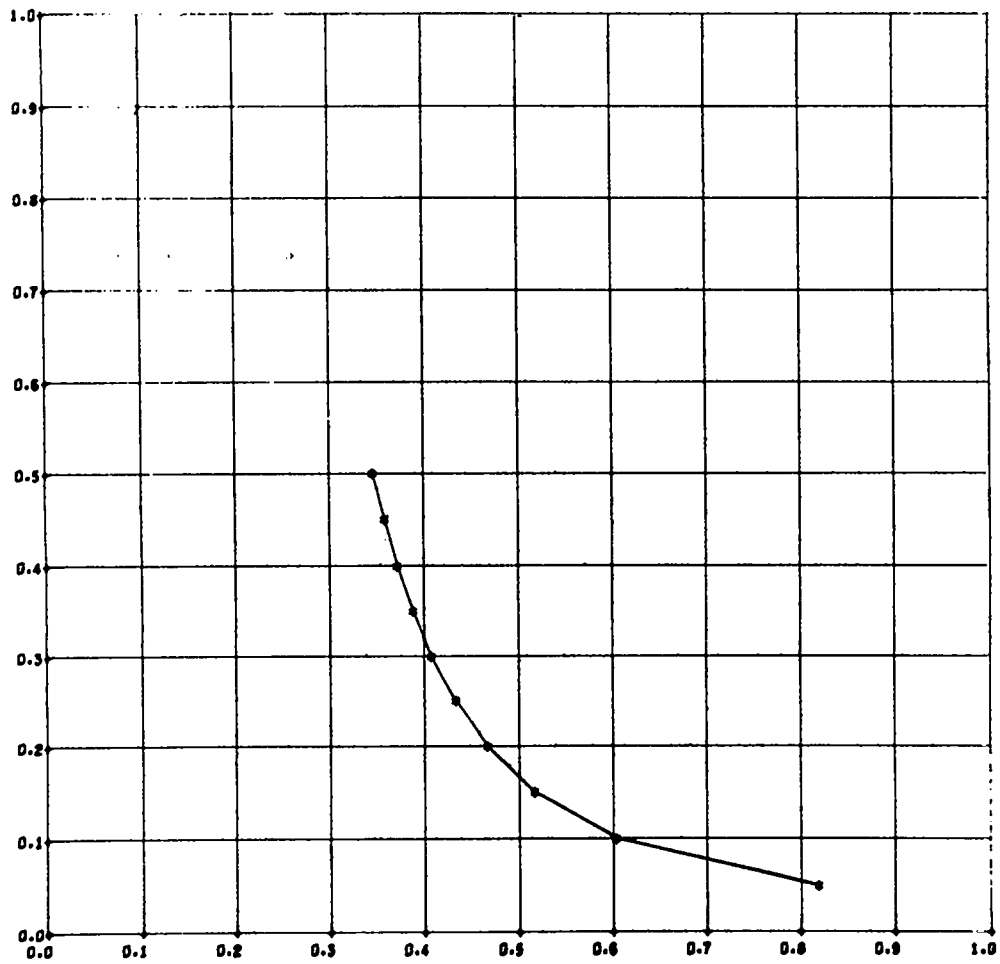
PRESSURE = 2.5000000000-001 VOLUME = 4.33114708103-001 TEMPERATURE = 3.60182600035+003
 H2O 2.49284563575+000
 H2 2.10643973055-003
 O2 5.31923110057-005
 CO2 1.55718154418+000
 CO 3.91517088442-001
 NH3 2.61510226931-003
 H 1.74063563492-005
 NO 1.14489970520-003
 N2 1.49811999901+000
 OH 2.29031166967-005
 CH4 5.52558191526-004
 SOL C 5.05074880918+000

PRESSURE = 2.0000000000-001 VOLUME = 4.66880485401-001 TEMPERATURE = 3.32856360285+003
H2O 2.49135252367+000
H2 2.99692875771-003
O2 1.72343437814-005
CO2 1.54740469992+000
CO 4.13294862699-001
NH3 2.84982206702-003
H 1.45896501826-005
NO 5.29101882596-004
N2 1.49831053803+000
OH 1.96440310137-005
CH4 6.79348817687-004
SOL C 9.03866108897+000

PRESSURE = 1.5000000000-001 VOLUME = 5.16857049041-001 TEMPERATURE = 3.09324152493+003
H2O 2.48658973888+000
H2 5.64817148194-003
O2 5.04385410245-006
CO2 1.50736839580+000
CO 4.98405911449-001
NH3 3.65977204649-003
H 1.59545753662-005
NO 2.38441124357-004
N2 1.49805189341+000
OH 2.10286334238-005
CH4 1.12698973139-003
SOL C 4.99309872322+000

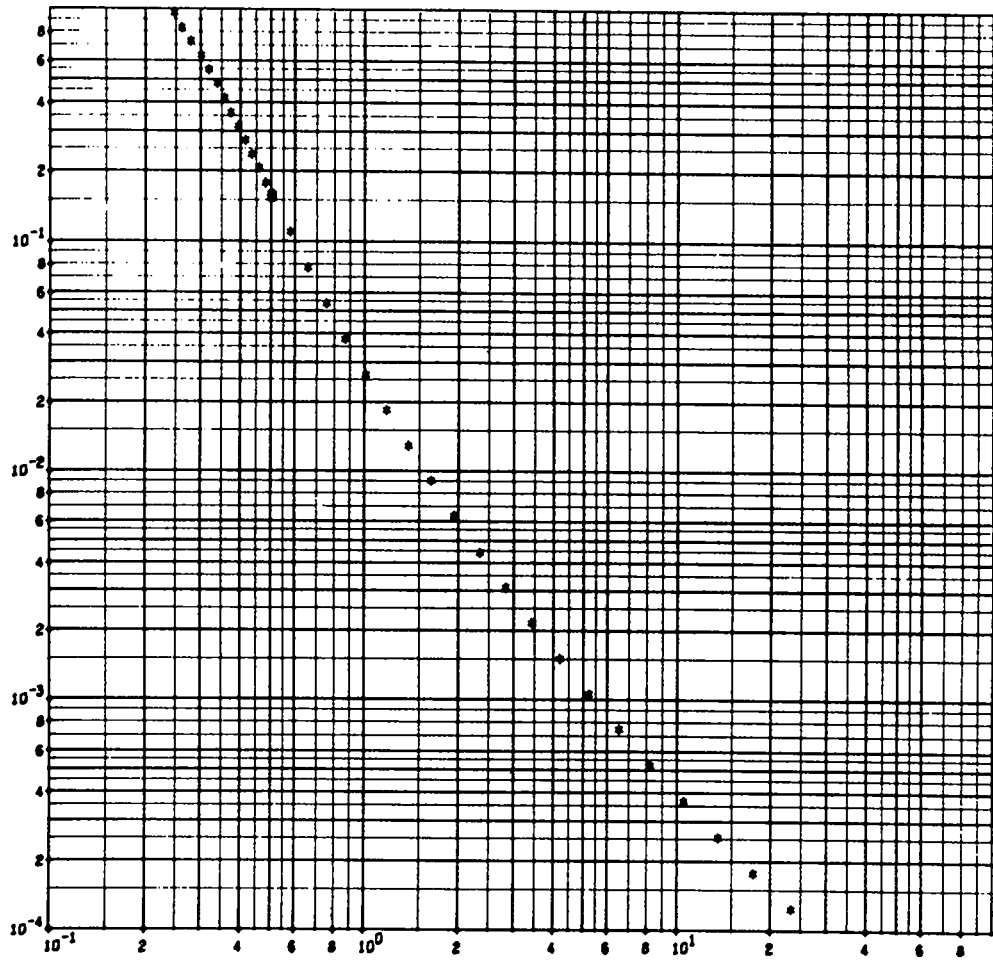
PRESSURE = 1.0000000000-001 VOLUME = 6.03398304608-001 TEMPERATURE = 2.89342773014+003
H2O 2.46889344154+000
H2 1.62107619395-002
O2 1.28282369823-006
CO2 1.39537871284+000
CO 7.39815337604-001
NH3 5.95311549253-003
H 2.64595598368-005
NO 1.00673987726-004
N2 1.49697310926+000
OH 3.0595503691-005
CH4 2.96879786347-003
SOL C 4.86163715170+000

PRESSURE = 5.0000000000-002 VOLUME = 8.18421599510-001 TEMPERATURE = 2.69865229672+003
H2O 2.34948136894+000
H2 9.40532367213-002
O2 1.80602203128-007
CO2 1.07282758362+000
CO 1.50476940756+000
NH3 1.39695592497-002
H 8.20640347403-005
NO 3.25923251198-003
N2 1.49298892421+000
OH 6.11027282729-005
CH4 1.77197360393-002
SOL C 4.40468327278+000



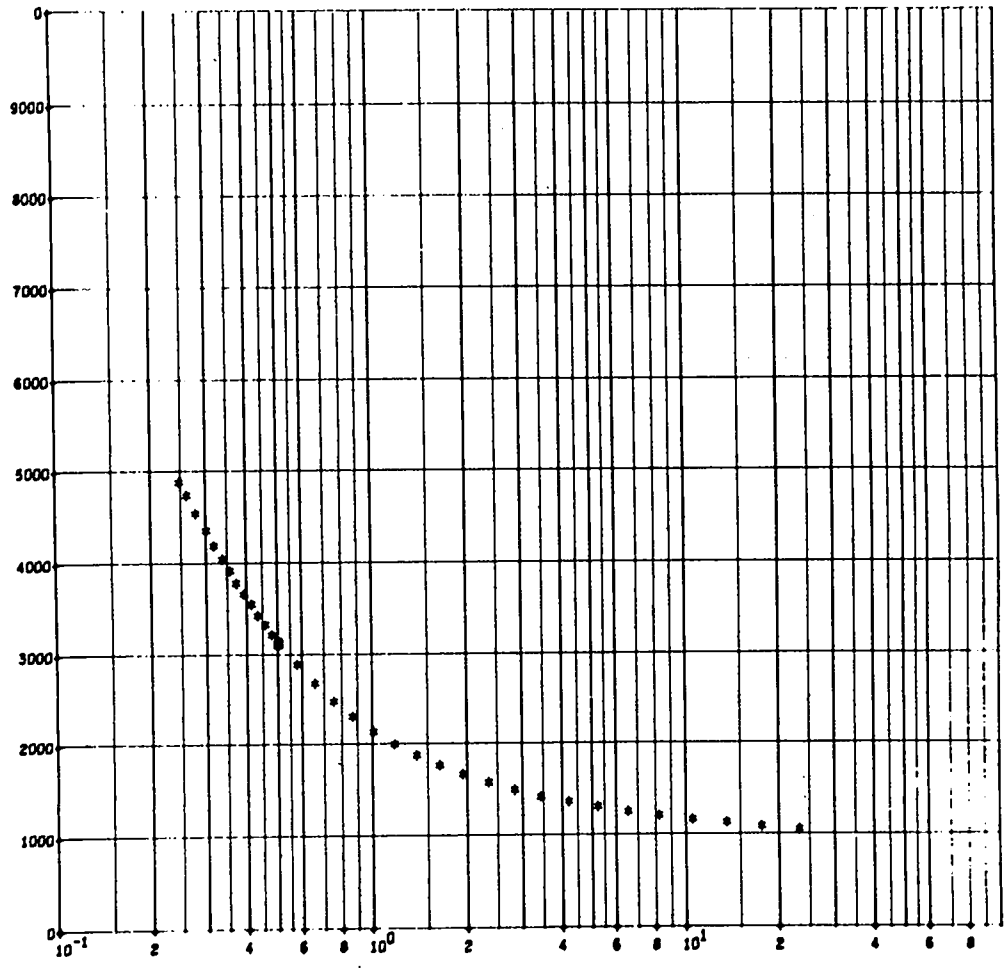
LIQUID TNT TRINITROTOLUENE

PRESSURE-VOLUME HUGONIOT

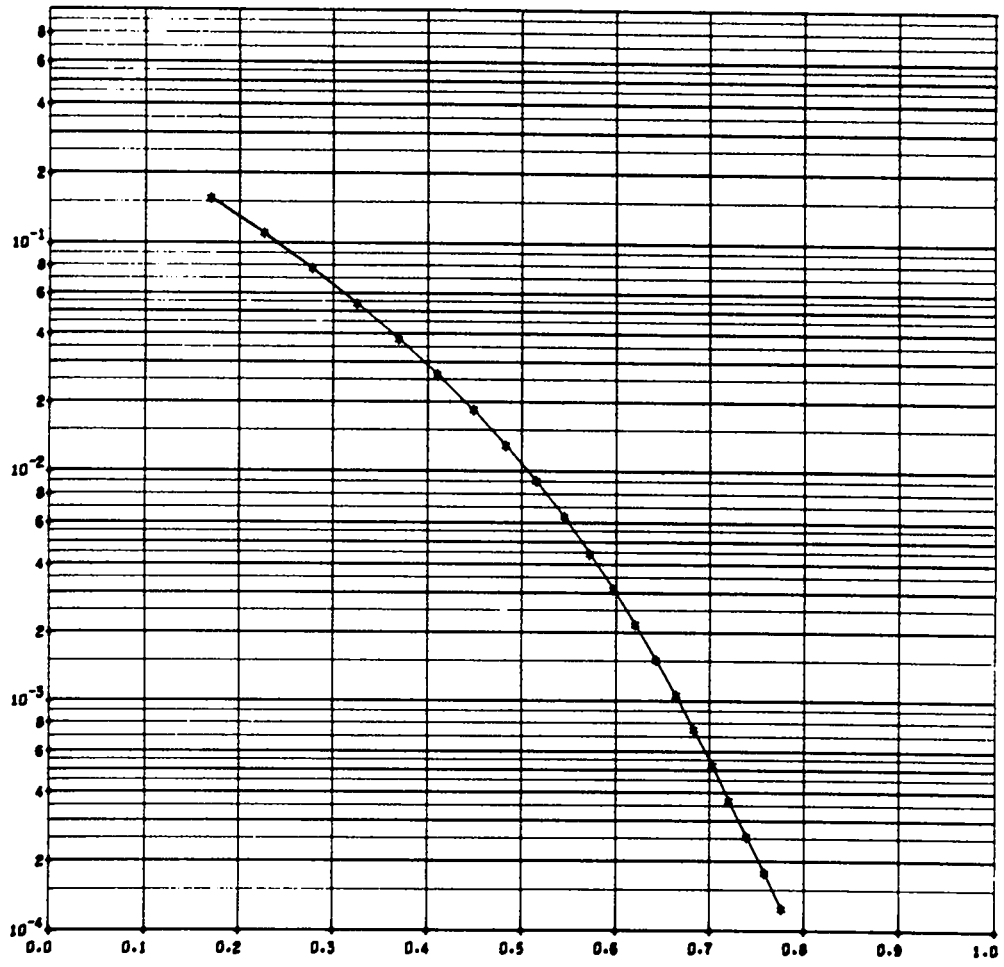


LIQUID TNT TRINITROTOLUENE

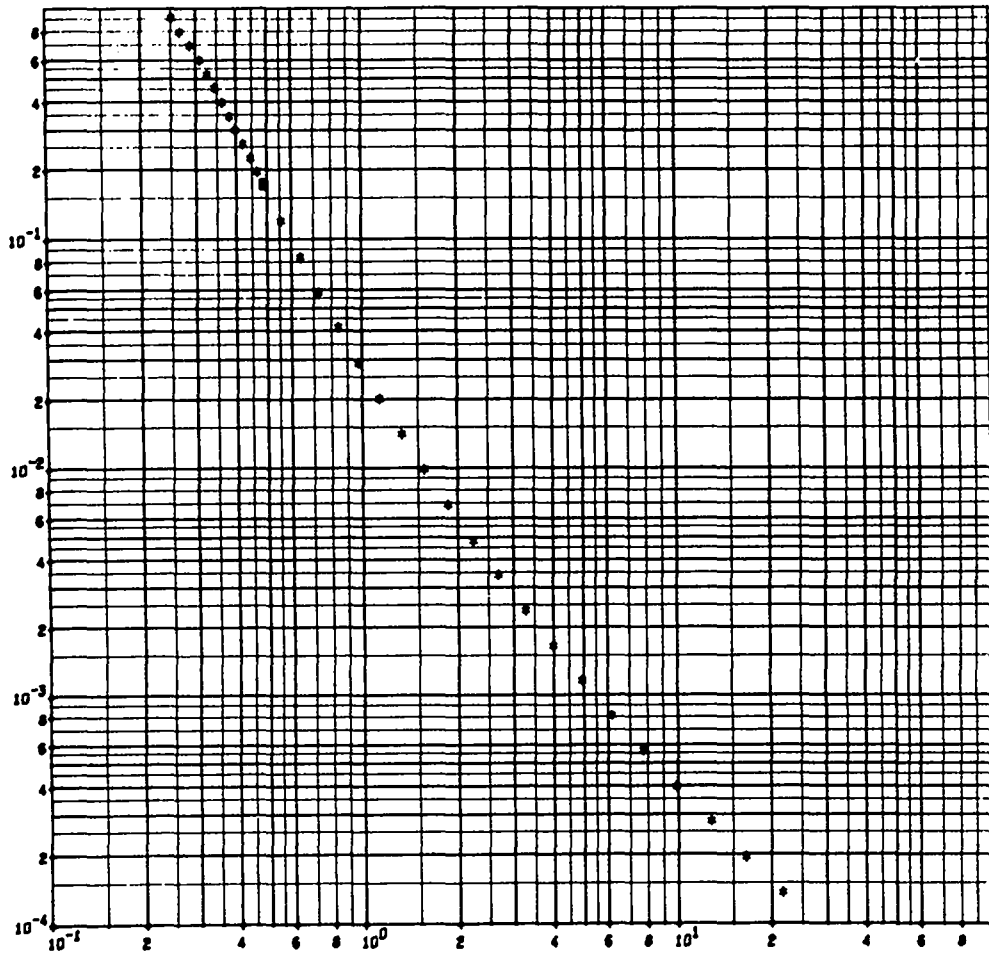
PRESSURE-VOLUME ISENTROPE THRU THE C-J VALUE



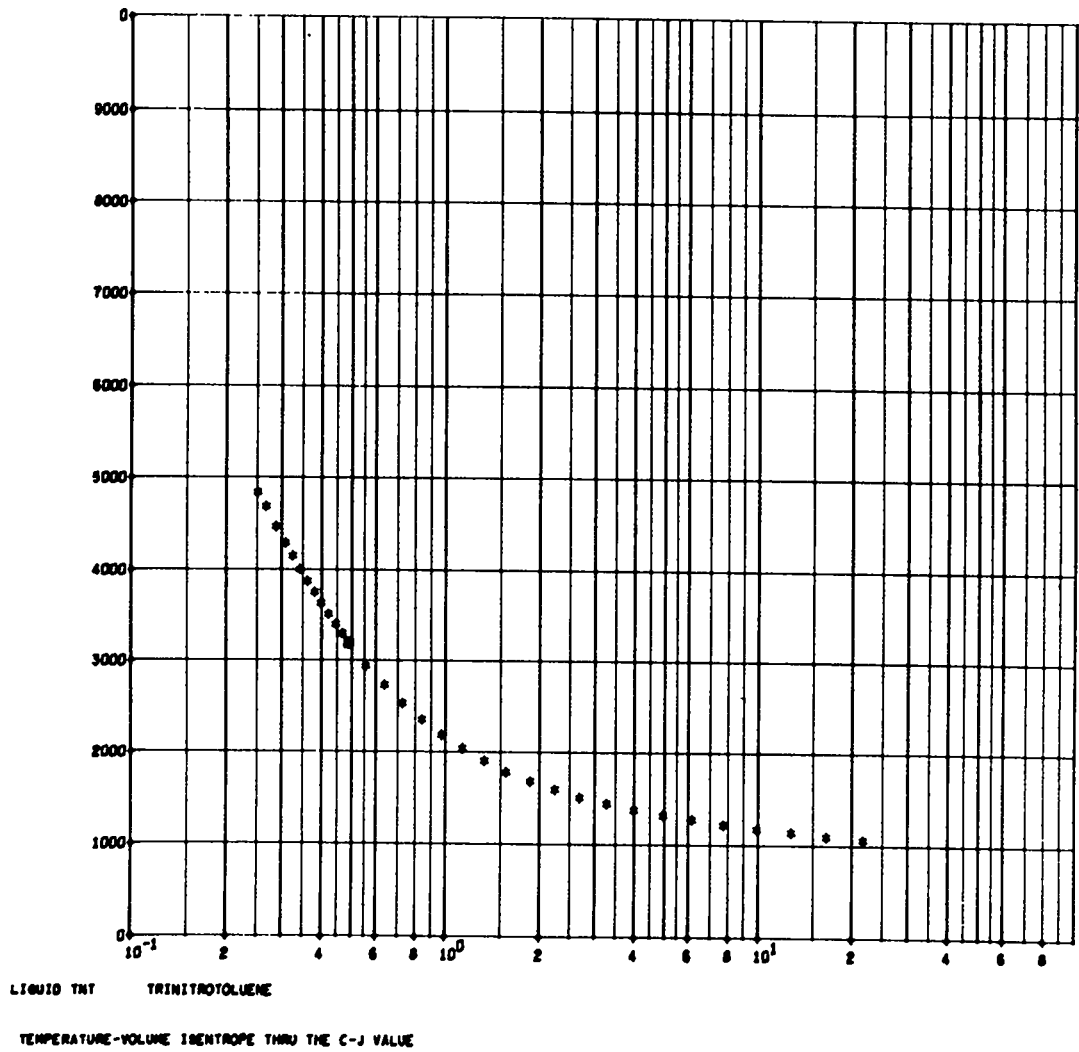
LIQUID TNT TRINITROTOLUENE
 TEMPERATURE-VOLUME ISENTROPE THRU THE C-J VALUE

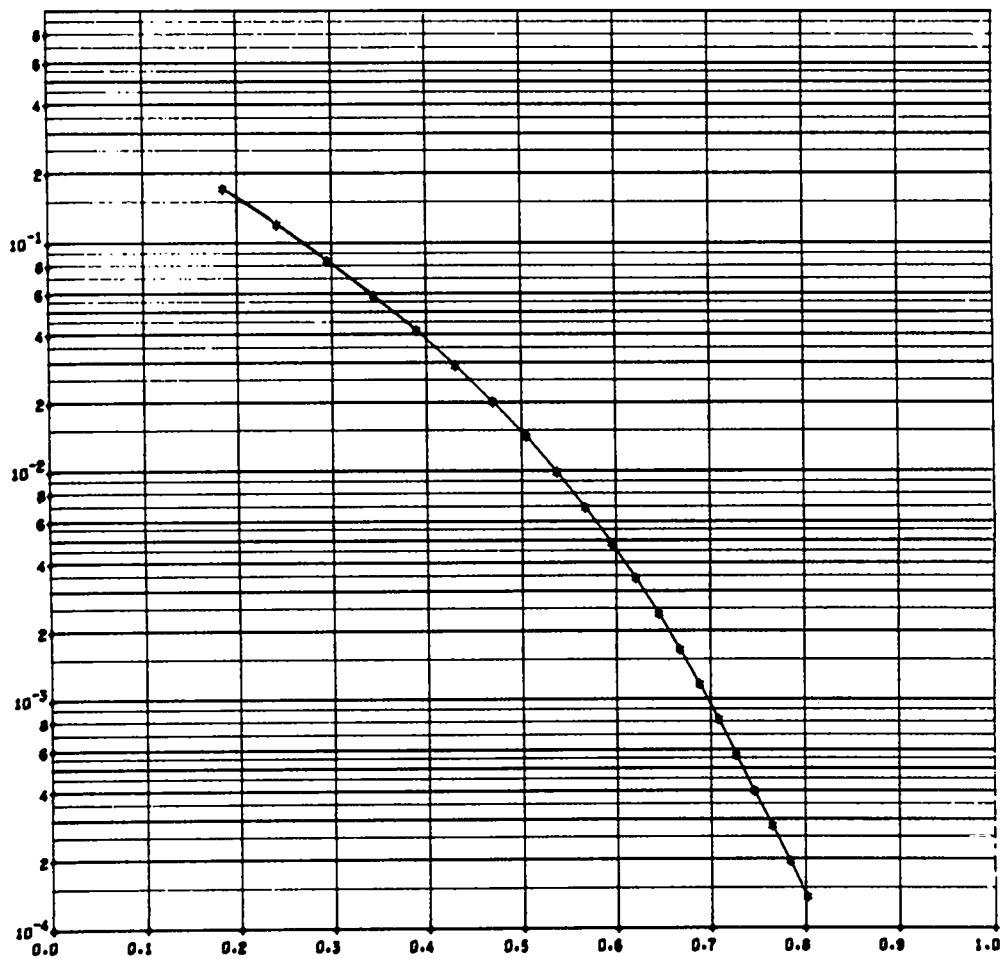


LIQUID TNT TRINITROTOLUENE
 PRESSURE-PARTICLE VELOCITY



LIQUID TNT TRINITROTOLUENE
 PRESSURE-VOLUME ISENTROPE THRU THE C-J VALUE





LIQUID TNT TRINITROTOLUENE
 PRESSURE-PARTICLE VELOCITY

A STRETCH BAW CALCULATION FOR THE EXPLOSIVE
NITROMETHANE

THE NUMBER OF ELEMENTS IS 4

THE NUMBER OF GAS SPECIES IS 11

THE NUMBER OF SOLID SPECIES IS 1

THE HW EQUATION OF STATE PARAMETERS ARE

ALPHA= 5.0000000000-001 BETA= 1.8000000000-001 THETA= 4.0000000000+002 KAPPA= 1.09097784436+001

THE COMPOSITION OF THE EXPLOSIVE IS

1.0000000000+000 MOLES OF C
3.0000000000+000 MOLES OF H
1.0000000000+000 MOLES OF N
2.0000000000+000 MOLES OF O

THE DENSITY OF THE EXPLOSIVE IS 1.1280000000+000 GRAMS/CC

THE MOLECULAR WEIGHT IS 6.1042000000+001 GRAMS

THE HEAT OF FORMATION AT 0 DEG K IS -1.4920000000+004 CALORIES PER FORMULA WEIGHT

THE SOLID (COMAN)EQUATION OF STATE PARAMETERS VO, AS, BS, CS, DS, ES, A1, A2, C1, C2, C3, ATOMIC WT

SOL C 4.4444444444-001 8.30935837268-001 -1.39381809219+000 6.72569716021-001 -1.13537262508-001 6.49155882007-003
-2.26705345948-001 1.20516569525-001 8.3160000000-002 -1.7559000000-001 1.5531000000-001 1.2010000000+001

THE INPUT DETONATION PRODUCT ELEMENTAL COMPOSITION MATRIX

0.0+00	2.0+00	0.0+00	1.0+00	0.0+00	2.0+00	0.0+00	0.0+00	0.0+00	0.0+00	0.0+00	2.0+00
1.0+00	0.0+00	0.0+00	2.0+00	1.0+00	0.0+00	0.0+00	1.0+00	0.0+00	3.0+00	1.0+00	0.0+00
0.0+00	1.0+00	0.0+00	0.0+00	0.0+00	0.0+00	1.0+00	1.0+00	0.0+00	0.0+00	2.0+00	0.0+00
0.0+00	1.0+00	0.0+00	1.0+00	1.0+00	4.0+00	0.0+00	0.0+00	1.0+00	0.0+00	0.0+00	0.0+00

A STRETCH B/W CALCULATION FOR THE EXPLOSIVE
NITROMETHAN"

THE COMPUTED CJ PRESSURE IS 1.30303928109-001 MEGABARS

THE COMPUTED DETONATION VELOCITY IS 6.46367282857-001 CM/MICROSECOND

THE COMPUTED CJ TEMPERATURE IS 3.12047389688+003 DEGREES KELVIN

THE COMPUTED CJ VOLUME IS 6.41405671268-001 CC/GRAM OF EXPLOSIVE

THE COMPUTED GAMMA IS 2.61668198514+000

THE VOLUME OF THE GAS IS 1.54757775052+001 CC/MOLE OF GAS AND THERE ARE 2.34980594292+000 MOLES OF GAS

SOLID VOLUME IN CC/GM
SOL C 3.61474673542-001

THE C-J COMPOSITION OF THE DETONATION PRODUCTS AND THE INPUT COEFFICIENTS TO THE THERMODYNAMIC FITS FOR EACH SPECIE

SPECIE	NO OF MOLES	COEFFICIENTS A,B,C,D,E, THE INTEGRATION CONSTANT, HEAT OF FORMATION IN CALORIES/MOLE, COVOLUME					
H2O	1.47797394562+000	4.2588420000+001	1.4808050000-002	-2.6391810000-006	1.9204530000-010	0.0000000000+000	
H2	1.19607553510-002	1.34282835156+003	-5.7107000000+004	2.5000000000+002	1.6777610000-010	0.0000000000+000	
O2	8.41904188038-007	2.9703470000+001	1.1438290000-002	-2.2012220000-006	1.9015700000-010	0.0000000000+000	
CO2	1.66224395413-001	1.17589615365+003	0.0000000000+000	1.8000000000+002	2.7703000000-010	0.0000000000+000	
CO	1.89504741198-001	4.7030900000+001	1.2871470000-002	-2.5002170000-006	1.8281810000-010	0.0000000000+000	
NH3	3.81754958150-003	1.03537647396+003	0.0000000000+000	3.5000000000+002	2.1978010000-010	0.0000000000+000	
H	3.24174363064-005	4.7481120000+001	1.9544630000-002	-3.7212960000-006	1.3168230000-010	0.0000000000+000	
NO	5.77626953467-005	7.46280968750+002	-9.3968000000+004	6.0000000000+002	1.8932130000-010	0.0000000000+000	
N2	4.98062343862-001	4.5330820000+001	1.2381610000-002	-2.4164030000-006	1.7983220000-010	0.0000000000+000	
OH	1.30758543629-005	1.12158830990+003	-2.7201000000+004	3.9000000000+002	1.6891550000-010	0.0000000000+000	
CH4	2.15811400696-003	4.2018160000+001	1.9116620000-002	-3.1643300000-006	2.4707140000-010	0.0000000000+000	
SOL C	6.42112749382-001	1.20696121615+003	-9.3680000000+003	4.7600000000+002	9.3499950000-011	0.0000000000+000	
		2.6391100000+001	8.1213720000-003	-1.6907400000-006			
		7.94631617188+002	5.1619000000+004	7.6000000000+001			
		4.8414980000+001	1.2693860000-002	-2.4946000000-006			
		1.20924970573+003	2.1477000000+004	3.8600000000+002			
		4.3923400000+001	1.2225010000-002	-2.3790090000-006			
		1.13916134896+003	0.0000000000+000	3.8000000000+002			
		4.2417920000+001	1.1568470000-002	-2.2266590000-006			
		1.18351754427+003	3.5600000000+003	4.1300000000+002			
		3.8756860000+001	2.3640130000-002	-3.7079570000-006			
		1.04242791146+003	-1.6000000000+004	5.2800000000+002			
		-2.4615190000-001	7.1798550000-003	-1.2975500000-006			
		-2.58204389323+002	0.0000000000+000	0.0000000000+000			

THE BKW HUGONIOT FOR THE DETONATION PRODUCTS OF
NITROMETHANE

PRESSURE = 5.000000000-001 VOLUME = 4.08342589280-001 TEMPERATURE = 5.77506217236+003
 H2O 1.48664224009+000
 H2 4.25239463729-003
 O2 9.79805191846-004
 CO2 1.44999401972-001
 CO 2.13267399993-001
 NH3 3.94990433546-003
 H 3.67220712604-004
 NO 8.03032368188-003
 N2 4.94009885991-001
 OH 1.01621905479-004
 CH4 1.47304372956-003
 SOL C 6.40260194305-001

PRESSURE = 4.500000000-001 VOLUME = 4.23181545362-001 TEMPERATURE = 5.46364701882+003
 H2O 1.48669155624+000
 H2 4.49589893420-003
 O2 6.18487330373-004
 CO2 1.46654704364-001
 CO 2.12850547976-001
 NH3 3.82439858429-003
 H 3.10510378431-004
 NO 5.82315331169-003
 N2 4.95176224052-001
 OH 8.83590802972-005
 CH4 1.43825610881-003
 SOL C 6.39056491551-001

PRESSURE = 4.000000000-001 VOLUME = 4.39769358153-001 TEMPERATURE = 5.11050618302+003
 H2O 1.48741674633+000
 H2 4.56205757886-003
 O2 3.53107924420-004
 CO2 1.50266348758-001
 CO 2.07382108057-001
 NH3 3.51216878866-003
 H 2.38605652584-004
 NO 3.89140971380-003
 N2 4.96298211746-001
 OH 7.04225301490-005
 CH4 1.29921909957-003
 SOL C 6.41052127275-001

PRESSURE = 3.500000000-001 VOLUME = 4.58756247123-001 TEMPERATURE = 4.72029835682+003
 H2O 1.48864923479+000
 H2 4.45539687512-003
 O2 1.75736498239-004
 CO2 1.5802000112-001
 CO 1.96573951890-001
 NH3 3.06826553838-003
 H 1.63957888189-004
 NO 2.33455744770-003
 N2 4.97298588507-001
 OH 5.07826613870-005
 CH4 1.09279987870-003
 SOL C 6.46313248120-001

PRESSURE = 3.000000000-001 VOLUME = 4.81436231235-001 TEMPERATURE = 4.31170669974+003
 H2O 1.48985693053+000
 H2 4.32465404362-003
 O2 7.35512266988-005
 CO2 1.63139957245-001
 CO 1.82449667862-001
 NH3 2.63242374050-003
 H 1.02374512278-004
 NO 1.23267260087-003
 N2 4.98067451829-001
 OH 3.37120583225-005
 CH4 9.00868262685-004
 SOL C 6.53509506630-001

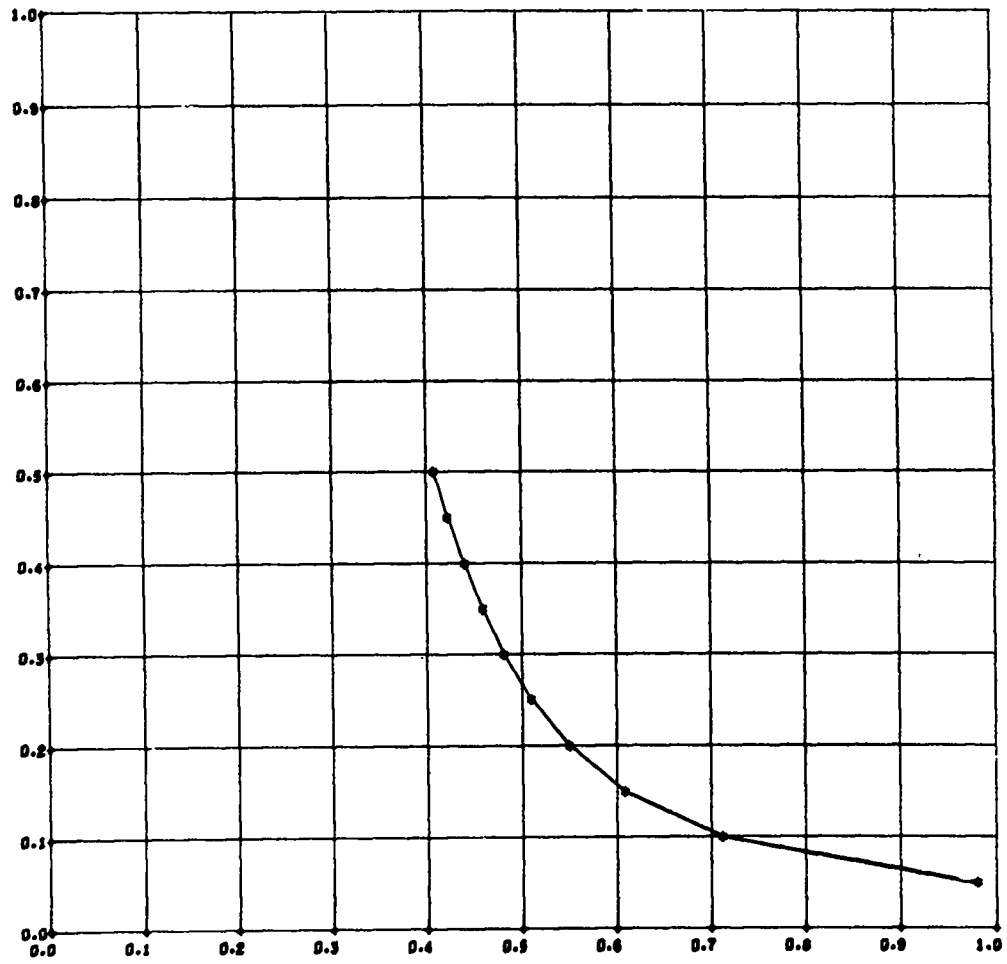
PRESSURE = 2.500000000-001 VOLUME = 5.10221098024-001 TEMPERATURE = 3.91322581322+003
 H2O 1.49030305636+000
 H2 4.47983519556-003
 O2 2.53232899434-005
 CO2 1.69643545362-001
 CO 1.69765818935-001
 NH3 2.37093284886-003
 H 6.20221071164-005
 NO 5.71454577338-004
 N2 4.98528886287-001
 OH 2.19328320039-005
 CH4 8.09365850271-004
 SOL C 6.59781269854-001

PRESSURE = 2.0000000000-001 VOLUME = 5.49501184972-001 TEMPERATURE = 3.54914466440+003
H2O 1.48901173344+000
H2 5.46908901414-003
O2 7.11551713033-006
CO2 1.72919462696-001
CO 1.64884119427-001
NH3 2.44410831301-003
H 4.04696742365-005
NO 2.35606788855-004
N2 4.98660142449-001
OH 1.53839151060-005
CH4 9.12544139151-004
SOL C 6.61283873738-001

PRESSURE = 1.5000000000-001 VOLUME = 6.08445200278-001 TEMPERATURE = 3.23194947293+003
H2O 1.48332681033+000
H2 8.86284962233-003
O2 1.61486866716-006
CO2 1.69948049410-001
CO 1.76673207523-001
NH3 3.16603761825-003
H 3.23662693577-005
NO 8.76836916399-005
N2 4.98373139345-001
OH 1.29699020180-005
CH4 1.51930776923-003
SOL C 6.51859435298-001

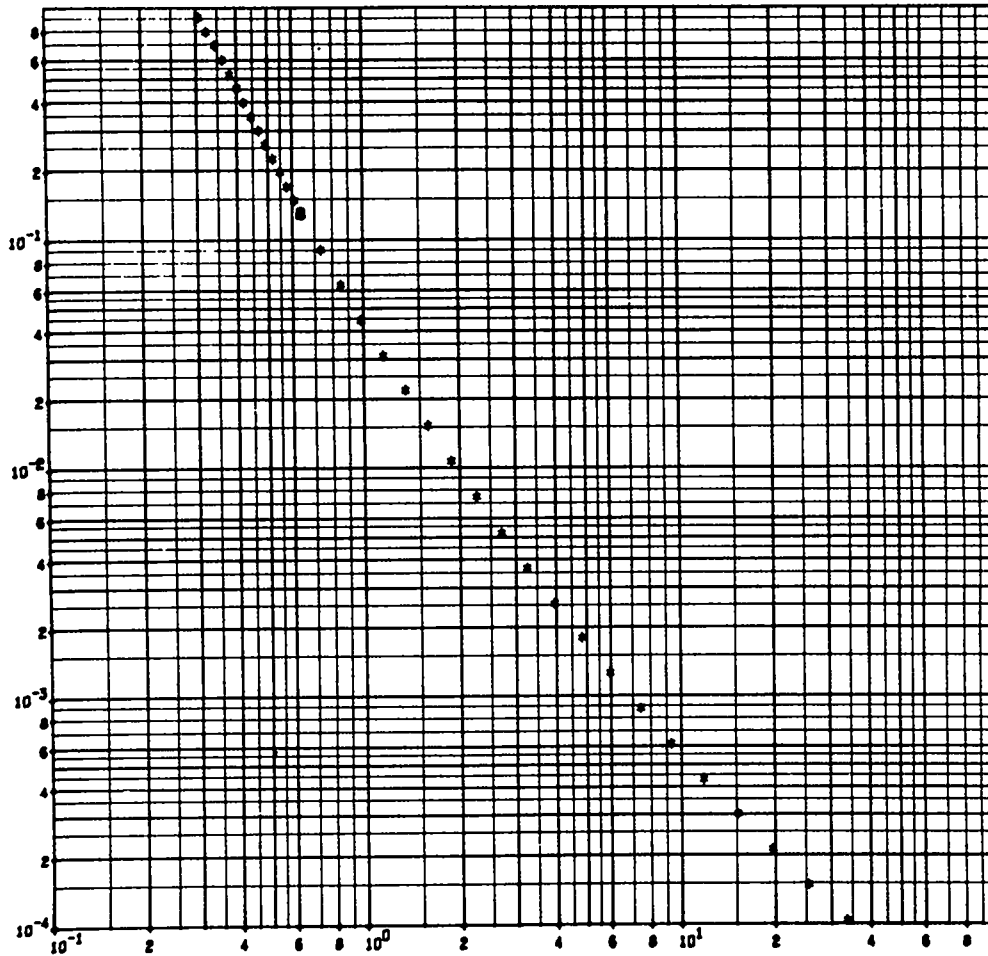
PRESSURE = 1.0000000000-001 VOLUME = 7.12478439769-001 TEMPERATURE = 2.96153664548+003
H2O 1.46005141184+000
H2 2.21853899171-002
O2 2.79538431337-007
CO2 1.57016632263-001
CO 2.25870969684-001
NH3 5.70840778100-003
H 3.70830534443-005
NO 2.91300267722-005
N2 4.97131231096-001
OH 1.46648442901-005
CH4 4.58733631001-003
SOL C 6.12525041743-001

PRESSURE = 5.0000000000-002 VOLUME = 9.80759019704-001 TEMPERATURE = 2.69073710375+003
H2O 1.32019905680+000
H2 9.92436815048-002
O2 5.91201245554-010
CO2 1.40033401448-001
CO 3.99705528718-001
NH3 1.41819297835-002
H 6.44683294150-005
NO 6.90821420783-006
N2 4.92905581001-001
OH 2.17021859112-005
CH4 2.96206408794-002
SOL C 4.30640428955-001



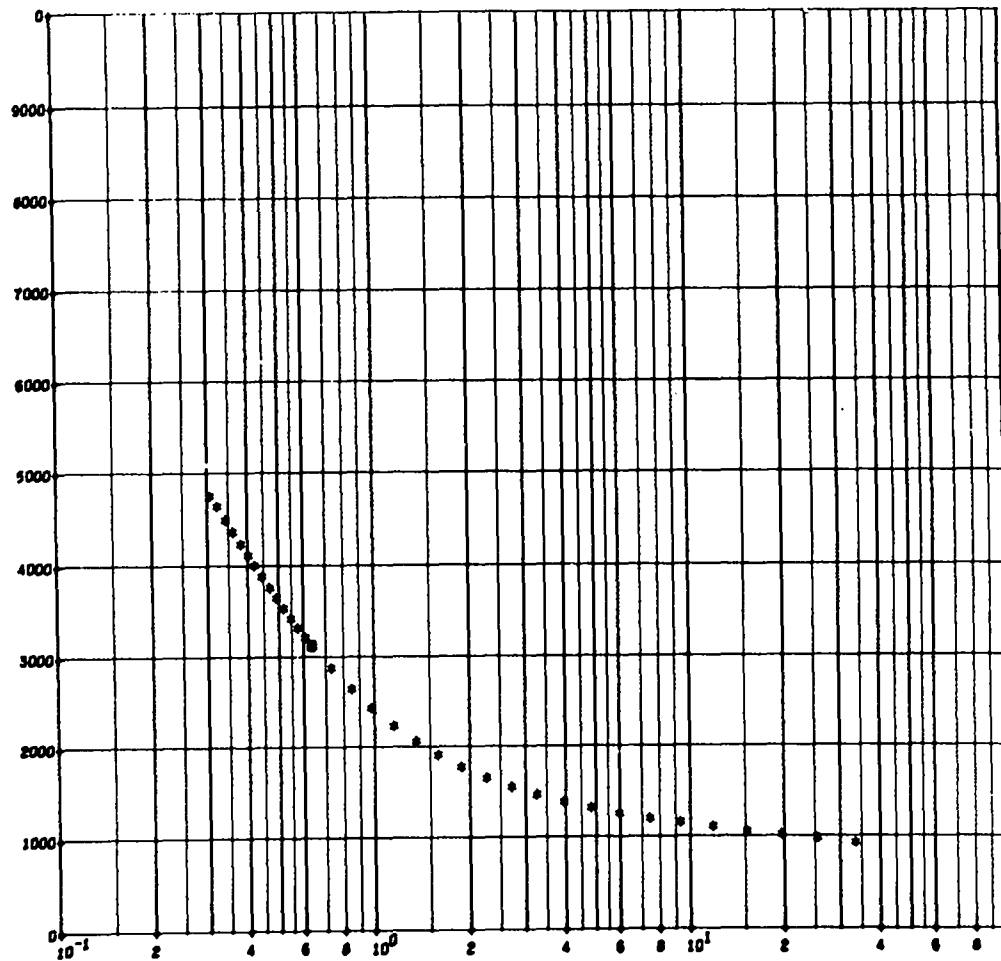
NITROMETHANE

PRESSURE-VOLUME HUGONIOT



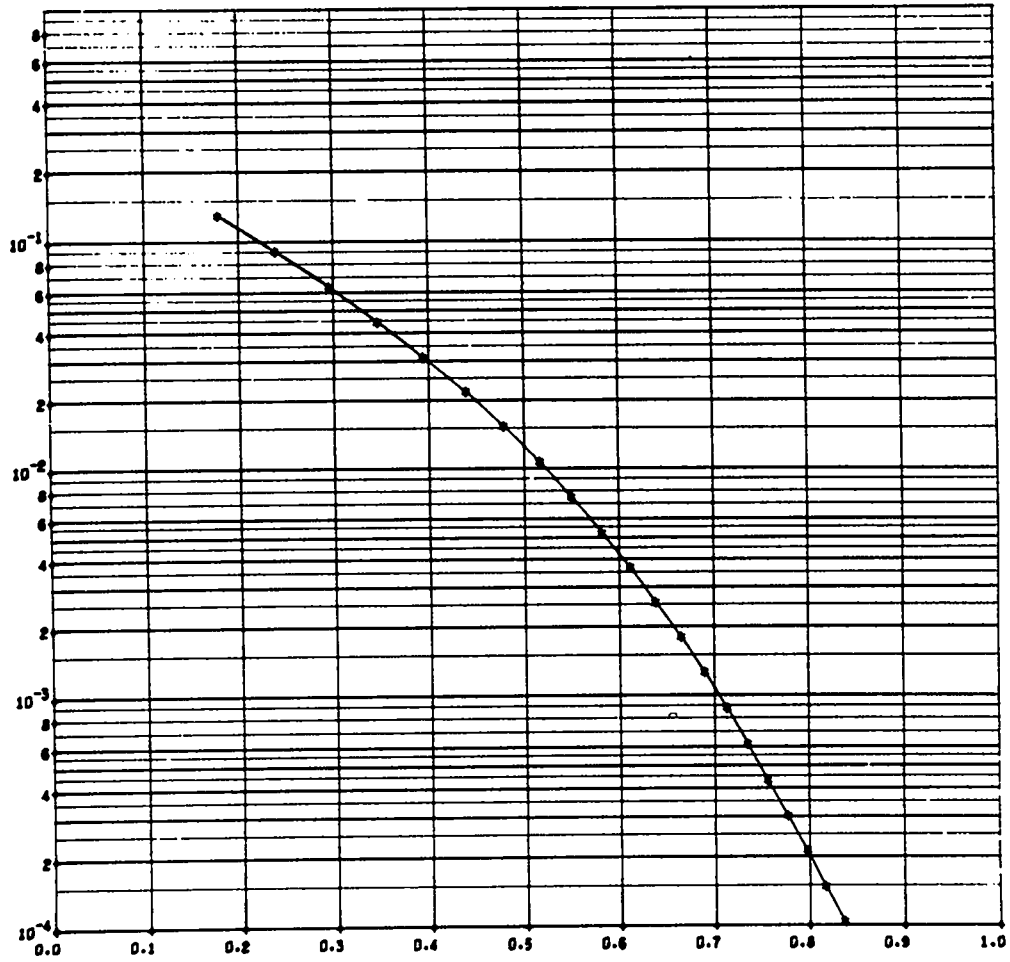
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PRESSURE-VOLUME ISENTROPE THRU THE C-J VALUE



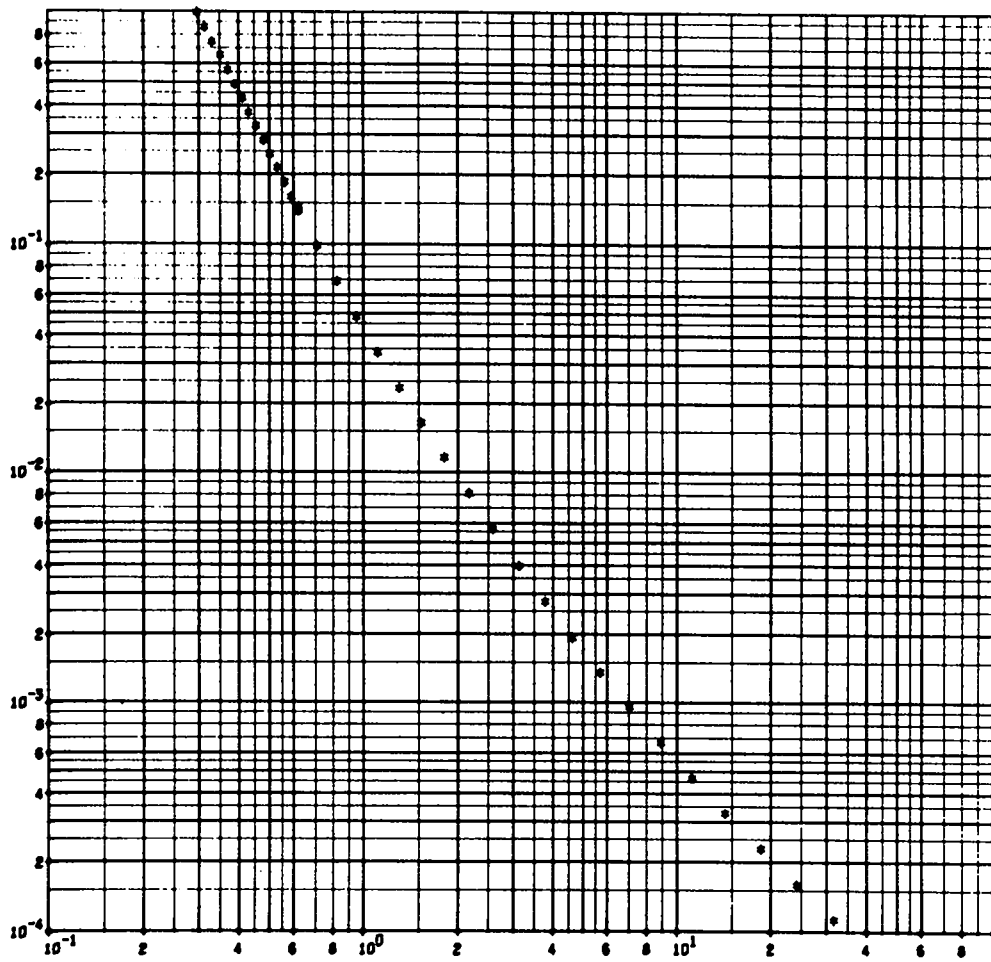
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TEMPERATURE-VOLUME ISENTROPE THRU THE C-J VALUE



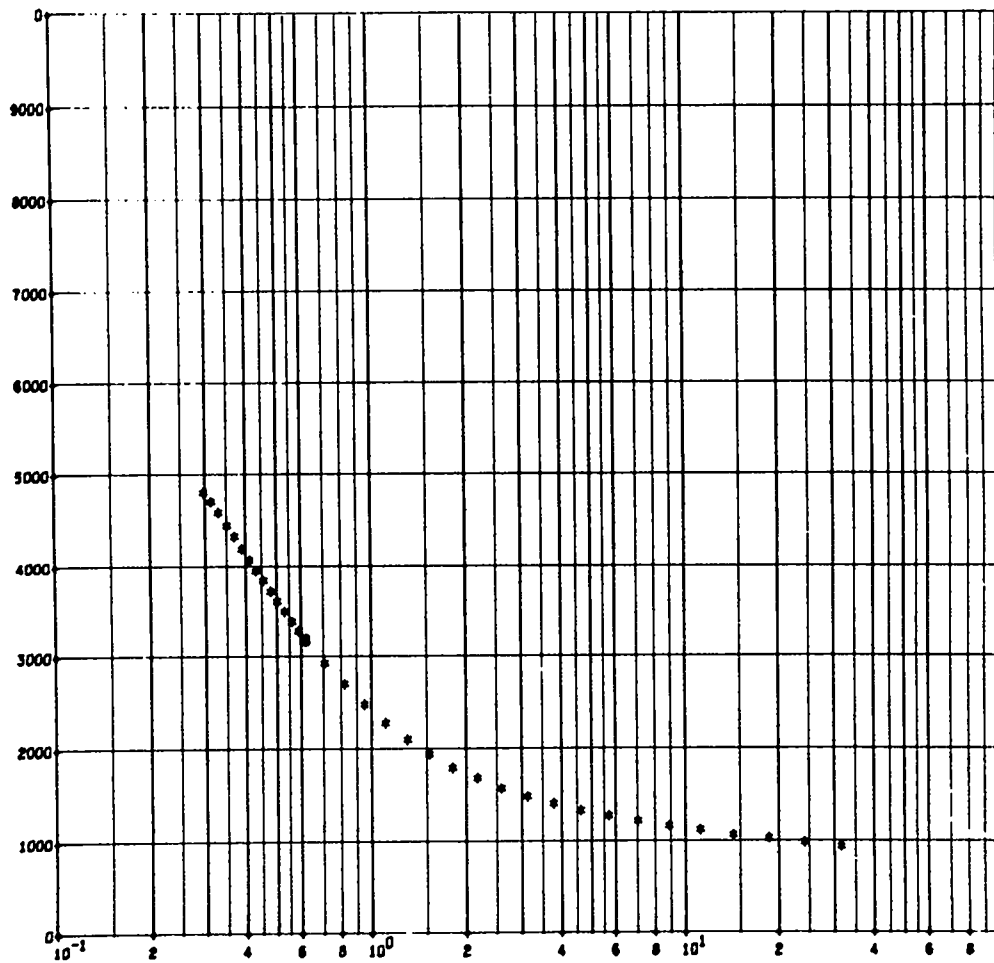
NITROMETHANE

PRESSURE-PARTICLE VELOCITY



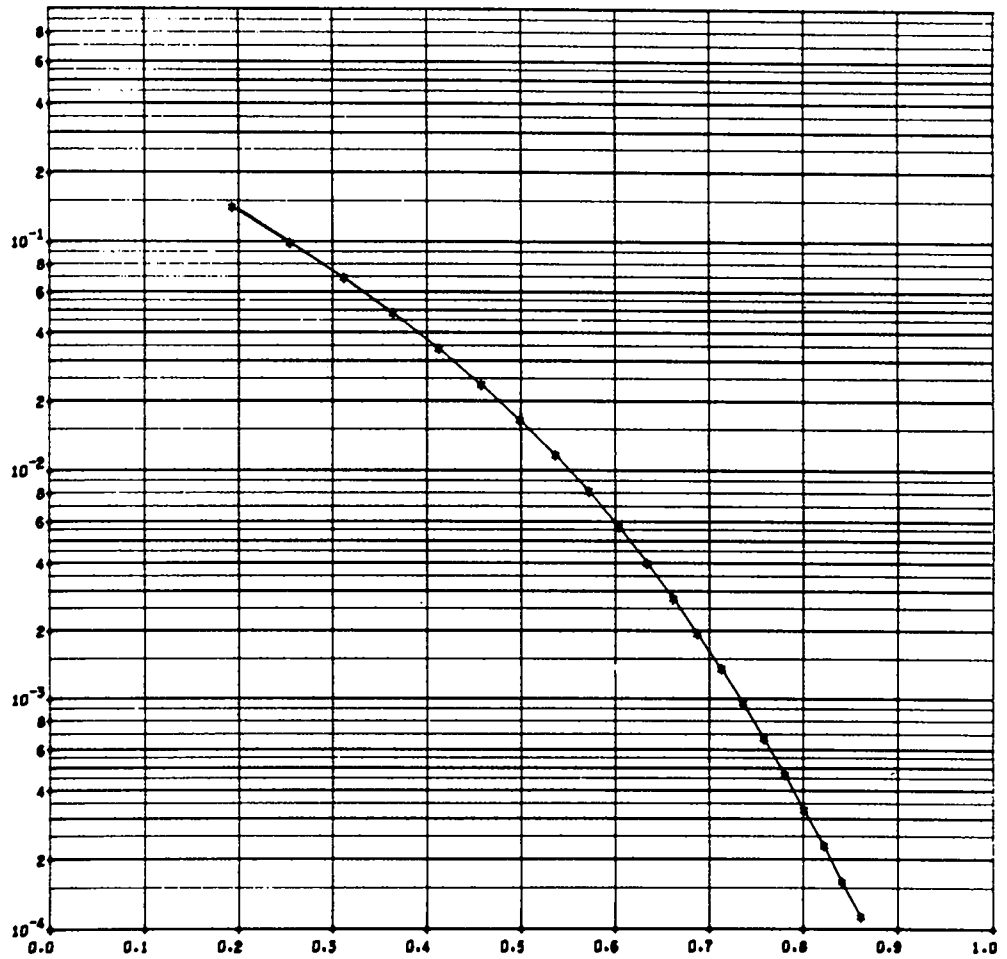
NITROMETHANE

PRESSURE-VOLUME ISENTROPE THRU THE C-J VALUE



NITROMETHANE

TEMPERATURE-VOLUME ISENTROPE THRU THE C-J VALUE



NITROMETHANE

PRESSURE-PARTICLE VELOCIT:

A STRETCH BKN CALCULATION FOR THE EXPLOSIVE
NITROGLYCERINE

THE NUMBER OF ELEMENTS IS 4

THE NUMBER OF GAS SPECIES IS 11

THE NUMBER OF SOLID SPECIES IS 1

THE KW EQUATION OF STATE PARAMETERS ARE

ALPHA= 5.0000000000-001 BETA= 1.6000000000-001 THETA= 4.0000000000+002 KAPPA= 1.09097784436+001

THE COMPOSITION OF THE EXPLOSIVE IS

3.0000000000+000 MOLES OF C
5.0000000000+000 MOLES OF H
3.0000000000+000 MOLES OF N
9.0000000000+000 MOLES OF O

THE DENSITY OF THE EXPLOSIVE IS 1.5900000000+000 GRAMS/CC

THE MOLECULAR WEIGHT IS 2.2700000000+002 GRAMS

THE HEAT OF FORMATION AT 0 DEG K IS -6.6520000000+004 CALORIES PER FORMULA WEIGHT

THE SOLID (COMAN) EQUATION OF STATE PARAMETERS VO, AS, BS, CS, DS, ES, A1, A2, C1, C2, C3, ATOMIC WT

SOL C 4.4444444444-001 8.30935837268-001 -1.39381809219+000 6.72569716021-001 -1.13537262508-001 6.49155882007-003
-2.26705345948-001 1.20516589525-001 8.31600000000-002 -1.75590000000-001 1.55310000000-001 1.20100000000+001

THE INPUT DETONATION PRODUCT ELEMENTAL COMPOSITION MATRIX

0.0+00	2.0+00	0.0+00	1.0+00	0.0+00	2.0+00	0.0+00	0.0+00	0.0+00	0.0+00	0.0+00	2.0+00
1.0+00	0.0+00	0.0+00	2.0+00	1.0+00	0.0+00	0.0+00	1.0+00	0.0+00	3.0+00	1.0+00	0.0+00
0.0+00	1.0+00	0.0+00	0.0+00	0.0+00	0.0+00	1.0+00	1.0+00	0.0+00	0.0+00	2.0+00	0.0+00
0.0+00	1.0+00	0.0+00	1.0+00	1.0+00	4.0+00	0.0+00	0.0+00	1.0+00	0.0+00	0.0+00	0.0+00

A STRETCH BKM CALCULATION FOR THE EXPLOSIVE
NITROGLYCERINE

THE COMPUTED CJ PRESSURE IS 2.46536960655-001 MEGABARS

THE COMPUTED DETONATION VELOCITY IS 7.69934879095-001 CM/MICROSECOND

THE COMPUTED CJ TEMPERATURE IS 3.21271553518+003 DEGREES KELVIN

THE COMPUTED CJ VOLUME IS 4.64426220459-001 CC/GRAM OF EXPLOSIVE

THE COMPUTED GAMMA IS 2.82316529411+000

THE VOLUME OF THE GAS IS 1.45374250395+001 CC/MOLE OF GAS AND THERE ARE 7.25195598690+000 MOLES OF GAS

SOL ID VOLUME IN CC/GM
SOL C 3.18628366069-001

THE C-J COMPOSITION OF THE DETONATION PRODUCTS AND THE INPUT COEFFICIENTS TO THE THERMODYNAMIC FITS FOR EACH SPECIE

SPECIE	NO OF MOLES	COEFFICIENTS A,B,C,D,E, THE INTEGRATION CONSTANT, HEAT OF FORMATION IN CALORIES/MOLE, COVOLUME					
H2O	2.49996224188+000	4.29884200000+001	1.48080500000-002	-2.63918100000-006	1.92045300000-010	0.00000000000+000	
H2	7.77235220096-006	1.34282835156+003	-5.71070000000+004	2.30000000000+002	-2.20122200000-006	1.67776100000-010	
O2	2.27474074234-001	2.97034700000+001	1.14382900000-002	-2.20122200000-006	1.67776100000-010	0.00000000000+000	
CO2	2.99612450829+000	1.17589615363+003	0.00000000000+000	1.80000000000+002	-2.50021700000-006	1.90157000000-010	
CO	3.87549171797-003	4.70309000000+001	1.28714700000-002	-3.50000000000+002	6.00000000000+002	0.00000000000+000	
NH3	8.35754641160-007	1.03537647396+003	0.00000000000+000	-3.72129600000-006	2.77030000000-010	0.00000000000+000	
H	3.95413479603-007	7.46280968750+002	-9.39680000000+004	6.00000000000+002	4.76000000000+002	0.00000000000+000	
NO	4.89080324601-002	4.53308200000+001	1.23816100000-002	-2.41640300000-006	1.82818100000-010	0.00000000000+000	
N2	1.47554556589+000	1.12158830990+003	-2.72010000000+004	3.90000000000+002	-3.16433000000-006	2.19780100000-010	
OH	5.70688896989-005	4.20181600000+001	1.91166200000-002	-3.16433000000-006	2.19780100000-010	0.00000000000+000	
CH4	1.00000000000-011	1.20696121615+003	-9.36800000000+003	4.76000000000+002	-1.69074000000-006	1.31682300000-010	
SOL C	0.00000000000+000	7.94631617188+002	5.16190000000+004	7.60000000000+001	-2.49460000000-006	1.89321300000-010	
		4.84149800000+001	1.26938600000-002	-2.49460000000-006	1.89321300000-010	0.00000000000+000	
		1.20924970573+003	2.14770000000+004	3.86000000000+002	-2.37900500000-006	1.79832200000-010	
		4.39234000000+001	1.22250100000-002	-2.37900500000-006	1.79832200000-010	0.00000000000+000	
		1.13916134896+003	0.00000000000+000	3.80000000000+002	-2.22665900000-006	1.68915500000-010	
		4.24179200000+001	1.15684700000-002	-2.22665900000-006	1.68915500000-010	0.00000000000+000	
		1.18351754427+003	3.56000000000+003	4.13000000000+002	-3.70795700000-006	2.47071400000-010	
		3.87568600000+001	2.36401300000-002	-3.70795700000-006	2.47071400000-010	0.00000000000+000	
		1.04242791146+003	-1.60000000000+004	5.28000000000+002	-1.29755000000-006	9.34999900000-011	
		-2.46151900000-001	7.17985300000-003	-1.29755000000-006	9.34999900000-011	0.00000000000+000	
		-2.5620458323+002	0.00000000000+000	0.00000000000+000			

A STRETCH BAW CALCULATION FOR THE EXPLOSIVE
 6.435/2.2275/6.434 MOLES NITRIC ACID, WATER, NITROMETHANE

THE NUMBER OF ELEMENTS IS 4

THE NUMBER OF GAS SPECIES IS 11

THE NUMBER OF SOLID SPECIES IS 1

THE KW EQUATION OF STATE PARAMETERS ARE
 ALPHA= 5.0000000000-001 BETA= 1.6000000000-001 THETA= 4.0000000000+002 KAPPA= 1.09097784436+001

THE COMPOSITION OF THE EXPLOSIVE IS
 6.4340000000+000 MOLES OF C
 3.0192000000+001 MOLES OF H
 1.2869000000+001 MOLES OF N
 3.4405000000+001 MOLES OF O

THE DENSITY OF THE EXPLOSIVE IS 1.2932000000+000 GRAMS/CC

THE MOLECULAR WEIGHT IS 8.3804000000+002 GRAMS

THE HEAT OF FORMATION AT 0 DEG K IS -4.7498000000+005 CALORIES PER FORMULA WEIGHT

THE SOLID (COMAN)EQUATION OF STATE PARAMETERS VO, AS, BS, CS, DS, ES, A1, A2, C1, C2, C3, ATOMIC WT

SOL C 4.4444444444-001 8.30935837268-001 -1.39381809219+000 6.72569716021-001 -1.13537262508-001 6.49155882007-003
 -2.26705345948-001 1.20516569525-001 8.31600000000-002 -1.75590000000-001 1.55310000000-001 1.20100000000+001

THE INPUT DETONATION PRODUCT ELEMENTAL COMPOSITION MATRIX

0.0+00	2.0+00	0.0+00	1.0+00	0.0+00	2.0+00	0.0+00	0.0+00	0.0+00	0.0+00	0.0+00	2.0+00
1.0+00	0.0+00	0.0+00	2.0+00	1.0+00	0.0+00	0.0+00	1.0+00	0.0+00	3.0+00	1.0+00	0.0+00
0.0+00	1.0+00	0.0+00	0.0+00	0.0+00	0.0+00	1.0+00	1.0+00	0.0+00	0.0+00	2.0+00	0.0+00
0.0+00	1.0+00	0.0+00	1.0+00	1.0+00	4.0+00	0.0+00	0.0+00	1.0+00	0.0+00	0.0+00	0.0+00

A STRETCH BKW CALCULATION FOR THE EXPLOSIVE
 6.435/2.2275/6.434 MOLES NITRIC ACID, WATER, NITROMETHANE

THE COMPUTED C-J PRESSURE IS 1.52755281940-001 MEGABARS

THE COMPUTED DETONATION VELOCITY IS 6.66615159179-001 CM/MICROSECOND

THE COMPUTED C-J TEMPERATURE IS 2.47681885747+003 DEGREES KELVIN

THE COMPUTED C-J VOLUME IS 5.67728364662-001 CC/GRAM OF EXPLOSIVE

THE COMPUTED GAMMA IS 2.76200900580+000

THE VOLUME OF THE GAS IS 1.52565399866+001 CC/MOLE OF GAS AND THERE ARE 3.11852542673+001 MOLES OF GAS

SOLID VOLUME IN CC/GM
 SOL C 3.49048680821-001

THE C-J COMPOSITION OF THE DETONATION PRODUCTS AND THE INPUT COEFFICIENTS TO THE THERMODYNAMIC FITS FOR EACH SPECIE

SPECIE	NO OF MOLES	COEFFICIENTS A,B,C,D,E, THE INTEGRATION CONSTANT, HEAT OF FORMATION IN CALORIES/MOLE, COVOLUME					
H2O	1.50959310959+001	4.2588420000+001	1.4808050000-002	-2.6391810000-006	1.9204530000-010	0.0000000000+000	
H2	3.31089929447-006	1.34282835156+003	-5.7107000000+004	2.5000000000+002	-2.2012220000-006	1.6777610000-010	
O2	3.15102749416+000	2.9703470000+001	1.1438290000-002	-2.2012220000-006	1.6777610000-010	0.0000000000+000	
CO2	6.43356035895+000	1.17589615365+003	0.0000000000+000	1.8000000000+002	-2.5002170000-006	1.9015700000-010	
CO	4.39641157851-004	4.7030900000+001	1.2871470000-002	-2.5002170000-006	1.9015700000-010	0.0000000000+000	
NH3	4.80752259526-008	1.03537647396+003	0.0000000000+000	3.5000000000+002	-3.7212960000-006	6.0000000000+002	
H	8.50380942558-008	4.7481120000+001	1.9544630000-002	-3.7212960000-006	2.7703000000-010	0.0000000000+000	
NO	1.39322599126-001	4.5330820000+001	1.2381610000-002	-2.4164030000-006	1.8281810000-010	0.0000000000+000	
N2	6.36483867640+000	1.12158830990+003	-2.7201000000+004	3.9000000000+002	-3.1643300000-006	2.1978010000-010	
OH	1.30957621635-004	1.20696121615+003	-9.3680000000+003	4.7600000000+002	-1.6907400000-006	7.6000000000+001	
CH4	1.0000000000-011	2.6391100000+001	8.1213720000-003	-1.6907400000-006	1.3168230000-010	0.0000000000+000	
SOL C	0.0000000000+000	7.94631617188+002	5.1619000000+004	7.6000000000+001	-2.4946000000-006	1.8932130000-010	
		4.8414980000+001	1.2693860000-002	-2.4946000000-006	1.8932130000-010	0.0000000000+000	
		1.20924970573+003	2.1477000000+004	3.8600000000+002	-2.3790050000-006	1.7983220000-010	
		4.3923400000+001	1.2225010000-002	-2.3790050000-006	1.7983220000-010	0.0000000000+000	
		1.13916134896+003	0.0000000000+000	3.8000000000+002	-2.2266590000-006	1.6891550000-010	
		4.2417920000+001	1.1568470000-002	-2.2266590000-006	1.6891550000-010	0.0000000000+000	
		1.18351754427+003	3.5600000000+003	4.1300000000+002	-3.7079570000-006	2.4707140000-010	
		3.8756860000+001	2.3640130000-002	-3.7079570000-006	2.4707140000-010	0.0000000000+000	
		1.04242791146+003	-1.6000000000+004	5.2800000000+002	-1.2975500000-006	9.3499950000-011	
		-2.4615190000-001	7.1798550000-003	-1.2975500000-006	9.3499950000-011	0.0000000000+000	
		-2.58204389323+002	0.0000000000+000	0.0000000000+000			

A STRETCH BKW CALCULATION FOR THE EXPLOSIVE
 ONE MOLE BENZENE AND 1.29 MOLE TETRANITROMETHANE

THE NUMBER OF ELEMENTS IS 4

THE NUMBER OF GAS SPECIES IS 11

THE NUMBER OF SOLID SPECIES IS 1

THE KW EQUATION OF STATE PARAMETERS ARE

ALPHA= 5.000000000-001 BETA= 1.6000000000-001 THETA= 4.000000000+002 KAPPA= 1.09097784436+001

THE COMPOSITION OF THE EXPLOSIVE IS

7.2900000000+000 MOLES OF C
 6.0000000000+000 MOLES OF H
 9.1600000000+000 MOLES OF N
 1.0320000000+001 MOLES OF O

THE DENSITY OF THE EXPLOSIVE IS 1.3620000000+000 GRAMS/CC

THE MOLECULAR WEIGHT IS 3.3100200000+002 GRAMS

THE HEAT OF FORMATION AT 0 DEG K IS 4.6740000000+004 CALORIES PER FORMULA WEIGHT

THE SOLID (COMAN) EQUATION OF STATE PARAMETERS VO, AS, BS, CS, DS, ES, A1, A2, C1, C2, C3, ATOMIC WT

SOL C 4.4444444444-001 8.30935837268-001 -1.39381809219+000 6.72569716021-001 -1.13537262508-001 6.49155882007-003
 -2.26705345948-001 1.20516569525-001 8.3160000000-002 -1.75390000000-001 1.55310000000-001 1.20100000000+001

THE INPUT DETONATION PRODUCT ELEMENTAL COMPOSITION MATRIX

0.0+00	2.0+00	0.0+00	1.0+00	0.0+00	2.0+00	0.0+00	0.0+00	0.0+00	0.0+00	0.0+00	2.0+00
1.0+00	0.0+00	0.0+00	2.0+00	1.0+00	0.0+00	0.0+00	1.0+00	0.0+00	3.0+00	1.0+00	0.0+00
0.0+00	1.0+00	0.0+00	0.0+00	0.0+00	0.0+00	1.0+00	1.0+00	0.0+00	0.0+00	2.0+00	0.0+00
0.0+00	1.0+00	0.0+00	1.0+00	1.0+00	4.0+00	0.0+00	0.0+00	1.0+00	0.0+00	0.0+00	0.0+00

A STRETCH BKM CALCULATION FOR THE EXPLOSIVE
ONE MOLE BENZENE AND 1.29 MOLE TETRANITROMETHANE

THE COMPUTED C-J PRESSURE IS 1.80763417214-001 MEGABARS

THE COMPUTED DETONATION VELOCITY IS 6.96013423999-001 CM/MICROSECOND

THE COMPUTED C-J TEMPERATURE IS 3.85451981677+003 DEGREES KELVIN

THE COMPUTED C-J VOLUME IS 5.33065012947-001 CC/GRAM OF EXPLOSIVE

THE COMPUTED GAMMA IS 2.65007507067+000

THE VOLUME OF THE GAS IS 1.61124023613+001 CC/MOLE OF GAS AND THERE ARE 1.02906338624+001 MOLES OF GAS

SOLID VOLUME IN CC/GM
SOL C 3.44752733772-001

THE C-J COMPOSITION OF THE DETONATION PRODUCTS AND THE INPUT COEFFICIENTS TO THE THERMODYNAMIC FITS FOR EACH SPECIE

SPECIE	NO OF MOLES	COEFFICIENTS A,B,C,D,E, THE INTEGRATION CONSTANT, HEAT OF FORMATION IN CALORIES/MOLE, COVOLUME				
M2O	2.96630075332+000	4.25884200000+001	1.48080500000-002	-2.63518100000-006	1.92045300000-010	0.00000000000+000
		1.34282835156+003	-5.71070000000+004	2.50000000000+002		
H2	1.79602426295-002	2.97034700000+001	1.14382900000-002	-2.20122200000-006	1.67776100000-010	0.00000000000+000
		1.17589615365+003	0.00000000000+000	1.80000000000+002		
O2	1.40369934130-004	4.70309000000+001	1.28714700000-002	-2.50021700000-006	1.90157000000-010	0.00000000000+000
		1.03537647396+003	0.00000000000+000	3.50000000000+002		
CO2	2.63177974361+000	4.74811200000+001	1.95446300000-002	-3.72129600000-006	2.77030000000-010	0.00000000000+000
		7.46280968750+002	-9.39680000000+004	6.00000000000+002		
CO	2.08621498083+000	4.53308200000+001	1.23816100000-002	-2.41640300000-006	1.82818100000-010	0.00000000000+000
		1.12158830990+003	-2.72010000000+004	3.90000000000+002		
NH3	6.90228013550-003	4.20181600000+001	1.91166200000-002	-3.16433000000-006	2.19780100000-010	0.00000000000+000
		1.20696121615+003	-9.36800000000+004	4.76000000000+002		
H	2.71081125119-004	2.63911000000+001	8.12137200000-003	-1.69074000000-006	1.31682300000-010	0.00000000000+000
		7.94631617188+002	5.16190000000+004	7.60000000000+001		
NO	3.36999947664-003	4.84149800000+001	1.26938600000-002	-2.49460000000-006	1.89321300000-010	0.00000000000+000
		1.20924970573+003	2.14770000000+004	3.86000000000+002		
N2	2.57486386019+000	4.39234000000+001	1.22250100000-002	-2.37900300000-006	1.79832200000-010	0.00000000000+000
		1.13916134896+003	0.00000000000+000	3.80000000000+002		
OH	2.74039275864-004	4.24179200000+001	1.15684700000-002	-2.22655900000-006	1.68915500000-010	0.00000000000+000
		1.18351754427+003	3.36000000000+003	4.13000000000+002		
CH4	2.55651182409-003	3.87968600000+001	2.36401300000-002	-3.70793700000-006	2.47071400000-010	0.00000000000+000
		1.04242791146+003	-1.60000000000+004	5.28000000000+002		
SOL C	2.56944876373+000	-2.46131900000-001	7.17983300000-003	-1.29755000000-006	9.34999500000-011	0.00000000000+000
		-2.58204389323+002	0.00000000000+000	0.00000000000+000		

A STRETCH BKW CALCULATION FOR THE EXPLOSIVE
ONE MOLE NITROMETHANE AND 0.071 MOLE TETRANITROMETHANE

THE NUMBER OF ELEMENTS IS 4

THE NUMBER OF GAS SPECIES IS 11

THE NUMBER OF SOLID SPECIES IS 1

THE KW EQUATION OF STATE PARAMETERS ARE

ALPHA= 5.000000000-001 BETA= 1.600000000-001 THETA= 4.000000000+002 KAPPA= 1.09097784436+001

THE COMPOSITION OF THE EXPLOSIVE IS

1.0710000000+000 MOLES OF C
3.000000000+000 MOLES OF H
1.2840000000+000 MOLES OF N
2.5680000000+000 MOLES OF O

THE DENSITY OF THE EXPLOSIVE IS 1.1970000000+000 GRAMS/CC

THE MOLECULAR WEIGHT IS 7.4961000000+001 GRAMS

THE HEAT OF FORMATION AT 0 DEG K IS -1.3350000000+004 CALORIES PER FORMULA WEIGHT

THE SOLID (COVAN) EQUATION OF STATE PARAMETERS VO, AS, BS, CS, DS, ES, A1, A2, C1, C2, C3, ATOMIC WT

SOL C 4.444444444-001 8.30935837268-001 -1.39381808219+000 6.72569716021-001 -1.13537262508-001 6.49155882007-003
-2.26705345948-001 1.20516569525-001 8.3160000000-002 -1.7559000000-001 1.5531000000-001 1.2010000000+001

THE INPUT DETONATION PRODUCT ELEMENTAL COMPOSITION MATRIX

0.0+00	2.0+00	0.0+00	1.0+00	0.0+00	2.0+00	0.0+00	0.0+00	0.0+00	0.0+00	0.0+00	2.0+00
1.0+00	0.0+00	0.0+00	2.0+00	1.0+00	0.0+00	0.0+00	1.0+00	0.0+00	3.0+00	1.0+00	0.0+00
0.0+00	1.0+00	0.0+00	0.0+00	0.0+00	0.0+00	1.0+00	1.0+00	0.0+00	0.0+00	2.0+00	0.0+00
0.0+00	1.0+00	0.0+00	1.0+00	1.0+00	4.0+00	0.0+00	0.0+00	1.0+00	0.0+00	0.0+00	0.0+00

A STRETCH BKW CALCULATION FOR THE EXPLOSIVE
ONE MOLE NITROMETHANE AND 0.071 MOLE TETRANITROMETHANE

THE COMPUTED CJ PRESSURE IS 1.53234014952-001 MEGABARS

THE COMPUTED DETONATION VELOCITY IS 6.79884903363-001 CM/MICROSECOND

THE COMPUTED CJ TEMPERATURE IS 3.35375989374+003 DEGREES KELVIN

THE COMPUTED CJ VOLUME IS 6.04059238027-001 CC/GRAM OF EXPLOSIVE

THE COMPUTED GAMMA IS 2.61085264204+000

THE VOLUME OF THE GAS IS 1.53930594054+001 CC/MOLE OF GAS AND THERE ARE 2.84054686044+000 MOLES OF GAS

SOLID VOLUME IN CC/GH
SOL C 3.53038337282-001

THE C-J COMPOSITION OF THE DETONATION PRODUCTS AND THE INPUT COEFFICIENTS TO THE THERMODYNAMIC FITS FOR EACH SPECIE

SPECIE	NO OF MOLES	COEFFICIENTS A,B,C,D,E, THE INTEGRATION CONSTANT, HEAT OF FORMATION IN CALORIES/MOLE, COVOLUME				
H2O	1.48465961809+000	4.25884200000+001	1.48080500000-002	-2.63918100000-006	1.92045300000-010	0.00000000000+000
H2	8.26210688836-003	1.34282835156+003	-5.71070000000+004	2.50000000000+002	1.67776100000-010	0.00000000000+000
O2	4.88652011203-006	2.97034700000+001	1.14382900000-002	-2.20122200000-006	1.90157000000-010	0.00000000000+000
CO2	3.80437500551-001	1.17589615365+003	0.00000000000+000	1.80000000000+002	2.77030000000-010	0.00000000000+000
CO	3.22229653082-001	4.70309000000+001	1.28714700000-002	-2.50021700000-006	1.82818100000-010	0.00000000000+000
NH3	2.95066275661-003	1.03537647396+003	0.00000000000+000	3.00000000000+002	2.19780100000-010	0.00000000000+000
H	4.28327669576-005	4.74811200000+001	1.95446300000-002	-3.72129600000-006	1.31682300000-010	0.00000000000+000
NO	1.99868405342-004	7.46280968750+002	-9.39680000000+004	6.00000000000+002	1.89321300000-010	0.00000000000+000
N2	6.40424734419-001	4.53308200000+001	1.23816100000-002	-2.41640300000-006	1.79832200000-010	0.00000000000+000
OH	2.60862855388-005	1.12158830990+003	-2.72010000000+004	3.90000000000+002	1.68915500000-010	0.00000000000+000
CH4	1.30891068217-003	4.20181600000+001	1.91166200000-002	-3.16433000000-006	2.47071400000-010	0.00000000000+000
SOL C	3.67023935686-001	1.20696121615+003	-9.36800000000+003	4.76000000000+002	9.34999500000-011	0.00000000000+000
		2.63911000000+001	8.12137200000-003	-1.69074000000-006		
		7.94631617188+002	5.16190000000+004	7.60000000000+001		
		4.84149800000+001	1.26938600000-002	-2.49460000000-006		
		1.20924970573+003	2.14770000000+004	3.86000000000+002		
		4.39234000000+001	1.22250100000-002	-2.37900300000-006		
		1.13916134896+003	0.00000000000+000	3.80000000000+002		
		4.24179200000+001	1.15684700000-002	-2.22665900000-006		
		1.18351754427+003	3.56000000000+003	4.13000000000+002		
		3.87568600000+001	2.36401300000-002	-3.70795700000-006		
		1.04242791146+003	-1.60000000000+004	5.28000000000+002		
		-2.46151900000-001	7.17985500000-003	-1.29755000000-006		
		-2.58204389323+002	0.00000000000+000	0.00000000000+000		

A STRETCH BKW CALCULATION FOR THE EXPLOSIVE
 ONE MOLE NITROMETHANE AND 0.25 MOLE TETRANITROMETHANE

THE NUMBER OF ELEMENTS IS 4

THE NUMBER OF GAS SPECIES IS 11

THE NUMBER OF SOLID SPECIES IS 1

THE BKW EQUATION OF STATE PARAMETERS ARE
 ALPHA= 5.000000000-001 BETA= 1.600000000-001 THETA= 4.000000000+002 KAPPA= 1.09097784436+001

THE COMPOSITION OF THE EXPLOSIVE IS
 1.250000000+000 MOLES OF C
 3.000000000+000 MOLES OF H
 2.000000000+000 MOLES OF N
 4.000000000+000 MOLES OF O

THE DENSITY OF THE EXPLOSIVE IS 1.310000000+000 GRAMS/CC

THE MOLECULAR WEIGHT IS 1.100925000+002 GRAMS

THE HEAT OF FORMATION AT 0 DEG K IS -9.510000000+003 CALORIES PER FORMULA WEIGHT

THE SOLID (COVALENT) EQUATION OF STATE PARAMETERS VO, AS, BS, CS, DS, ES, A1, A2, C1, C2, C3, ATOMIC WT

SOL C 4.444444444-001 8.30935837268-001 -1.39381809219+000 6.72569716021-001 -1.13537262508-001 6.49155882007-003
 -2.26705345948-001 1.20516569525-001 8.31600000000-002 -1.75590000000-001 1.55310000000-001 1.20100000000+001

THE INPUT DETONATION PRODUCT ELEMENTAL COMPOSITION MATRIX

0.0+00	2.0+00	0.0+00	1.0+00	0.0+00	2.0+00	0.0+00	0.0+00	0.0+00	0.0+00	0.0+00	2.0+00
1.0+00	0.0+00	0.0+00	2.0+00	1.0+00	0.0+00	0.0+00	1.0+00	0.0+00	3.0+00	1.0+00	0.0+00
0.0+00	1.0+00	0.0+00	0.0+00	0.0+00	0.0+00	1.0+00	1.0+00	0.0+00	0.0+00	2.0+00	0.0+00
0.0+00	1.0+00	0.0+00	1.0+00	1.0+00	4.0+00	0.0+00	0.0+00	1.0+00	0.0+00	0.0+00	0.0+00

A STRETCH BRW CALCULATION FOR THE EXPLOSIVE
ONE MOLE NITROMETHANE AND 0.25 MOLE TETRANITROMETHANE

THE COMPUTED C-J PRESSURE IS 1.81292088426-001 MEGABARS

THE COMPUTED DETONATION VELOCITY IS 7.09370483326-001 CM/MICROSECOND

THE COMPUTED C-J TEMPERATURE IS 3.99871441864+003 DEGREES KELVIN

THE COMPUTED C-J VOLUME IS 5.53422430779-001 CC/GRAM OF EXPLOSIVE

THE COMPUTED GAMMA IS 2.63612308135+000

THE VOLUME OF THE GAS IS 1.60936532540+001 CC/MOLE OF GAS AND THERE ARE 3.78444353821+000 MOLES OF GAS

SOLID VOLUME IN CC/GM
SOL C 3.45255092030-001

THE C-J COMPOSITION OF THE DETONATION PRODUCTS AND THE INPUT COEFFICIENTS TO THE THERMODYNAMIC FITS FOR EACH SPECIE

SPECIE	NO OF MOLES	COEFFICIENTS A,B,C,D,E, THE INTEGRATION CONSTANT, HEAT OF FORMATION IN CALORIES/MOLE, COVOLUME
H2O	1.49880129554+000	4.25884200000+001 1.48080500000-002 -2.63918100000-006 1.92045300000-010 0.00000000000+000
H2	7.04210578264-004	1.34282835156+003 -5.71070000000+004 2.50000000000+002 -2.20122200000-006 1.67776100000-010 0.00000000000+000
O2	2.01470206853-002	2.97034700000+001 1.14382900000-002 1.7589615365+003 0.00000000000+000 1.80000000000+002 -2.50021700000-006 1.90157000000-010 0.00000000000+000
CO2	1.18220762704+000	4.70309000000+001 1.28714700000-002 1.03537647396+003 0.00000000000+000 3.50000000000+002 -3.72129600000-006 2.77030000000-010 0.00000000000+000
CO	6.77923335856-002	7.46280968750+002 -9.39680000000+004 4.53308200000+001 1.23816100000-002 -2.41640300000-006 1.82818100000-010 0.00000000000+000
NH3	7.44882168849-005	1.12158830990+003 -2.72010000000+004 4.20181600000+001 1.91166200000-002 -3.90000000000+002 -3.16433000000-006 2.19780100000-010 0.00000000000+000
H	4.50935594050-005	1.20696121615+003 -9.36800000000+003 2.63911000000+001 8.12137200000-003 -1.69074000000-006 1.31682300000-010 0.00000000000+000
NO	2.79768033586-002	7.94631617188+002 5.16190000000+004 4.84149800000+001 1.26938600000-002 -2.49460000000-006 1.89321300000-010 0.00000000000+000
N2	9.85974354212-001	1.20924970573+003 2.14770000000+004 4.39234000000+001 1.22250100000-002 -2.37900500000-006 1.79832200000-010 0.00000000000+000
OH	7.20272060103-004	1.13916134896+003 0.00000000000+000 4.24179200000+001 1.15684700000-002 -2.22659000000-006 1.68915500000-010 0.00000000000+000
CH4	3.93725917313-008	1.18351754427+003 3.56000000000+003 3.87568600000+001 2.36401300000-002 -2.41300000000+002 -3.70799700000-006 2.47071400000-010 0.00000000000+000
SOL C	0.00000000000+000	1.04242791146+003 -1.60000000000+004 -2.46151900000-001 7.17985500000-003 -1.29755000000-006 9.34999500000-011 0.00000000000+000
		-2.58204389323+002 0.00000000000+000 0.00000000000+000

A STRETCH BKW CALCULATION FOR THE EXPLOSIVE
ONE MOLE NITROMETHANE AND 0.5 MOLE TETRANITROMETHANE

THE NUMBER OF ELEMENTS IS 4

THE NUMBER OF GAS SPECIES IS 11

THE NUMBER OF SOLID SPECIES IS 1

THE KW EQUATION OF STATE PARAMETERS ARE

ALPHA= 5.0000000000-001 BETA= 1.8000000000-001 THETA= 4.0000000000+002 KAPPA= 1.09097784436+001

THE COMPOSITION OF THE EXPLOSIVE IS

1.5000000000+000 MOLES OF C
3.0000000000+000 MOLES OF H
3.0000000000+000 MOLES OF N
5.0000000000+000 MOLES OF O

THE DENSITY OF THE EXPLOSIVE IS 1.3970000000+000 GRAMS/CC

THE MOLECULAR WEIGHT IS 1.4306300000+002 GRAMS

THE HEAT OF FORMATION AT 0 DEG K IS -4.1000000000+003 CALORIES PER FORMULA WEIGHT

THE SOLID (COWAN) EQUATION OF STATE PARAMETERS VO, AS, BS, CS, DS, ES, A1, A2, C1, C2, C3, ATOMIC WT

SOL C 4.4444444444-001 8.30935837268-001 -1.39381809219+000 6.72569716021-001 -1.13537262508-001 6.49155882007-003
-2.26705345948-001 1.20516569525-001 8.31600000000-002 -1.75590000000-001 1.55310000000-001 1.20100000000+001

THE INPUT DETONATION PRODUCT ELEMENTAL COMPOSITION MATRIX

0.0+00	2.0+00	0.0+00	1.0+00	0.0+00	2.0+00	0.0+00	0.0+00	0.0+00	0.0+00	0.0+00	2.0+00
1.0+00	0.0+00	0.0+00	2.0+00	1.0+00	0.0+00	0.0+00	1.0+00	0.0+00	3.0+00	1.0+00	0.0+00
0.0+00	1.0+00	0.0+00	0.0+00	0.0+00	0.0+00	1.0+00	1.0+00	0.0+00	0.0+00	2.0+00	0.0+00
0.0+00	1.0+00	0.0+00	1.0+00	1.0+00	4.0+00	0.0+00	0.0+00	1.0+00	0.0+00	0.0+00	0.0+00

A STRETCH BKM CALCULATION FOR THE EXPLOSIVE
ONE MOLE NITROMETHANE AND 0.5 MOLE TETRANITROMETHANE

THE COMPUTED CJ PRESSURE IS 1.91542705585-001 MEGABARS

THE COMPUTED DETONATION VELOCITY IS 7.13359570268-001 CM/MICROSECOND

THE COMPUTED CJ TEMPERATURE IS 3.5648593275+003 DEGREES KELVIN

THE COMPUTED CJ VOLUME IS 5.22954554648-001 CC/GRAM OF EXPLOSIVE

THE COMPUTED GAMMA IS 2.71148553681+000

THE VOLUME OF THE GAS IS 1.57363714190+001 CC/MOLE OF GAS AND THERE ARE 4.75430106849+000 MOLES OF GAS

SOLID VOLUME IN CC/GM
SOL C 3.39351681735-001

THE C-J COMPOSITION OF THE DETONATION PRODUCTS AND THE INPUT COEFFICIENTS TO THE THERMODYNAMIC FITS FOR EACH SPECIE

SPECIE	NO OF MOLES	COEFFICIENTS A,B,C,D,E, THE INTEGRATION CONSTANT, HEAT OF FORMATION IN CALORIES/MOLE, COVOLUME				
H2O	1.49975392352+000	4.2588420000+001	1.4808050000-002	-2.6391810000-006	1.9204530000-010	0.0000000000+000
H2	4.80233890848-005	1.34282835156+003	-5.7107000000+004	2.5000000000+002	1.6777610000-010	0.0000000000+000
O2	2.16282128816-001	2.9703470000+001	1.1438290000-002	-2.2012220000-006	1.9015700000-010	0.0000000000+000
CO2	1.49164197626+000	1.17589618365+003	0.0000000000+000	1.8000000000+002	2.7703000000-010	0.0000000000+000
CO	8.35802372658-003	4.7030900000+001	1.2871470000-002	-2.5002170000-006	1.8281810000-010	0.0000000000+000
NH3	3.03080388806-006	1.03537647396+003	0.0000000000+000	3.5000000000+002	2.1978010000-010	0.0000000000+000
H	4.09841075422-006	4.7481120000+001	1.9544630000-002	-3.7212960000-006	1.3168230000-010	0.0000000000+000
NO	7.56569272947-002	7.46280968750+002	-9.3968000000+004	6.0000000000+002	1.8932130000-010	0.0000000000+000
N2	1.46217002095+000	4.5330820000+001	1.2381610000-002	-2.4164030000-006	1.7983220000-010	0.0000000000+000
OH	3.82915310665-004	1.12158830990+003	-2.7201000000+004	3.9000000000+002	1.6891550000-010	0.0000000000+000
CH4	1.40447469118-011	4.2018160000+001	1.9116620000-002	-3.1643300000-006	2.4707140000-010	0.0000000000+000
SOL C	0.0000000000+000	1.20696121615+003	-9.3680000000+003	4.7600000000+002	9.3499950000-011	0.0000000000+000
		2.6391100000+001	8.1213720000-003	-1.6907400000-006		
		7.94631617188+002	5.1619000000+004	7.6000000000+001		
		4.8414980000+001	1.2693860000-002	-2.4946000000-006		
		1.20924970573+003	2.1477000000+004	3.8600000000+002		
		4.3923400000+001	1.2225010000-002	-2.3790050000-006		
		1.13916134896+003	0.0000000000+000	3.8000000000+002		
		1.2417920000+001	1.1568470000-002	-2.2266590000-006		
		1.18351754427+003	3.5600000000+003	4.1300000000+002		
		3.8756860000+001	2.3640130000-002	-3.7079570000-006		
		1.04242791146+003	-1.6000000000+004	5.2800000000+002		
		-2.4615190000-001	7.1798550000-003	-1.2975500000-006		
		-2.58204389323+002	0.0000000000+000	0.0000000000+000		

A STRETCH BKW CALCULATION FOR THE EXPLOSIVE
 ONE MOLE ACRYLONITRILE AND 1.25 MOLES TETRANITROMETHANE

THE NUMBER OF ELEMENTS IS 4

THE NUMBER OF GAS SPECIES IS 11

THE NUMBER OF SOLID SPECIES IS 1

THE KW EQUATION OF STATE PARAMETERS ARE

ALPHA= 5.000000000-001 BETA= 1.6000000000-001 THETA= 4.0000000000+002 KAPPA= 1.09097784436+001

THE COMPOSITION OF THE EXPLOSIVE IS

4.2500000000+000 MOLES OF C
 3.0000000000+000 MOLES OF H
 6.0000000000+000 MOLES OF N
 1.0000000000+001 MOLES OF O

THE DENSITY OF THE EXPLOSIVE IS 1.3800000000+000 GRAMS/CC

THE MOLECULAR WEIGHT IS 2.9811450000+002 GRAMS

THE HEAT OF FORMATION AT 0 DEG K IS 7.0500000000+004 CALORIES PER FORMULA WEIGHT

THE SOLID (COWAN) EQUATION OF STATE PARAMETERS VO, AS, BS, CS, DS, ES, A1, A2, C1, C2, C3, ATOMIC WT

SOL C 4.4444444444-001 8.30935837268-001 -1.39381809219+000 6.72569716021-001 -1.13537262508-001 6.49155882007-003
 -2.26705345948-001 1.20516569525-001 8.31600000000-002 -1.75590000000-001 1.55310000000-001 1.20100000000+001

THE INPUT DETONATION PRODUCT ELEMENTAL COMPOSITION MATRIX

0.0+00	2.0+00	0.0+00	1.0+00	0.0+00	2.0+00	0.0+00	0.0+00	0.0+00	0.0+00	0.0+00	2.0+00
1.0+00	0.0+00	0.0+00	2.0+00	1.0+00	0.0+00	0.0+00	1.0+00	0.0+00	3.0+00	1.0+00	0.0+00
0.0+00	1.0+00	0.0+00	0.0+00	0.0+00	0.0+00	1.0+00	1.0+00	0.0+00	0.0+00	2.0+00	0.0+00
0.0+00	1.0+00	0.0+00	1.0+00	1.0+00	4.0+00	0.0+00	0.0+00	1.0+00	0.0+00	0.0+00	0.0+00

A STRETCH BAW CALCULATION FOR THE EXPLOSIVE
ONE MOLE ACRYLONITRILE AND 1.25 MOLES TETRANITROMETHANE

THE COMPUTED C-J PRESSURE IS 1.92172336837-001 MEGABARS

THE COMPUTED DETONATION VELOCITY IS 7.07438956090-001 CM/MICROSECOND

THE COMPUTED C-J TEMPERATURE IS 4.76059157591+003 DEGREES KELVIN

THE COMPUTED C-J VOLUME IS 5.23008913291-001 CC/GRAM OF EXPLOSIVE

THE COMPUTED GAMMA IS 2.59390139636+000

THE VOLUME OF THE GAS IS 1.73612990240+001 CC/MOLE OF GAS AND THERE ARE 8.98069553816+000 MOLES OF GAS

SOLID VOLUME IN CC/GM
SOL C 3.44958334426-001

THE C-J COMPOSITION OF THE DETONATION PRODUCTS AND THE INPUT COEFFICIENTS TO THE THERMODYNAMIC FITS FOR EACH SPECIE

SPECIE	NO OF MOLES	COEFFICIENTS A,B,C,D,E, THE INTEGRATION CONSTANT, HEAT OF FORMATION IN CALORIES/MOLE, COVOLUME					
H2O	1.49470741126+000	4.2588420000+001	1.4808050000-002	-2.6391810000-006	1.9204530000-010	0.0000000000+000	
H2	2.14141634489-003	1.34282835156+003	-5.7107000000+004	2.5000000000+002	-2.2012220000-006	1.6777610000-010	0.0000000000+000
O2	1.28941889918-001	1.17589615365+003	0.0000000000+000	1.8000000000+002	-2.5002170000-006	1.9015700000-010	0.0000000000+000
CO2	3.79383110618+000	1.03537647396+003	0.0000000000+000	3.5000000000+002	-3.7212960000-006	2.7703000000-010	0.0000000000+000
CO	4.56168632331-001	4.7481120000+001	1.9544630000-002	-2.4164030000-006	1.8281810000-010	0.0000000000+000	
NH3	2.20538536644-004	7.46280968750+002	-9.3968000000+004	6.0000000000+002	-3.9000000000+002	2.1978010000-010	0.0000000000+000
H	3.71455305845-004	1.12158830990+003	-2.7201000000+004	3.9000000000+002	-3.1643300000-006	2.1978010000-010	0.0000000000+000
NO	1.98309736319-001	1.20696121615+003	-9.3680000000+003	4.7600000000+002	-1.6907400000-006	1.3168230000-010	0.0000000000+000
N2	2.90073406257+000	7.94631617188+002	5.1619000000+004	7.6000000000+001	-2.4946000000-006	1.8932130000-010	0.0000000000+000
OH	5.26822789848-003	1.20924970573+003	2.1477000000+004	3.8600000000+002	-2.3790030000-006	1.7983220000-010	0.0000000000+000
CH4	2.61492808455-007	4.3923400000+001	1.2225010000-002	-2.2266590000-006	1.6891550000-010	0.0000000000+000	
SOL C	0.0000000000+000	1.13916134896+003	0.0000000000+000	3.8000000000+002	-4.1300000000+002	2.4707140000-010	0.0000000000+000
		1.18351754427+003	1.1568470000-002	-2.2266590000-006	1.6891550000-010	0.0000000000+000	
		3.8756860000+001	2.3640130000-002	-3.7079570000-006	2.4707140000-010	0.0000000000+000	
		1.04242791146+003	-1.6000000000+004	5.2800000000+002	-1.2975500000-006	9.3499950000-011	0.0000000000+000
		-2.4615190000-001	7.1798550000-003	0.0000000000+000	0.0000000000+000		
		-2.58204389323+002	0.0000000000+000	0.0000000000+000			

A STRETCH BKW CALCULATION FOR THE EXPLOSIVE
ALEX 2G (20 PERCENT AL IN COMPOSITION B)

THE NUMBER OF ELEMENTS IS 5

THE NUMBER OF GAS SPECIES IS 13

THE NUMBER OF SOLID SPECIES IS 3

THE KW EQUATION OF STATE PARAMETERS ARE
ALPHA= 5.0000000000-001 BETA= 1.6000000000-001 THETA= 4.0000000000+002 KAPPA= 1.09097784436+001

THE COMPOSITION OF THE EXPLOSIVE IS
1.8730000000+000 MOLES OF C
2.4690000000+000 MOLES OF H
1.6130000000+000 MOLES OF N
2.0390000000+000 MOLES OF O
7.3380000000-001 MOLES OF AL

THE DENSITY OF THE EXPLOSIVE IS 1.8010000000+000 GRAMS/CC

THE MOLECULAR WEIGHT IS 1.0000000000+002 GRAMS

THE HEAT OF FORMATION AT 0 DEG K IS 5.7300000000+003 CALORIES PER FORMULA WEIGHT

THE SOLID (COMAN) EQUATION OF STATE PARAMETERS VO, AS, BS, CS, DS, ES, A1, A2, C1, C2, C3, ATOMIC WT

	VO	AS	BS	CS	DS	ES	A1	A2	C1	C2	C3	ATOMIC WT
SOLC	4.4444444444-001	8.30935837268-001	-1.39381809219+000	6.72569716021-001	-1.13537262508-001	6.49155882007-003						
AL2O3	-2.26705345948-001	1.20516569525-001	8.31600000000-002	-1.75590000000-001	1.55310000000-001	1.20100000000+001						
AL	-2.26705345948-001	1.20516569525-001	8.31600000000-002	-1.75590000000-001	1.55310000000-001	1.20100000000+001						
	2.50000000000-001	0.00000000000+000	0.00000000000+000	0.00000000000+000	0.00000000000+000	0.00000000000+000						
	2.50000000000-001	0.00000000000+000	0.00000000000+000	0.00000000000+000	0.00000000000+000	0.00000000000+000						
	0.00000000000+000	0.00000000000+000	0.00000000000+000	0.00000000000+000	0.00000000000+000	0.00000000000+000						1.01960000000+002

THE INPUT DETONATION PRODUCT ELEMENTAL COMPOSITION MATRIX

0.0+00	0.0+00	0.0+00	3.0+00	2.0+00	0.0+00	0.0+00	0.0+00	0.0+00	1.0+00	0.0+00	2.0+00
0.0+00	1.0+00	0.0+00	0.0+00	2.0+00	0.0+00	0.0+00	0.0+00	0.0+00	0.0+00	0.0+00	2.0+00
0.0+00	1.0+00	0.0+00	0.0+00	2.0+00	0.0+00	1.0+00	0.0+00	0.0+00	1.0+00	0.0+00	0.0+00
3.0+00	1.0+00	0.0+00	0.0+00	2.0+00	1.0+00	0.0+00	0.0+00	0.0+00	0.0+00	0.0+00	1.0+00
1.0+00	0.0+00	0.0+00	0.0+00	2.0+00	0.0+00	0.0+00	0.0+00	1.0+00	0.0+00	1.0+00	0.0+00
1.0+00	4.0+00	0.0+00	0.0+00	0.0+00	1.0+00	0.0+00	0.0+00	0.0+00	0.0+00	0.0+00	0.0+00
0.0+00	3.0+00	2.0+00	0.0+00	0.0+00	0.0+00	0.0+00	1.0+00	0.0+00	0.0+00	0.0+00	0.0+00

A STRETCH BKW CALCULATION FOR THE EXPLOSIVE
ALEX 20 (20 PERCENT AL IN COMPOSITION B)

THE COMPUTED CJ PRESSURE IS 2.42982976055-001 MEGABARS

THE COMPUTED DETONATION VELOCITY IS 7.45088165905-001 CM/MICROSECOND

THE COMPUTED CJ TEMPERATURE IS 5.14249537949+003 DEGREES KELVIN

THE COMPUTED CJ VOLUME IS 4.20310006560-001 CC/GRAM OF EXPLOSIVE

THE COMPUTED GAMMA IS 3.11484231347+000

THE VOLUME OF THE GAS IS 1.32857286808+001 CC/MOLE OF GAS AND THERE ARE 1.96709056225+000 MOLES OF GAS

SOLID	VOLUME IN CC/GM
SOLC	3.29337610931-001
AL203	2.50000000000-001
AL	3.59066427000-001

THE C-J COMPOSITION OF THE DETONATION PRODUCTS AND THE INPUT COEFFICIENTS TO THE THERMODYNAMIC FITS FOR EACH SPECIE

SPECIE	NO OF MOLES	COEFFICIENTS A,B,C,D,E, THE INTEGRATION CONSTANT, HEAT OF FORMATION IN CALORIES/MOLE, COVOLUME				
AL203	1.34563972592-007	6.51223800000+001	3.92489300000-002	-7.92542100000-006	6.07439600000-010	0.00000000000+000
AL	9.68236928153-008	7.41808468750+002	-2.40000000000+005	1.35000000000+003	1.32957700000-010	0.00000000000+000
H2O	8.13827740782-001	3.83231600000+001	8.16978100000-003	-1.70494700000-006	1.92045300000-010	0.00000000000+000
H2	8.17924044090-002	9.62900841146+002	7.69000000000+004	3.50000000000+002	1.92045300000-010	0.00000000000+000
O2	9.12881262779-006	4.25884200000+001	1.48080500000-002	-2.63918100000-006	1.90157000000-010	0.00000000000+000
CO2	7.86072684835-003	1.34282835156+003	-5.71070000000+004	2.50000000000+002	2.77030000000-010	0.00000000000+000
CO	1.07623155171-001	2.97034700000+001	1.14382900000-002	-2.20122200000-006	1.82818100000-010	0.00000000000+000
NH3	8.79953566527-002	1.17589615365+003	0.00000000000+000	1.80000000000+002	2.19780100000-010	0.00000000000+000
H	1.91843388432-003	4.70309000000+001	1.28714700000-002	-2.50021700000-006	1.31682300000-010	0.00000000000+000
NO	9.39569137319-004	1.03537647396+003	0.00000000000+000	3.50000000000+002	1.89321300000-010	0.00000000000+000
N2	7.62032537105-001	4.74811200000+001	1.95446300000-002	-3.72129600000-006	1.79832200000-010	0.00000000000+000
OH	1.69968823334-004	7.46280968750+002	-9.39680000000+004	6.00000000000+002	1.68915500000-010	0.00000000000+000
CH4	1.02921309238-001	4.53308200000+001	1.23816100000-002	-2.41640300000-006	2.47071400000-010	0.00000000000+000
SOL C	1.65459480674+000	1.12158830990+003	-2.72010000000+004	3.90000000000+002	1.53396100000-010	0.00000000000+000
AL203	3.66899817024-001	4.20181600000+001	1.91166200000-002	-3.16433000000-006	0.00000000000+000	0.00000000000+000
AL	0.00000000000+000	1.20696121615+003	-9.36800000000+003	4.76000000000+002	0.00000000000+000	0.00000000000+000
		7.94631617188+002	5.16190000000+004	7.60000000000+001		
		4.84149800000+001	1.26938600000-002	-2.49460000000-006		
		1.20924970573+003	2.14770000000+000	3.86000000000+002		
		4.39234000000+001	1.22250100000-002	-2.37900500000-006		
		1.13916134896+003	0.00000000000+000	3.80000000000+002		
		4.24179200000+001	1.15684700000-002	-2.22663900000-006		
		1.18551754427+003	3.56000000000+003	4.13000000000+002		
		3.87568600000+001	2.36401300000-002	-3.70795700000-006		
		1.04242791146+003	-1.60000000000+004	5.28000000000+002		
		-2.46151900000-001	7.17985500000-003	-1.29755000000-006		
		-2.58204389323+002	0.00000000000+000	0.00000000000+000		
		5.15819100000+000	4.45208600000-002	-8.91889700000-006		
		-1.21976061198+003	-3.96000000000+005	0.00000000000+000		
		5.26704100000+000	9.56928600000-003	-1.97729200000-006		
		2.40307549479+002	0.00000000000+000	0.00000000000+000		

THE BRW HUGONIOT FOR THE DETONATION PRODUCTS OF
ALEX 20 (20 PERCENT AL IN COMPOSITION B)

PRESSURE = 5.000000000-001 VOLUME = 3.39006218598-001 TEMPERATURE = 5.94718486176+003
 AL2O3 1.42081909499-007
 AL 1.32566667952-007
 H2O 9.09729024737-001
 H2 2.69701178396-002
 O2 1.31098984253-005
 CO2 1.83870647667-003
 CO 2.35887096818-002
 NH3 9.60531114792-002
 H 9.40330818286-004
 N2 1.24323473441-003
 N2 7.37851026893-001
 OH 3.55969468933-005
 CH4 7.66166131611-002
 SOL C 1.77095597068+000
 AL2O3 3.66899791635-001
 AL 0.000000000+000

PRESSURE = 4.500000000-001 VOLUME = 3.49440208139-001 TEMPERATURE = 5.80737240799+003
 AL2O3 1.13768319201-007
 AL 1.10274629948-007
 H2O 9.01868758211-001
 H2 3.17752370762-002
 O2 1.28376565883-005
 CO2 2.38887619675-003
 CO 3.03682959365-002
 NH3 9.42639912258-002
 H 1.04359562341-003
 N2 1.21341482392-003
 N2 7.58761296975-001
 OH 4.62687342791-005
 CH4 7.94575428478-002
 SOL C 1.76078528502+000
 AL2O3 3.66899831094-001
 AL 0.000000000+000

PRESSURE = 4.000000000-001 VOLUME = 3.61513893221-001 TEMPERATURE = 5.65982646534+003
 AL2O3 9.74406716916-008
 AL 9.49122515341-008
 H2O 8.91146910343-001
 H2 3.81445406954-002
 O2 1.23421955580-005
 CO2 3.12766790179-003
 CO 3.96416999692-002
 NH3 9.25794135275-002
 H 1.17079874056-003
 N2 1.17046911350-003
 N2 7.59625058679-001
 OH 6.10428482920-005
 CH4 8.29617539381-002
 SOL C 1.74736887829+000
 AL2O3 3.66899855103-001
 AL 0.000000000+000

PRESSURE = 3.500000000-001 VOLUME = 3.75876720284-001 TEMPERATURE = 5.50423574204+003
 AL2O3 9.16882831828-008
 AL 8.60687906640-008
 H2O 8.76028830737-001
 H2 4.68818112292-002
 O2 1.16142286471-005
 CO2 4.13957804184-003
 CO 5.27726820909-002
 NH3 9.10005938809-002
 H 1.33363360154-003
 N2 1.11408641660-003
 N2 7.60442659801-001
 OH 8.21453175705-005
 CH4 8.71902888014-002
 SOL C 1.72889745107+000
 AL2O3 3.66899865277-001
 AL 0.000000000+000

PRESSURE = 3.000000000-001 VOLUME = 3.93584159568-001 TEMPERATURE = 5.34031905979+003
 AL2O3 9.83877592643-008
 AL 8.45327775578-008
 H2O 8.53884664137-001
 H2 5.93957206212-002
 O2 1.06276140323-005
 CO2 5.54897174499-003
 CO 7.21400913187-002
 NH3 8.95369329790-002
 H 1.55205994770-003
 N2 1.04282320819-003
 N2 7.61210121906-001
 OH 1.13349417184-004
 CH4 9.30407555454-002
 SOL C 1.70227018139+000
 AL2O3 3.66899859346-001
 AL 0.000000000+000

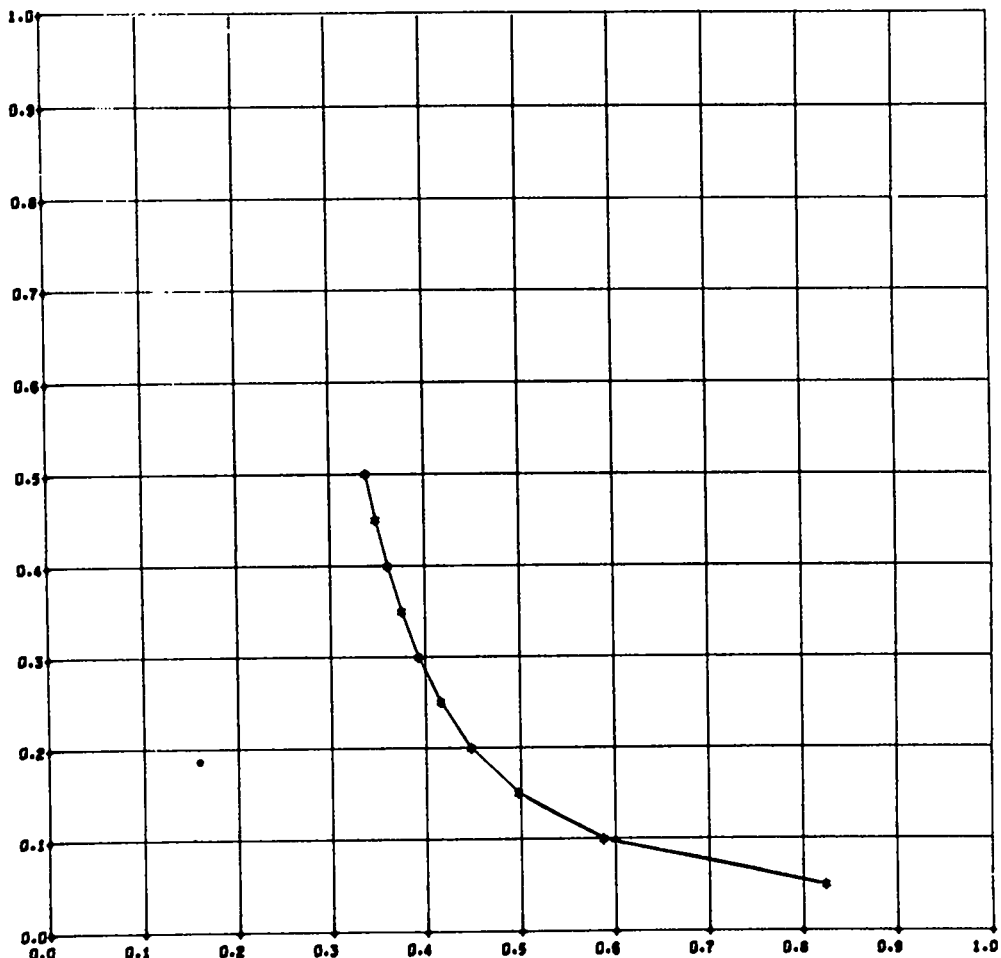
PRESSURE = 2.500000000-001 VOLUME = 4.16503097549-001 TEMPERATURE = 5.16752172778+003
AL2O3 1.27300109304-007
AL 9.40824161480-008
H2O 8.19964107621-001
H2 7.83580126713-002
O2 9.33802816438-006
CO2 7.52673822422-003
CO 1.02148779550-001
NH3 8.81811719126-002
H 1.86370115879-003
NO 9.53788773323-004
N2 7.61932519657-001
OH 1.61312674689-004
CH4 1.01446807461-001
SOL C 1.66187767476+000
AL2O3 3.66899825659-001
AL 0.000000000+000

PRESSURE = 2.000000000-001 VOLUME = 4.48304459432-001 TEMPERATURE = 4.98434341522+003
AL2O3 2.15876855849-007
AL 1.27933284491-007
H2O 7.65357691606-001
H2 1.09321861021-001
O2 7.66894051330-006
CO2 1.02378781653-002
CO 1.51375022126-001
NH3 8.67799484174-002
H 2.34374856537-003
NO 8.40690363504-004
N2 7.62689680610-001
OH 2.37893592441-004
CH4 1.14179401834-001
SOL C 1.59720969787+000
AL2O3 3.66899720157-001
AL 0.000000000+000

PRESSURE = 1.500000000-001 VOLUME = 4.97349308354-001 TEMPERATURE = 4.78726242842+003
AL2O3 5.47914755342-007
AL 2.44348086793-007
H2O 6.72700798027-001
H2 1.65301496489-001
O2 5.53990221840-006
CO2 1.35394980655-002
CO 2.37456280187-001
NH3 8.45264639501-002
H 3.18142674629-003
NO 6.92108939140-004
N2 7.63890713555-001
OH 3.61103432887-004
CH4 1.33968372234-001
SOL C 1.48803584951+000
AL2O3 3.66899329911-001
AL 0.000000000+000

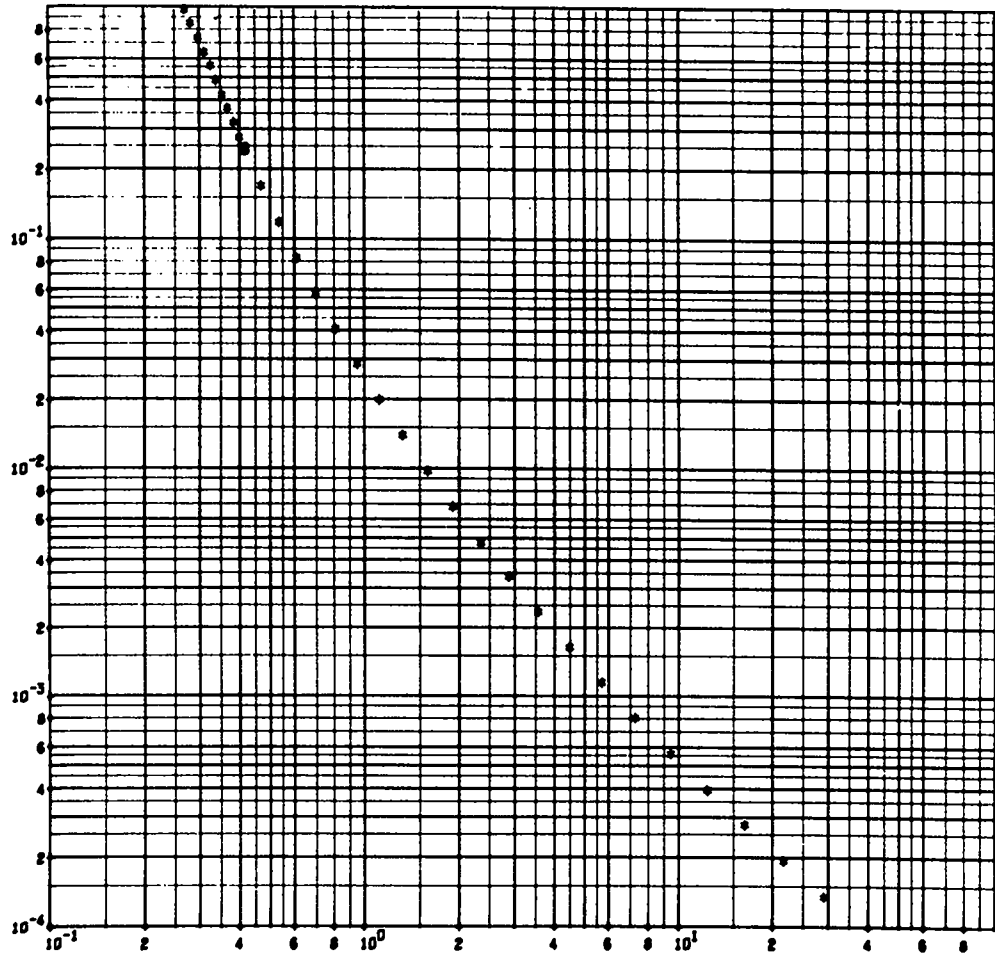
PRESSURE = 1.000000000-001 VOLUME = 5.87547538026-001 TEMPERATURE = 4.57190978924+003
AL2O3 2.71103639798-006
AL 9.10983281513-007
H2O 5.07364956606-001
H2 2.82224432138-001
O2 3.03221173889-006
CO2 1.37602080273-002
CO 3.98367128226-001
NH3 7.81181504834-002
H 4.94303917986-003
NO 4.93883778947-004
N2 7.67193982869-001
OH 5.48917385150-004
CH4 1.62493703624-001
SOL C 1.29637896012+000
AL2O3 3.66896833472-001
AL 0.000000000+000

PRESSURE = 5.000000000-002 VOLUME = 8.23906752279-001 TEMPERATURE = 4.37477132049+003
AL2O3 6.77638096030-005
AL 2.50603104378-005
H2O 2.16640243231-001
H2 5.78864426589-001
O2 8.02471295411-007
CO2 1.04358094679-002
CO 6.99834805956-001
NH3 5.51867368793-002
H 1.10149888865-002
NO 2.51494410723-004
N2 7.78780884355-001
OH 7.37822990157-004
CH4 1.75169409462-001
SOL C 9.87559975115-001
AL2O3 3.66819706035-001
AL 0.000000000+000



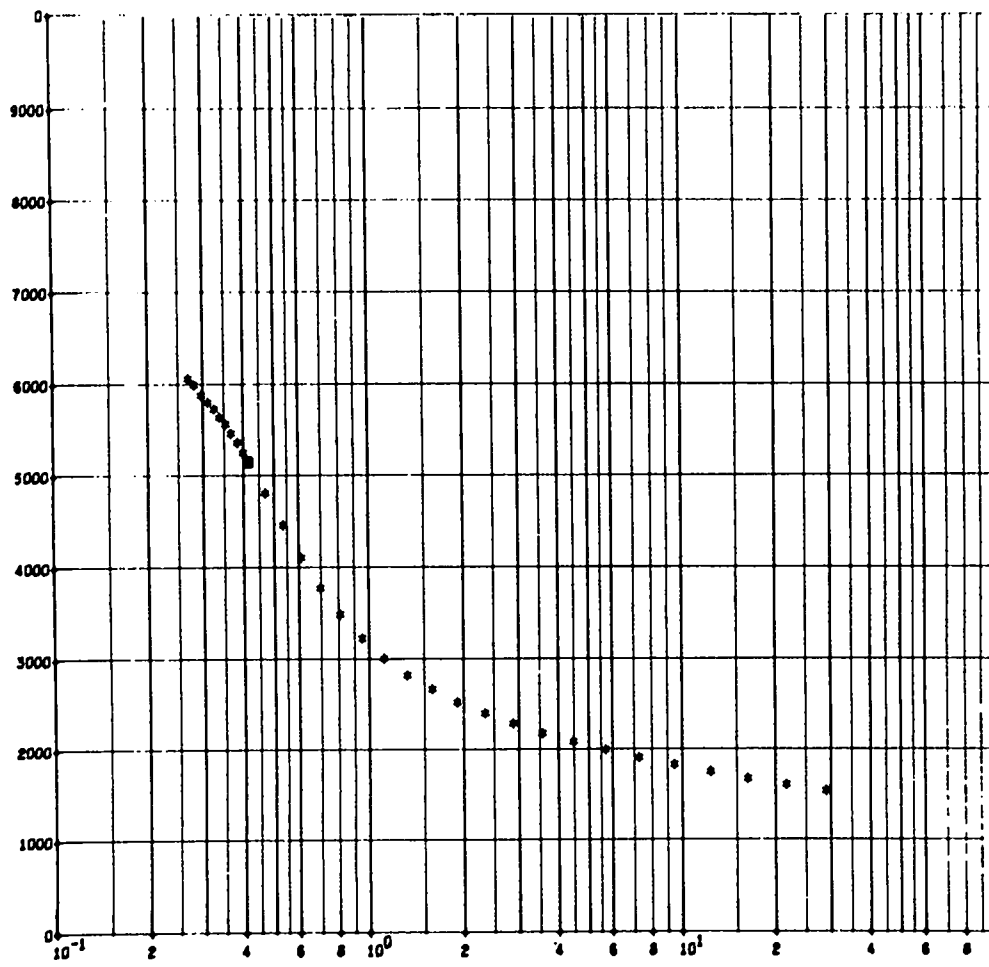
ALEX 20 (20 PERCENT AL IN COMPOSITION B)

PRESSURE-VOLUME DIAGRAM

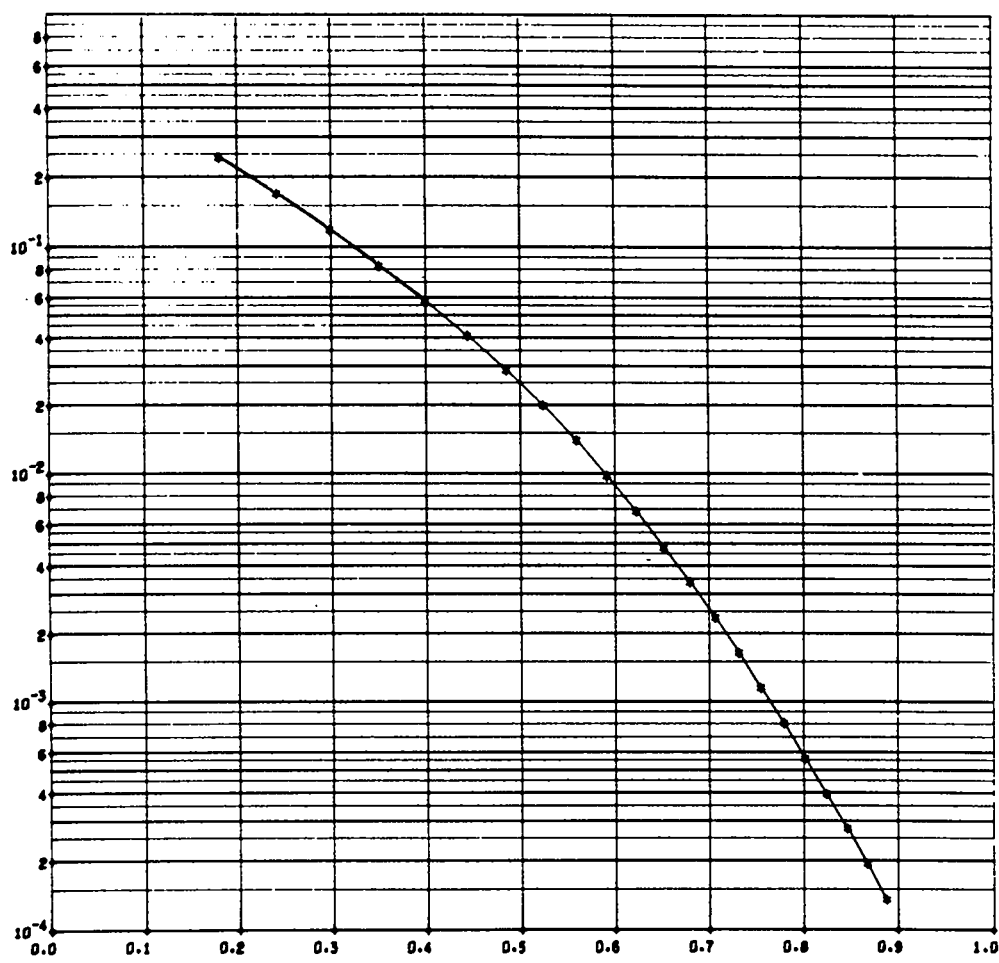


ALEX 20 (20 PERCENT AL IN COMPOSITION B)

PRESSURE-VOLUME ISENTROPE THRU THE C-J VALUE

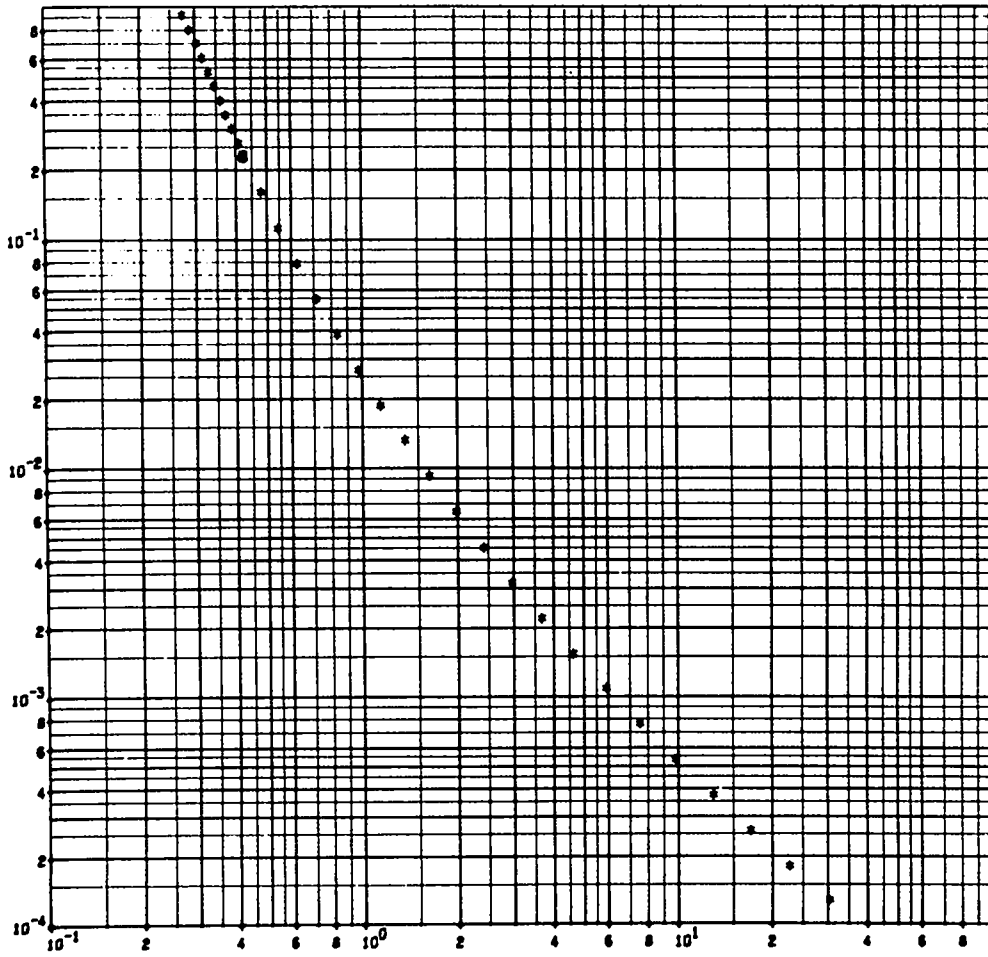


ALEX 20 (20 PERCENT AL IN COMPOSITION B)
 TEMPERATURE-VOLUME ISENTROPE THRU THE C-J VALUE



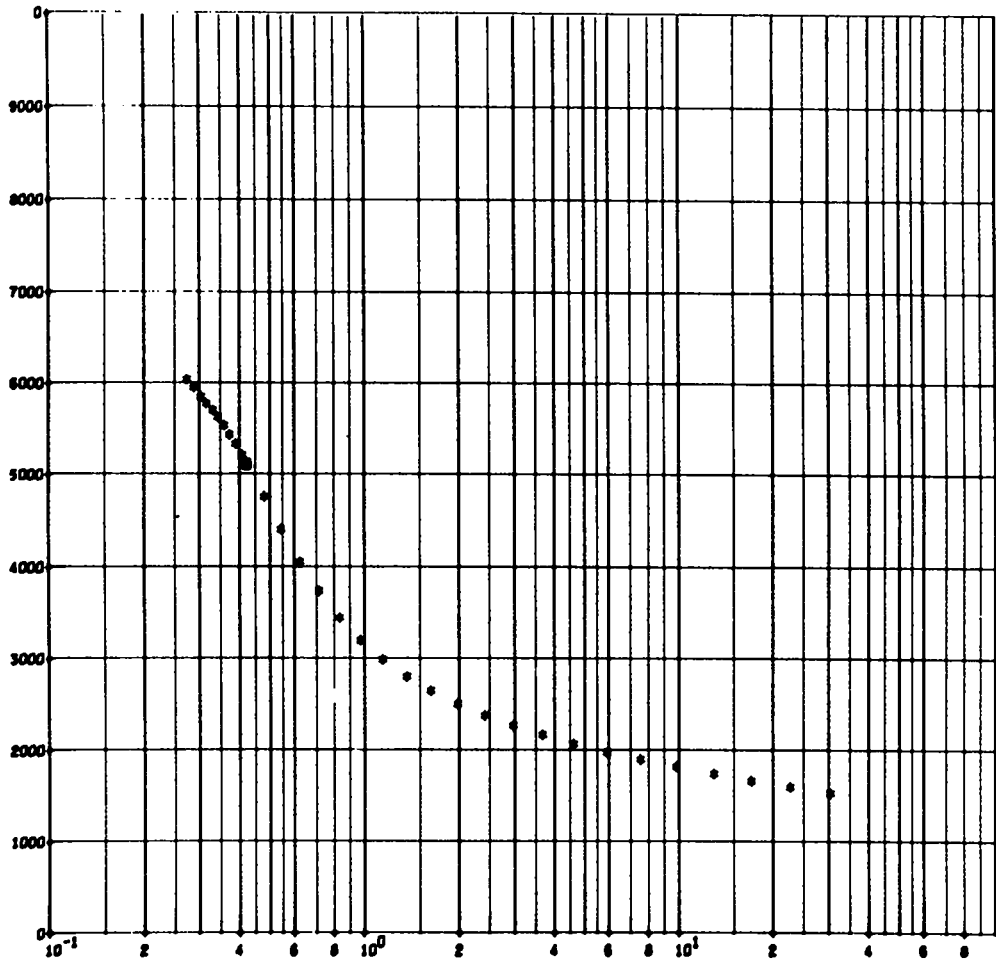
ALER 20 (20 PERCENT AL IN COMPOSITION B)

PRESSURE-PARTICLE VELOCITY



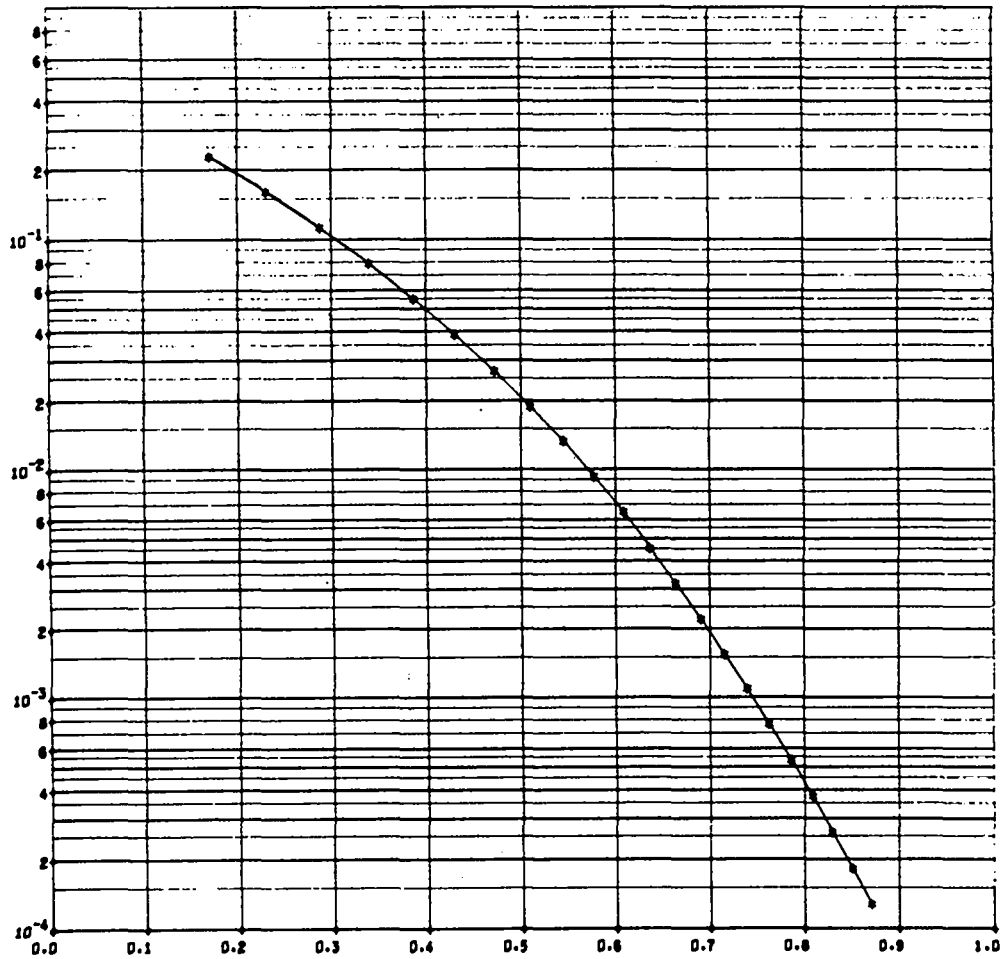
ALEX 20 (20 PERCENT AL IN COMPOSITION B)

PRESSURE-VOLUME ISENTROPE THRU THE C-J VALUE



ALEX 20 (20 PERCENT AL IN COMPOSITION B)

TEMPERATURE-VOLUME ISENTROPE THRU THE C-J VALUE



ALEX 20 (20 PERCENT AL IN COMPOSITION B)

PRESSURE-PARTICLE VELOCITY

A STRETCH BKW CALCULATION FOR THE EXPLOSIVE
TETRANITROMETHANE

THE NUMBER OF ELEMENTS IS 3

THE NUMBER OF GAS SPECIES IS 5

THE NUMBER OF SOLID SPECIES IS 1

THE KW EQUATION OF STATE PARAMETERS ARE

ALPHA= 5.0000000000-001 BETA= 1.6000000000-001 THETA= 4.0000000000+002 KAPPA= 1.09097784436+001

THE COMPOSITION OF THE EXPLOSIVE IS

1.0000000000+000 MOLES OF C
4.0000000000+000 MOLES OF N
8.0000000000+000 MOLES OF O

THE DENSITY OF THE EXPLOSIVE IS 1.6400000000+000 GRAMS/CC

THE MOLECULAR WEIGHT IS 1.9604200000+002 GRAMS

THE HEAT OF FORMATION AT 0 DEG K IS 2.1600000000+004 CALORIES PER FORMULA WEIGHT

THE SOLID (COMAN) EQUATION OF STATE PARAMETERS VO, AS, BS, CS, DS, ES, A1, A2, C1, C2, C3, ATOMIC WT

SOL C 4.4444444444-001 8.30935837268-001 -1.39381809219+000 6.72569716021-001 -1.13537262508-001 6.49155882007-003
-2.26705345948-001 1.20516569525-001 8.31600000000-002 -1.75590000000-001 1.55310000000-001 1.20100000000+001

THE INPUT DETONATION PRODUCT ELEMENTAL COMPOSITION MATRIX

1.0+00	0.0+00	2.0+00	1.0+00	0.0+00	1.0+00	0.0+00	1.0+00	1.0+00	0.0+00	2.0+00	0.0+00
0.0+00	0.0+00	2.0+00	1.0+00	0.0+00	0.0+00	0.0+00	0.0+00	0.0+00	0.0+00	0.0+00	0.0+00

A STRETCH BKW CALCULATION FOR THE EXPLOSIVE
TETRANITROMETHANE

THE COMPUTED C_J PRESSURE IS 1.62531586180-001 MEGABARS

THE COMPUTED DETONATION VELOCITY IS 6.42137675249-001 CM/MICROSECOND

THE COMPUTED C_J TEMPERATURE IS 1.34094076419+003 DEGREES KELVIN

THE COMPUTED C_J VOLUME IS 4.63204315856-001 CC/GRAM OF EXPLOSIVE

THE COMPUTED GAMMA IS 3.16066143211+000

THE VOLUME OF THE GAS IS 1.51345834148+001 CC/MOLE OF GAS AND THERE ARE 6.0000000000+000 MOLES OF GAS

SOLID VOLUME IN CC/GM
SOL C 3.39764961420-001

THE C-J COMPOSITION OF THE DETONATION PRODUCTS AND THE INPUT COEFFICIENTS TO THE THERMODYNAMIC FITS FOR EACH SPECIE

SPECIE	NO OF MOLES	COEFFICIENTS A,B,C,D,E	THE INTEGRATION CONSTANT	HEAT OF FORMATION IN CALORIES/MOLE	COVOLUME
CO2	9.99999999937-001	4.74811200000+001 7.46280968750+002	1.95446300000-002 -9.39680000000+004	-3.72129600000-006 6.00000000000+002	2.77030000000-010 0.00000000000+000
CO	6.27124116588-011	4.53308200000+001 1.12158830990+003	1.23816100000-002 -2.72010000000+004	-2.41640300000-006 3.90000000000-002	1.82818100000-010 0.00000000000+000
NO	1.11497039564-003	4.84149800000+001 1.20924970573+003	1.26938600000-002 2.14770000000+004	-2.49460000000-006 3.86000000000+002	1.89321300000-010 0.00000000000+000
N2	1.99944251480+000	4.39234000000+001 1.13916134896+003	1.22250100000-002 0.00000000000+000	-2.37900500000-006 3.80000000000+002	1.79832200000-010 0.00000000000+000
O2	2.99944251483+000	4.70309000000+001 1.03537647396+003	1.28714700000-002 0.00000000000+000	-2.50021700000-006 3.50000000000+002	1.90157000000-010 0.00000000000+000
SOLC	0.00000000000+000	-2.46151900000-001 -2.58204389323+002	7.17985500000-003 0.00000000000+000	-1.29735000000-006 0.00000000000+000	9.34999500000-011 0.00000000000+000

A STRETCH BKW CALCULATION FOR THE EXPLOSIVE
MNB HEXANITROSOBENZENE

THE NUMBER OF ELEMENTS IS 3

THE NUMBER OF GAS SPECIES IS 5

THE NUMBER OF SOLID SPECIES IS 1

THE KW EQUATION OF STATE PARAMETERS ARE
ALPHA= 5.000000000+001 BETA= 1.600000000+001 THETA= 4.000000000+002 KAPPA= 1.09097784436+001

THE COMPOSITION OF THE EXPLOSIVE IS
6.000000000+000 MOLES OF C
6.000000000+000 MOLES OF N
6.000000000+000 MOLES OF O

THE DENSITY OF THE EXPLOSIVE IS 1.700000000+000 GRAMS/CC

THE MOLECULAR WEIGHT IS 2.521000000+002 GRAMS

THE HEAT OF FORMATION AT 0 DEG K IS 1.578000000+005 CALORIES PER FORMULA WEIGHT

THE SOLID (COMAN)EQUATION OF STATE PARAMETERS VO, AS, BS, CS, DS, ES, A1, A2, C1, C2, C3, ATOMIC WT

SOL C 4.444444444+001 8.30935837268+001 -1.39381809219+000 6.72569716021+001 -1.13537262508+001 6.49155882007+003
-2.26705345948+001 1.20516569525+001 8.31600000000+002 -1.75590000000+001 1.55310000000+001 1.20100000000+001

THE INPUT DETONATION PRODUCT ELEMENTAL COMPOSITION MATRIX

1.0+00	0.0+00	2.0+00	1.0+00	0.0+00	1.0+00	0.0+00	1.0+00	1.0+00	0.0+00	2.0+00	0.0+00
0.0+00	0.0+00	2.0+00	1.0+00	0.0+00	0.0+00	1.0+00	1.0+00	1.0+00	0.0+00	2.0+00	0.0+00

A STRETCH BKW CALCULATION FOR THE EXPLOSIVE
MNB HEXANITROSOBENZENE

THE COMPUTED C_J PRESSURE IS 2.72316415328+001 MEGABARS

THE COMPUTED DETONATION VELOCITY IS 7.73508197191+001 CM/MICROSECOND

THE COMPUTED C_J TEMPERATURE IS 4.29362480634+003 DEGREES KELVIN

THE COMPUTED C_J VOLUME IS 4.35748354699+001 CC/GRAM OF EXPLOSIVE

THE COMPUTED GAMMA IS 2.73512328180+000

THE VOLUME OF THE GAS IS 1.52214411695+001 CC/MOLE OF GAS AND THERE ARE 6.51385179542+000 MOLES OF GAS

SOL ID VOLUME IN CC/GM
SOL C 3.15760318069+001

THE C-J COMPOSITION OF THE DETONATION PRODUCTS AND THE INPUT COEFFICIENTS TO THE THERMODYNAMIC FITS FOR EACH SPECIE

SPECIE	NO OF MOLES	COEFFICIENTS A,B,C,D,E, THE INTEGRATION CONSTANT, HEAT OF FORMATION IN CALORIES/MOLE, COVOLUME									
CO2	2.48173907181+000	4.74811200000+001	1.95446300000+002	-3.72129600000+006	2.77030000000+010	0.000000000+000					
CO	1.02770359084+000	4.53308200000+001	1.23816100000+002	-2.41640300000+006	1.82818100000+010	0.000000000+000					
NO	7.96504278449+003	4.84149800000+001	1.26938600000+002	-2.49480000000+006	1.89321300000+010	0.000000000+000					
N2	2.99601747861+000	1.20924970373+003	4.39234000000+001	2.14770000000+004	3.96000000000+002	1.79832200000+010	0.000000000+000				
O2	4.26611380955+004	1.13916134896+003	0.000000000+000	1.22250100000+002	2.37900000000+006	1.90157000000+010	0.000000000+000				
SOL C	2.49055733735+000	4.70309000000+001	1.28714700000+002	-2.50021700000+006	1.90157000000+010	0.000000000+000					
		1.03537647396+003	0.000000000+000	3.500000000+002	9.34999500000+011	0.000000000+000					
		-2.46151900000+001	7.17985500000+003	-1.29753000000+006							
		-2.58204389323+002	0.000000000+000	0.000000000+000							

A STRETCH BKW CALCULATION FOR THE EXPLOSIVE
TNTAB TRINITRO TRIAZIIO BENZENE

THE NUMBER OF ELEMENTS IS 3

THE NUMBER OF GAS SPECIES IS 5

THE NUMBER OF SOLID SPECIES IS 1

THE KW EQUATION OF STATE PARAMETERS ARE
ALPHA= 5.000000000-001 BETA= 1.600000000-001 THETA= 4.000000000+002 KAPPA= 1.09097784436+001

THE COMPOSITION OF THE EXPLOSIVE IS
6.000000000+000 MOLES OF C
1.200000000+001 MOLES OF N
6.000000000+000 MOLES OF O

THE DENSITY OF THE EXPLOSIVE IS 1.740000000+000 GRAMS/CC

THE MOLECULAR WEIGHT IS 3.361960000+002 GRAMS

THE HEAT OF FORMATION AT 0 DEG K IS 2.906000000+005 CALORIES PER FORMULA WEIGHT

THE SOLID (COWAN) EQUATION OF STATE PARAMETERS VO, AS, BS, CS, DS, ES, A1, A2, C1, C2, C3, ATOMIC WT

SOL C 4.444444444-001 8.30935837268-001 -1.39381809219+000 6.72569716021-001 -1.13537262508-001 6.49155882007-003
-2.26705349948-001 1.20916569925-001 8.31600000000-002 -1.75990000000-001 1.55310000000-001 1.20100000000+001

THE INPUT DETONATION PRODUCT ELEMENTAL COMPOSITION MATRIX

1.0+00	0.0+00	2.0+00	1.0+00	0.0+00	1.0+00	0.0+00	1.0+00	1.0+00	0.0+00	2.0+00	0.0+00
0.0+00	0.0+00	2.0+00	1.0+00	0.0+00	0.0+00						

A STRETCH BKW CALCULATION FOR THE EXPLOSIVE
TNTAB TRINITRO TRIAZIIO BENZENE

THE COMPUTED CJ PRESSURE IS 3.00216632312-001 MEGABARS

THE COMPUTED DETONATION VELOCITY IS 8.09335737912-001 CM/MICROSECOND

THE COMPUTED CJ TEMPERATURE IS 4.04608418531+003 DEGREES KELVIN

THE COMPUTED CJ VOLUME IS 4.23329552266-001 CC/GRAM OF EXPLOSIVE

THE COMPUTED GAMMA IS 2.79639974313+000

THE VOLUME OF THE GAS IS 1.41218569192+001 CC/MOLE OF GAS AND THERE ARE 9.39887782782+000 MOLES OF GAS

SOLID VOLUME IN CC/GM
SOL C 3.06010296343-001

THE C-J COMPOSITION OF THE DETONATION PRODUCTS AND THE INPUT COEFFICIENTS TO THE THERMODYNAMIC FITS FOR EACH SPECIE

SPECIE	NO OF MOLES	COEFFICIENTS A,B,C,D,E, THE INTEGRATION CONSTANT, HEAT OF FORMATION IN CALORIES/MOLE, COVOLUME					
CO2	2.59688853778+000	4.74811200000+001	1.95446300000-002	-3.72129600000-006	2.77030000000-010	0.000000000+000	
CO	7.97755655643-001	7.46280968750+002	-9.39680000000+004	6.000000000+002	1.82818100000-010	0.000000000+000	
NO	7.82257040551-003	4.53308200000+001	1.23816100000-002	-2.41640300000-006	1.89321300000-010	0.000000000+000	
N2	5.99608871480+000	1.12158830990+003	-2.72010000000+004	3.900000000+002	1.79832200000-010	0.000000000+000	
O2	3.22349197030-004	4.84149800000+001	1.26938600000-002	-2.49460000000-006	1.90157000000-010	0.000000000+000	
SOLC	2.60535580658+000	1.20924970573+003	2.14770000000+004	3.860000000+002	9.34999500000-011	0.000000000+000	
		4.39234000000+001	1.22250100000-002	-2.37900500000-006			
		1.13916134896+003	0.000000000+000	3.800000000+002			
		4.70309000000+001	1.28714700000-002	-2.50021700000-006			
		1.03537647396+003	0.000000000+000	3.500000000+002			
		-2.46151900000-001	7.17985500000-003	-1.29755000000-006			
		-2.58204389323+002	0.000000000+000	0.000000000+000			

A STRETCH BKW CALCULATION FOR THE EXPLOSIVE
HYDRAZINE NITRATE

THE NUMBER OF ELEMENTS IS 3

THE NUMBER OF GAS SPECIES IS 7

THE NUMBER OF SOLID SPECIES IS 0

THE KW EQUATION OF STATE PARAMETERS ARE

ALPHA= 5.0000000000+001 BETA= 1.6000000000-001 THETA= 4.0000000000+002 KAPPA= 1.09097784436+001

THE COMPOSITION OF THE EXPLOSIVE IS

5.0000000000+000 MOLES OF H
3.0000000000+000 MOLES OF N
3.0000000000+000 MOLES OF O

THE DENSITY OF THE EXPLOSIVE IS 1.6260000000+000 GRAMS/CC

THE MOLECULAR WEIGHT IS 9.5064000000+001 GRAMS

THE HEAT OF FORMATION AT 0 DEG K IS -4.7700000000+004 CALORIES PER FORMULA WEIGHT

THE INPUT DETONATION PRODUCT ELEMENTAL COMPOSITION MATRIX

2.0+00	0.0+00	1.0+00	2.0+00	0.0+00	0.0+00	0.0+00	0.0+00	2.0+00	3.0+00	1.0+00	0.0+00
0.0+00	1.0+00	1.0+00	0.0+00	2.0+00	0.0+00	1.0+00	0.0+00	1.0+00			

A STRETCH BKW CALCULATION FOR THE EXPLOSIVE
HYDRAZINE NITRATE

THE COMPUTED CJ PRESSURE IS 2.76374631081-001 MEGABARS

THE COMPUTED DETONATION VELOCITY IS 8.47414893913-001 CM/MICROSECOND

THE COMPUTED CJ TEMPERATURE IS 1.34768905704+003 DEGREES KELVIN

THE COMPUTED CJ VOLUME IS 4.69439014403-001 CC/GRAM OF EXPLOSIVE

THE COMPUTED GAMMA IS 3.22488168099+000

THE VOLUME OF THE GAS IS 1.05004118736+001 CC/MOLE OF GAS AND THERE ARE 4.25000000024+000 MOLES OF GAS

THE C-J COMPOSITION OF THE DETONATION PRODUCTS AND THE INPUT COEFFICIENTS TO THE THERMODYNAMIC FITS FOR EACH SPECIE

SPECIE	NO OF MOLES	COEFFICIENTS A,B,C,D,E, THE INTEGRATION CONSTANT, HEAT OF FORMATION IN CALORIES/MOLE, COVOLUME					
H2O	2.50000000027+000	4.2588420000+001	1.4808050000-002	-2.6391810000-006	1.9204530000-010	0.0000000000+000	
H2	1.0000000000-011	1.34282835156+003	-5.7107000000+004	2.5000000000+002	-2.2012220000-006	1.6777610000-010	0.0000000000+000
O2	2.49922805376-001	1.17589615365+003	0.0000000000+000	1.8000000000+002	-2.5002170000-006	1.9015700000-010	0.0000000000+000
NH3	1.0000000000-011	4.2018160000+001	1.9116620000-002	-3.1643300000-006	2.1978010000-010	0.0000000000+000	
NO	1.54389007156-004	1.20924970573+003	1.2693860000-002	4.7600000000+002	-2.4946000000-006	1.8932130000-010	0.0000000000+000
N2	1.49992280556+000	4.3923400000+001	1.2225010000-002	3.8600000000+002	-2.3790050000-006	1.7983220000-010	0.0000000000+000
OH	1.0000000000-011	1.13916134896+003	0.0000000000+000	3.8000000000+002	-2.2266590000-006	1.6891550000-010	0.0000000000+000
		4.2417920000+001	1.1568470000-002	4.1300000000+002			
		1.18351754427+003	3.5600000000+003				

A STRETCH BVM CALCULATION FOR THE EXPLOSIVE
 1 MOLE OF ETHYL DECABORANE AND 3.75 MOLES TETRANITROMETHANE

THE NUMBER OF ELEMENTS IS 5

THE NUMBER OF GAS SPECIES IS 13

THE NUMBER OF SOLID SPECIES IS 1

THE KW EQUATION OF STATE PARAMETERS ARE
 ALPHA= 5.000000000+001 BETA= 1.600000000+001 THETA= 4.000000000+002 KAPPA= 1.09097784436+001

THE COMPOSITION OF THE EXPLOSIVE IS
 5.750000000+000 MOLES OF C
 1.800000000+001 MOLES OF H
 1.500000000+001 MOLES OF N
 3.000000000+001 MOLES OF O
 1.000000000+001 MOLES OF B

THE DENSITY OF THE EXPLOSIVE IS 1.400000000+000 GRAMS/CC

THE MOLECULAR WEIGHT IS 8.8552150000+002 GRAMS

THE HEAT OF FORMATION AT 0 DEG K IS 1.092000000+005 CALORIES PER FORMULA WEIGHT

THE SOLID (COMAN)EQUATION OF STATE PARAMETERS VO, AS, BS, CS, DS, ES, A1, A2, C1, C2, C3, ATOMIC WT

SOL C 4.444444444+001 8.30935837268+001 -1.39381809219+000 6.72569716021+001 -1.13537262508+001 6.49155882007+003
 -2.26705345948+001 1.20516569525+001 8.31600000000+002 -1.75590000000+001 1.55310000000+001 1.20100000000+001

THE INPUT DETONATION PRODUCT ELEMENTAL COMPOSITION MATRIX

0.0+00	0.0+00	0.0+00	3.0+00	2.0+00	0.0+00	1.0+00	0.0+00	2.0+00	1.0+00	0.0+00	2.0+00
0.0+00	1.0+00	0.0+00	0.0+00	2.0+00	0.0+00	0.0+00	0.0+00	0.0+00	0.0+00	0.0+00	2.0+00
0.0+00	1.0+00	0.0+00	0.0+00	2.0+00	0.0+00	1.0+00	0.0+00	0.0+00	1.0+00	0.0+00	0.0+00
3.0+00	1.0+00	0.0+00	0.0+00	0.0+00	1.0+00	0.0+00	0.0+00	0.0+00	0.0+00	0.0+00	0.0+00
1.0+00	0.0+00	0.0+00	0.0+00	2.0+00	0.0+00	0.0+00	0.0+00	1.0+00	0.0+00	0.0+00	1.0+00
1.0+00	4.0+00	0.0+00	0.0+00	0.0+00	1.0+00	0.0+00	0.0+00	0.0+00	0.0+00	1.0+00	0.0+00

A STRETCH BRW CALCULATION FOR THE EXPLOSIVE
 1 MOLE OF ETHYL DECBORANE AND 3.75 MOLES TETRANITROMETHANE

THE COMPUTED C J PRESSURE IS 1.96658170759-001 MEGABARS

THE COMPUTED DETONATION VELOCITY IS 6.94577822472-001 CM/MICROSECOND

THE COMPUTED C J TEMPERATURE IS 5.33597791962+003 DEGREES KELVIN

THE COMPUTED C J VOLUME IS 5.06310351428-001 CC/GRAM OF EXPLOSIVE

THE COMPUTED GAMMA IS 2.43445527562+000

THE VOLUME OF THE GAS IS 1.66375818701+001 CC/MOLE OF GAS AND THERE ARE 2.69479486479+001 MOLES OF GAS

SOLID VOLUME IN CC/GM
 SOL C 3.46166389123-001

THE C-J COMPOSITION OF THE DETONATION PRODUCTS AND THE INPUT COEFFICIENTS TO THE THERMODYNAMIC FITS FOR EACH SPECIE

SPECIE	NO OF MOLES	COEFFICIENTS A,B,C,D,E, THE INTEGRATION CONSTANT, HEAT OF FORMATION IN CALORIES/MOLE, COVOLUME					
B2O3	4.99956484084+000	5.41972500000+001	-3.31408600000-002	-6.20294700000-006	4.56476100000-010	0.00000000000+000	
HBO2	8.70318313640-004	4.67274507813+002	-2.16000000000+005	7.30000000000+002	-4.60439200000-006	3.40205800000-010	0.00000000000+000
H2O	8.10923314536+000	5.32500300000+001	-2.46339500000-002	-1.40000000000+005	1.27000000000+003	1.92045300000-010	0.00000000000+000
H2	4.31219463352-001	7.80148119792+002	-1.48080500000-002	-5.71070000000+004	2.50000000000+002	1.67776100000-010	0.00000000000+000
O2	2.35552324276-003	1.34282835156+003	2.97034700000+001	1.14382900000-002	-2.20122200000-006	1.90157000000-010	0.00000000000+000
CO2	1.14934917929+000	1.17589615365+003	4.70309000000+001	1.28714700000-002	-2.50021700000-006	2.77030000000-010	0.00000000000+000
CO	4.51934571698+000	4.74811200000+001	1.95446300000-002	-9.39680000000+004	6.00000000000+002	1.82818100000-010	0.00000000000+000
NH3	1.86411802111-001	7.46280968750+002	4.53308200000+001	1.23816100000-002	-2.41640300000-006	2.19780100000-010	0.00000000000+000
H	2.16536950965-002	1.12158830990+003	4.20181600000+001	1.91166200000-002	-3.16433000000-006	1.31682300000-010	0.00000000000+000
NO	5.54616255343-002	1.20696121615+003	2.63911000000+001	8.12137200000-003	-1.69074000000-006	1.89321300000-010	0.00000000000+000
N2	7.37906328618+000	7.94631617188+002	4.84149800000+001	1.26938600000-002	-2.49460000000-006	1.79832200000-010	0.00000000000+000
OH	1.21149478980-002	2.120924970573+003	1.13916134896+003	2.14770000000+004	3.86000000000+002	1.68915500000-010	0.00000000000+000
CH4	8.13051037313-002	4.39234000000+001	1.22250100000-002	-3.37900500000-006	3.80000000000+002	2.47071400000-010	0.00000000000+000
SOL C	0.00000000000+000	4.24179200000+001	1.15684700000-002	1.15684700000-002	-2.22665900000-006	9.34999500000-011	0.00000000000+000
		1.18351754427+003	3.56000000000+003	4.13000000000+002	-3.70795700000-006		
		3.47568600000+001	2.36401300000-002	-1.60000000000+004	5.28000000000+002		
		1.04242791146+003	-1.60000000000+004	7.17985500000-003	-1.29755000000-006		
		2.46151900000-001	0.00000000000+000	0.00000000000+000	0.00000000000+000		
		-2.58204389323+002					

A STRETCH BKW CALCULATION FOR THE EXPLOSIVE
1 MOLE ETHYLDICARBORANE AND 4.45 MOLES TETRANITROMETHANE

THE NUMBER OF ELEMENTS IS 5

THE NUMBER OF GAS SPECIES IS 13

THE NUMBER OF SOLID SPECIES IS 1

THE KW EQUATION OF STATE PARAMETERS ARE

ALPHA= 5.0000000000-001 BETA= 1.6000000000-001 THETA= 4.0000000000+002 KAPPA= 1.09097784436+001

THE COMPOSITION OF THE EXPLOSIVE IS

6.4500000000+000 MOLES OF C
1.8000000000+001 MOLES OF H
1.7800000000+001 MOLES OF N
3.5600000000+001 MOLES OF O
1.0000000000+001 MOLES OF B

THE DENSITY OF THE EXPLOSIVE IS 1.4270000000+000 GRAMS/CC

THE MOLECULAR WEIGHT IS 1.0227500000+003 GRAMS

THE HEAT OF FORMATION AT 0 DEG K IS 1.2430000000+005 CALORIES PER FORMULA WEIGHT

THE SOLID (COMAN) EQUATION OF STATE PARAMETERS VO, AS, BS, CS, DS, ES, A1, A2, C1, C2, C3, ATOMIC WT

SOL C 4.4444444444-001 8.30935837268-001 -1.39381808219+000 6.72569716021-001 -1.13537262508-001 6.49155882007-003
-2.26705345948-001 1.20516569525-001 8.3160000000-002 -1.7559000000-001 1.5531000000-001 1.2010000000+001

THE INPUT DETONATION PRODUCT ELEMENTAL COMPOSITION MATRIX

0.0+00	0.0+00	0.0+00	3.0+00	2.0+00	0.0+00	1.0+00	0.0+00	2.0+00	1.0+00	0.0+00	2.0+00
0.0+00	1.0+00	0.0+00	0.0+00	2.0+00	0.0+00	0.0+00	0.0+00	0.0+00	0.0+00	0.0+00	2.0+00
0.0+00	1.0+00	0.0+00	0.0+00	2.0+00	0.0+00	1.0+00	0.0+00	0.0+00	1.0+00	0.0+00	0.0+00
3.0+00	1.0+00	0.0+00	0.0+00	0.0+00	1.0+00	0.0+00	0.0+00	0.0+00	0.0+00	0.0+00	1.0+00
1.0+00	0.0+00	0.0+00	0.0+00	2.0+00	0.0+00	0.0+00	0.0+00	1.0+00	0.0+00	1.0+00	0.0+00
1.0+00	4.0+00	0.0+00	0.0+00	0.0+00	1.0+00	0.0+00	0.0+00	0.0+00	0.0+00	0.0+00	0.0+00

A STRETCH BKW CALCULATION FOR THE EXPLOSIVE
 1 MOLE ETHYLDECABORANE AND 4.45 MOLES TETRANITROMETHANE

THE COMPUTED CJ PRESSURE IS 1.96034286616-001 MEGABARS

THE COMPUTED DETONATION VELOCITY IS 6.89673274885-001 CM/MICROSECOND

THE COMPUTED CJ TEMPERATURE IS 5.40909761351+003 DEGREES KELVIN

THE COMPUTED CJ VOLUME IS 4.98378037768-001 CC/GRAM OF EXPLOSIVE

THE COMPUTED GAMMA IS 2.46241189411+000

THE VOLUME OF THE GAS IS 1.70949223027+001 CC/MOLE OF GAS AND THERE ARE 2.98168151397+001 MOLES OF GAS

SOLID VOLUME IN CC/GH
 SOL C 3.46752528064-001

THE C-J COMPOSITION OF THE DETONATION PRODUCTS AND THE INPUT COEFFICIENTS TO THE THERMODYNAMIC FITS FOR EACH SPECIE

SPECIE	NO OF MOLES	COEFFICIENTS A,B,C,D,E, THE INTEGRATION CONSTANT, HEAT OF FORMATION IN CALORIES/MOLE, COMVOLUME					
B2O3	4.99935980223+000	5.41972500000+001	3.31408600000-002	-6.20294700000-006	4.56476100000-010	0.00000000000+000	
HBO2	1.28039554058-003	4.67274507813+002	-2.16000000000+005	7.30000000000+002	3.40205800000-010	0.00000000000+000	
H2O	8.89360763969+000	5.32500300000+001	2.46339500000-002	-4.60439200000-006	1.92045300000-010	0.00000000000+000	
H2	6.34124451273-002	7.80148119792+002	-1.40000000000+005	1.27000000000+003	1.67776100000-010	0.00000000000+000	
O2	1.79836995204-001	1.34282835156+003	-5.71070000000+004	2.50000000000+002	1.90157000000-010	0.00000000000+000	
CO2	4.30984592988+000	2.97034700000+001	1.14382900000-002	-2.20122200000-006	2.77030000000-010	0.00000000000+000	
CO	2.14006772338+000	1.17589615365+003	0.00000000000+000	1.80000000000+002	1.82818100000-010	0.00000000000+000	
NH3	1.05852195637-002	4.74811200000+001	1.95446300000-002	-3.72129600000-006	2.19780100000-010	0.00000000000+000	
N	9.15352612184-003	7.46280968750+002	-9.39880000000+004	6.00000000000+002	1.31682300000-010	0.00000000000+000	
NO	5.42893725940-001	4.53308200000+001	1.23816100000-002	-2.41640300000-006	1.89321300000-010	0.00000000000+000	
N2	8.62326052725+000	1.12158830990+003	-2.72010000000+004	3.90000000000+002	1.79832200000-010	0.00000000000+000	
OH	4.34248630470-002	4.20181600000+001	1.91168200000-002	-3.16433000000-006	1.68915500000-010	0.00000000000+000	
CH4	8.63467405314-005	1.20696121615+003	-9.36800000000+003	4.76000000000+002	2.47071400000-010	0.00000000000+000	
SOL C	0.00000000000+000	2.63911000000+001	8.12137200000-003	-1.69074000000-006	9.34999500000-011	0.00000000000+000	
		7.94631617188+002	5.16190000000+004	7.80000000000+001			
		1.26938600000+001	1.26938600000-002	-2.49460000000-006			
		1.20924970573+003	2.14770000000+004	3.86000000000+002			
		4.39234000000+001	1.22250100000-002	-2.37900500000-006			
		1.13916134896+003	0.00000000000+000	3.80000000000+002			
		4.24179200000+001	1.15684700000-002	-2.22665900000-006			
		1.18351754427+003	3.56000000000+003	4.13000000000+002			
		3.87568600000+001	2.36401300000-002	-3.70795700000-006			
		1.04242791146+003	-1.60000000000+004	5.28000000000+002			
		-2.46151900000-001	7.17985500000-003	-1.29755000000-006			
		-2.58204389323+002	0.00000000000+000	0.00000000000+000			

A STRETCH BKW CALCULATION FOR THE EXPLOSIVE
65/35 RDX/TFNA

THE NUMBER OF ELEMENTS IS 5

THE NUMBER OF GAS SPECIES IS 15

THE NUMBER OF SOLID SPECIES IS 1

THE KW EQUATION OF STATE PARAMETERS ARE

ALPHA= 5.0030000000-001 BETA= 1.6000000000-001 THETA= 4.0000000000+002 KAPPA= 1.09097784436+001

THE COMPOSITION OF THE EXPLOSIVE IS

3.7000000000+000 MOLES OF C
6.3900000000+000 MOLES OF H
5.3000000000+000 MOLES OF N
6.0000000000+000 MOLES OF O
1.0500000000+000 MOLES OF F

THE DENSITY OF THE EXPLOSIVE IS 1.7540000000+000 GRAMS/CC

THE MOLECULAR WEIGHT IS 2.4103020000+002 GRAMS

THE HEAT OF FORMATION AT 0 DEG K IS -3.3300000000+004 CALORIES PER FORMULA WEIGHT

THE SOLID (COMAN) EQUATION OF STATE PARAMETERS VO, AS, BS, CS, DS, ES, A1, A2, C1, C2, C3, ATOMIC WT

SOL C 4.4444444444-001 8.30935837268-001 -1.39381809219+000 6.72569716021-001 -1.13537262508-001 6.49155882007-003
-2.26705345948-001 1.20516569525-001 8.3160000000-002 -1.75590000000-001 1.55310000000-001 1.20100000000+001

THE INPUT DETONATION PRODUCT ELEMENTAL COMPOSITION MATRIX

0.0+00	1.0+00	0.0+00	0.0+00	1.0+00	1.0+00	0.0+00	0.0+00	0.0+00	4.0+00	0.0+00	0.0+00
0.0+00	0.0+00	2.0+00	0.0+00	2.0+00	0.0+00	1.0+00	0.0+00	0.0+00	2.0+00	0.0+00	0.0+00
0.0+00	0.0+00	0.0+00	0.0+00	2.0+00	0.0+00	1.0+00	0.0+00	0.0+00	2.0+00	0.0+00	1.0+00
0.0+00	0.0+00	1.0+00	0.0+00	0.0+00	3.0+00	1.0+00	0.0+00	0.0+00	0.0+00	1.0+00	0.0+00
0.0+00	0.0+00	0.0+00	0.0+00	1.0+00	1.0+00	0.0+00	0.0+00	0.0+00	2.0+00	0.0+00	0.0+00
0.0+00	1.0+00	0.0+00	0.0+00	0.0+00	1.0+00	4.0+00	0.0+00	0.0+00	0.0+00	1.0+00	0.0+00
0.0+00	1.0+00	2.0+00	1.0+00	0.0+00	0.0+00	0.0+00	0.0+00	0.0+00	0.0+00	1.0+00	0.0+00

A STRETCH BKW CALCULATION FOR THE EXPLOSIVE
65/35 RDX/TFNA

THE COMPUTED CJ PRESSURE IS 3.02221327525-001 MEGABARS

THE COMPUTED DETONATION VELOCITY IS 8.27787668471-001 CM/MICROSECOND

THE COMPUTED CJ TEMPERATURE IS 2.44629338325+003 DEGREES KELVIN

THE COMPUTED CJ VOLUME IS 4.26765890841-001 CC/GRAM OF EXPLOSIVE

THE COMPUTED GAMMA IS 2.97687906961+000

THE VOLUME OF THE GAS IS 1.27206223066+001 CC/MOLE OF GAS AND THERE ARE 7.52079369089+000 MOLES OF GAS

SOLID VOLUME IN CC/GM
SOL C 2.97208163096-001

THE C-J COMPOSITION OF THE DETONATION PRODUCTS AND THE INPUT COEFFICIENTS TO THE THERMODYNAMIC FITS FOR EACH SPECIE

SPECIE	NO OF MOLES	COEFFICIENTS A,B,C,D,E, THE INTEGRATION CONSTANT, HEAT OF FORMATION IN CALORIES/MOLE, COVOLUME			
HF	2.26926152511-002	4.00007100000+001	1.14458200000-002	-2.21043000000-006	1.68170500000-010
CF4	2.56826461294-001	1.17906488281+003	-6.42000000000+004	3.89000000000+002	5.16953400000-010
F2	6.43909619445-007	5.56808600000+001	3.56363400000-002	-6.89817200000-006	0.00000000000+000
H2O	3.16354766540+000	2.03729692709+002	-2.18000000000+005	1.33000000000+003	2.15833800000-010
H2	1.43762738297-005	4.63724900000+001	1.39582500000-002	-2.80475800000-006	0.00000000000+000
O2	6.84462484065-007	9.25884200000+001	0.00000000000+000	3.87000000000+002	1.92045300000-010
CO2	1.40875732316+000	1.34282835156+003	1.48080500000-002	-2.63918100000-006	0.00000000000+000
CO	1.89079454366-002	2.97034700000+001	1.14382900000-002	-2.20122200000-006	1.67776100000-010
NH3	5.93193990197-005	1.17589615365+003	0.00000000000+000	1.80000000000+002	0.00000000000+000
H	4.84189811426-010	4.70509000000+001	1.28714700000-002	-2.50021700000-006	1.90157000000-010
NO	2.82480371813-005	1.03537647396+003	0.00000000000+000	3.50000000000+002	0.00000000000+000
N2	2.64995621628+000	4.74811200000+001	1.95446300000-002	-3.72129600000-006	2.77030000000-010
OH	9.73249408512-007	7.46280968750+002	-9.39680000000+004	6.00000000000+002	0.00000000000+000
CH4	1.09236592982-006	4.53308200000+001	1.23816100000-002	-2.41640300000-006	1.82818100000-010
COF2	1.25877315508-007	1.12158830990+003	-2.72010000000+004	3.90000000000+002	0.00000000000+000
SOL C	2.01550705187+000	4.20181600000+001	1.91166200000-002	-3.16433000000-006	2.19780100000-010
		1.20696121615+003	-9.36800000000+003	4.76000000000+002	0.00000000000+000
		2.63911000000+001	8.12137200000-003	-1.69074000000-006	1.31682300000-010
		7.94631617188+002	5.16190000000+004	7.80000000000+001	0.00000000000+000
		4.84149800000+001	1.26938600000-002	-2.49460000000-006	1.89321300000-010
		1.20924970573+003	2.14770000000+004	3.86000000000+002	0.00000000000+000
		4.39234000000+001	1.22250100000-002	-2.37900500000-006	1.79832200000-010
		1.13916134896+003	0.00000000000+000	3.80000000000+002	0.00000000000+000
		4.24179200000+001	1.15684700000-002	-2.22665900000-006	1.68915500000-010
		1.18351754427+003	3.56000000000+003	4.13000000000+002	0.00000000000+000
		3.87568600000+001	2.36401300000-002	-3.70795700000-006	2.47071400000-010
		1.04242791146+003	-1.60000000000+004	5.28000000000+002	0.00000000000+000
		5.67523300000+001	2.67670700000-002	-5.13590100000-006	3.83331300000-010
		5.64431820312+002	-1.50000000000+005	1.33000000000+003	0.00000000000+000
		-2.46151900000-001	7.17985500000-003	-1.29755000000-006	9.34999500000-011
		-2.58204389323+002	0.00000000000+000	0.00000000000+000	0.00000000000+000

A STRETCH BKW CALCULATION FOR THE EXPLOSIVE
 TFNA 1,1,1-TRIFLUORO-3,3,3-TRINITRO-3-AZAHKANE

THE NUMBER OF ELEMENTS IS 5

THE NUMBER OF GAS SPECIES IS 15

THE NUMBER OF SOLID SPECIES IS 1

THE KW EQUATION OF STATE PARAMETERS ARE

ALPHA= 5.0000000000-001 BETA= 1.6000000000-001 THETA= 4.0000000000+002 KAPPA= 1.09097784436+001

THE COMPOSITION OF THE EXPLOSIVE IS

5.0000000000+000 MOLES OF C
 7.0000000000+000 MOLES OF H
 4.0000000000+000 MOLES OF N
 6.0000000000+000 MOLES OF O
 3.0000000000+000 MOLES OF F

THE DENSITY OF THE EXPLOSIVE IS 1.6920000000+000 GRAMS/CC

THE MOLECULAR WEIGHT IS 2.7613800000+002 GRAMS

THE HEAT OF FORMATION AT 0 DEG K IS -1.5800000000+005 CALORIES PER FORMULA WEIGHT

THE SOLID (COWAN) EQUATION OF STATE PARAMETERS VO, AS, BS, CS, DS, ES, A1, A2, C1, C2, C3, ATOMIC WT

SOL C 4.4444444444-001 8.30935837268-001 -1.39381809219+000 6.72569716021-001 -1.13537262508-001 6.49155882007-003
 -2.26705345948-001 1.20516569525-001 8.31600000000-002 -1.75590000000-001 1.55310000000-001 1.20100000000+001

THE INPUT DETONATION PRODUCT ELEMENTAL COMPOSITION MATRIX

0.0+00	1.0+00	0.0+00	0.0+00	1.0+00	1.0+00	0.0+00	0.0+00	0.0+00	4.0+00	0.0+00	0.0+00
0.0+00	0.0+00	2.0+00	0.0+00	2.0+00	0.0+00	1.0+00	0.0+00	0.0+00	2.0+00	0.0+00	0.0+00
0.0+00	0.0+00	0.0+00	0.0+00	2.0+00	0.0+00	1.0+00	0.0+00	0.0+00	2.0+00	0.0+00	1.0+00
0.0+00	0.0+00	1.0+00	0.0+00	0.0+00	3.0+00	1.0+00	0.0+00	0.0+00	0.0+00	1.0+00	0.0+00
0.0+00	0.0+00	0.0+00	0.0+00	1.0+00	1.0+00	0.0+00	0.0+00	0.0+00	2.0+00	0.0+00	0.0+00
0.0+00	1.0+00	0.0+00	0.0+00	0.0+00	1.0+00	4.0+00	0.0+00	0.0+00	0.0+00	1.0+00	0.0+00
0.0+00	1.0+00	2.0+00	1.0+00	0.0+00	0.0+00	0.0+00	0.0+00	0.0+00	0.0+00	1.0+00	0.0+00

A STRETCH BKW CALCULATION FOR THE EXPLOSIVE
 TFNA 1,1,1-TRIFLUORO-3,5,5-TRINITRO-3-AZANERANE

THE COMPUTED CJ PRESSURE IS 2.42238814667-001 MEGABARS

THE COMPUTED DETONATION VELOCITY IS 7.5689:919969-001 CM/MICROSECOND

THE COMPUTED CJ TEMPERATURE IS 2.20505139801+003 DEGREES KELVIN

THE COMPUTED CJ VOLUME IS 4.43318932806-001 CC/GRAM OF EXPLOSIVE

THE COMPUTED GAMMA IS 3.00151421555+000

THE VOLUME OF THE GAS IS 1.47537181183+001 CC/MOLE OF GAS AND THERE ARE 7.52964353808+000 MOLES OF GAS

SOLID VOLUME IN CC/GM
 SOL C 3.15037543271-001

THE C-J COMPOSITION OF THE DETONATION PRODUCTS AND THE INPUT COEFFICIENTS TO THE THERMODYNAMIC FITS FOR EACH SPECIE

SPECIE	NO OF MOLES	COEFFICIENTS A,B,C,D,E	THE INTEGRATION CONSTANT	HEAT OF FORMATION IN CALORIES/MOLE	COVOLUME
MF	4.69935262710-002	4.00007100000+001 1.17906488281+003 5.56808600000+001 2.03729692709+002 4.63724900000+001 9.56070057292+002	1.14458200000-002 -6.42000000000+004 3.56363400000-002 -2.18000000000+005 1.39582500000-002 0.00000000000+000	-2.21043000000-006 3.89000000000+002 -6.89817200000-006 1.33000000000+003 -2.80475800000-006 3.87000000000+002	1.68170500000-010 0.00000000000+000 5.16953400000-010 0.00000000000+000 2.15833800000-010 0.00000000000+000
CF4	7.38251242774-001	4.25884200000+001 1.34282835156+003 2.97034700000+001 1.17589615365+003 4.70309000000+001 1.03537647396+003	1.48080500000-002 -5.71070000000+004 1.14382900000-002 0.00000000000+000 1.28714700000-002 0.00000000000+000	-2.63918100000-006 2.50000000000+002 -2.20122200000-006 1.80000000000+002 -2.50021700000-006 3.50000000000+002	1.92045300000-010 0.00000000000+000 1.67776100000-010 0.00000000000+000 1.90157000000-010 0.00000000000+000
F2	4.22355075961-008	1.03537647396+003 4.74811200000+001 7.46280968750+002 4.53308200000+001 1.12158830990+003 4.20181600000+001	1.95446300000-002 -9.39680000000+004 1.23816100000-002 -2.72010000000+004 -9.91662000000-002 -9.36800000000+003	-3.72129600000-006 6.00000000000+002 -2.41640300000-006 3.90000000000+002 -3.16433000000-006 4.76000000000+002	2.77030000000-010 0.00000000000+000 1.82818100000-010 0.00000000000+000 2.19780100000-010 0.00000000000+000
H2O	3.47624854805+000	4.20696121615+003 2.63911000000+001 7.84149800000+001 1.20924970573+003 4.39234000000+001 1.13916134896+003	1.26938600000-002 2.14770000000+004 1.22250100000-002 0.00000000000+000 1.15684700000-002 3.56000000000+003	-2.49460000000-006 7.49000000000+001 -2.37900500000-006 3.86000000000+002 -2.22665900000-006 4.13000000000+002	1.89321300000-010 0.00000000000+000 1.79832200000-010 0.00000000000+000 1.68915500000-010 0.00000000000+000
H2	2.22434049853-005	4.24179200000+001 1.18351754427+003 3.87568600000+001 1.04242791146+003 5.67523300000+001 5.64431820312+002	1.15684700000-002 3.56000000000+003 2.36401300000-002 -1.60000000000-004 2.67670700000-002 -1.50000000000+005	-2.22665900000-006 4.13000000000+002 -3.70795700000-006 5.28000000000+002 -5.13590100000-006 1.33000000000+003	1.68915500000-010 0.00000000000+000 2.47071400000-010 0.00000000000+000 3.83331300000-010 0.00000000000+000
N2	1.99992411338+000	5.67523300000+001 5.64431820312+002 -2.48151800000-001 -2.58204389323+002	2.67670700000-002 -1.50000000000+005 7.17985500000-003 0.00000000000+000	-2.37900500000-006 3.86000000000+002 -1.29755000000-006 0.00000000000+000	1.79832200000-010 0.00000000000+000 9.34999500000-011 0.00000000000+000
N2O	3.47624854805+000	1.03537647396+003 4.74811200000+001 7.46280968750+002 4.53308200000+001 1.12158830990+003 4.20181600000+001	1.95446300000-002 -9.39680000000+004 1.23816100000-002 -2.72010000000+004 -9.91662000000-002 -9.36800000000+003	-3.72129600000-006 6.00000000000+002 -2.41640300000-006 3.90000000000+002 -3.16433000000-006 4.76000000000+002	2.77030000000-010 0.00000000000+000 1.82818100000-010 0.00000000000+000 2.19780100000-010 0.00000000000+000
CO2	1.25570293611+000	1.03537647396+003 4.74811200000+001 7.46280968750+002 4.53308200000+001 1.12158830990+003 4.20181600000+001	1.95446300000-002 -9.39680000000+004 1.23816100000-002 -2.72010000000+004 -9.91662000000-002 -9.36800000000+003	-3.72129600000-006 6.00000000000+002 -2.41640300000-006 3.90000000000+002 -3.16433000000-006 4.76000000000+002	2.77030000000-010 0.00000000000+000 1.82818100000-010 0.00000000000+000 2.19780100000-010 0.00000000000+000
CO	1.23404496529-002	1.12158830990+003 4.20181600000+001 1.20696121615+003 2.63911000000+001 7.84149800000+001 1.20924970573+003	1.23816100000-002 -2.72010000000+004 -9.91662000000-002 -9.36800000000+003 1.26938600000-002 2.14770000000+004	-2.41640300000-006 3.90000000000+002 -3.16433000000-006 4.76000000000+002 -2.49460000000-006 7.49000000000+001	1.82818100000-010 0.00000000000+000 2.19780100000-010 0.00000000000+000 1.31682300000-010 0.00000000000+000
NH3	1.47448381965-004	4.20696121615+003 2.63911000000+001 7.84149800000+001 1.20924970573+003 4.39234000000+001 1.13916134896+003	1.26938600000-002 2.14770000000+004 1.22250100000-002 0.00000000000+000 1.15684700000-002 3.56000000000+003	-1.69074000000-006 4.76000000000+002 -2.37900500000-006 3.86000000000+002 -2.22665900000-006 4.13000000000+002	1.31682300000-010 0.00000000000+000 1.89321300000-010 0.00000000000+000 1.79832200000-010 0.00000000000+000
H	1.21682540126-009	4.84149800000+001 1.20924970573+003 4.39234000000+001 1.13916134896+003 2.63911000000+001 7.84149800000+001	1.26938600000-002 2.14770000000+004 1.22250100000-002 0.00000000000+000 1.15684700000-002 3.56000000000+003	-1.69074000000-006 4.76000000000+002 -2.37900500000-006 3.86000000000+002 -2.22665900000-006 4.13000000000+002	1.31682300000-010 0.00000000000+000 1.89321300000-010 0.00000000000+000 1.79832200000-010 0.00000000000+000
NO	4.32486742366-006	4.84149800000+001 1.20924970573+003 4.39234000000+001 1.13916134896+003 2.63911000000+001 7.84149800000+001	1.26938600000-002 2.14770000000+004 1.22250100000-002 0.00000000000+000 1.15684700000-002 3.56000000000+003	-2.49460000000-006 7.49000000000+001 -2.37900500000-006 3.86000000000+002 -2.22665900000-006 4.13000000000+002	1.89321300000-010 0.00000000000+000 1.79832200000-010 0.00000000000+000 1.68915500000-010 0.00000000000+000
OH	3.02463838745-006	4.24179200000+001 1.18351754427+003 3.87568600000+001 1.04242791146+003 5.67523300000+001 5.64431820312+002	1.15684700000-002 3.56000000000+003 2.36401300000-002 -1.60000000000-004 2.67670700000-002 -1.50000000000+005	-2.22665900000-006 4.13000000000+002 -3.70795700000-006 5.28000000000+002 -5.13590100000-006 1.33000000000+003	1.68915500000-010 0.00000000000+000 2.47071400000-010 0.00000000000+000 3.83331300000-010 0.00000000000+000
CH4	4.87995347786-006	1.04242791146+003 5.67523300000+001 5.64431820312+002 -2.48151800000-001 -2.58204389323+002	1.60000000000-004 2.67670700000-002 -1.50000000000+005 7.17985500000-003 0.00000000000+000	5.28000000000+002 -5.13590100000-006 1.33000000000+003 -1.29755000000-006 0.00000000000+000	3.83331300000-010 0.00000000000+000 9.34999500000-011 0.00000000000+000
COF2	7.09081159513-007	5.67523300000+001 5.64431820312+002 -2.48151800000-001 -2.58204389323+002	2.67670700000-002 -1.50000000000+005 7.17985500000-003 0.00000000000+000	-5.13590100000-006 1.33000000000+003 -1.29755000000-006 0.00000000000+000	3.83331300000-010 0.00000000000+000 9.34999500000-011 0.00000000000+000
SOL C	2.99369978243+000	-2.48151800000-001 -2.58204389323+002	7.17985500000-003 0.00000000000+000	-1.29755000000-006 0.00000000000+000	9.34999500000-011 0.00000000000+000

A STRETCH BAW CALCULATION FOR THE EXPLOSIVE
 TFENA TRIFLUOROETHYL NITRAMINE

THE NUMBER OF ELEMENTS IS 5

THE NUMBER OF GAS SPECIES IS 15

THE NUMBER OF SOLID SPECIES IS 1

THE RM EQUATION OF STATE PARAMETERS ARE
 ALPHA= 5.0000000000-001 BETA= 1.8000000000-001 THETA= 4.0000000000+002 KAPPA= 1.09087784436+001

THE COMPOSITION OF THE EXPLOSIVE IS
 2.0000000000+000 MOLES OF C
 3.0000000000+000 MOLES OF H
 2.0000000000+000 MOLES OF N
 2.0000000000+000 MOLES OF O
 3.0000000000+000 MOLES OF F

THE DENSITY OF THE EXPLOSIVE IS 1.5230000000+000 GRAMS/CC

THE MOLECULAR WEIGHT IS 1.4406000000+002 GRAMS

THE HEAT OF FORMATION AT 0 DEG K IS -1.5200000000+005 CALORIES PER FORMULA WEIGHT

THE SOLID (COMAN) EQUATION OF STATE PARAMETERS VO, AS, BS, CS, DS, ES, A1, A2, C1, C2, C3, ATOMIC WT

SOL C 4.4444444444-001 8.30935837268-001 -1.39381809219+000 6.72569716021-001 -1.13537262508-001 6.49155882007-003
 -2.26705345948-001 1.20516569525-001 8.3160000000-002 -1.7559000000-001 1.5531000000-001 1.2010000000+001

THE INPUT DETONATION PRODUCT ELEMENTAL COMPOSITION MATRIX

0.0+00	1.0+00	0.0+00	0.0+00	1.0+00	1.0+00	0.0+00	0.0+00	0.0+00	4.0+00	0.0+00	0.0+00
0.0+00	0.0+00	2.0+00	0.0+00	2.0+00	0.0+00	1.0+00	0.0+00	0.0+00	2.0+00	0.0+00	0.0+00
0.0+00	0.0+00	0.0+00	0.0+00	2.0+00	0.0+00	1.0+00	0.0+00	0.0+00	2.0+00	0.0+00	1.0+00
0.0+00	0.0+00	1.0+00	0.0+00	0.0+00	3.0+00	1.0+00	0.0+00	0.0+00	0.0+00	1.0+00	0.0+00
0.0+00	0.0+00	0.0+00	0.0+00	1.0+00	1.0+00	0.0+00	0.0+00	0.0+00	2.0+00	0.0+00	0.0+00
0.0+00	1.0+00	0.0+00	0.0+00	0.0+00	1.0+00	4.0+00	0.0+00	0.0+00	0.0+00	1.0+00	0.0+00
0.0+00	1.0+00	2.0+00	1.0+00	0.0+00	0.0+00	0.0+00	0.0+00	0.0+00	0.0+00	0.0+00	0.0+00

A STRETCH BKM CALCULATION FOR THE EXPLOSIVE
TFENA TRIFLUOROETHYL NITRANINE

THE COMPUTED CJ PRESSURE IS 1.62266423627-001 MEGABARS

THE COMPUTED DETONATION VELOCITY IS 6.49169727802-001 CM/MICROSECOND

THE COMPUTED CJ TEMPERATURE IS 1.82741182397+003 DEGREES KELVIN

THE COMPUTED CJ VOLUME IS 4.96598216434-001 CC/GRAM OF EXPLOSIVE

THE COMPUTED GAMMA IS 2.95537589418+000

THE VOLUME OF THE GAS IS 1.88435988785+001 CC/MOLE OF GAS AND THERE ARE 3.53281878267+000 MOLES OF GAS

SOLID VOLUME IN CC/GM
SOL C 3.42165068785-001

THE C-J COMPOSITION OF THE DETONATION PRODUCTS AND THE INPUT COEFFICIENTS TO THE THERMODYNAMIC FITS FOR EACH SPECIE

SPECIE	NO OF MOLES	COEFFICIENTS A,B,C,D,E	THE INTEGRATION CONSTANT	HEAT OF FORMATION IN CALORIES/MOLE	COVOLUME
HF	6.39914378328-002	4.00007100000+001	1.14458200000-002	-2.21043000000-006	1.68170500000-010
CF4	7.34001122790-001	1.17906488281+003	-6.42000000000+004	3.89000000000+008	0.00000000000+000
F2	5.68030279910-011	3.56808000000+001	3.56363400000-002	-6.89817200000-006	5.16893400000-010
H2O	1.46746171164+000	2.03729692709+002	-2.18000000000+005	1.33000000000+003	0.00000000000+000
H2	1.91844670996-005	4.63784900000+001	1.39582500000-002	-2.86475800000-006	2.15833800000-010
O2	6.81318367323-011	9.58070057282+002	0.00000000000+000	3.87000000000+002	0.00000000000+000
CO2	2.65380381587-001	4.25884200000+001	1.48080500000-002	-2.63918100000-006	1.98045300000-010
CO	1.77544226230-003	1.34282833136+003	-5.71070000000+004	2.50000000000+002	0.00000000000+000
NH3	3.20152593503-004	2.97034700000+001	1.14382900000-002	-2.20122200000-006	1.67776100000-010
N2	9.99839900034-001	1.17389613363+003	0.00000000000+000	1.80000000000+002	0.00000000000+000
OH	7.71784134451-006	4.70309000000+001	1.28714700000-002	-2.50021700000-006	1.90157000000-010
CH4	1.96485395550-005	1.03537847398+003	0.00000000000+000	3.50000000000+002	0.00000000000+000
COF2	2.03544707000-006	4.74811200000+001	1.95448300000-002	-3.72128600000-006	2.77030000000-010
CF2	2.03544707000-006	7.46280968750+002	-9.39680000000+004	6.00000000000+002	0.00000000000+000
NO	4.75385441397-008	4.53308200000+001	1.23816100000-002	-2.41840300000-006	1.82818100000-010
N2O	1.46746171164+000	1.12138830990+003	-2.72010000000+004	3.90000000000+002	0.00000000000+000
H2O	1.46746171164+000	4.20181600000+001	1.91186200000-002	-3.18433000000-006	2.19780100000-010
H2	1.91844670996-005	1.20896121613+003	-9.36800000000+004	4.76000000000+002	0.00000000000+000
O2	6.81318367323-011	2.63911000000+001	8.12137200000-003	-1.89074000000-006	1.31682300000-010
CO2	2.65380381587-001	7.94631817188+002	5.18190000000+004	7.80000000000+002	0.00000000000+000
CO	1.77544226230-003	4.84149800000+001	1.28938600000-002	-2.49480000000-006	1.89321300000-010
NH3	3.20152593503-004	1.20924970573+003	2.14770000000+004	3.86000000000+002	0.00000000000+000
N2	9.99839900034-001	4.39234000000+001	1.22250100000-002	-2.37800500000-006	1.79832200000-010
OH	7.71784134451-006	1.13918134898+003	0.00000000000+000	3.80000000000+002	0.00000000000+000
CH4	1.96485395550-005	4.24179200000+001	1.15884700000-002	-2.22663900000-006	1.68915500000-010
COF2	2.03544707000-006	1.18351754427+003	3.56000000000+003	4.13000000000+002	0.00000000000+000
CF2	2.03544707000-006	3.87588600000+001	2.36401300000-002	-3.70795700000-006	2.47071400000-010
SOL C	3.42165068785-001	1.04242791146+003	-1.80000000000+004	5.28000000000+002	0.00000000000+000
		5.64231820312+002	2.87670700000-002	-5.13590100000-006	3.83331300000-010
		2.46131800000-001	7.17983500000-003	-1.33000000000+003	0.00000000000+000
		-2.58204389323+002	0.00000000000+000	-1.29755000000-006	9.34999500000-011