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Addendum to ARL-TR-9536, A Detailed, Finite-Rate Chemical Kinetic Mechanism for Modeling the Thermal Decomposition and Combustion of Gaseous Nitroglycerin

by Christopher P Stone and Chiung-Chu Chen

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***Addendum to ARL-TR-9536, A Detailed, Finite-Rate
Chemical Kinetic Mechanism for Modeling the
Thermal Decomposition and Combustion of
Gaseous Nitroglycerin***

Christopher P Stone and Chiung-Chu Chen
DEVCOM Army Research Laboratory

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14. ABSTRACT This technical note amends the chemical kinetics mechanism data for the thermal decomposition and combustion of gaseous nitroglycerin previously published by Chen and McQuaid in ARL-TR-9536. The updated mechanism data detailing the chemical kinetics as well as chemical species thermodynamic and transport properties are provided in formats compatible with commercial versions of CHEMKIN and the open-source Cantera chemical kinetics software packages. Multiple pressure-dependent reactions previously formulated using the Tsang and Herron "falloff" reaction formulae, unsupported by certain chemical kinetics software packages, were reformulated using the standard Troe or log-interpolation (PLOG) formulations. Details are provided concerning the falloff reaction conversions methods. Predicted linear burning rates using the updated mechanism are compared with experiments and predictions using the previous mechanism to validate the mechanism modifications.					
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1. Introduction

In 2022, Chen and McQuaid¹ released a finite-rate chemical kinetics mechanism for modeling the thermal decomposition and combustion of gaseous nitroglycerin (NGg). Intended to serve as a benchmark and foster collaboration with others within the combustion science community, there were several issues with the release that proved to compromise its usefulness for that purpose. For one, it contained two transcription errors. In addition, the data composing the mechanism was provided in a format that could not be directly imported into standard versions of the two most prominent software packages for implementing canonical gas-phase combustion models—namely, CHEMKIN² and Cantera.³ This technical note addresses these issues.

With respect to the data’s format, there are three separate issues:

1. The output file of the CHEMKIN (pre-commercial version 3) interpreter* was provided, not the input file.
2. The keyword and the ordering of the rate constants and pressures used to parameterize pressure-dependent reactions using the logarithmic interpolation (PLOG) method was different than that expected by Cantera or recent (commercial) versions of CHEMKIN.⁴
3. The mechanism included 10 fall-off reactions whose rates were computed with the Tsang–Herron⁵ (TH) method, which is not supported by CHEMKIN[†].

Users can overcome the first two issues by simply editing the file but doing so is unnecessarily tedious and prone to introducing errors. Not capable of being addressed without modifying CHEMKIN’s or Cantera’s source code, issue 3 is more problematic.

To improve the adoption of the NGg mechanism detailed in Chen and McQuaid,¹ we have corrected the transcription errors and provided an input file whose format for PLOG reactions follows that accepted by Cantera and recent (commercial) versions of CHEMKIN. Additionally, we removed two unused species and converted the 10 TH falloff reaction formulae into either a (four-parameter) Troe² (TROE) formula or a PLOG set, both of which are supported by Cantera and

* The CHEMKIN interpreter program (ckinterp.exe) parses the mechanism (chem.inp) and thermodynamic (therm.dat) input files, and exports a Fortran unformatted or formatted file to be imported by the CHEMKIN runtime library.

† Cantera³ supports TH falloff reactions, but no examples of its usage have been found.

commercial versions of CHEMKIN. For completeness, we have also included the TRANLIB⁶ input file used to evaluate transport properties of the chemical species.

As will be discussed, the same theoretical basis underlies the TROE and TH formulations, and they have similar capabilities and limitations. The PLOG formulation, which explicitly tabulates rate expressions over a range of pressures, allows more nuanced pressure dependency than either TH or TROE falloff formulations and is easier, in general, to fit to the underlying temperature- and pressure-dependent reaction rate data $[k(T, p)]$. However, enhanced third-body collision efficiencies cannot be specified in the current PLOG formulation, which may limit their accuracy when describing reactions with species with large efficiencies (e.g., H₂O, N₂O, NH₃, HCN).^{5,7} Recently, alternative methods⁸ for including third-body efficiencies have been investigated within the Cantera framework; however, these capabilities are not yet available in an official Cantera or CHEMKIN release.

Of the 10 TH reactions in Chen and McQuaid,¹ 7 were part of the “dark-zone” (DZ) mechanism presented by Anderson et al.⁹ and 2 were part of a mechanism for monomethylhydrazine-red fuming nitric acid.¹⁰ The DZ mechanism was designed to be a (nearly) universal finite-rate chemical kinetics mechanism for modeling the gas-phase combustion of small molecules formed during solid propellant pyrolysis. The updated reactions presented here can be directly applied to those two mechanisms to increase their adoption as well.

In the following section, we discuss the method for converting the TH to either TROE or PLOG formulations. Following that, we provide results of the conversion and validation of the reformulated NGg mechanism. Finally, the reformulated mechanism data, including thermodynamic and transport properties data, are included in the appendixes.

2. Method

The pressure dependencies of the rates of falloff reactions are represented by combining the temperature-dependent rates at the low- and high-pressure limits. Following Kee et al.,² the pressure-dependent rate coefficient $[k(T, p)]$ is calculated as

$$k(T, p) = F k_{\infty} \left[\frac{P_r}{1 + P_r} \right] \quad (1)$$

where F is the (so-called) “broadening factor,”⁹ k_{∞} is the (temperature-dependent) rate in the high-pressure limit, and P_r is the “reduced pressure” defined as

$$P_r = \frac{k_0[M]}{k_\infty} . \quad (2)$$

There, k_0 is the temperature-dependent reaction rate in the low-pressure limit and $[M]$ is the effective* molar concentration of the gas mixture. All temperature-dependent reaction rates are specified using the modified Arrhenius expression:

$$k_i(T) = A_i T^{\beta_i} \exp\left(\frac{-E_{a_i}}{RT}\right) \quad (3)$$

where A_i , β_i , and E_{a_i} are coefficients fit over a temperature range. For all falloff reactions, the three coefficients must be specified for both k_0 and k_∞ .

TH and TROE formulations differ in how they define F in Eq. 1. For TH, F is defined as

$$\log_{10} F = \frac{\log_{10} F_c}{1 + L_{Pr}^2} \quad (4)$$

$$F_c = a_0 + a_1 T + a_2 T^2 \quad (5)$$

where $L_{Pr} = (\log_{10} Pr)$ and F_c is the “centering coefficient.”⁵ The polynomial coefficients, a_i , are the adjustable model parameters for a TH falloff reaction formulation. Note that $a_2 = 0$ for all TH reactions in the NGg mechanism.

TROE falloff reactions have a more complicated expression for F and F_c :

$$\log_{10} F = \frac{\log_{10} F_c}{1 + \left[\frac{L_{Pr} + c}{n - d(L_{Pr} + c)} \right]^2} \quad (6)$$

$$F_c = (1 - \alpha) \exp(-T/T^{***}) + \alpha \exp(-T/T^*) + \exp(-T^{**}/T) \quad (7)$$

where α , T^* , T^{**} , and T^{***} are adjustable parameters and c , n , and d are defined as

$$\begin{aligned} c &= -0.4 - 0.67 \log_{10} F_c \\ n &= 0.75 - 1.27 \log_{10} F_c \\ d &= 0.14 . \end{aligned} \quad (8)$$

To specify a falloff reaction in TROE form, the four adjustable parameters[†] in Eq. 7 must be fit in addition to the three Arrhenius coefficients for both k_0 and k_∞ . That is, 10 parameters must be fit in total.

* CHEMKIN and Cantera support enhanced third-body efficiencies that can alter $[M]$ from the mixture concentration.

[†] T^{**} can be omitted in the TROE form,² in which case the last expression in Eq. 7 is ignored.

When specifying pressure dependency in PLOG form,³ a table of (temperature-dependent) Arrhenius rate coefficients at specific pressures is provided. The pressure-dependent rate coefficients in PLOG form were estimated using quantum Rice–Ramsperger–Kassel (RRK) theory^{11–13} in an N₂ bath gas. The pressure-dependent reaction rate is determined by linearly interpolating, in log-space, between two temperature-dependent rates, independently evaluated via Eq. 3 as follows:

$$\log k(T, p) = \log k_j(T) + \left(\log k_{j+1}(T) - \log k_j(T) \right) \frac{\log p - \log p_j}{\log p_{j+1} - \log p_j} \quad (9)$$

where k_j is the rate evaluated at the tabulated p_j and $p_j \leq p < p_{j+1}$. The number (N) of pressure and rate coefficient pairs tabulated (in increasing pressure) is arbitrary (provided $N \geq 2$) leading to a total of $3N$ model parameters. Note that while $3N$ parameters are needed, each set of Arrhenius coefficients are independent, making the fitting less challenging than either TROE or TH form (i.e., we fit only three parameters at each p_j). As noted, this makes PLOG formulations easier to fit to the underlying $k(T, p)$ data compared to the 10 parameters for the TROE formulation.

We used the original TH formulations for the 10 reactions to generate the reaction rate data over a range of pressures (p) and temperatures (T) from which the new TROE or PLOG parameters were fit. For all reactions, the pressure range was $10^{-4} \leq p \leq 10^5$ (atm) in multiples of 10 (atm). The minimum temperature for all reactions was 200 (K) and increased in increments of 100 K. The maximum tabulated temperature was limited to ensure $F_c \geq 0$. Since $a_2 = 0$ in all TH reactions in Chen and McQuaid,¹ the maximum temperature for each reaction, when building the fitting data, was $T_{max} = \min(5000, -a_0/a_1)$.

When fitting TROE reactions, since TH and TROE only differ in their treatment of F in Eq. 1, we reused the original k_0 and k_∞ Arrhenius coefficients (i.e., the rate coefficients in the low- and high-pressure regimes) and fit the four TROE parameters such that $F^{TROE}(T, p) \approx F^{TH}(T, p)$. For the PLOG reaction, we tabulated $k(T, p)$ via Eq. 1 using the original TH parameters and fit the three Arrhenius coefficients at each pressure interval.

We used the multivariate optimization algorithm from SciPy* to fit the four parameters in the TROE formulation and the three Arrhenius parameters at each p_j in the PLOG formulation. For TROE, we used the following initial values: $\alpha = a_0$, $T^{***} = 10^{-3}$, $T^* = 10^5$, and $T^{**} = 10^4$. For PLOG, we used the original Arrhenius coefficients (i.e., only temperature-dependent) as the starting guess.

* `scipy.optimize.curve_fit`

The Arrhenius rate coefficients for PLOG formulations were constrained during the fitting process according to the following:

$$\begin{aligned}
 A &> 0 \\
 10^{-300} &< T^\beta < 10^{300} \\
 -708.4 &> E_a/RT > 709.8.
 \end{aligned}
 \tag{10}$$

The first constraint on the pre-exponential coefficient was based on physical grounds. The latter two constraints were defined to keep the *log* and *exp* math functions within bounds assuming 64-bit floating point operations and were determined from the minimum and maximum tabulated temperatures for each reformulated TH reaction. Similar constraints were used for the TROE parameters to avoid floating-point under-/overflow.

3. Discussion

One of the TH reactions was converted to PLOG and the remaining nine to TROE form. We chose to reformulate reaction R1282 [$\text{CH}_3\text{NO}_2 \leftrightarrow \text{CH}_3 + \text{NO}_2$] to PLOG since no enhanced third-body collision efficiencies were specified, and as noted, PLOG provides more flexibility in defining pressure dependencies. The remaining nine TH falloff reactions specified third-body collision efficiencies, which necessitated converting to the TROE form to retain that functionality. Once new parameters were obtained from curve fitting, the new $k(T, p)$ data was compared with the original TH values.

Figure 1 shows the original rates using TH and the rates using the TROE formulation for reaction R828 [$2\text{CN} \leftrightarrow \text{C}_2\text{N}_2$] for a range of temperatures and pressures. The rates using the TROE formulation are in close agreement with the original TH-based results over the ranges of pressure and temperature. Figure 2 shows the ratio of the rates (i.e., k^{TH}/k^{TROE}), and the differences are seen to be less than 5% in general. The oscillatory nature of the error is attributed to the linearity of F_c in the TH model compared to the nonlinear dependency in TROE. We observe that the errors are attenuated at higher pressure as both models converge to the high-pressure regime (i.e., the converge to k_∞). An outlier in this behavior was R1138 [$\text{OH} + \text{NO}_2 \leftrightarrow \text{HNO}_3$] as shown in Fig. 3. There, we observed larger errors in the high-pressure regime, with errors peaking as the temperature approached the limit for which $F_c > 0$ (i.e., 2,900 [K]). The errors observed were still within a factor of 2 at 1,000 (MPa).

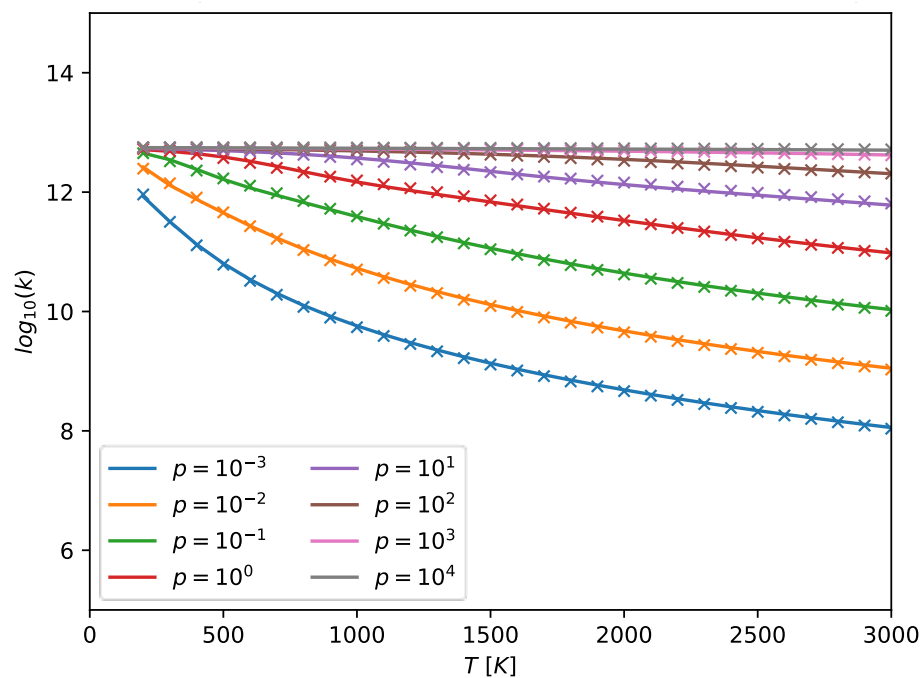


Fig. 1 Forward reaction rates $[k(T, p)]$ using original TH (symbols) and TROE (lines) formulations for reaction R828 $[2\text{CN} \leftrightarrow \text{C}_2\text{N}_2]$. Pressure units in atmospheres (atm).

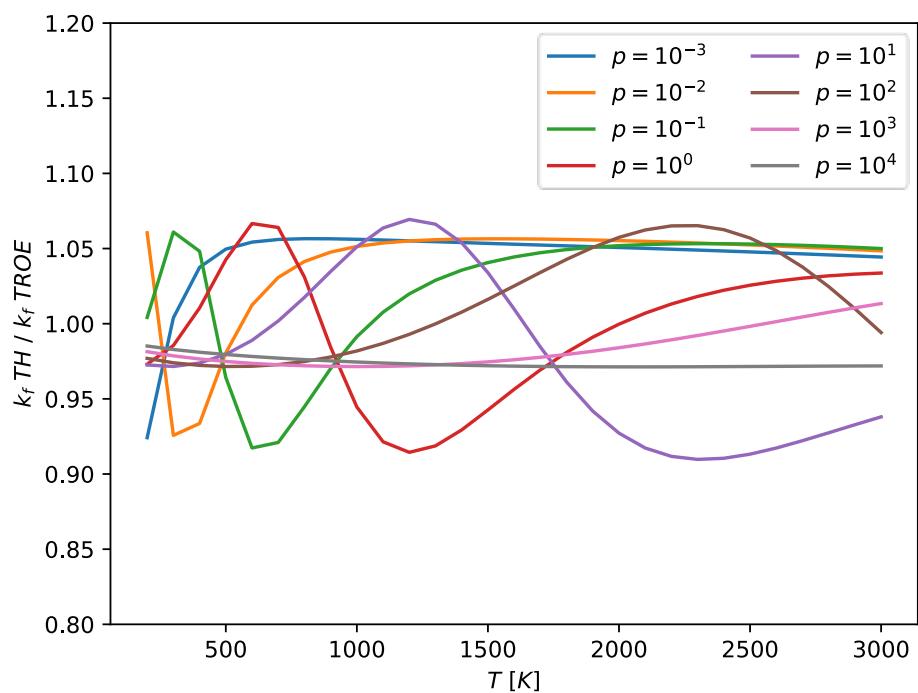


Fig. 2 Ratio of TH and TROE reaction rates $[k(T, p)]$ for reaction R828 $[2\text{CN} \leftrightarrow \text{C}_2\text{N}_2]$

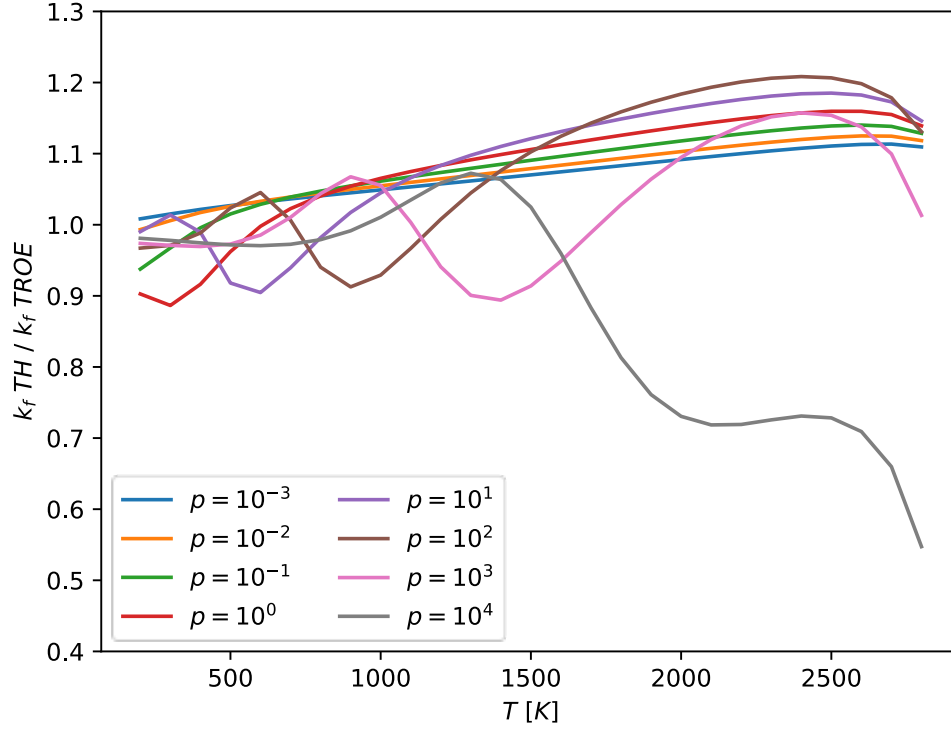


Fig. 3 Ratio of TH and TROE reaction rates $[k(T,p)]$ for reaction R1138 $[\text{OH} + \text{NO}_2 \leftrightarrow \text{HNO}_3]$ showing significant disagreement at higher pressure, especially as $F_c^{TH}(T)$ approaches zero

To determine the validity of the reformulated reactions in combination, we repeated computational estimates of the propellant linear burning rate ($\dot{r}$) of NGg over a range of pressures as was done in Chen and McQuaid¹ using the CYCLOPS-3 model of McQuaid and Chen,¹⁴ an evolution of the modeling methods of Miller and Anderson.^{15,16} We used the same condensed-phase properties for NGg (see Table 1 in Chen and McQuaid¹) and modeled the condensed-to-gas phase kinetic process using the same evaporative flux model (see Eqs. 5 and 6 in Chen and McQuaid¹). Figure 4 shows $\dot{r}$ from Chen and McQuaid¹ using the previous NGg mechanism (not including the aforementioned transcription errors) and the updated NGg mechanism as well as experimental data reported there. We see no appreciable differences in the burning rates using the reformulated mechanism when accounting for the solution tolerances in the CYCLOPS model. Excellent agreement was found even at the higher pressures ($p > 100$ [MPa]) where higher deviations in the computed reaction rates were observed.

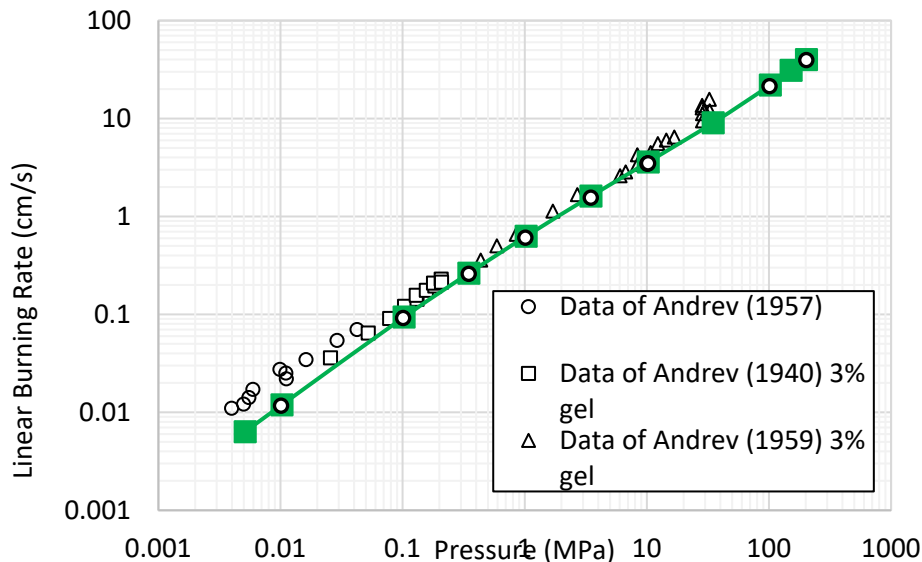


Fig. 1 Linear burning rate prediction of NGg as a function of pressure using CYCLOPS-3.¹⁴ Previous CYCLOPS-3 predictions (green) from Chen and McQuaid¹ compared with predictions using updated NGg mechanism (blue). (See HLK-1 results in Fig. 14 in Chen and McQuaid.¹)

4. Conclusions

We have presented a reformulated finite-rate chemical kinetics mechanism for the decomposition and deflagration of NGg. This addendum updated the NGg mechanism previously reported in Chen and McQuaid¹ by reformulating the nonstandard TH falloff reactions with either TROE or PLOG.

The method of conversion was presented. Pressure-dependent reaction rates using the original TH and reformulated forms were compared and presented. Good agreement was observed over a broad range of pressures and temperatures for individual reactions, with differences in reaction rates using the TH and TROE formulation generally less than 5%. However, larger differences were seen at higher temperatures as the validity limit of the TH falloff reaction parametrization is approached (i.e., $F_c \approx 0$) for select reactions. The impact was most pronounced at higher pressures due to higher fitting errors, though the maximum difference observed was 50% at 1,000 (MPa) and 2,900 K.

Propellant linear burning rate predictions over a wide range of pressures (above and below atmospheric) were computed and reported here. We showed that even with the deviations at high pressure, the burning rates predicted with the reformulated NGg mechanism were unaffected. From this, we conclude that the reformulated NGg mechanism is suitable for modeling NGg decomposition and deflagration.

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Appendix A. Transport Property Data

The following is the text of the input file for the TRANLIB¹ library (i.e., “tran.dat”) used by the CYCLOPS burning rate prediction model.

ACCJA	2	436	5.18	0	0	2
AR	0	136.5	3.33	0	0	0
C	0	71.4	3.298	0	0	0
C2H	1	209	4.1	0	0	2.5
C2H2	1	209	4.1	0	0	2.5
C2H2OH	2	436	5.18	0	0	2
C2H3	2	209	4.1	0	0	1
C2H4	2	280.8	3.971	0	0	1.5
C2H4O	2	436	3.97	0	0	2
C2H4O2H	2	436	5.18	0	0	2
C2H5	2	252.3	4.302	0	0	1.5
C2H5NO2	2	436	5.18	0	0	2
C2H5O	2	417	3.69	1.7	0	2
C2H5O2	2	436	5.18	0	0	2
C2H5O2H	2	436	5.18	0	0	2
C2H5OH	2	362.6	4.53	0	0	1
C2H5ONO	2	436	5.18	0	0	2
C2H6	2	252.3	4.302	0	0	1.5
C2N2	1	349	4.361	0	0	1
C3H3	1	252	4.76	0	0	1
C3H7	2	266.8	4.982	0	0	1
C3H8	2	266.8	4.982	0	0	1
CACACDJO	2	436	5.18	0	0	2
CACACDO	2	436	5.18	0	0	2
CACACDOOH	2	436	5.18	0	0	2
CACACDOOJ	2	436	5.18	0	0	2
CACACOH	2	436	5.18	0	0	2
CACACOH	2	436	5.18	0	0	2
CACACONO	2	436	5.18	0	0	2
CACACOONO	2	436	5.18	0	0	2
CACACQJ	2	436	5.18	0	0	2
CACDOCOJ	2	436	5.18	0	0	2
CACJACDO	2	436	5.18	0	0	2
CCDOOH	2	436	5.18	0	0	2
CCOONO	2	436	5.18	0	0	2
CCOONO_I	2	436	5.18	0	0	2
CDJCDO	2	436	5.18	0	0	2
CDJONO2	2	436	5.18	0	0	2
CDCOH	2	481.8	3.626	0	0	1
CDCONO2	2	436	5.18	0	0	2
CDJOCA	2	436	5.18	0	0	2
CDJOCDOCA	2	436	5.18	0	0	2
CDJOCQ	2	436	5.18	0	0	2
CDOCACOH	2	436	5.18	0	0	2
CDOCJACOH	2	436	5.18	0	0	2
CDOCOJ	2	436	5.18	0	0	2
CDOCOJCOH	2	436	5.18	0	0	2
CDOCQ	2	436	5.18	0	0	2
CDOOHA	2	436	5.18	0	0	2
CDOOJA	2	436	5.18	0	0	2
CH	1	80	2.75	0	0	0
CH2	1	144	3.8	0	0	0
CH2(S)	1	144	3.8	0	0	0
CH2CHO	2	436	3.97	0	0	2
CH2CO	2	436	3.97	0	0	2
CH2NH	2	436	5.18	0	0	2
CH2O	2	498	3.59	0	0	2
CH2OH	2	417	3.69	1.7	0	2
CH3	1	144	3.8	0	0	0
CH3CHO	2	436	3.97	0	0	2
CH3CO	2	436	3.97	0	0	2

¹ Kee RJ, Dixon-Lewis G, Warnatz J, Coltrin M, Miller JA. A Fortran computer code package for the evaluation of gas-phase, multicomponent transport properties. Sandia National Laboratories (US); 1986. Report No.: SAND86-8246.

CH3CO2	2	436	5.18	0	0	2
CH3N (NH2) NO2	2	436	6	0	0	2
CH3N (NH2) ONO	2	436	6	0	0	2
CH3NH	2	436	5.18	0	0	2
CH3NHNH2	2	436	5.18	0	0	2
CH3NN	2	436	5.18	0	0	2
CH3NNCH3	2	436	5.18	0	0	2
CH3NNH	2	436	5.18	0	0	2
CH3NNH2	2	436	5.18	0	0	2
CH3NO	2	436	5.18	0	0	2
CH3NO2	2	436	5.18	0	0	2
CH3O	2	417	3.69	1.7	0	2
CH3O2	2	436	5.18	0	0	2
CH3O2H	2	436	5.18	0	0	2
CH3OH	2	481.8	3.626	0	0	1
CH3ONO	2	436	5.18	0	0	2
CH3ONO2	2	436	5.18	0	0	2
CH3OONO	2	436	5.18	0	0	2
CH3OONOI	2	436	5.18	0	0	2
CH4	2	141.4	3.746	0	2.6	13
CHOCCHO	2	498	3.59	0	0	2
CJACACDO	2	436	5.18	0	0	2
CJACACOH	2	436	5.18	0	0	2
CJACDOCOH	2	436	5.18	0	0	2
CJCDOOH	2	436	5.18	0	0	2
CJCONO2	2	436	5.18	0	0	2
CJNO2CDO	2	436	5.18	0	0	2
CJOCDO	2	436	5.18	0	0	2
CJOHCDO	2	436	5.18	0	0	2
CJONOCDO	2	436	5.18	0	0	2
CN	1	75	3.856	0	0	1
CNO2CDJO	2	436	5.18	0	0	2
CNO2CDO	2	436	5.18	0	0	2
CO	1	98.1	3.65	0	1.95	1.8
CO2	1	244	3.763	0	2.65	2.1
COCDJO	2	436	5.18	0	0	2
COCDO	2	436	5.18	0	0	2
COHCDJO	2	436	5.18	0	0	2
COHCDO	2	436	5.18	0	0	2
COHOJK	2	436	5.18	0	0	2
COHOJJK	2	436	5.18	0	0	2
COHONOK	2	436	5.18	0	0	2
COHONOKK	2	436	5.18	0	0	2
COJCONO2	2	436	5.18	0	0	2
CONOCDJO	2	436	5.18	0	0	2
CONOCDO	2	436	5.18	0	0	2
CQJCONO2	2	436	5.18	0	0	2
DICACDO	2	436	5.18	0	0	2
DICACOH	2	436	5.18	0	0	2
DICACOJ	2	436	5.18	0	0	2
DICACONO	2	436	5.18	0	0	2
DICACOONO	2	436	5.18	0	0	2
DICACQJ	2	436	5.18	0	0	2
DICDJOCA	2	436	5.18	0	0	2
DICDOCA	2	436	5.18	0	0	2
DICDOCJA	2	436	5.18	0	0	2
DICDOCOJ	2	436	5.18	0	0	2
DICJACDO	2	436	5.18	0	0	2
DIOHCH2	2	436	5.18	0	0	2
ETONO2	2	436	5.18	0	0	2
H	0	145	2.05	0	0	0
H2	1	38	2.92	0	0.79	280
H2CC	2	436	5.18	0	0	2
H2CN	2	498	3.59	0	0	2
H2CNO2	2	436	5.18	0	0	2
H2NCHO	2	436	5.18	0	0	2
H2NN	2	116.7	3.492	0	0	1
H2NNO2	2	436	5.18	0	0	2
H2NONO	2	436	5.18	0	0	2
H2O	2	572.4	2.605	1.844	0	4
H2O2	2	107.4	3.458	0	0	3.8

HCCO	2	150	2.5	0	0	1
HCCOH	2	436	5.18	0	0	2
HCJOHONO	2	436	5.18	0	0	2
HCN	1	569	3.63	0	0	1
HCNO	2	232.4	3.828	0	0	1
HCO	2	498	3.59	0	0	0
HCOCACOJ	2	436	5.18	0	0	2
HCOCDOCA	2	436	5.18	0	0	2
HCOCDOCJA	2	436	5.18	0	0	2
HCOCJONO2	2	436	5.18	0	0	2
HCOCOJCA	2	436	5.18	0	0	2
HCOCONO2	2	436	5.18	0	0	2
HE	0	10.2	2.576	0	0	0
HNC	2	116.7	3.492	0	0	1
HNCO	2	232.4	3.828	0	0	1
HNJNO2	2	436	5.18	0	0	2
HNNDOOH	2	436	5.18	0	0	2
HNNDOOH_Z	2	436	5.18	0	0	2
HNNO	2	232.4	3.828	0	0	1
HNO	2	116.7	3.492	0	0	1
HNO2	2	572.4	3.6	1.844	0	3
HNO3	2	572.4	3.6	1.844	0	3
HNOH	2	116.7	3.492	0	0	1
HNOJNO2	2	436	5.18	0	0	2
HO2	2	107.4	3.458	0	0	1
HOCDONO	2	436	5.18	0	0	2
HOCDONO2	2	436	5.18	0	0	2
HOCDOONO	2	436	5.18	0	0	2
HOCH2O	2	436	5.18	0	0	2
HOCHO	2	436	5.18	0	0	2
HOCN	2	232.4	3.828	0	0	1
HOCO	2	572.4	3.6	1.844	0	3
HONJOCHO	2	436	5.18	0	0	2
HONNH	2	436	5.18	0	0	2
HONO	2	572.4	3.6	1.844	0	3
HOONO	2	436	5.18	0	0	2
HOYCCJO	2	436	5.18	0	0	2
HOYCCO	2	436	5.18	0	0	2
HOYCJCO	2	436	5.18	0	0	2
KDCNOHOJ	2	436	5.18	0	0	2
N	0	71.4	3.298	0	0	0
N2	1	97.53	3.621	0	1.76	4
N2H2	2	71.4	3.798	0	0	1
N2H3	2	200	3.9	0	0	1
N2H4	2	205	4.23	0	4.26	1.5
N2O	1	232.4	3.828	0	0	1
N2O3	2	436	5.18	0	0	2
N2O4	2	347	4.621	0	0	1
N2O5	2	436	5.18	0	0	2
NAMMH	2	436	6	0	0	2
NCN	1	232.4	3.828	0	0	1
NCNO	2	232.4	3.828	0	0	1
NCO	1	232.4	3.828	0	0	1
NG	2	436	5.18	0	0	2
NG1J	2	436	5.18	0	0	2
NG2J	2	436	5.18	0	0	2
NH	1	80	2.65	0	0	4
NH2	2	80	2.65	0	2.26	4
NH2NO	2	436	5.18	0	0	2
NH2O	2	116.7	3.492	0	0	1
NH2OH	2	436	5.18	0	0	2
NH2QJ	2	436	5.18	0	0	2
NH3	2	481	2.92	1.47	0	10
NJH2Q	2	436	5.18	0	0	2
NNH	2	71.4	3.798	0	0	1
NO	1	97.53	3.621	0	1.76	4
NO2	2	200	3.5	0	0	1
NO3	2	436	5.18	0	0	2
O	0	80	2.75	0	0	0
O2	1	107.4	3.458	0	1.6	3.8
O2C2H4OH	2	436	5.18	0	0	2

O2NCHO	2	436	5.18	0	0	2
O3	2	180	4.1	0	0	2
OCHO	2	436	5.18	0	0	2
OCJCDOCOH	2	436	5.18	0	0	2
ODCCDJO	2	436	5.18	0	0	2
ODCCDOCOH	2	436	5.18	0	0	2
ODCCDOCOJ	2	436	5.18	0	0	2
ODCICDO2	2	436	5.18	0	0	2
ODCJCACOH	2	436	5.18	0	0	2
ODCJKIDO	2	436	5.18	0	0	2
ODCKCJOH	2	436	5.18	0	0	2
OH	1	80	2.75	0	0	0
OH*	1	80	2.75	0	0	0
OJNHCHO	2	436	5.18	0	0	2
ONOCHO	2	436	5.18	0	0	2
ONONO2	2	436	5.18	0	0	2
PC2H4OH	2	436	5.18	0	0	2
SC2H2OH	2	436	5.18	0	0	2
SC2H4OH	2	436	5.18	0	0	2
VCDJO	2	436	5.18	0	0	2
VCDO	2	436	5.18	0	0	2
Y3COCA	2	436	5.18	0	0	2
Y3COCOJ	2	436	5.18	0	0	2
YC2JO	2	436	5.18	0	0	2

Appendix B. Chemical Kinetic and Thermodynamic Property Data

The following is the text of the reformulated nitroglycerin mechanism reported here using the CHEMKIN-III format with the common extension supporting PLOG pressure-dependent reactions. The chemical species thermodynamic data is embedded such that a single file (i.e., “chem.inp”) can be created and used as input to CHEMKIN-III’s interpreter or Cantera’s CHEMKIN-to-Cantera convert (i.e., ck2yaml).

```
!! CHEMKIN-III input for NG decomposition and combustion.
!! 1591 reactions
!! 227 species
!! 6 elements

ELEMENTS
C H N O HE AR
END

SPECIES
NG          CO          CO2          H2O          NO          NO2
H2          N2          O2          HOCHO        HE          AR
NG1J        NG2J        DICACOJ      CACACOJ      CACACDO     DICACDO
HCOCDOCA   CDJJOCA   DICDOCA     HCOCOJCA     HCOCACOJ     HCOCDOCJA
CDJOCDOCA  DICDOCJA  DICDJOCA    HCOCONO2     CJACACOH     CDOCACOH
CACDOCOJ   DICJACDO  CJACDOCOH   ODCCDOCOH    CACACDJO     CACJACDO
CJACACDO   ODCJCAOH  COHCDO      ODCICDO2     ODCCDOCOJ    DICDOCOJ
HCOCJONO2  CDOCJCOH  CDOCJAOH    ODCCDJO      OCJCDCOH     COHCDJO
ODCJKIDO   ODCKCJOH  COHONOKK    COHOJJK      COHONOK      COHOJK
CDOOHA     CDOOJA    CACACDOOH   CACACDOOJ    ACCJA        Y3COCA
Y3COCOJ    HOYCCO    CJOCDO      HOYCJCO      CJCDOOH      HOYCCJO
CJOHCDO    COCDO     COCDJO      CCDOOH       C2H2OH       SC2H2OH
HOCDOO     HOCDOO2   HOCDOONO    ONOCHO       HCJOHONO     OJNHCHO
HONJOCHO   O2NCHO    DIOHCH2     O            N2O          H
HNO         OH         HONO        HCN          CN           C2N2
HNCO        NH         H2CN        NCNO         C            N
NO3         HO2        NH2         NH3          CH           HCO
HCCO        H2O2       NCN         HCNO         NCO          NNH
N2H2        N2H3       N2H4        HNC          HOCO         HNO
HNO3        CH2        CH2 (S)     CH3          CH2O         CH4
CH2OH       CH3O       CH3OH       C2H          C2H2         C2H5
C2H6        CH2CO      C2H3        C2H4         HCCOH        HNO2
HNCH        NH2O       C2H4O       CH2CHO       CH3CHO       HOCN
CH3NNH2     CH3NH      CH3NNH2     CH3NNH       CH2NH        CH3NN
CH3NNCH3    CH3N (NH2) NO2 CH3N (NH2) ONO N2O4        NAMMH        CH3NO2
CH3NO       H2CNO2    CH3ONO      CHOCHO       C3H8         C3H7
CH3ONO2     CH3OONO   CH3OONOI    CH3O2        CH3O2H       C2H5O
CH3CO       CDCONO2   CONOCDO     CNO2CDO     CDCJONO2     CJONOCDO
CONOCDJO    CJNO2CDO  CNO2CDJO    KDCNOHOJ    ETONO2       CJCONO2
YC2JO       COJCONO2  CQJCONO2    CDOCQ        CDOCJ        CDJOCQ
CCOONO      CCOONO_I  C2H5O2      C2H5OH       SC2H4OH      HOCH2O
OCHO        CH3CO2    PC2H4OH     C2H4O2H      C2H5O2H      O2C2H4OH
C2H5ONO     C2H5NO2   NH2NO       NH2OH        H2NN         H2NONO
H2NNO2      HOONO     NH2QJ       HNNDOOH_Z    HNNDOOH      N2O5
HNJNO2      NJH2Q     HNOJNO2     N2O3         ONONO2       HONNH
O3          OH*       C3H3        CDCOH        H2NCHO       CDCJCDO
H2CC        VCDO      VCDJO       CACACOONO    CACACQJ      DICACOONO
DICACQJ     CACACONO  DICACONO    CACACOH      DICACOH

THERMO ALL
200.000 1000.0 6000.000
ACCJA      C      2H      3N      2O      6G300.000  5000.000  1386.000  1
1.86910132E+01 1.80443954E-02 -8.07957324E-06 1.52616905E-09 -9.95108875E-14 2
-1.08160042E+04 -5.66085026E+01 9.98953377E-01 7.03029807E-02 -6.66538442E-05 3
3.08745239E-08 -5.61607056E-12 -5.93685691E+03 3.42517321E+01 4
AR          AR      1          G300.000  5000.000  1000.000  1
```


2.50000000E+00	0.00000000E+00	0.00000000E+00	0.00000000E+00	0.00000000E+00	2
-7.45375000E+02	4.36600100E+00	2.50000000E+00	0.00000000E+00	0.00000000E+00	3
0.00000000E+00	0.00000000E+00	-7.45375000E+02	4.36600100E+00		4
C	C	1	G300.000	5000.000 1000.000	1
2.60208700E+00	-1.78708100E-04	9.08704100E-08	-1.14993300E-11	3.31084400E-16	2
8.54215400E+04	4.19517700E+00	2.49858500E+00	8.08577700E-05	-2.69769700E-07	3
3.04072900E-10	-1.10665200E-13	8.54587800E+04	4.75345900E+00		4
C2H	C	2H	1	G300.000 4000.000 1000.000	1
3.98636700E+00	3.14312300E-03	-1.26724300E-06	2.92436300E-10	-2.71632000E-14	2
6.65588400E+04	1.19106300E+00	2.73770400E+00	8.04844600E-03	-9.24431000E-06	3
6.52525900E-09	-1.93958000E-12	6.68381300E+04	7.30022000E+00		4
C2H2	C	2H	2	G300.000 5000.000 1000.000	1
4.43677000E+00	5.37603900E-03	-1.91281700E-06	3.28637900E-10	-2.15671000E-14	2
2.56676600E+04	-2.80033800E+00	2.01356200E+00	1.51904500E-02	-1.61631900E-05	3
9.07899200E-09	-1.91274600E-12	2.61244400E+04	8.80537800E+00		4
C2H2OH	C	2H	3O	1 G300.000 5000.000 1391.000	1
9.34909932E+00	5.25044090E-03	-1.82394986E-06	2.86589639E-10	-1.67805710E-14	2
1.15682550E+04	-2.53098042E+01	1.26743959E+00	2.39821817E-02	-1.78083709E-05	3
6.19704804E-09	-8.05764086E-13	1.43181570E+04	1.80275157E+01		4
C2H3	C	2H	3	G300.000 5000.000 1000.000	1
5.93346800E+00	4.01774600E-03	-3.96674000E-07	-1.44126700E-10	2.37864400E-14	2
3.18543500E+04	-8.53031300E+00	2.45927600E+00	7.37147600E-03	2.10987300E-06	3
-1.32164200E-09	-1.18478400E-12	3.33522500E+04	1.15562000E+01		4
C2H4	C	2H	4	G300.000 5000.000 1000.000	1
3.52841900E+00	1.14851800E-02	-4.41838500E-06	7.84460100E-10	-5.26684800E-14	2
4.42828900E+03	2.23038900E+00	-8.61488000E-01	2.79616300E-02	-3.38867700E-05	3
2.78515200E-08	-9.73787900E-12	5.57304600E+03	2.42114900E+01		4
C2H4O	C	2H	4O	1 G300.000 5000.000 1400.000	1
7.04272994E+00	1.00110676E-02	-3.42398623E-06	5.31623557E-10	-3.08469387E-14	2
-1.00228712E+04	-1.61926118E+01	-1.42915337E+00	2.91826985E-02	-1.96414512E-05	3
6.60926623E-09	-8.79248471E-13	-7.04124488E+03	2.94882584E+01		4
C2H4O2H	C	2H	5O	2 G300.000 5000.000 1388.000	1
1.11476965E+01	1.04949968E-02	-3.62326819E-06	5.66061229E-10	-3.29857328E-14	2
-8.35606734E+02	-2.87480538E+01	3.40977031E+00	2.65939711E-02	-1.57408161E-05	3
4.41132564E-09	-4.49209001E-13	2.05874655E+03	1.35264941E+01		4
C2H5	C	2H	5	G300.000 5000.000 1460.000	1
5.57508447E+00	1.05558254E-02	-3.55403212E-06	5.46155407E-10	-3.14675617E-14	2
1.10133650E+04	-6.48758419E+00	1.60717554E+00	1.33592058E-02	1.85866156E-06	3
-5.67582851E-09	1.66338686E-12	1.30227172E+04	1.70908946E+01		4
C2H5NO2	C	2H	5N	2 G300.000 5000.000 1391.000	1
1.07740191E+01	1.35779965E-02	-4.64194704E-06	7.20484469E-10	-4.17943130E-14	2
-1.80929868E+04	-2.85409960E+01	8.60265707E-01	3.50853856E-02	-2.19669529E-05	3
6.86630898E-09	-8.49036070E-13	-1.44784977E+04	2.52985528E+01		4
C2H5O	C	2H	5O	1 G300.000 5000.000 1397.000	1
7.99494328E+00	1.16435818E-02	-4.95527268E-06	9.40395740E-10	-6.27179768E-14	2
-6.03840830E+03	-1.80274987E+01	-2.06105850E+00	3.90869199E-02	-3.39343824E-05	3
1.48663223E-08	-2.60789426E-12	-2.98499617E+03	3.45061278E+01		4
C2H5O2	C	2H	5O	2 G300.000 5000.000 1386.000	1
9.15255914E+00	1.24709284E-02	-4.27100650E-06	6.63470012E-10	-3.85024363E-14	2
-7.91818201E+03	-2.00995359E+01	3.25121168E+00	2.36765869E-02	-1.18477606E-05	3
2.79401564E-09	-2.41043601E-13	-5.53591951E+03	1.26342679E+01		4
C2H5O2H	C	2H	6O	2 G300.000 5000.000 1389.000	1
1.15361794E+01	1.26680904E-02	-4.36302927E-06	6.80516196E-10	-3.96092541E-14	2
-2.58990676E+04	-3.37584606E+01	2.55448138E+00	3.13447282E-02	-1.84312866E-05	3
5.15917791E-09	-5.28572992E-13	-2.25353676E+04	1.53197322E+01		4
C2H5OH	C	2H	6O	1 G300.000 5000.000 1391.000	1
7.95264841E+00	1.31574144E-02	-4.43693359E-06	6.82201160E-10	-3.93096335E-14	2
-3.23602958E+04	-1.76537972E+01	4.23149045E-01	2.92858167E-02	-1.73845099E-05	3
5.33639892E-09	-6.74917252E-13	-2.95683054E+04	2.33538763E+01		4
C2H5ONO	C	2H	5N	1O 2G300.000 5000.000 1394.000	1
1.17299657E+01	1.27562764E-02	-4.35584164E-06	6.75510485E-10	-3.91616614E-14	2
-1.71362413E+04	-3.31116039E+01	1.84941267E+00	3.53907948E-02	-2.41398149E-05	3
8.54918027E-09	-1.24564972E-12	-1.36536655E+04	2.01222696E+01		4
C2H6	C	2H	6	G300.000 4000.000 1000.000	1
4.82593800E+00	1.38404300E-02	-4.55725900E-06	6.72496700E-10	-3.59816100E-14	2
-1.27177900E+04	-5.23950700E+00	1.46253900E+00	1.54946700E-02	5.78050700E-06	3
-1.25783200E-08	4.58626700E-12	-1.12391800E+04	1.44322900E+01		4
C2N2	C	2N	2	G300.000 5000.000 1000.000	1
6.54800300E+00	3.98470700E-03	-1.63421600E-06	3.03859700E-10	-2.11106900E-14	2
3.49071600E+04	-9.73579000E+00	4.26545900E+00	1.19225700E-02	-1.34201400E-05	3
9.19229700E-09	-2.77894200E-12	3.54788800E+04	1.71321200E+00		4

C3H3	C	3H	3	G300.000	5000.000	1395.000	1
7.33864676E+00	7.21591641E-03	-2.45847585E-06	3.80595652E-10	-2.20344486E-14			2
3.78839243E+04	-1.52993244E+01	1.97162626E+00	2.08254354E-02	-1.62243553E-05			3
6.91470764E-09	-1.22819424E-12	3.96736606E+04	1.31996920E+01				4
C3H7	C	3H	7	G300.000	5000.000	1000.000	1
7.70269870E+00	1.60442030E-02	-5.28332200E-06	7.62985900E-10	-3.93922840E-14			2
8.29843360E+03	-1.54801800E+01	1.05155180E+00	2.59919800E-02	2.38005400E-06			3
-1.96095690E-08	9.37324700E-12	1.06318630E+04	2.11225590E+01				4
C3H8	C	3H	8	G300.000	5000.000	1000.000	1
7.53413680E+00	1.88722390E-02	-6.27184910E-06	9.14756490E-10	-4.78380690E-14			2
-1.64675160E+04	-1.78923490E+01	9.33553810E-01	2.64245790E-02	6.10597270E-06			3
-2.19774990E-08	9.51492530E-12	-1.39585200E+04	1.92016910E+01				4
CACACDJO	C	3H	3N 2O	7G300.000	5000.000	1396.000	1
2.87579835E+01	1.03836158E-02	-3.78069816E-06	6.11981894E-10	-3.65533688E-14			2
-3.00582883E+04	-1.09186553E+02	4.83442686E+00	6.73248632E-02	-5.40224699E-05			3
2.00179814E-08	-2.78794465E-12	-2.26912497E+04	1.85327407E+01				4
CACACDO	C	3H	4N 2O	7G300.000	5000.000	1398.000	1
3.13808405E+01	1.07393812E-02	-3.91192809E-06	6.33405898E-10	-3.78405633E-14			2
-5.08171865E+04	-1.27688926E+02	4.21832645E+00	7.89613443E-02	-6.88048498E-05			3
2.83391650E-08	-4.51044334E-12	-4.20894623E+04	1.61207745E+01				4
CACACDOOH	C	3H	4N 2O	8G300.000	5000.000	1399.000	1
3.15054374E+01	1.40834483E-02	-5.07773126E-06	8.16709863E-10	-4.85692860E-14			2
-8.27296674E+04	-1.32418831E+02	-7.01631142E-01	9.71657225E-02	-8.70903349E-05			3
3.74732923E-08	-6.28261713E-12	-7.25455460E+04	3.74122942E+01				4
CACACDOOJ	C	3H	5N 2O	8G300.000	5000.000	1398.000	1
3.27612770E+01	1.43878706E-02	-5.10753528E-06	8.13311886E-10	-4.80388189E-14			2
-5.86666439E+04	-1.34909692E+02	4.53609389E+00	8.76708299E-02	-7.82648875E-05			3
3.40086478E-08	-5.79284579E-12	-4.97555052E+04	1.38126648E+01				4
CACACOH	C	3H	6N 2O	7G300.000	5000.000	1427.000	1
2.89011195E+01	1.66482702E-02	-5.76241823E-06	9.03027715E-10	-5.27717758E-14			2
-6.07320627E+04	-1.11657564E+02	9.67180613E-01	8.41292400E-02	-6.63673956E-05			3
2.48038614E-08	-3.52589400E-12	-5.15409878E+04	3.70960996E+01				4
CACACOJ	C	3H	5N 2O	7G300.000	5000.000	1380.000	1
3.04161121E+01	1.43066390E-02	-5.18930099E-06	8.37883811E-10	-4.99592011E-14			2
-3.53594673E+04	-1.21140816E+02	2.35359482E+00	7.94117384E-02	-6.11212416E-05			3
2.18552653E-08	-2.94533753E-12	-2.57864720E+04	2.93734813E+01				4
CACACONO	C	3H	5N 3O	8G300.000	5000.000	1398.000	1
3.07138893E+01	2.09668937E-02	-7.31986268E-06	1.15265674E-09	-6.75545540E-14			2
-4.52711522E+04	-1.29976175E+02	3.90908834E-01	9.75023055E-02	-8.16287121E-05			3
3.40230114E-08	-5.63185676E-12	-3.54393116E+04	3.06420299E+01				4
CACACOONO	C	3H	5N 3O	9G300.000	5000.000	1398.000	1
3.32789518E+01	2.13657403E-02	-7.46467185E-06	1.17607053E-09	-6.89524669E-14			2
-3.85446861E+04	-1.43478361E+02	5.98806506E-01	1.05488581E-01	-9.10328773E-05			3
3.90510284E-08	-6.63538551E-12	-2.81077518E+04	2.90523541E+01				4
CACACQJ	C	3H	5N 2O	8G300.000	5000.000	1399.000	1
2.87733204E+01	1.99781800E-02	-6.95867503E-06	1.09414324E-09	-6.40598993E-14			2
-3.45876565E+04	-1.20113095E+02	5.73380652E-02	9.24809249E-02	-7.73047832E-05			3
3.21587787E-08	-5.30925182E-12	-2.52872258E+04	3.19710541E+01				4
CACDOCOJ	C	3H	4N 1O	5G300.000	5000.000	1391.000	1
2.21025308E+01	1.15273747E-02	-4.11177389E-06	6.56614178E-10	-3.88531887E-14			2
-3.28508314E+04	-8.18831713E+01	2.21771044E+00	6.31410447E-02	-5.62591180E-05			3
2.48612358E-08	-4.35424256E-12	-2.65002987E+04	2.30176059E+01				4
CACJACDO	C	3H	3N 2O	7G300.000	5000.000	1380.000	1
2.83412521E+01	1.11591793E-02	-4.04696225E-06	6.53363447E-10	-3.89540210E-14			2
-3.07164606E+04	-1.10004310E+02	6.45629275E+00	6.21818601E-02	-4.82499017E-05			3
1.74870385E-08	-2.40645273E-12	-2.32691964E+04	7.29902967E+00				4
CCDOOH	C	2H	4O 2	G300.000	5000.000	1406.000	1
8.47880563E+00	1.04358500E-02	-3.38181696E-06	5.06226275E-10	-2.86319822E-14			2
-5.69628340E+04	-1.79972281E+01	3.13389685E-01	3.06447963E-02	-2.24672836E-05			3
8.65714199E-09	-1.35274380E-12	-5.42830370E+04	2.53824436E+01				4
CCOONO	C	2H	5N 1O	3G300.000	5000.000	1372.000	1
1.52531777E+01	1.20289859E-02	-4.23177954E-06	6.69469748E-10	-3.93526998E-14			2
-1.05877371E+04	-4.81975762E+01	6.75177828E+00	2.78319082E-02	-1.41234387E-05			3
2.85712283E-09	-9.87063015E-14	-7.16210614E+03	-9.85637250E-01				4
CCOONO I	C	2H	5N 1O	3G300.000	5000.000	1374.000	1
1.47574518E+01	1.24935145E-02	-4.40217099E-06	6.97166259E-10	-4.10112045E-14			2
-1.14047761E+04	-4.52509519E+01	5.01498966E+00	3.21521432E-02	-1.89965715E-05			3
5.47531077E-09	-6.33172616E-13	-7.63360176E+03	8.30449907E+00				4
CDCJCDO	C	3H	3O 1	G300.000	5000.000	1394.000	1
9.16948946E+00	8.26011971E-03	-2.83138627E-06	4.40239395E-10	-2.55688961E-14			2
1.63611269E+04	-2.19787415E+01	2.06423047E+00	2.53895107E-02	-1.89080978E-05			3

7.42682956E-09-1.20612383E-12 1.87864637E+04 1.60108083E+01	4
CDCJONO2 C 2H 2N 1O 3G300.000 5000.000 1402.000	1
1.36529858E+01 6.71971893E-03-2.33498422E-06 3.66637602E-10-2.14480539E-14	2
2.06425576E+04-4.21413165E+01 1.20749335E+00 4.09753525E-02-3.88019995E-05	3
1.80063308E-08-3.25998536E-12 2.43932553E+04 2.27723030E+01	4
CDCOH C 2H 4O 1 G300.000 5000.000 1410.000	1
9.77956215E+00 6.84812705E-03-2.24091841E-06 3.37327909E-10-1.91426269E-14	2
-1.89257556E+04-2.92498906E+01-2.40062821E+00 4.77910119E-02-5.39966347E-05	3
2.90602124E-08-5.88121059E-12-1.59381982E+04 3.17448264E+01	4
CDCONO2 C 2H 3N 1O 3G300.000 5000.000 1405.000	1
1.40417680E+01 8.50005220E-03-2.94750572E-06 4.62179339E-10-2.70114913E-14	2
-8.41498031E+03-4.53161830E+01-5.64762170E-01 4.73860351E-02-4.28030522E-05	3
1.90078671E-08-3.30897487E-12-3.90059834E+03 3.13037825E+01	4
CDJJOCA C 2H 2N 1O 4G300.000 5000.000 1380.000	1
1.50591976E+01 7.60669565E-03-2.72719133E-06 4.36966971E-10-2.59156551E-14	2
-1.40354249E+04-4.49275887E+01 3.60367542E+00 3.45323936E-02-2.68308746E-05	3
1.02325623E-08-1.55413751E-12-1.01018471E+04 1.64924927E+01	4
CDJOCDOCA C 3H 2N 1O 5G300.000 5000.000 1385.000	1
1.84276000E+01 9.92172196E-03-3.54456620E-06 5.66602984E-10-3.35497656E-14	2
-2.85281891E+04-5.97024161E+01 3.26461282E+00 4.70174413E-02-3.85914778E-05	3
1.57665098E-08-2.57976007E-12-2.34566887E+04 2.10962443E+01	4
CDJOCQ C 2H 3O 3 G300.000 5000.000 1407.000	1
1.48670719E+01 4.65146202E-03-1.57814245E-06 2.43830428E-10-1.41036785E-14	2
-1.86396780E+04-4.86539425E+01 1.59661371E+00 4.76893967E-02-5.44409850E-05	3
2.89550619E-08-5.78228861E-12-1.24560480E+04 1.83113216E+01	4
CDOCACOH C 3H 5N 1O 5G300.000 5000.000 1400.000	1
2.41709863E+01 1.15249857E-02-4.02655825E-06 6.34304719E-10-3.71828469E-14	2
-5.75286447E+04-9.40987496E+01 2.85153431E+00 7.25114875E-02-7.18599875E-05	3
3.49017024E-08-6.58086546E-12-5.13249166E+04 1.63811759E+01	4
CDOCJACOH C 3H 4N 1O 5G300.000 5000.000 1403.000	1
2.10369511E+01 1.17302538E-02-4.02756835E-06 6.27495379E-10-3.65137323E-14	2
-3.86997633E+04-7.48552361E+01 5.44710137E+00 4.92326451E-02-3.79148252E-05	3
1.42539905E-08-2.08934876E-12-3.35095302E+04 8.29518859E+00	4
CDOCOJ C 2H 3O 2 G300.000 5000.000 1400.000	1
9.27571884E+00 7.75575520E-03-2.66050704E-06 4.13950919E-10-2.40557083E-14	2
-1.43208212E+04-2.15954698E+01 7.35801911E-01 2.94411702E-02-2.40116195E-05	3
1.00523052E-08-1.69503344E-12-1.15462450E+04 2.36230662E+01	4
CDOCOJCOH C 3H 5O 3 G300.000 5000.000 1405.000	1
1.58341657E+01 1.12732598E-02-3.81841297E-06 5.88990558E-10-3.40193615E-14	2
-3.91978927E+04-5.30030295E+01 1.67421441E+00 5.12488487E-02-4.77486008E-05	3
2.25512609E-08-4.19106813E-12-3.49895961E+04 2.05649167E+01	4
CDOCQ C 2H 4O 3 G300.000 5000.000 1418.000	1
1.59083418E+01 6.44259253E-03-2.23012225E-06 3.49619204E-10-2.04405575E-14	2
-3.53786109E+04-5.68289201E+01-7.05853704E-01 5.28285000E-02-5.16967689E-05	3
2.40768348E-08-4.31137688E-12-3.05034699E+04 2.94836893E+01	4
CDOOHA C 2H 3N 1O 5G300.000 5000.000 1406.000	1
1.90622954E+01 9.56080594E-03-3.37066000E-06 5.34712293E-10-3.15133196E-14	2
-6.52289877E+04-7.11834364E+01-6.20401037E-01 5.86257336E-02-4.94836048E-05	3
1.98913597E-08-3.08825327E-12-5.88810123E+04 3.31330974E+01	4
CDOOJA C 2H 4N 1O 5G300.000 5000.000 1399.000	1
1.96506127E+01 1.05146339E-02-3.63642751E-06 5.68900696E-10-3.31866752E-14	2
-4.05144224E+04-6.90949928E+01 3.91525349E+00 5.53318964E-02-5.35492020E-05	3
2.59099320E-08-4.90481630E-12-3.58496530E+04 1.25659979E+01	4
CH C 1H 1 G300.000 5000.000 1000.000	1
2.19622300E+00 2.34038100E-03-7.05820100E-07 9.00758200E-11-3.85504000E-15	2
7.08672300E+04 9.17837300E+00 3.20020200E+00 2.07287600E-03-5.13443100E-06	3
5.73389000E-09-1.95553300E-12 7.04525900E+04 3.33158800E+00	4
CH2 C 1H 2 G250.000 4000.000 1000.000	1
3.63640800E+00 1.93305700E-03-1.68701600E-07-1.00989900E-10 1.80825600E-14	2
4.53413400E+04 2.15656100E+00 3.76223700E+00 1.15981900E-03 2.48958500E-07	3
8.80083600E-10-7.33243500E-13 4.53679100E+04 1.71257800E+00	4
CH2(S) C 1H 2 G300.000 4000.000 1000.000	1
3.55288900E+00 2.06678800E-03-1.91411600E-07-1.10467300E-10 2.02135000E-14	2
4.98497500E+04 1.68657000E+00 3.97126500E+00-1.69908900E-04 1.02536900E-06	3
2.49255100E-09-1.98126600E-12 4.98936800E+04 5.75320700E-02	4
CH2CHO C 2H 3O 1 G300.000 5000.000 1000.000	1
5.97567000E+00 8.13059100E-03-2.74362400E-06 4.07030400E-10-2.17601700E-14	2
4.90321800E+02-5.04525100E+00 3.40906200E+00 1.07385740E-02 1.89149200E-06	3
-7.15858300E-09 2.86738500E-12 1.52147660E+03 9.55829000E+00	4
CH2CO C 2H 2O 1 G300.000 5000.000 1000.000	1
6.03881700E+00 5.80484000E-03-1.92095400E-06 2.79448500E-10-1.45886800E-14	2

-8.58340200E+03-7.65758100E+00 2.97497100E+00 1.21187100E-02-2.34504600E-06	3
-6.46668500E-09 3.90564900E-12-7.63263700E+03 8.67355300E+00	4
CH2NH C 1H 3N 1 G300.000 5000.000 1577.000	1
4.54737795E+00 7.17720948E-03-2.47935299E-06 3.87692351E-10-2.26113075E-14	2
8.64056516E+03-1.16687427E+00 2.81849510E+00 5.11983235E-03 6.38887146E-06	3
-6.61374671E-09 1.65531940E-12 9.88442597E+03 1.03390629E+01	4
CH2O C 1H 2O 1 G200.000 3500.000 1000.000	1
1.76069008E+00 9.20000082E-03-4.42258813E-06 1.00641212E-09-8.83855640E-14	2
-1.39958323E+04 1.36563230E+01 4.79372315E+00-9.90833369E-03 3.73220008E-05	3
-3.79285261E-08 1.31772652E-11-1.43089567E+04 6.02812900E-01	4
CH2OH C 1H 3O 1 G250.000 4000.000 1000.000	1
6.32752000E+00 3.60827100E-03-3.20154700E-07-1.93875000E-10 3.50970500E-14	2
-4.47450900E+03-8.32936600E+00 2.86262800E+00 1.00152700E-02-5.28543600E-07	3
-5.13854000E-09 2.24604100E-12-3.34967900E+03 1.03979400E+01	4
CH3 C 1H 3 G300.000 5000.000 1000.000	1
2.84405200E+00 6.13797400E-03-2.23034500E-06 3.78516100E-10-2.45215900E-14	2
1.64378100E+04 5.45269700E+00 2.43044300E+00 1.11241000E-02-1.68022000E-05	3
1.62182900E-08-5.86495300E-12 1.64237800E+04 6.78979400E+00	4
CH3CHO C 2H 4O 1 G200.000 6000.000 1000.000	1
5.40411080E+00 1.17230590E-02-4.22631370E-06 6.83724510E-10-4.09848630E-14	2
-2.25931220E+04-3.48079170E+00 4.72945950E+00-3.19328580E-03 4.75349210E-05	3
-5.74586110E-08 2.19311120E-11-2.15728780E+04 4.10301590E+00	4
CH3CO C 2H 3O 1 G300.000 5000.000 1000.000	1
5.61227900E+00 8.44988600E-03-2.85414700E-06 4.23837600E-10-2.26840400E-14	2
-5.18786300E+03-3.27494900E+00 3.12527800E+00 9.77822000E-03 4.52144800E-06	3
-9.00946200E-09 3.19371800E-12-4.10850800E+03 1.12288500E+01	4
CH3CO2 C 2H 3O 2 G300.000 5000.000 1402.000	1
8.66668933E+00 8.12452077E-03-2.66950784E-06 4.03691210E-10-2.30057984E-14	2
-2.73530000E+04-1.77978225E+01 9.48577764E-01 2.69496305E-02-2.00635163E-05	3
7.62275527E-09-1.15644350E-12-2.48005404E+04 2.32904248E+01	4
CH3N(NH2)NO2 C 1H 5N 3O 2G200.000 6000.000 1000.000	1
1.21984835E+01 1.62617248E-02-5.71988812E-06 9.08210118E-10-5.36252527E-14	2
6.79844434E+03-3.67869301E+01 2.88978982E+00 3.53801027E-02-1.65682595E-05	3
2.48456899E-09-5.91301368E-13 9.87751953E+03 1.34300222E+01	4
CH3N(NH2)ONO C 1H 5N 3O 2G200.000 6000.000 1000.000	1
1.30544300E+01 1.54322572E-02-5.40527844E-06 8.55610804E-10-5.04036781E-14	2
1.38417080E+04-4.07214851E+01 2.03535080E+00 4.72689942E-02-4.53003959E-05	3
2.92119520E-08-9.32928127E-12 1.70074824E+04 1.63740444E+01	4
CH3NH C 1H 4N 1 G200.000 6000.000 1000.000	1
4.30231530E+00 1.02773370E-02-3.65937600E-06 5.87024570E-10-3.49794530E-14	2
2.04731260E+04 1.30254030E-01 4.74627490E+00-7.17051980E-03 5.02425790E-05	3
-5.85892310E-08 2.22432190E-11 2.11242010E+04 1.71623900E+00	4
CH3NHNH2 C 1H 6N 2 G298.150 6000.000 1000.000	1
6.46195602E+00 1.54661452E-02-5.29188310E-06 8.22877488E-10-4.78182997E-14	2
8.08517920E+03-1.06506405E+01-1.55617356E-01 3.41164172E-02-3.21289044E-05	3
2.50164209E-08-9.43703969E-12 1.01527490E+04 2.41129608E+01	4
CH3NN C 1H 3N 2 G200.000 6000.000 1000.000	1
5.67013311E+00 8.94569233E-03-3.14525028E-06 4.98943442E-10-2.94305257E-14	2
2.57493809E+04-3.74855208E+00 3.61245823E+00 8.93290434E-03 4.69342467E-06	3
-6.90933755E-09 1.61064066E-12 2.67246172E+04 8.61822414E+00	4
CH3NNCH3 C 2H 6N 2 G300.000 4000.000 1000.000	1
4.98631520E+00 2.40708090E-02-1.07325550E-05 2.24411620E-09-1.79616550E-13	2
1.54095820E+04-1.56061580E+00 1.90138150E+00 2.72808590E-02-5.37521940E-06	3
-5.76096930E-09 2.34301720E-12 1.66004570E+04 1.58983380E+01	4
CH3NNH C 1H 4N 2 G200.000 6000.000 1000.000	1
5.48334026E+00 1.17117818E-02-4.12106147E-06 6.54262200E-10-3.86199590E-14	2
1.86890527E+04-4.73384237E+00 3.51484036E+00 5.56200324E-03 2.14472257E-05	3
-2.41589770E-08 7.32461054E-12 1.99403457E+04 8.65997982E+00	4
CH3NNH2 C 1H 5N 2 G200.000 6000.000 1000.000	1
6.48248625E+00 1.31416200E-02-4.55408099E-06 7.15495219E-10-4.19235501E-14	2
2.18344199E+04-9.10020638E+00 2.89725447E+00 1.52571928E-02 5.46573210E-06	3
-1.13299263E-08 3.45334525E-12 2.33342324E+04 1.16815443E+01	4
CH3NO C 1H 3N 1O 1G300.000 4000.000 1500.000	1
8.82054700E+00 3.70623300E-03-2.89474100E-07-1.89791000E-10 3.23754400E-14	2
5.36286200E+03-2.21322000E+01 2.10995500E+00 1.51782200E-02-7.07178900E-06	3
1.51061100E-09-1.60420400E-13 8.29361200E+03 1.56970200E+01	4
CH3NO2 C 1H 3N 1O 2G300.000 4000.000 1500.000	1
1.09015800E+01 4.32638100E-03-4.20354800E-07-1.89307100E-10 3.41744400E-14	2
-1.37086200E+04-3.07318300E+01 3.22471700E-01 2.66514700E-02-1.93057400E-05	3
7.76262000E-09-1.39874600E-12-9.59752700E+03 2.72615600E+01	4
CH3O C 1H 3O 1 G300.000 3000.000 1000.000	1

3.77080000E+00	7.87149700E-03	-2.65638400E-06	3.94443100E-10	-2.11261600E-14	2			
1.27832500E+02	2.92957500E+00	2.10620400E+00	7.21659500E-03	5.33847200E-06	3			
-7.37763600E-09	2.07561100E-12	9.78601100E+02	1.31521800E+01		4			
CH3O2	C	1H	3O	2	G300.000	5000.000	1385.000	1
5.95787891E+00	7.90728626E-03	-2.68246234E-06	4.13891337E-10	-2.39007330E-14	2			
-1.72699146E+03	-4.22643302E+00	4.26146906E+00	1.00873599E-02	-3.21506184E-06	3			
2.09409266E-10	4.18339104E-14	-8.75637340E+02	5.65650904E+00		4			
CH3O2H	C	1H	4O	2	G300.000	5000.000	1390.000	1
8.43117091E+00	8.06817909E-03	-2.77094921E-06	4.31332243E-10	-2.50692146E-14	2			
-1.96678771E+04	-1.93032733E+01	3.23442817E+00	1.90129767E-02	-1.13386287E-05	3			
3.40306653E-09	-4.11830222E-13	-1.77197926E+04	9.07002912E+00		4			
CH3OH	C	1H	4O	1	G300.000	5000.000	1000.000	1
4.02906100E+00	9.37659300E-03	-3.05025400E-06	4.35879300E-10	-2.22472300E-14	2			
-2.61579100E+04	2.37819600E+00	2.66011500E+00	7.34150800E-03	7.17005100E-06	3			
-8.79319400E-09	2.39057000E-12	-2.53534800E+04	1.12326300E+01		4			
CH3ONO	C	1H	3N	1O	2G300.000	4000.000	1500.000	1
1.13612900E+01	4.15934900E-03	-4.14567000E-07	-1.69514000E-10	3.02873200E-14	2			
-1.28148200E+04	-3.54543500E+01	1.49034500E+00	2.64543300E-02	-2.11233200E-05	3			
9.41439900E-09	-1.81120500E-12	-9.12578200E+03	1.81376600E+01		4			
CH3ONO2	C	1H	3N	1O	3G300.000	5000.000	1382.000	1
1.13980493E+01	8.43730296E-03	-2.97734215E-06	4.72072167E-10	-2.77953870E-14	2			
-1.99184963E+04	-3.29755758E+01	2.00735388E+00	2.89172145E-02	-1.93690231E-05	3			
6.14043414E-09	-7.31614920E-13	-1.65357106E+04	1.79360405E+01		4			
CH3OONO	C	1H	3N	1O	3G300.000	5000.000	1494.000	1
1.21875552E+01	8.17408541E-03	-2.79386939E-06	4.34165217E-10	-2.52247350E-14	2			
-4.81404643E+03	-3.43126278E+01	5.48691449E+00	1.95385444E-02	-7.35972144E-06	3			
-6.65431141E-10	6.93373477E-13	-2.11121372E+03	3.10809865E+00		4			
CH3OONOI	C	1H	3N	1O	3G300.000	5000.000	1359.000	1
1.17404835E+01	7.79729216E-03	-2.77331328E-06	4.41968769E-10	-2.61130780E-14	2			
-5.41338875E+03	-3.12701889E+01	5.79625109E+00	1.77190906E-02	-7.29923824E-06	3			
3.03861648E-10	3.15712663E-13	-2.90994810E+03	2.13425651E+00		4			
CH4	C	1H	4		G300.000	5000.000	1000.000	1
1.68347900E+00	1.02372400E-02	-3.87512900E-06	6.78558500E-10	-4.50342300E-14	2			
-1.00807900E+04	9.62339500E+00	7.78741500E-01	1.74766800E-02	-2.78340900E-05	3			
3.04970800E-08	-1.22393100E-11	-9.82522900E+03	1.37221900E+01		4			
CHOCHO	C	2H	2O	2	G300.000	5000.000	1386.000	1
9.75438561E+00	4.97645947E-03	-1.74410483E-06	2.75586994E-10	-1.61969892E-14	2			
-2.95832896E+04	-2.61878329E+01	1.88105120E+00	2.36386368E-02	-1.83443295E-05	3			
6.84842963E-09	-9.92733674E-13	-2.69280190E+04	1.59154793E+01		4			
CJACACDO	C	3H	3N	2O	7G300.000	5000.000	1392.000	1
2.81004192E+01	1.08763518E-02	-3.93437620E-06	6.34132529E-10	-3.77642966E-14	2			
-2.58519260E+04	-1.04545423E+02	3.18919184E+00	7.64008081E-02	-7.05787205E-05	3			
3.15710826E-08	-5.52664917E-12	-1.80405324E+04	2.64689376E+01		4			
CJACACOH	C	3H	5N	2O	7G300.000	5000.000	1402.000	1
2.94685926E+01	1.37385032E-02	-4.77657052E-06	7.50326089E-10	-4.39072111E-14	2			
-3.65047519E+04	-1.12955256E+02	5.32146673E+00	7.82336164E-02	-7.12315061E-05	3			
3.18850209E-08	-5.59604778E-12	-2.90494830E+04	1.36591053E+01		4			
CJACDOCOH	C	3H	4N	1O	5G300.000	5000.000	1405.000	1
2.11156492E+01	1.17132717E-02	-4.03063765E-06	6.28743363E-10	-3.66125928E-14	2			
-3.86607403E+04	-7.56518744E+01	1.96321739E+00	6.37918723E-02	-5.87442478E-05	3			
2.67521678E-08	-4.77521843E-12	-3.28315088E+04	2.44587312E+01		4			
CJCDOOH	C	2H	3O	2	G300.000	5000.000	1408.000	1
9.92268798E+00	7.12175837E-03	-2.33698653E-06	3.53122426E-10	-2.01136310E-14	2			
-3.42214024E+04	-2.58304681E+01	7.81452443E-01	3.20323232E-02	-2.84753333E-05	3			
1.27826432E-08	-2.26150853E-12	-3.14545057E+04	2.19152825E+01		4			
CJCONO2	C	2H	4N	1O	3G300.000	5000.000	1399.000	1
1.38517581E+01	1.18591964E-02	-4.06013780E-06	6.30897516E-10	-3.66300367E-14	2			
2.33167020E+02	-4.36638294E+01	1.49800776E+00	4.26286420E-02	-3.36922236E-05	3			
1.37060312E-08	-2.25507906E-12	4.30675402E+03	2.19629786E+01		4			
CJNO2CDO	C	2H	2N	1O	3G300.000	5000.000	1399.000	1
1.28968517E+01	7.45254331E-03	-2.60772639E-06	4.11283037E-10	-2.41313131E-14	2			
-3.39664734E+03	-3.81364573E+01	1.39610524E+00	3.65374276E-02	-3.08201666E-05	3			
1.28427252E-08	-2.11530240E-12	3.16396708E+02	2.27446553E+01		4			
CJOCDO	C	2H	3O	2	G300.000	5000.000	1460.000	1
1.08037367E+01	7.08996206E-03	-2.48244812E-06	3.91976878E-10	-2.30254771E-14	2			
-2.41177064E+04	-3.02291920E+01	3.15810251E+00	2.05547121E-02	-8.59630180E-06	3			
-3.19285417E-10	6.88498091E-13	-2.10995109E+04	1.22655826E+01		4			
CJOHCDO	C	2H	3O	2	G300.000	5000.000	1395.000	1
9.44921414E+00	7.74500666E-03	-2.60081773E-06	3.99391492E-10	-2.30137072E-14	2			
-2.91259253E+04	-2.47737731E+01	8.11786303E-01	2.79549459E-02	-2.02061959E-05	3			
7.15156504E-09	-9.80241885E-13	-2.61913594E+04	2.15004101E+01		4			

CJONOCDO	C	2H	2N	1O	3G300.000	5000.000	1375.000	1
1.34535802E+01	7.24208738E-03	-2.59433195E-06	4.15447751E-10	-2.46297107E-14				2
-8.09453912E+03	-4.08933250E+01	3.65447382E+00	2.90824004E-02	-2.07328745E-05				3
7.08587430E-09	-9.41862910E-13	-4.60815891E+03	1.20727129E+01					4
CN	C	1N	1		G300.000	5000.000	1000.000	1
3.72012000E+00	1.51835100E-04	1.98738100E-07	-3.79837100E-11	1.32823000E-15				2
5.11162600E+04	2.88859700E+00	3.66320400E+00	-1.15652900E-03	2.16340900E-06				3
1.85420800E-10	-8.21469500E-13	5.12811800E+04	3.73901600E+00					4
CNO2CDJO	C	2H	2N	1O	3G300.000	5000.000	1396.000	1
1.18614720E+01	7.83770281E-03	-2.72398742E-06	4.27604948E-10	-2.50047534E-14				2
-4.92420844E+03	-2.91567336E+01	1.80409610E+00	3.33483988E-02	-2.78101648E-05				3
1.17427155E-08	-1.98673347E-12	-1.65577401E+03	2.41051570E+01					4
CNO2CDO	C	2H	3N	1O	3G300.000	5000.000	1371.000	1
1.32288746E+01	9.26849853E-03	-3.22656841E-06	5.06934833E-10	-2.96576108E-14				2
-2.46158782E+04	-3.63830375E+01	7.03685016E+00	1.96126610E-02	-7.54117304E-06				3
-1.86582837E-10	5.10199439E-13	-2.20524759E+04	-1.66421396E+00					4
CO	C	1O	1		G300.000	5000.000	1000.000	1
3.02507800E+00	1.44268900E-03	-5.63082800E-07	1.01858100E-10	-6.91095200E-15				2
-1.42683500E+04	6.10821800E+00	3.26245200E+00	1.51194100E-03	-3.88175500E-06				3
5.58194400E-09	-2.47495100E-12	-1.43105400E+04	4.84889700E+00					4
CO2	C	1O	2		G300.000	5000.000	1000.000	1
4.45362300E+00	3.14016900E-03	-1.27841100E-06	2.39399700E-10	-1.66903300E-14				2
-4.89669600E+04	-9.55395900E-01	2.27572500E+00	9.92207200E-03	-1.04091100E-05				3
6.86668700E-09	-2.11728000E-12	-4.83731400E+04	1.01884900E+01					4
COCDJO	C	2H	3O	2	G300.000	5000.000	1541.000	1
7.73793939E+00	8.89639270E-03	-2.93211762E-06	4.44309261E-10	-2.53559030E-14				2
-2.29909114E+04	-1.21558332E+01	2.53422865E+00	1.79992156E-02	-7.09392427E-06				3
3.41229579E-11	4.28677995E-13	-2.09144223E+04	1.68146636E+01					4
COCDO	C	2H	4O	2	G300.000	5000.000	1463.000	1
9.23259738E+00	1.05475892E-02	-3.58559093E-06	5.55173899E-10	-3.21739348E-14				2
-4.76258476E+04	-2.25965404E+01	7.93074690E-01	2.48049082E-02	-9.12231430E-06				3
1.03961513E-09	9.33858527E-13	-4.42260474E+04	2.45378489E+01					4
COHCDJO	C	2H	3O	2	G300.000	5000.000	1393.000	1
9.35142631E+00	6.95596116E-03	-2.41330436E-06	4.05176640E-10	-2.53601772E-14				2
-2.19729685E+04	-1.96039725E+01	4.20863539E+00	1.95296544E-02	-1.44212705E-05				3
5.72270774E-09	-9.40316946E-13	-2.02347759E+04	7.83116998E+00					4
COHCDO	C	2H	4O	2	G300.000	5000.000	1494.000	1
9.75098946E+00	9.66217861E-03	-3.36757878E-06	5.30101564E-10	-3.10722665E-14				2
-4.31119186E+04	-2.77155212E+01	3.45457001E-01	2.59812170E-02	-1.05269047E-05				3
-5.03267723E-10	8.61680595E-13	-3.93574474E+04	2.46765312E+01					4
COHOJK	C	2H	3O	3	G300.000	5000.000	1413.000	1
1.36557474E+01	6.00410874E-03	-2.02464947E-06	3.11607545E-10	-1.79777976E-14				2
-4.11029061E+04	-4.33031972E+01	7.26791575E-01	4.46454223E-02	-4.62115436E-05				3
2.29443103E-08	-4.35766644E-12	-3.75230169E+04	2.30288969E+01					4
COHOJJK	C	3H	3O	4	G300.000	5000.000	1410.000	1
1.80530976E+01	6.91276994E-03	-2.33534757E-06	3.60083460E-10	-2.08076402E-14				2
-5.49213408E+04	-6.13522944E+01	2.70196058E+00	5.17526430E-02	-5.25413743E-05				3
2.56215352E-08	-4.79547331E-12	-5.05762631E+04	1.77607148E+01					4
COHONOK	C	2H	3N	1O	4G300.000	5000.000	1369.000	1
1.66294866E+01	1.11977321E-02	-5.07462258E-06	9.12519618E-10	-5.53542619E-14				2
-5.02001079E+04	-5.77839366E+01	-1.75979717E+00	7.07210084E-02	-7.64687174E-05				3
3.85000533E-08	-7.38160215E-12	-4.57046255E+04	3.47219816E+01					4
COHONOKK	C	3H	3N	1O	5G300.000	5000.000	1410.000	1
2.46446049E+01	6.85351864E-03	-2.50901308E-06	4.07594746E-10	-2.44060332E-14				2
-6.56977256E+04	-9.82610471E+01	5.80609559E-01	7.28628153E-02	-7.17225736E-05				3
3.11135397E-08	-5.86566179E-12	-5.85175387E+04	2.71752039E+01					4
COJCONO2	C	2H	4N	1O	4G300.000	5000.000	1381.000	1
1.67734530E+01	1.12681466E-02	-3.99562895E-06	6.35582533E-10	-3.75073915E-14				2
-1.64575681E+04	-5.54185115E+01	3.05340507E+00	4.11055238E-02	-2.75745073E-05				3
8.54264158E-09	-9.56389649E-13	-1.15288168E+04	1.89578134E+01					4
CONOCDJO	C	2H	2N	1O	3G300.000	5000.000	1366.000	1
1.39088821E+01	5.94382215E-03	-2.13176154E-06	3.41631286E-10	-2.02638895E-14				2
-6.21034387E+03	-3.96279186E+01	6.71739835E+00	2.09518687E-02	-1.34157463E-05				3
3.90160946E-09	-4.01687769E-13	-3.53767575E+03	-3.73924051E-01					4
CONOCDO	C	2H	3N	1O	3G300.000	5000.000	1382.000	1
1.30878363E+01	9.21480731E-03	-3.26600326E-06	5.19315520E-10	-3.06363437E-14				2
-2.53124989E+04	-3.80804493E+01	2.19236648E+00	3.43529991E-02	-2.54449832E-05				3
9.46261573E-09	-1.42638896E-12	-2.14956513E+04	2.05511241E+01					4
CQJCONO2	C	2H	4N	1O	5G300.000	5000.000	1382.000	1
2.15148604E+01	9.18513166E-03	-3.33580359E-06	5.39057118E-10	-3.21599762E-14				2
-1.93264084E+04	-7.56925008E+01	2.69814934E+00	5.29722849E-02	-4.09820481E-05				3

1.46458085E-08-1.95953941E-12-1.29355694E+04 2.51594423E+01	4
DICACDO C 3H 4N 2O 7G300.000 5000.000 1387.000	1
2.92779191E+01 1.25288956E-02-4.52904090E-06 7.29637295E-10-4.34374662E-14	2
-5.16259387E+04-1.13953816E+02 3.06088122E+00 7.98843834E-02-7.14728751E-05	3
3.11796054E-08-5.35813029E-12-4.32265239E+04 2.45283463E+01	4
DICACOH C 3H 6N 2O 7G300.000 5000.000 1400.000	1
2.69237779E+01 2.12014481E-02-7.30359432E-06 1.13994376E-09-6.64008873E-14	2
-6.09685915E+04-1.12646106E+02-4.29231032E-01 9.02574159E-02-7.43454429E-05	3
3.07777523E-08-5.07719347E-12-5.21025855E+04 3.22316206E+01	4
DICACOOJ C 3H 5N 2O 7G300.000 5000.000 1385.000	1
3.05153592E+01 1.40824518E-02-5.07818536E-06 8.16793469E-10-4.85723777E-14	2
-3.47650348E+04-1.20208144E+02 4.20794521E+00 7.82957908E-02-6.48587921E-05	3
2.60375324E-08-4.11440660E-12-2.60329333E+04 1.98913671E+01	4
DICACONO C 3H 5N 3O 8G300.000 5000.000 1397.000	1
3.07079963E+01 2.09610758E-02-7.31533278E-06 1.15167638E-09-6.74860754E-14	2
-4.51510786E+04-1.26439729E+02 1.07318223E+00 9.52451368E-02-7.88803872E-05	3
3.25552108E-08-5.34250737E-12-3.54884338E+04 3.07200415E+01	4
DICACOONO C 3H 5N 3O 9G300.000 5000.000 1398.000	1
3.32070410E+01 2.14299058E-02-7.48744073E-06 1.17968689E-09-6.91654363E-14	2
-3.39204493E+04-1.39260568E+02 9.81300107E-01 1.03726642E-01-8.84800288E-05	3
3.75231956E-08-6.30857134E-12-2.79668931E+04 3.10974661E+01	4
DICACQJ C 3H 5N 2O 8G300.000 5000.000 1398.000	1
2.82371381E+01 2.03716159E-02-7.08073630E-06 1.11177760E-09-6.50293844E-14	2
-3.41158200E+04-1.14435212E+02 8.28454776E-01 8.79858891E-02-7.08399967E-05	3
2.83777261E-08-4.51617489E-12-2.50855303E+04 3.12792462E+01	4
DICDJOCA C 3H 2N 1O 5G300.000 5000.000 1374.000	1
2.11475408E+01 7.17011333E-03-2.59195048E-06 4.17568260E-10-2.48589317E-14	2
-2.67195130E+04-7.58434453E+01 8.77961876E+00 3.54405169E-02-2.66033117E-05	3
9.39215478E-09-1.26634511E-12-2.24307450E+04-9.31121536E+00	4
DICDOCA C 3H 3N 1O 5G300.000 5000.000 1403.000	1
2.39744985E+01 7.34620634E-03-2.66029618E-06 4.29123476E-10-2.55707116E-14	2
-4.73493560E+04-9.42016126E+01-5.82383341E-02 7.70462256E-02-8.05202073E-05	3
3.96634392E-08-7.47106375E-12-4.04655827E+04 2.98840190E+01	4
DICDOCJA C 3H 2N 1O 5G300.000 5000.000 1415.000	1
2.25118000E+01 6.03944140E-03-2.20960690E-06 3.58807693E-10-2.14786147E-14	2
-3.11996251E+04-8.43975158E+01 3.31423651E+00 5.65896691E-02-5.27747746E-05	3
2.30807809E-08-3.87861591E-12-2.52852211E+04 1.63789292E+01	4
DICDOCOJ C 3H 3O 3 G300.000 5000.000 1374.000	1
1.34378977E+01 9.04448041E-03-3.13791808E-06 4.91824770E-10-2.87235328E-14	2
-2.69201548E+04-3.85008826E+01 8.46745674E+00 1.71344268E-02-6.47792661E-06	3
4.88568258E-11 3.38694343E-13-2.48044070E+04-1.04942446E+01	4
DICJACDO C 3H 3N 2O 7G300.000 5000.000 1386.000	1
2.75242677E+01 1.18470015E-02-4.28247248E-06 6.89909109E-10-4.10721672E-14	2
-3.13424767E+04-1.04808588E+02 3.65156226E+00 7.13788985E-02-6.12024307E-05	3
2.54498014E-08-4.16518680E-12-2.35424178E+04 2.18814107E+01	4
DIOHCH2 C 1H 4O 2 G300.000 5000.000 1408.000	1
7.23599163E+00 9.39087193E-03-3.11037208E-06 4.72375853E-10-2.69830566E-14	2
-5.06157972E+04-1.42438837E+01 8.23487237E-01 2.48484141E-02-1.73882425E-05	3
6.47025502E-09-9.90888491E-13-4.84507250E+04 2.00011895E+01	4
ETONO2 C 2H 5N 1O 3G300.000 5000.000 1386.000	1
1.46515723E+01 1.28951427E-02-4.51624920E-06 7.12471272E-10-4.18026785E-14	2
-2.58655638E+04-4.85145617E+01 1.50837107E+00 4.21061803E-02-2.87403500E-05	3
9.61518131E-09-1.26461213E-12-2.11697401E+04 2.25733412E+01	4
H H 1 G300.000 5000.000 1000.000	1
2.50000000E+00 0.00000000E+00 0.00000000E+00 0.00000000E+00 0.00000000E+00	2
2.54716300E+04-4.60117600E-01 2.50000000E+00 0.00000000E+00 0.00000000E+00	3
0.00000000E+00 0.00000000E+00 2.54716300E+04-4.60117600E-01	4
H2 H 2 G300.000 5000.000 1000.000	1
2.99142300E+00 7.00064400E-04-5.63382900E-08-9.23157800E-12 1.58275200E-15	2
-8.35034000E+02-1.35511000E+00 3.29812400E+00 8.24944200E-04-8.14301500E-07	3
-9.47543400E-11 4.13487200E-13-1.01252100E+03-3.29409400E+00	4
H2CC C 2H 2 G200.000 6000.000 1000.000	1
4.27803400E+00 4.75628040E-03-1.63010090E-06 2.54628060E-10-1.48863790E-14	2
4.83166880E+04 6.40237010E-01 3.28154830E+00 6.97647910E-03-2.38552440E-06	3
-1.21044320E-09 9.81895450E-13 4.86217940E+04 5.92039100E+00	4
H2CN C 1H 2N 1 G300.000 4000.000 1000.000	1
5.20970300E+00 2.96929100E-03-2.85558900E-07-1.63555000E-10 3.04325900E-14	2
2.76771100E+04-4.44447800E+00 2.85166100E+00 5.69523300E-03 1.07114000E-06	3
-1.62261200E-09-2.35110800E-13 2.86378200E+04 8.99275100E+00	4
H2CNO2 C 1H 2N 1O 2G300.000 4000.000 1500.000	1
1.12748100E+01 2.58471100E-03-3.93433100E-07-5.61496900E-11 1.39240000E-14	2

1.36047000E+04-3.46195100E+01 1.16569600E+00 2.89049000E-02-2.81766300E-05	3
1.38756900E-08-2.72759500E-12 1.69454600E+04 1.88829300E+01	4
H2NCHO C 1H 3N 1O 1G300.000 5000.000 1398.000	1
6.53544538E+00 7.60189660E-03-2.52847333E-06 3.85128016E-10-2.20452362E-14	2
-2.41589832E+04-9.39315303E+00 2.19118782E+00 1.71525883E-02-1.03704040E-05	3
3.23947452E-09-4.09547394E-13-2.25884461E+04 1.41531425E+01	4
H2NN H 2N 2 G300.000 5000.000 1695.000	1
3.13531032E+00 5.68632569E-03-1.93983467E-06 3.01290501E-10-1.74978144E-14	2
3.33678346E+04 7.04815840E+00 2.88544262E+00 4.69495999E-03 7.01983230E-07	3
-1.53359038E-09 3.79345858E-13 3.36030690E+04 8.95096779E+00	4
H2NNO2 H 2N 2O 2 G300.000 4500.000 1000.000	1
9.45441628E+00 3.80055304E-03-5.10139330E-07-7.97079347E-11 1.62415349E-14	2
-3.15945020E+03-2.53962326E+01 4.51412708E-01 3.07305455E-02-3.94054223E-05	3
3.29329026E-08-1.20280756E-11-5.00637573E+02 2.13188362E+01	4
H2NONO H 2N 2O 2 G300.000 5000.000 1000.000	1
1.06022091E+01 2.97922175E-03-4.11380626E-07-7.63555677E-11 1.51623624E-14	2
7.04965039E+03-2.60694790E+01 4.11092949E+00 2.01979112E-02-2.22550043E-05	3
1.79199517E-08-6.86493007E-12 9.08973535E+03 8.19506931E+00	4
H2O H 2O 1 G300.000 5000.000 1000.000	1
2.67214600E+00 3.05629300E-03-8.73026000E-07 1.20099600E-10-6.39161800E-15	2
-2.98992100E+04 6.86281700E+00 3.38684200E+00 3.47498200E-03-6.35469600E-06	3
6.96858100E-09-2.50658800E-12-3.02081100E+04 2.59023300E+00	4
H2O2 H 2O 2 G300.000 5000.000 1000.000	1
4.57316700E+00 4.33613600E-03-1.47468900E-06 2.34890400E-10-1.43165400E-14	2
-1.80069600E+04 5.01137000E-01 3.38875400E+00 6.56922600E-03-1.48501300E-07	3
-4.62580600E-09 2.47151500E-12-1.76631500E+04 6.78536300E+00	4
HCCO C 2H 1O 1 G300.000 4000.000 1000.000	1
6.75807300E+00 2.00040000E-03-2.02760700E-07-1.04113200E-10 1.96516500E-14	2
1.90151300E+04-9.07126200E+00 5.04796500E+00 4.45347800E-03 2.26828300E-07	3
-1.48209500E-09 2.25074200E-13 1.96589200E+04 4.81843900E-01	4
HCCOH C 2H 2O 1 G300.000 4000.000 1000.000	1
7.32832400E+00 3.33641600E-03-3.02470500E-07-1.78110600E-10 3.24516800E-14	2
7.59825800E+03-1.40121400E+01 3.89946500E+00 9.70107500E-03-3.11930900E-07	3
-5.53773200E-09 2.46573200E-12 8.70119000E+03 4.49187500E+00	4
HCJOHONO C 1H 2N 1O 3G300.000 5000.000 1412.000	1
1.33706500E+01 3.92433214E-03-1.35842931E-06 2.13037116E-10-1.24604744E-14	2
-1.13311362E+04-4.15839523E+01 2.27239807E+00 3.56275553E-02-3.60086850E-05	3
1.72430523E-08-3.16347350E-12-8.13553697E+03 1.58365059E+01	4
HCN C 1H 1N 1 G200.000 6000.000 1000.000	1
3.80231733E+00 3.14630009E-03-1.06315698E-06 1.66185395E-10-9.79891789E-15	2
1.47215128E+04 1.57503584E+00 2.25901123E+00 1.00510591E-02-1.33514911E-05	3
1.00920882E-08-3.00882048E-12 1.50268794E+04 8.91634590E+00	4
HCNO C 1H 1N 1O 1G250.000 4000.000 1000.000	1
6.69241200E+00 2.36836000E-03-2.37151000E-07-1.27550300E-10 2.40713700E-14	2
1.69473700E+04-1.24543400E+01 3.18485900E+00 9.75231600E-03-1.28020300E-06	3
-6.16310400E-09 3.22627500E-12 1.79790700E+04 6.12384400E+00	4
HCO C 1H 1O 1 G200.000 6000.000 1000.000	1
3.64896209E+00 3.08090819E-03-1.12429876E-06 1.86308085E-10-1.13951828E-14	2
3.71209048E+03 5.06147406E+00 4.22118584E+00-3.24392532E-03 1.37799446E-05	3
-1.33144093E-08 4.33768865E-12 3.83956496E+03 3.39437243E+00	4
HCOCACOJ C 3H 4N 1O 5G300.000 5000.000 1390.000	1
2.14556617E+01 1.20558918E-02-4.28938143E-06 6.83841611E-10-4.04183193E-14	2
-3.02222874E+04-7.71899889E+01 2.79346249E+00 5.78968920E-02-4.75255696E-05	3
1.92796670E-08-3.11075676E-12-2.40294954E+04 2.21370783E+01	4
HCOCDOCA C 3H 3N 1O 5G300.000 5000.000 1392.000	1
2.30813845E+01 8.19508699E-03-2.97426305E-06 4.80425740E-10-2.86535960E-14	2
-4.81235439E+04-8.81349233E+01 3.12716159E+00 6.04246823E-02-5.56551631E-05	3
2.46731882E-08-4.27013370E-12-4.18595469E+04 1.68690708E+01	4
HCOCDOCJA C 3H 2N 1O 5G300.000 5000.000 1405.000	1
2.19682440E+01 6.97306006E-03-2.54271477E-06 4.12002424E-10-2.46259847E-14	2
-2.94472917E+04-8.24859077E+01 1.02646447E+00 6.29902545E-02-5.98766725E-05	3
2.69214472E-08-4.67149148E-12-2.30454657E+04 2.71998617E+01	4
HCOCJONO2 C 2H 2N 1O 4G300.000 5000.000 1387.000	1
1.63076789E+01 6.60963053E-03-2.39900630E-06 3.87520865E-10-2.31131218E-14	2
-1.48009746E+04-5.10349082E+01 2.33497221E+00 4.01051214E-02-3.25160527E-05	3
1.24290743E-08-1.82736099E-12-1.01416639E+04 2.35263799E+01	4
HCOCOJCA C 3H 4N 1O 5G300.000 5000.000 1400.000	1
2.28970349E+01 1.08387954E-02-3.87208293E-06 6.19047052E-10-3.66619218E-14	2
-3.15914496E+04-8.54092617E+01 1.15180629E+00 6.69868000E-02-5.95274230E-05	3
2.56667302E-08-4.33387938E-12-2.47005913E+04 2.92699151E+01	4
HCOCONO2 C 2H 3N 1O 4G300.000 5000.000 1389.000	1

1.64587490E+01	8.97219876E-03	-3.19981071E-06	5.10923846E-10	-3.02300047E-14	2			
-3.32876739E+04	-5.46362076E+01	2.21337648E+00	4.43498011E-02	-3.71160218E-05	3			
1.54053400E-08	-2.54837362E-12	-2.85881131E+04	2.10647711E+01		4			
HE	HE	1	G300.000	5000.000	1000.000	1		
2.50000000E+00	0.00000000E+00	0.00000000E+00	0.00000000E+00	0.00000000E+00		2		
-7.45375000E+02	9.15348900E-01	2.50000000E+00	0.00000000E+00	0.00000000E+00		3		
0.00000000E+00	0.00000000E+00	-7.45375000E+02	9.15348800E-01			4		
HNC	C	1H	1N	1	G300.000	5000.000	1394.000	1
4.14927436E+00	2.75915497E-03	-9.32137975E-07	1.43421369E-10	-8.26579656E-15				2
2.12186267E+04	-2.04087166E-02	2.85596031E+00	6.10771202E-03	-4.55238112E-06				3
2.02415456E-09	-3.88077938E-13	2.16612862E+04	6.85303990E+00					4
HNCO	C	1H	1N	1O	1G200.000	6000.000	1000.000	1
5.29404664E+00	4.03039650E-03	-1.41290348E-06	2.24428234E-10	-1.32859380E-14				2
-1.61346328E+04	-3.08763130E+00	2.24322454E+00	1.44986380E-02	-1.52609054E-05				3
8.36364453E-09	-1.72191967E-12	-1.53950081E+04	1.21565469E+01					4
HNJNO2	H	1N	2O	2	G300.000	5000.000	1393.000	1
8.58829360E+00	3.55783685E-03	-1.37988061E-06	2.34140297E-10	-1.42057446E-14				2
2.48692567E+04	-1.72810309E+01	2.38719149E+00	2.06880667E-02	-1.97118815E-05				3
9.16137562E-09	-1.66604445E-12	2.67339286E+04	1.50451867E+01					4
HNNDOOH	H	2N	2O	2	G300.000	4500.000	1000.000	1
9.63997173E+00	3.70860961E-03	-5.18303239E-07	-6.96194283E-11	1.49814243E-14				2
1.57270654E+03	-2.55737362E+01	1.26449108E-01	3.37673463E-02	-4.51127307E-05				3
3.69971254E-08	-1.30025522E-11	4.25849072E+03	2.32806358E+01					4
HNNDOOH Z	H	2N	2O	2	G300.000	4500.000	1000.000	1
9.55833721E+00	3.74337588E-03	-5.07222978E-07	-7.66333663E-11	1.58003832E-14				2
1.40625635E+03	-2.53437691E+01	1.88560843E-01	3.19484882E-02	-4.05696737E-05				3
3.29120518E-08	-1.17457684E-11	4.13276953E+03	2.31506348E+01					4
HNNO	H	1N	2O	1	G300.000	5000.000	1389.000	1
6.24922910E+00	3.26983002E-03	-1.14794284E-06	1.81383141E-10	-1.06538637E-14				2
2.53822106E+04	-7.09495778E+00	2.40143922E+00	1.26718648E-02	-1.00828306E-05				3
4.10522736E-09	-6.79228705E-13	2.66782646E+04	1.34257436E+01					4
HNO	H	1N	1O	1	G300.000	5000.000	1000.000	1
3.32506061E+00	3.28074885E-03	-1.17988827E-06	1.90627500E-10	-1.14185005E-14				2
1.16469551E+04	6.44374561E+00	4.30275249E+00	-3.27872764E-03	1.00572297E-05				3
-6.51594911E-09	1.03982469E-12	1.16696904E+04	2.60372138E+00					4
HNO2	H	1N	1O	2	G300.000	5000.000	1432.000	1
5.86536159E+00	3.31399617E-03	-1.19686495E-06	1.92694936E-10	-1.14665018E-14				2
-7.43588573E+03	-7.16262271E+00	2.33853317E+00	7.87822298E-03	-4.64351984E-07				3
-2.66198709E-09	9.09206462E-13	-5.88999705E+03	1.30055842E+01					4
HNO3	H	1N	1O	3	G300.000	5000.000	1000.000	1
7.00384500E+00	5.81149300E-03	-2.33378900E-06	4.28881400E-10	-2.95938500E-14				2
-1.88995200E+04	-1.04786300E+01	1.35318500E+00	2.22002500E-02	-1.97881200E-05				3
8.77390800E-09	-1.65838400E-12	-1.73856300E+04	1.85186800E+01					4
HNOH	H	2N	1O	1	G300.000	5000.000	1375.000	1
5.24159962E+00	3.64132385E-03	-1.26199882E-06	1.97647403E-10	-1.15363360E-14				2
8.79675199E+03	-2.52971854E+00	3.42226363E+00	6.62639079E-03	-2.62136579E-06				3
1.83974483E-10	7.81187077E-14	9.57854837E+03	7.72947399E+00					4
HNOJNO2	H	1N	2O	3	G300.000	5000.000	1392.000	1
1.03253946E+01	4.98675264E-03	-1.80524376E-06	2.92271754E-10	-1.73600960E-14				2
1.02125162E+04	-2.57969338E+01	2.76417845E+00	2.48231368E-02	-2.20842798E-05				3
9.81343839E-09	-1.73206394E-12	1.26074164E+04	1.40188663E+01					4
HO2	H	1O	2	G200.000	6000.000	1000.000		1
4.17228728E+00	1.88117647E-03	-3.46277408E-07	1.94657853E-11	1.76254294E-16				2
2.13417795E+02	2.95767746E+00	4.30179801E+00	-4.74912051E-03	2.11582891E-05				3
-2.42763894E-08	9.29225124E-12	4.46415539E+02	3.71666245E+00					4
HOCDONO	C	1H	1N	1O	3G300.000	5000.000	1400.000	1
9.84094437E+00	4.71273745E-03	-1.60851575E-06	2.49577145E-10	-1.44802858E-14				2
-3.14223386E+04	-2.14472253E+01	3.38671948E+00	2.15074980E-02	-1.84677705E-05				3
7.96048213E-09	-1.36107142E-12	-2.93817859E+04	1.25584114E+01					4
HOCDONO2	C	1H	1N	1O	4G300.000	5000.000	1390.000	1
1.28217298E+01	5.15487929E-03	-1.85679871E-06	2.98434850E-10	-1.77380555E-14				2
-5.13795098E+04	-3.94584564E+01	2.21690968E+00	3.29433160E-02	-3.01319912E-05				3
1.34798396E-08	-2.37261069E-12	-4.80294458E+04	1.63761893E+01					4
HOCDOONO	C	1H	1N	1O	4G300.000	5000.000	1403.000	1
1.45793492E+01	3.16593427E-03	-1.15431568E-06	1.87028442E-10	-1.11788182E-14				2
-5.60326833E+04	-4.79836881E+01	9.10833792E-01	4.49883245E-02	-5.01607294E-05				3
2.58755678E-08	-5.04053738E-12	-5.23196233E+04	2.18428330E+01					4
HOCH2O	C	1H	3O	2	G300.000	5000.000	1452.000	1
6.39521515E+00	7.43673043E-03	-2.50422354E-06	3.84879712E-10	-2.21778689E-14				2
-2.25557758E+04	-6.63865583E+00	4.11183145E+00	7.53850697E-03	3.77337370E-06				3
-5.38746005E-09	1.45615887E-12	-2.12471918E+04	7.46807254E+00					4

HOCHO	C	1H	2O	2	G300.000	4000.000	1500.000	1
7.95969800E+00	3.02453200E-03	-3.43424200E-07	-1.32676700E-10	2.52024000E-14				2
-5.02744500E+04	-1.87220800E+01	9.32603100E-01	1.89100200E-02	-1.55496400E-05				3
7.29003100E-09	-1.48369500E-12	-4.76007100E+04	1.95065300E+01					4
HOCN	C	1H	1N	1O	1G300.000	4000.000	1400.000	1
6.02211200E+00	1.92953000E-03	-1.45502900E-07	-1.04581100E-10	1.79481400E-14				2
-4.04032100E+03	-5.86643300E+00	3.78942400E+00	5.38798100E-03	-6.51827000E-07				3
-1.42016400E-09	5.36796900E-13	-3.13533500E+03	6.66705200E+00					4
HOCO	C	1H	1O	2	G300.000	4000.000	1500.000	1
7.51763400E+00	1.25902900E-03	-1.91090100E-07	-3.13639100E-11	7.54767300E-15				2
-2.63412100E+04	-1.44839200E+01	2.28512200E+00	1.35143500E-02	-1.16040700E-05				3
5.04701100E-09	-9.03223100E-13	-2.44841600E+04	1.36787400E+01					4
HONJOCHO	C	1H	2N	1O	3G300.000	5000.000	1401.000	1
1.17747099E+01	5.21375906E-03	-1.78777179E-06	2.78381747E-10	-1.61956188E-14				2
-2.12687212E+04	-3.21567860E+01	3.44111947E+00	2.68184766E-02	-2.32741419E-05				3
9.97076727E-09	-1.68106597E-12	-1.86392038E+04	1.17573165E+01					4
HONNH	H	2N	2O	1	G300.000	5000.000	1410.000	1
6.28422378E+00	5.37598499E-03	-1.78502698E-06	2.71645903E-10	-1.55420951E-14				2
6.70148292E+03	-8.61273360E+00	1.39096839E+00	1.79340781E-02	-1.42097587E-05				3
5.87052739E-09	-9.78695345E-13	8.26845062E+03	1.72339344E+01					4
HONO	H	1N	1O	2	G300.000	5000.000	1000.000	1
5.48689300E+00	4.21806500E-03	-1.64914300E-06	2.97187700E-10	-2.02114800E-14				2
-1.12686500E+04	-2.99700200E+00	2.29041300E+00	1.40992200E-02	-1.36787200E-05				3
7.44850623E-09	-1.87690500E-12	-1.04319500E+04	1.32807700E+01					4
HOONO	H	1N	1O	3	G300.000	5000.000	1404.000	1
8.67045892E+00	3.50845701E-03	-1.17567986E-06	1.80133633E-10	-1.03585545E-14				2
-2.82263590E+03	-1.77656079E+01	3.85889794E+00	1.70164941E-02	-1.58784450E-05				3
7.44850623E-09	-1.37103894E-12	-1.39312875E+03	7.24655237E+00					4
HOYCCJO	C	2H	3O	2	G300.000	5000.000	1393.000	1
9.45126897E+00	7.85895317E-03	-3.01074991E-06	5.27488064E-10	-3.34089308E-14				2
-8.25767435E+03	-2.42588526E+01	1.20153762E+00	2.94790106E-02	-2.50682496E-05				3
1.08554718E-08	-1.88783739E-12	-5.64472445E+03	1.91866823E+01					4
HOYCCO	C	2H	4O	2	G300.000	5000.000	1418.000	1
9.24063528E+00	9.80909716E-03	-3.17075113E-06	4.73865566E-10	-2.67729880E-14				2
-3.36102874E+04	-2.41243631E+01	-5.84104386E-01	3.55391645E-02	-2.89141357E-05				3
1.20968983E-08	-2.01472680E-12	-3.05488976E+04	2.75327581E+01					4
HOYCJCO	C	2H	3O	2	G300.000	5000.000	1393.000	1
9.37106475E+00	7.84114656E-03	-2.95589992E-06	5.12247312E-10	-3.22484874E-14				2
-8.30584148E+03	-2.34768760E+01	1.19797435E+00	2.90866328E-02	-2.44729181E-05				3
1.05281226E-08	-1.82292888E-12	-5.69629080E+03	1.96324341E+01					4
KDCNOHOJ	C	2H	2N	1O	3G300.000	5000.000	1396.000	1
-9.65312027E+00	4.32964389E-02	-2.40839754E-05	5.09433831E-09	-3.56342414E-13				2
1.00680962E+04	8.79883253E+01	3.53211000E+00	2.98609574E-02	-2.75856633E-05				3
1.22751216E-08	-2.23653225E-12	3.10440800E+03	9.95054749E+00					4
N	N	1			G300.000	5000.000	1000.000	1
2.45026800E+00	1.06614600E-04	-7.46533700E-08	1.87965200E-11	-1.02598400E-15				2
5.61160400E+04	4.44875800E+00	2.50307100E+00	-2.18001800E-05	5.42052900E-08				3
-5.64756000E-11	2.09990400E-14	5.60989000E+04	4.16756600E+00					4
N2	N	2			G300.000	5000.000	1000.000	1
2.92664000E+00	1.48797700E-03	-5.68476100E-07	1.00970400E-10	-6.75335100E-15				2
-9.22797700E+02	5.98052800E+00	3.29867700E+00	1.40824000E-03	-3.96322200E-06				3
5.64151500E-09	-2.44485500E-12	-1.02090000E+03	3.95037200E+00					4
N2H2	H	2N	2		G200.000	6000.000	1000.000	1
1.43773356E+00	8.72166734E-03	-2.99323466E-06	4.50029732E-10	-2.50422693E-14				2
2.22727357E+04	1.57453260E+01	4.74387065E+00	-9.15242446E-03	3.35349897E-05				3
-3.22086920E-08	1.06734098E-11	2.17525597E+04	7.28947240E-01					4
N2H3	H	3N	2		G300.000	5000.000	1385.000	1
5.56523220E+00	5.92789098E-03	-2.05378972E-06	3.21563158E-10	-1.87648230E-14				2
2.40692822E+04	-7.11150205E+00	1.68398813E+00	1.46455461E-02	-9.84764677E-06				3
3.66967922E-09	-5.99668094E-13	2.54978433E+04	1.39338819E+01					4
N2H4	H	4N	2		G300.000	5000.000	1000.000	1
4.97731700E+00	9.59551900E-03	-3.54763900E-06	6.12429900E-10	-4.02979500E-14				2
9.34121900E+03	-2.96299000E+00	6.44260600E-02	2.74973000E-02	-2.89945100E-05				3
1.74524000E-08	-4.42228200E-12	1.04519200E+04	2.12778900E+01					4
N2O	N	2O	1		G300.000	5000.000	1000.000	1
4.71897700E+00	2.87371400E-03	-1.19749600E-06	2.25055200E-10	-1.57533700E-14				2
8.16581100E+03	-1.65725000E+00	2.54305800E+00	9.49219300E-03	-9.79277500E-06				3
6.26384500E-09	-1.90182600E-12	8.76510000E+03	9.51122200E+00					4
N2O3	N	2O	3		G300.000	5000.000	1385.000	1
9.47187957E+00	3.20342454E-03	-1.15394851E-06	1.85472586E-10	-1.10239650E-14				2
6.29102106E+03	-1.92801187E+01	3.42941189E+00	1.86131141E-02	-1.64162298E-05				3

7.13285223E-09-1.22878517E-12 8.24651782E+03 1.26913770E+01	4
N2O4 N 2O 4 G300.000 5000.000 1000.000	1
1.04822000E+01 5.97227200E-03-2.56404400E-06 4.91688500E-10-3.49096900E-14	2
-2.84998900E+03-2.61228900E+01 3.62459300E+00 2.47470800E-02-2.17287500E-05	3
9.92710400E-09-2.22281700E-12-9.12824100E+02 9.45717400E+00	4
N2O5 N 2O 5 G300.000 5000.000 1397.000	1
1.40972974E+01 4.27467371E-03-1.50087100E-06 2.37166589E-10-1.39312162E-14	2
-3.83999936E+03-4.16508426E+01 2.56982614E+00 4.24349709E-02-4.97133469E-05	3
2.71882048E-08-5.57217535E-12-9.05347260E+02 1.63675147E+01	4
NAMMH C 1H 7N 3O 3G200.000 6000.000 1000.000	1
1.50959778E+01 2.14520842E-02-7.50972231E-06 1.18712673E-09-6.98257234E-14	2
-1.84746328E+04-4.69501419E+01 5.71540308E+00 3.20207886E-02 4.71338672E-06	3
-1.74429253E-08 5.14898454E-12-1.48390283E+04 6.07362127E+00	4
NCN C 1N 2 G300.000 4000.000 1500.000	1
6.65212100E+00 6.10803400E-04-1.38972700E-07 2.69554900E-12 1.66994400E-15	2
5.17240300E+04-1.13851700E+01 3.10127000E+00 9.98167400E-03-9.92070100E-06	3
4.75891900E-09-8.96862600E-13 5.28575700E+04 7.31757900E+00	4
NCNO C 1N 2O 1 G300.000 4000.000 1000.000	1
7.32663580E+00 1.78826550E-03-2.02887530E-07-9.47245270E-11 1.86671340E-14	2
3.67047930E+04-1.08860140E+01 4.92516370E+00 5.37065460E-03 2.78448740E-07	3
-2.19867610E-09 4.60365360E-13 3.75922730E+04 2.47060300E+00	4
NCO C 1N 1O 1 G200.000 6000.000 1000.000	1
5.15255717E+00 2.30945594E-03-8.83699519E-07 1.48525346E-10-9.08857905E-15	2
1.39030086E+04-2.56406350E+00 2.75452392E+00 9.23008037E-03-9.28006629E-06	3
5.62521381E-09-1.61200144E-12 1.45909290E+04 9.85368773E+00	4
NG C 3H 5N 3O 9G300.000 5000.000 1679.000	1
3.17905527E+01 2.15462327E-02-8.14853254E-06 1.35682759E-09-8.27426040E-14	2
-5.11450173E+04-1.21122161E+02 6.91509331E+00 7.78682750E-02-5.33692075E-05	3
1.65762778E-08-1.87542834E-12-4.28737343E+04 1.23261411E+01	4
NG1J C 3H 4N 3O 9G300.000 5000.000 1386.000	1
3.67990247E+01 1.30405164E-02-4.73086307E-06 7.63951238E-10-4.55546633E-14	2
-2.91978669E+04-1.48407213E+02 8.83903344E+00 8.17316990E-02-6.88117192E-05	3
2.77108938E-08-4.35242286E-12-2.00057403E+04 2.61786473E-01	4
NG2J C 3H 4N 3O 9G300.000 5000.000 1374.000	1
3.63643586E+01 1.34349717E-02-4.87285191E-06 7.86757584E-10-4.69094409E-14	2
-3.0468859E+04-1.44992375E+02 1.10424592E+01 7.06330837E-02-5.19874518E-05	3
1.73565477E-08-2.09596494E-12-2.16876660E+04-8.64768101E+00	4
NH H 1N 1 G200.000 6000.000 1000.000	1
2.78372645E+00 1.32985886E-03-4.24785565E-07 7.83494425E-11-5.50451298E-15	2
4.22190438E+04 5.74084857E+00 3.49295037E+00 3.11795722E-04-1.48906628E-06	3
2.48167403E-09-1.03570916E-12 4.19788215E+04 1.84834974E+00	4
NH2 H 2N 1 G200.000 6000.000 1000.000	1
2.84768992E+00 3.14280035E-03-8.98641458E-07 1.30318284E-10-7.48812926E-15	2
2.18239049E+04 6.47165433E+00 4.20556857E+00-2.13561363E-03 7.26851301E-06	3
-5.93069876E-09 1.80690978E-12 2.15352231E+04-1.46662770E-01	4
NH2NO H 2N 2O 1 G300.000 5000.000 1393.000	1
5.58336257E+00 5.09204279E-03-1.73536968E-06 2.83666022E-10-1.73828574E-14	2
9.12692776E+03-4.61046368E+00 1.64587862E+00 1.47076327E-02-1.09035730E-05	3
4.33657169E-09-7.13659773E-13 1.04585192E+04 1.63982286E+01	4
NH2O H 2N 1O 1 G300.000 5000.000 1398.000	1
4.26222939E+00 4.60071183E-03-1.52686779E-06 2.32081624E-10-1.32607907E-14	2
6.26937941E+03 1.89523882E+00 2.62132814E+00 8.05594293E-03-4.34199752E-06	3
1.31067689E-09-1.79413169E-13 6.89825870E+03 1.08768221E+01	4
NH2OH H 3N 1O 1 G300.000 5000.000 1420.000	1
4.63525852E+00 6.45493945E-03-2.08558973E-06 3.11059157E-10-1.75319478E-14	2
-7.64275787E+03-7.73608271E-01 2.09386013E+00 1.24417866E-02-7.51044198E-06	3
2.55541054E-09-3.73533556E-13-6.76250551E+03 1.28607110E+01	4
NH2OJ H 2N 1O 2 G300.000 5000.000 1413.000	1
6.78804822E+00 4.91007717E-03-1.61681265E-06 2.44675423E-10-1.39448536E-14	2
1.58745596E+04-8.94756826E+00 2.49242794E+00 1.56153048E-02-1.17850476E-05	3
4.60380239E-09-7.23142624E-13 1.72741990E+04 1.38424043E+01	4
NH3 H 3N 1 G300.000 5000.000 1000.000	1
2.46190400E+00 6.05916600E-03-2.00497700E-06 3.13600300E-10-1.93831700E-14	2
-6.49327000E+03 7.47209700E+00 2.20435200E+00 1.01147600E-02-1.46526500E-05	3
1.44723500E-08-5.32850900E-12-6.52548800E+03 8.12713800E+00	4
NJH2Q H 2N 1O 2 G300.000 5000.000 1411.000	1
7.28155470E+00 4.47144130E-03-1.45944647E-06 2.19345201E-10-1.24347586E-14	2
1.57203916E+04-1.09774221E+01 3.16360542E+00 1.64448333E-02-1.49603801E-05	3
7.10451904E-09-1.33414813E-12 1.69096365E+04 1.02938463E+01	4
NNH H 1N 2 G250.000 4000.000 1000.000	1
4.41534200E+00 1.61438800E-03-1.63289400E-07-8.55984600E-11 1.61479100E-14	2

2.78802900E+04	9.04288800E-01	3.50134400E+00	2.05358700E-03	7.17041000E-07	3			
4.92134800E-10	-9.67117000E-13	2.83334700E+04	6.39183700E+00		4			
NO	N	10	1	G200.000	1000.000	1		
3.26071234E+00	1.19101135E-03	-4.29122646E-07	6.94481463E-11	-4.03295681E-15	2			
9.92143132E+03	6.36900518E+00	4.21859896E+00	-4.63988124E-03	1.10443049E-05	3			
-9.34055507E-09	2.80554874E-12	9.84509964E+03	2.28061001E+00		4			
NO2	N	10	2	G300.000	5000.000	1		
4.68285900E+00	2.46242900E-03	-1.04225900E-06	1.97690200E-10	-1.39171700E-14	2			
2.26129200E+03	9.88598500E-01	2.67060000E+00	7.83850100E-03	-8.06386500E-06	3			
6.16171500E-09	-2.32015000E-12	2.89629100E+03	1.16120700E+01		4			
NO3	N	10	3	G300.000	5000.000	1		
7.12030700E+00	3.24622800E-03	-1.43161300E-06	2.79705300E-10	-2.01300800E-14	2			
5.86447900E+03	-1.21373000E+01	1.22107600E+00	1.87879700E-02	-1.34432100E-05	3			
1.27460100E-09	1.35406000E-12	7.47314400E+03	1.84020300E+01		4			
O	O	1		G300.000	5000.000	1		
2.54206000E+00	-2.75506200E-05	-3.10280300E-09	4.55106700E-12	-4.36805200E-16	2			
2.92308000E+04	4.92030800E+00	2.94642900E+00	-1.63816600E-03	2.42103200E-06	3			
-1.60284300E-09	3.89069600E-13	2.91476400E+04	2.96399500E+00		4			
O2	O	2		G300.000	5000.000	1		
3.69757800E+00	6.13519700E-04	-1.25884200E-07	1.77528100E-11	-1.13643500E-15	2			
-1.23393000E+03	3.18916600E+00	3.21293600E+00	1.12748600E-03	-5.75615000E-07	3			
1.31387700E-09	-8.76855400E-13	-1.00524900E+03	6.03473800E+00		4			
O2C2H4OH	C	2H	5O	3	G300.000	5000.000	1392.000	
1.07432659E+01	1.30957787E-02	-4.45370088E-06	6.88548738E-10	-3.98230113E-14	2			
-2.55911274E+04	-2.33254953E+01	4.11839445E+00	2.72240632E-02	-1.60824430E-05	3			
5.17033408E-09	-7.31610168E-13	-2.30857785E+04	1.28482112E+01		4			
O2NCHO	C	1H	1N	1O	3G300.000	5000.000	1394.000	
9.91141295E+00	4.90047838E-03	-1.72715003E-06	2.73638213E-10	-1.61035429E-14	2			
-2.00230456E+04	-2.30177654E+01	2.62365244E+00	2.36338057E-02	-2.04428729E-05	3			
8.85914610E-09	-1.52941335E-12	-1.76779234E+04	1.54916873E+01		4			
O3	O	3		G300.000	5000.000	1000.000		
5.42937100E+00	1.82038000E-03	-7.70560700E-07	1.49929300E-10	-1.07556300E-14	2			
1.52352700E+04	-3.26638700E+00	2.46260900E+00	9.58278100E-03	-7.08735900E-06	3			
1.36336800E-09	2.96964700E-13	1.60615200E+04	1.21418700E+01		4			
OCHO	C	1H	1O	2	G300.000	5000.000	1381.000	
6.68745467E+00	2.95190945E-03	-1.05090800E-06	1.67601590E-10	-9.90818539E-15	2			
-1.85406254E+04	-9.43952142E+00	2.80270641E+00	1.18925590E-02	-8.84143783E-06	3			
3.23180648E-09	-4.70421586E-13	-1.71855715E+04	1.14598519E+01		4			
OCJCDOCOH	C	3H	3O	3	G300.000	5000.000	1399.000	
1.32306752E+01	8.94685700E-03	-3.04587725E-06	4.71550476E-10	-2.73093590E-14	2			
-3.71690524E+04	-3.74971443E+01	4.24201161E+00	3.09510544E-02	-2.37297114E-05	3			
9.33238167E-09	-1.48263634E-12	-3.41747458E+04	1.03760498E+01		4			
ODCCDJJO	C	2H	1O	2	G300.000	5000.000	1415.000	
1.71525514E+00	4.02150430E-03	-1.30901449E-06	1.96668239E-10	-1.11562717E-14	2			
-9.46292348E+03	-1.41721698E+01	1.74810209E+00	2.13338176E-02	-2.02387303E-05	3			
9.51144225E-09	-1.73690014E-12	-7.71019710E+03	1.72310520E+01		4			
ODCCDOCOH	C	3H	4O	3	G300.000	5000.000	1414.000	
1.80922178E+01	7.37963477E-03	-2.60942961E-06	4.14835510E-10	-2.44863777E-14	2			
-5.82762377E+04	-6.84278893E+01	8.47707722E-01	5.13597998E-02	-4.50160357E-05	3			
1.87183592E-08	-3.00190772E-12	-5.28226069E+04	2.25994123E+01		4			
ODCCDOCOJ	C	3H	3O	3	G300.000	5000.000	1382.000	
1.31408492E+01	9.28247194E-03	-3.21792127E-06	5.04181350E-10	-2.94404565E-14	2			
-2.76068420E+04	-3.62338457E+01	5.86182642E+00	2.40831500E-02	-1.38420320E-05	3			
3.55330676E-09	-2.85086387E-13	-2.48567189E+04	3.64434184E+00		4			
ODCICDO2	C	3H	2O	3	G300.000	5000.000	1382.000	
1.20732619E+01	7.73300416E-03	-2.70381548E-06	4.26060745E-10	-2.49779691E-14	2			
-4.07763355E+04	-3.07218527E+01	4.89849412E+00	2.35737858E-02	-1.59022207E-05	3			
5.39051954E-09	-7.41311134E-13	-3.81807922E+04	8.15830834E+00		4			
ODCJCACOH	C	3H	4N	1O	5G300.000	5000.000	1400.000	
2.36195291E+01	9.45058389E-03	-3.31080941E-06	5.22453623E-10	-3.06614870E-14	2			
-3.85886383E+04	-8.90116122E+01	2.78162272E+00	7.30919666E-02	-7.84595973E-05	3			
4.04022134E-08	-7.94370898E-12	-3.28369007E+04	1.76138025E+01		4			
ODCJKIDO	C	3H	1O	3	G300.000	5000.000	1381.000	
1.30307103E+01	5.42479998E-03	-1.95526257E-06	3.14387723E-10	-1.86913541E-14	2			
-2.88753573E+04	-3.91025938E+01	3.60290349E+00	2.77762170E-02	-2.20066382E-05	3			
8.40888328E-09	-1.26071797E-12	-2.56784293E+04	1.13420481E+01		4			
ODCKCJOH	C	3H	3O	3	G300.000	5000.000	1391.000	
1.47379258E+01	8.60329122E-03	-3.04384973E-06	4.83626506E-10	-2.85222632E-14	2			
-4.53900896E+04	-5.06293206E+01	9.94680663E-01	4.16337513E-02	-3.30424009E-05	3			
1.27055346E-08	-1.91237883E-12	-4.07922665E+04	2.27161010E+01		4			
OH	H	1O	1		G300.000	5000.000	1000.000	1

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2.88273000E+00 1.01397400E-03-2.27687700E-07 2.17468400E-11-5.12630500E-16 2
3.67208900E+03 5.59571200E+00 3.63726600E+00 1.85091000E-04-1.67616500E-06 3
2.38720300E-09-8.43144200E-13 3.39198300E+03 1.35886000E+00 4
OH* H 1O 1 G300.000 5000.000 1360.000 1
2.34769505E+00 1.68959247E-03-4.96196365E-07 6.44214778E-11-3.12846870E-15 2
5.05933255E+04 8.74832296E+00 3.79519890E+00-9.60320738E-04 1.07935821E-06 3
-2.21198282E-10-1.46184056E-14 5.00092499E+04 7.00359228E-01 4
OJNHCHO C 1H 2N 1O 3G300.000 5000.000 1400.000 1
1.08734861E+01 6.50228848E-03-2.25178564E-06 3.52675979E-10-2.05918430E-14 2
-2.03343514E+04-2.84424804E+01 1.95323752E+00 2.93851318E-02-2.49049976E-05 3
1.05847645E-08-1.78869460E-12-1.74760935E+04 1.86811328E+01 4
ONOCHO C 1H 1N 1O 3G300.000 5000.000 1410.000 1
1.22840065E+01 2.54240817E-03-9.33422794E-07 1.51922313E-10-9.10868201E-15 2
-2.83490847E+04-3.52608565E+01 8.67680831E-01 3.59748223E-02-3.83580776E-05 3
1.89460479E-08-3.55203605E-12-2.51378321E+04 2.35246630E+01 4
ONONO2 N 2O 4 G300.000 5000.000 1394.000 1
1.22043664E+01 3.45851420E-03-1.24871388E-06 2.01018965E-10-1.19612560E-14 2
-4.93024132E+02-3.16697375E+01 4.21575317E+00 2.46409530E-02-2.29584816E-05 3
1.03444807E-08-1.82063749E-12 1.99316683E+03 1.02809212E+01 4
PC2H4OH C 2H 5O 1 G300.000 5000.000 1391.000 1
7.52241939E+00 1.10492715E-02-3.72576465E-06 5.72827397E-10-3.30061759E-14 2
-7.29333590E+03-1.24958732E+01 1.17714711E+00 2.48115685E-02-1.50299503E-05 3
4.79006785E-09-6.40994211E-13-4.95369043E+03 2.20081586E+01 4
SC2H2OH C 2H 3O 1 G300.000 5000.000 1410.000 1
7.99235139E+00 5.83109353E-03-1.89242965E-06 2.83129118E-10-1.59933287E-14 2
9.51237374E+03-1.62058375E+01 1.63791895E+00 2.64968839E-02-2.74821415E-05 3
1.43110557E-08-2.85794966E-12 1.11467016E+04 1.58714777E+01 4
SC2H4OH C 2H 5O 1 G300.000 5000.000 1392.000 1
7.83524517E+00 1.08808198E-02-3.68694127E-06 5.68601361E-10-3.28288951E-14 2
-1.07534311E+04-1.53495702E+01 1.91496477E+00 2.45693145E-02-1.63075399E-05 3
6.12282361E-09-1.00784363E-12-8.62161551E+03 1.65987309E+01 4
VCDJO C 3H 3O 1 G300.000 5000.000 1403.000 1
8.76612341E+00 7.77928992E-03-2.49026790E-06 3.69252827E-10-2.07329959E-14 2
7.79908556E+03-1.86491247E+01 2.10804239E+00 2.79698291E-02-2.62572868E-05 3
1.29707093E-08-2.52092364E-12 9.65945852E+03 1.54835048E+01 4
VCDJO C 3H 4O 1 G300.000 5000.000 1392.000 1
9.39918255E+00 1.01168249E-02-3.36959545E-06 5.14172946E-10-2.94835284E-14 2
-1.23594302E+04-2.47300373E+01 1.13047846E+00 2.92269879E-02-1.99974542E-05 3
6.98466320E-09-9.79237748E-13-9.49490843E+03 1.97052158E+01 4
Y3COCA C 2H 3N 1O 4G300.000 5000.000 1451.000 1
1.68115792E+01 9.78948072E-03-3.45294759E-06 5.47901688E-10-3.22948472E-14 2
-2.52265373E+04-6.14702701E+01 2.54040884E+00 3.91378691E-02-2.35751154E-05 3
5.18530257E-09-5.82503482E-14-2.00291603E+04 1.63285136E+01 4
Y3COCOJ C 2H 3O 2 G300.000 5000.000 1401.000 1
9.17383335E+00 8.22812313E-03-2.81507219E-06 4.37221828E-10-2.53766092E-14 2
-1.03631874E+04-2.37823010E+01-1.29779828E-01 3.23807857E-02-2.71929856E-05 3
1.17196115E-08-2.02680010E-12-7.39285304E+03 2.52943587E+01 4
YC2JO C 2H 3O 1 G300.000 5000.000 1406.000 1
6.81683925E+00 7.62002526E-03-2.59113313E-06 4.00752133E-10-2.31905993E-14 2
1.60615293E+04-1.25713586E+01-6.16869600E-01 2.60165534E-02-2.00834274E-05 3
7.97480374E-09-1.27809428E-12 1.85154616E+04 2.69449080E+01 4
END

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REACTIONS

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NG<=>CACACOJ+NO2 1 0 0 !! R1
PLOG / 0.001 1.75e+81 -21.85 53461 /
PLOG / 0.01 2.22e+79 -20.9 54255 /
PLOG / 0.1 3.54e+78 -20.36 55205 /
PLOG / 1.0 2.1e+58 -13.8 49612 /
PLOG / 10.0 6.5e+50 -11.28 47942 /
PLOG / 25.0 9.1e+48 -10.64 47596 /
PLOG / 50.0 8.66e+45 -9.66 46769 /
PLOG / 75.0 2.06e+44 -9.13 46324 /
PLOG / 100.0 1.43e+43 -8.76 46002 /
PLOG / 150.0 3.09e+41 -8.22 45531 /
PLOG / 200.0 1.94e+40 -7.84 45186 /
PLOG / 250.0 2.28e+39 -7.54 44916 /
PLOG / 300.0 3.86e+38 -7.29 44691 /
PLOG / 350.0 8.64e+37 -7.08 44500 /
PLOG / 400.0 2.33e+37 -6.9 44332 /
PLOG / 450.0 7.38e+36 -6.74 44184 /

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PLOG / 500.0	2.61e+36	-6.6	44049 /			
PLOG / 600.0	4.32e+35	-6.35	43815 /			
PLOG / 700.0	9.33e+34	-6.14	43615 /			
PLOG / 800.0	2.5e+34	-5.95	43442 /			
PLOG / 900.0	7.71e+33	-5.79	43286 /			
PLOG / 1000.0	2.69e+33	-5.65	43147 /			
PLOG / 1500.0	4.55e+31	-5.08	42603 /			
PLOG / 2000.0	2.4e+30	-4.68	42208 /			
NG<=>DICACDJ+NO2		1		0	0	!! R2
PLOG / 0.001	2.62e+83	-22.88	54695 /			
PLOG / 0.01	5.36e+81	-21.98	55646 /			
PLOG / 0.1	1.17e+81	-21.46	56720 /			
PLOG / 1.0	3.02e+60	-14.77	51073 /			
PLOG / 10.0	6.12e+52	-12.18	49391 /			
PLOG / 25.0	7.47e+50	-11.52	49042 /			
PLOG / 50.0	5.68e+47	-10.5	48193 /			
PLOG / 75.0	1.19e+46	-9.96	47736 /			
PLOG / 100.0	7.55e+44	-9.57	47405 /			
PLOG / 150.0	1.43e+43	-9.02	46920 /			
PLOG / 200.0	8.14e+41	-8.62	46564 /			
PLOG / 250.0	8.86e+40	-8.31	46286 /			
PLOG / 300.0	1.41e+40	-8.05	46053 /			
PLOG / 350.0	2.99e+39	-7.83	45856 /			
PLOG / 400.0	7.68e+38	-7.65	45682 /			
PLOG / 450.0	2.33e+38	-7.48	45529 /			
PLOG / 500.0	7.93e+37	-7.33	45390 /			
PLOG / 600.0	1.23e+37	-7.07	45148 /			
PLOG / 700.0	2.51e+36	-6.85	44941 /			
PLOG / 800.0	6.4e+35	-6.66	44762 /			
PLOG / 900.0	1.89e+35	-6.5	44601 /			
PLOG / 1000.0	6.34e+34	-6.35	44457 /			
PLOG / 1500.0	9.21e+32	-5.76	43894 /			
PLOG / 2000.0	4.36e+31	-5.34	43484 /			
NG<=>CACACDO+HONO		1		0	0	!! R3
PLOG / 0.001	3.5017e+88	-24.42093	57103 /			
PLOG / 0.01	2.325e+87	-23.61939	58421 /			
PLOG / 0.1	1.1188e+87	-23.15558	59789 /			
PLOG / 1.0	5.5001e+65	-16.20807	54053 /			
PLOG / 10.0	4.4749e+57	-13.46426	52354 /			
PLOG / 25.0	4.0535e+55	-12.75059	51996 /			
PLOG / 50.0	1.8492e+52	-11.66207	51101 /			
PLOG / 75.0	2.9305e+50	-11.07851	50616 /			
PLOG / 100.0	1.4791e+49	-10.66217	50263 /			
PLOG / 150.0	2.1485e+47	-10.06436	49749 /			
PLOG / 200.0	9.6683e+45	-9.62846	49368 /			
PLOG / 250.0	8.7807e+44	-9.29533	49071 /			
PLOG / 300.0	1.2267e+44	-9.01635	48822 /			
PLOG / 350.0	2.3386e+43	-8.78675	48611 /			
PLOG / 400.0	5.4245e+42	-8.58619	48425 /			
PLOG / 450.0	1.4999e+42	-8.4052	48261 /			
PLOG / 500.0	4.6634e+41	-8.24369	48112 /			
PLOG / 600.0	6.1444e+40	-7.96951	47852 /			
PLOG / 700.0	1.1193e+40	-7.73019	47630 /			
PLOG / 800.0	2.4699e+39	-7.5238	47435 /			
PLOG / 900.0	6.6656e+38	-7.34326	47262 /			
PLOG / 1000.0	2.1073e+38	-7.17778	47110 /			
PLOG / 1500.0	2.0545e+36	-6.54535	46501 /			
PLOG / 2000.0	7.7133e+34	-6.08637	46060 /			
NG<=>DICACDO+HONO		1		0	0	!! R4
PLOG / 0.001	4.93e+84	-23.71	55315 /			
PLOG / 0.01	1.33e+83	-22.83	56353 /			
PLOG / 0.1	3.48e+82	-22.33	57496 /			
PLOG / 1.0	5.96e+61	-15.57	51825 /			
PLOG / 10.0	9.72e+53	-12.95	50139 /			
PLOG / 25.0	1.11e+52	-12.27	49788 /			
PLOG / 50.0	7.5e+48	-11.24	48929 /			
PLOG / 75.0	1.48e+47	-10.69	48465 /			
PLOG / 100.0	8.92e+45	-10.3	48129 /			
PLOG / 150.0	1.57e+44	-9.73	47637 /			
PLOG / 200.0	8.52e+42	-9.32	47275 /			
PLOG / 250.0	8.91e+41	-9.01	46993 /			

PLOG / 300.0	1.37e+41	-8.75	46756 /			
PLOG / 350.0	2.83e+40	-8.53	46556 /			
PLOG / 400.0	7.09e+39	-8.33	46379 /			
PLOG / 450.0	2.11e+39	-8.17	46224 /			
PLOG / 500.0	7.02e+38	-8.01	46082 /			
PLOG / 600.0	1.05e+38	-7.75	45836 /			
PLOG / 700.0	2.09e+37	-7.53	45625 /			
PLOG / 800.0	5.19e+36	-7.33	45443 /			
PLOG / 900.0	1.5e+36	-7.16	45280 /			
PLOG / 1000.0	4.92e+35	-7.01	45133 /			
PLOG / 1500.0	6.59e+33	-6.42	44560 /			
PLOG / 2000.0	2.94e+32	-5.99	44143 /			
CACACQJ<=>CJACACOH		5.0838e+19		-1.50713	19714.88	!! R5
CJACACOH<=>CDOCACOH+NO2		4.9904e+11		0.20979	-1712.79	!! R6
CACACDO+H<=>CACACQJ		4.61e+07		1.71	7089.957	!! R7
CACACQJ<=>ACCJA+CH2O		1.9789e+13		0.33845	15825.9	!! R8
ACCJA<=>HCOCONO2+NO2		6.6421e+12		0.26298	442.0773	!! R9
CACACQJ+NO2<=>CACACOONO		1		0	0	!! R10
PLOG / 0.001	8.25e+98	-32.65	14640 /			
PLOG / 0.01	1.06e+102	-33.25	15929 /			
PLOG / 0.1	1.65e+106	-34.17	17848 /			
PLOG / 1.0	4.77e+111	-35.45	20522 /			
PLOG / 10.0	1.46e+118	-37.02	23902 /			
PLOG / 25.0	6.82e+120	-37.67	25365 /			
PLOG / 50.0	6.51e+122	-38.14	26485 /			
PLOG / 75.0	8.72e+123	-38.41	27139 /			
PLOG / 100.0	5.26e+124	-38.6	27601 /			
PLOG / 150.0	6.17e+125	-38.85	28246 /			
PLOG / 200.0	3.34e+126	-39.01	28699 /			
PLOG / 250.0	1.19e+127	-39.14	29046 /			
PLOG / 300.0	3.29e+127	-39.24	29327 /			
PLOG / 350.0	7.62e+127	-39.32	29563 /			
PLOG / 400.0	1.55e+128	-39.39	29765 /			
PLOG / 450.0	2.88e+128	-39.45	29942 /			
PLOG / 500.0	4.95e+128	-39.5	30100 /			
PLOG / 600.0	1.24e+129	-39.59	30369 /			
PLOG / 700.0	2.63e+129	-39.66	30595 /			
PLOG / 800.0	4.97e+129	-39.72	30788 /			
PLOG / 900.0	8.6e+129	-39.77	30956 /			
PLOG / 1000.0	1.39e+130	-39.81	31106 /			
PLOG / 1500.0	7.97e+130	-39.97	31668 /			
PLOG / 2000.0	2.5e+131	-40.07	32054 /			
CACACOONO=>CACACQJ+NO		1		0	0	!! R11
PLOG / 0.001	0.122	-1.57	17301 /			
PLOG / 0.01	336	-2.26	15951 /			
PLOG / 0.1	5.69e+07	-3.43	14345 /			
PLOG / 1.0	8.29e+20	-6.8	15636 /			
PLOG / 10.0	3.04e+43	-12.61	23447 /			
PLOG / 25.0	5.57e+50	-14.33	26900 /			
PLOG / 50.0	1.66e+55	-15.31	29401 /			
PLOG / 75.0	1.37e+57	-15.66	30742 /			
PLOG / 100.0	2.58e+58	-15.91	31567 /			
PLOG / 150.0	1.93e+60	-16.29	32790 /			
PLOG / 200.0	6.99e+58	-15.68	32828 /			
PLOG / 250.0	4.38e+59	-15.82	33431 /			
PLOG / 300.0	1.78e+60	-15.92	33911 /			
PLOG / 350.0	6.4e+54	-14.16	32325 /			
PLOG / 400.0	1.45e+55	-14.2	32654 /			
PLOG / 450.0	2.28e+55	-14.21	32887 /			
PLOG / 500.0	3.65e+55	-14.23	33111 /			
PLOG / 600.0	7.68e+55	-14.25	33486 /			
PLOG / 700.0	1.33e+56	-14.26	33804 /			
PLOG / 800.0	2.31e+56	-14.28	34066 /			
PLOG / 900.0	3.12e+56	-14.27	34275 /			
PLOG / 1000.0	3.88e+56	-14.26	34482 /			
PLOG / 1500.0	6.93e+56	-14.17	35164 /			
PLOG / 2000.0	7.14e+56	-14.07	35575 /			
CACACOONO<=>CACACDO+HNO2		1		0	0	!! R12
PLOG / 0.001	0.00239	-1.61	16726 /			
PLOG / 0.01	6.99	-2.31	15390 /			
PLOG / 0.1	1540000	-3.52	13870 /			

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PLOG / 1.0 4.05e+19 -6.96 15468 /
PLOG / 10.0 2.53e+41 -12.54 23218 /
PLOG / 25.0 2.17e+48 -14.17 26568 /
PLOG / 50.0 4.11e+52 -15.11 28994 /
PLOG / 75.0 2.56e+54 -15.43 30281 /
PLOG / 100.0 4.28e+55 -15.66 31081 /
PLOG / 150.0 2.54e+57 -16.02 32257 /
PLOG / 200.0 4.61e-15 6.47 8771 /
PLOG / 250.0 5.83e+56 -15.56 32877 /
PLOG / 300.0 2.12e+57 -15.65 33333 /
PLOG / 350.0 8.32e+51 -13.9 31757 /
PLOG / 400.0 1.81e+52 -13.94 32072 /
PLOG / 450.0 2.78e+52 -13.95 32295 /
PLOG / 500.0 4.8e+52 -13.98 32540 /
PLOG / 600.0 9.13e+52 -13.99 32881 /
PLOG / 700.0 1.62e+53 -14 33193 /
PLOG / 800.0 2.43e+53 -14 33450 /
PLOG / 900.0 3.14e+53 -13.99 33644 /
PLOG / 1000.0 4.04e+53 -13.99 33835 /
PLOG / 1500.0 7.18e+53 -13.9 34499 /
PLOG / 2000.0 7.68e+53 -13.81 34904 /
CACACQJ+NO2<=>CACACDO+HONO 1.2696e+18 -1.44131 6517.361 !! R13
CACACQJ+NO2<=>CACACDO+HNO2 4.0859e+16 -1.40313 1916.488 !! R14
DICACQJ+NO2<=>DICACQJ+NO 1 0 0 !! R15
PLOG / 0.001 7.26e+107 -34.57 22317 /
PLOG / 0.01 5.27e+113 -35.95 25422 /
PLOG / 0.1 6.6e+119 -37.39 28905 /
PLOG / 1.0 1.15e+125 -38.56 32302 /
PLOG / 10.0 2.5e+128 -39.15 35156 /
PLOG / 25.0 1.01e+129 -39.17 36054 /
PLOG / 50.0 1.45e+129 -39.09 36627 /
PLOG / 75.0 1.33e+129 -39.01 36917 /
PLOG / 100.0 1.1e+129 -38.93 37101 /
PLOG / 150.0 6.96e+128 -38.8 37331 /
PLOG / 200.0 4.36e+128 -38.68 37472 /
PLOG / 250.0 2.81e+128 -38.59 37568 /
PLOG / 300.0 1.86e+128 -38.5 37638 /
PLOG / 350.0 1.26e+128 -38.42 37691 /
PLOG / 400.0 8.82e+127 -38.35 37733 /
PLOG / 450.0 6.3e+127 -38.29 37767 /
PLOG / 500.0 4.58e+127 -38.23 37794 /
PLOG / 600.0 2.56e+127 -38.12 37836 /
PLOG / 700.0 1.51e+127 -38.02 37866 /
PLOG / 800.0 9.32e+126 -37.94 37888 /
PLOG / 900.0 5.98e+126 -37.86 37904 /
PLOG / 1000.0 3.97e+126 -37.79 37916 /
PLOG / 1500.0 7.17e+125 -37.49 37940 /
PLOG / 2000.0 1.88e+125 -37.27 37937 /
DICACQJ+NO=>DICACQJ+NO 1 0 0 !! R16
PLOG / 0.001 3.04e+23 -7.67 17342 /
PLOG / 0.01 8.77e+34 -10.34 21406 /
PLOG / 0.1 9.15e+47 -13.38 27930 /
PLOG / 1.0 5.94e+52 -14 32254 /
PLOG / 10.0 2.88e+48 -11.98 33314 /
PLOG / 25.0 4.71e+47 -11.5 33979 /
PLOG / 50.0 8.9e+45 -10.8 34049 /
PLOG / 75.0 6.12e+44 -10.36 34012 /
PLOG / 100.0 6.62e+43 -10 33924 /
PLOG / 150.0 2.17e+42 -9.47 33740 /
PLOG / 200.0 1.37e+41 -9.05 33550 /
PLOG / 250.0 1.37e+40 -8.7 33373 /
PLOG / 300.0 1.86e+39 -8.4 33211 /
PLOG / 350.0 3.23e+38 -8.14 33064 /
PLOG / 400.0 5.91e+37 -7.89 32915 /
PLOG / 450.0 1.14e+37 -7.64 32765 /
PLOG / 500.0 1.74e+36 -7.37 32577 /
PLOG / 600.0 7.46e+34 -6.91 32291 /
PLOG / 700.0 2.91e+33 -6.43 31994 /
PLOG / 800.0 6.86e+32 -6.19 31983 /
PLOG / 900.0 1.59e+32 -5.98 31815 /
PLOG / 1000.0 6.04e+31 -5.85 31692 /

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PLOG / 1500.0	7.9e+29	-5.26	31065 /			
PLOG / 2000.0	3.85e+29	-5.17	30962 /			
DICACOONO<=>DICACDO+HNO2		1		0	0	!! R17
PLOG / 0.001	1.6e+21	-7.22	17695 /			
PLOG / 0.01	1.05e+35	-10.55	22426 /			
PLOG / 0.1	8.21e+46	-13.25	28253 /			
PLOG / 1.0	4.12e+52	-14.06	33128 /			
PLOG / 10.0	3e+48	-12.05	34370 /			
PLOG / 25.0	5e+47	-11.56	35082 /			
PLOG / 50.0	9.54e+45	-10.86	35186 /			
PLOG / 75.0	6.15e+44	-10.41	35156 /			
PLOG / 100.0	6.67e+43	-10.05	35081 /			
PLOG / 150.0	1.86e+42	-9.49	34887 /			
PLOG / 200.0	1.08e+41	-9.05	34695 /			
PLOG / 250.0	1.03e+40	-8.7	34519 /			
PLOG / 300.0	1.38e+39	-8.39	34360 /			
PLOG / 350.0	2.1e+38	-8.11	34202 /			
PLOG / 400.0	3.8e+37	-7.86	34055 /			
PLOG / 450.0	6.55e+36	-7.6	33895 /			
PLOG / 500.0	9.23e+35	-7.31	33701 /			
PLOG / 600.0	3.23e+34	-6.82	33396 /			
PLOG / 700.0	1.36e+33	-6.35	33117 /			
PLOG / 800.0	3.43e+32	-6.12	33119 /			
PLOG / 900.0	8.38e+31	-5.92	32969 /			
PLOG / 1000.0	2.73e+31	-5.77	32812 /			
PLOG / 1500.0	3.15e+29	-5.16	32166 /			
PLOG / 2000.0	1.68e+29	-5.08	32077 /			
DICACOJ+NO2<=>DICACDO+HONO		3.4534e+16		-1.11408	3349.18	!! R18
DICACOJ+NO2<=>DICACDO+HNO2		3.7962e+17		-1.27078	6501.261	!! R19
DICACOJ<=>HCOCONO2+CH2O+NO2		1.1146e+12		0.5035	13981.92	!! R20
DICACOJ<=>DICACDO+H		4.1635e+11		0.70001	35212.79	!! R21
NG+NO2<=>NG1J+HONO		1.5829e-11		7.07789	17097.9	!! R22
NG+NO2<=>NG1J+HNO2		6.6392e-08		6.16901	24534.85	!! R23
NG+NO2<=>NG2J+HONO		2.2048e-20		9.41874	14542.91	!! R24
NG+NO2<=>NG2J+HNO2		3.2328e-10		6.48448	22878.86	!! R25
NG1J<=>CACACDO+NO2		6.89e+08		1.19007	-2218.887	!! R26
NG2J<=>DICACDO+NO2		1.0085e+12		0.3049	273.3483	!! R27
NG+NO2<=>CACACOJ+N2O4		1.1688		4.06762	39012.76	!! R28
NG+NO2<=>DICACOJ+N2O4		0.69291		4.0353	35939.78	!! R29
CACACOJ+NO<=>CACACONO		1		0	0	!! R30
PLOG / 0.001	2.72e+136	-41.12	29621 /			
PLOG / 0.01	4.49e+138	-41.4	31775 /			
PLOG / 0.1	4.61e+139	-41.32	33609 /			
PLOG / 1.0	9.73e+138	-40.72	34898 /			
PLOG / 10.0	1.83e+136	-39.52	35459 /			
PLOG / 25.0	3.53e+134	-38.85	35448 /			
PLOG / 50.0	1.01e+133	-38.28	35344 /			
PLOG / 75.0	9.98e+131	-37.91	35244 /			
PLOG / 100.0	1.74e+131	-37.64	35155 /			
PLOG / 150.0	1.29e+130	-37.23	35005 /			
PLOG / 200.0	1.83e+129	-36.93	34880 /			
PLOG / 250.0	3.81e+128	-36.69	34773 /			
PLOG / 300.0	1.01e+128	-36.49	34679 /			
PLOG / 350.0	3.23e+127	-36.32	34595 /			
PLOG / 400.0	1.17e+127	-36.17	34518 /			
PLOG / 450.0	4.74e+126	-36.03	34448 /			
PLOG / 500.0	2.08e+126	-35.91	34383 /			
PLOG / 600.0	4.88e+125	-35.69	34266 /			
PLOG / 700.0	1.39e+125	-35.5	34162 /			
PLOG / 800.0	4.62e+124	-35.34	34069 /			
PLOG / 900.0	1.72e+124	-35.19	33984 /			
PLOG / 1000.0	7.01e+123	-35.06	33906 /			
PLOG / 1500.0	2.01e+122	-34.53	33587 /			
PLOG / 2000.0	1.47e+121	-34.15	33343 /			
CACACONO<=>CACACDO+HNO		1		0	0	!! R31
PLOG / 0.001	1.15e+70	-19.72	49929 /			
PLOG / 0.01	8.35e+73	-20.56	52504 /			
PLOG / 0.1	3.39e+75	-20.69	54439 /			
PLOG / 1.0	2.37e+74	-19.98	55446 /			
PLOG / 10.0	1.8e+71	-18.7	55704 /			
PLOG / 25.0	1.26e+70	-18.23	55777 /			

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PLOG / 50.0 3.81e+69 -18 55896 /
PLOG / 75.0 8.9e+67 -17.44 55572 /
PLOG / 100.0 3.38e+67 -17.28 55550 /
PLOG / 150.0 4.67e+66 -16.98 55434 /
PLOG / 200.0 9.91e+57 -14.25 52659 /
PLOG / 250.0 9.59e+56 -13.91 52429 /
PLOG / 300.0 7.98e+56 -13.87 52455 /
PLOG / 350.0 2.83e+56 -13.72 52365 /
PLOG / 400.0 3.01e+55 -13.4 52092 /
PLOG / 450.0 4.81e+54 -13.14 51871 /
PLOG / 500.0 2.28e+55 -13.34 52137 /
PLOG / 600.0 6.28e+54 -13.16 52018 /
PLOG / 700.0 2.05e+54 -12.99 51912 /
PLOG / 800.0 7.58e+53 -12.85 51816 /
PLOG / 900.0 3.15e+53 -12.72 51731 /
PLOG / 1000.0 1.44e+53 -12.6 51654 /
PLOG / 1500.0 1.67e+51 -11.97 51146 /
PLOG / 2000.0 3.3e+49 -11.42 50671 /
CACACDJ+NO<=>CACACDO+HNO 1.656e+17 -1.43279 3590.178 !! R32
DICACDJ+NO<=>DICACONO 1 0 0 !! R33
PLOG / 0.001 7.73e+135 -40.9 29631 /
PLOG / 0.01 9.41e+137 -41.14 31756 /
PLOG / 0.1 6.65e+138 -41 33539 /
PLOG / 1.0 8.64e+137 -40.35 34750 /
PLOG / 10.0 8.76e+134 -39.06 35209 /
PLOG / 25.0 1.29e+133 -38.36 35151 /
PLOG / 50.0 3e+131 -37.76 35011 /
PLOG / 75.0 2.64e+130 -37.38 34890 /
PLOG / 100.0 4.24e+129 -37.1 34786 /
PLOG / 150.0 2.79e+128 -36.68 34615 /
PLOG / 200.0 3.65e+127 -36.37 34475 /
PLOG / 250.0 7.12e+126 -36.12 34357 /
PLOG / 300.0 1.8e+126 -35.91 34253 /
PLOG / 350.0 5.49e+125 -35.73 34161 /
PLOG / 400.0 1.93e+125 -35.58 34077 /
PLOG / 450.0 7.53e+124 -35.43 34001 /
PLOG / 500.0 3.21e+124 -35.31 33931 /
PLOG / 600.0 7.16e+123 -35.08 33805 /
PLOG / 700.0 1.96e+123 -34.89 33693 /
PLOG / 800.0 6.28e+122 -34.72 33593 /
PLOG / 900.0 2.27e+122 -34.57 33503 /
PLOG / 1000.0 9e+121 -34.44 33419 /
PLOG / 1500.0 2.33e+120 -33.9 33080 /
PLOG / 2000.0 1.59e+119 -33.51 32822 /
DICACONO<=>DICACDO+HNO 1 0 0 !! R34
PLOG / 0.001 2.6e+69 -19.36 49420 /
PLOG / 0.01 2.25e+72 -19.93 51667 /
PLOG / 0.1 2.61e+73 -19.96 53175 /
PLOG / 1.0 2.24e+71 -19.02 53698 /
PLOG / 10.0 2.72e+68 -17.83 53902 /
PLOG / 25.0 4.64e+66 -17.18 53747 /
PLOG / 50.0 5.97e+65 -16.84 53725 /
PLOG / 75.0 8.83e+64 -16.55 53611 /
PLOG / 100.0 1.22e+64 -16.25 53437 /
PLOG / 150.0 2.73e+63 -16.01 53377 /
PLOG / 200.0 2.9e+62 -15.69 53171 /
PLOG / 250.0 1.55e+62 -15.58 53150 /
PLOG / 300.0 7.16e+56 -13.91 51432 /
PLOG / 350.0 1.55e+52 -12.44 49925 /
PLOG / 400.0 8.07e+52 -12.66 50212 /
PLOG / 450.0 4.98e+51 -12.27 49848 /
PLOG / 500.0 1.43e+52 -12.41 50036 /
PLOG / 600.0 3.65e+51 -12.21 49900 /
PLOG / 700.0 1.52e+51 -12.08 49823 /
PLOG / 800.0 5.85e+50 -11.94 49726 /
PLOG / 900.0 2.45e+50 -11.81 49637 /
PLOG / 1000.0 2.12e+49 -11.48 49315 /
PLOG / 1500.0 7.47e+47 -11 48953 /
PLOG / 2000.0 9.88e+46 -10.7 48742 /
DICACDJ+NO<=>DICACDO+HNO 5.0497e+17 -1.31614 3802.377 !! R35
NG<=>NG1J+H 1 0 0 !! R36

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PLOG / 0.001 1.1438e+57 -33.91997 101710 /
PLOG / 0.01 1.5076e+83 -37.86999 103600 /
PLOG / 0.1 6.3195e+118 -43.83993 110330 /
PLOG / 1.0 2.2014e+110 -36.51002 109410 /
PLOG / 10.0 4.392e+116 -35.39 117360 /
PLOG / 25.0 1.0965e+120 -35.55004 121090 /
PLOG / 50.0 1.3326e+117 -34.05997 122020 /
PLOG / 75.0 1.9239e+115 -33.17999 122460 /
PLOG / 100.0 4.8286e+113 -32.48069 122650 /
PLOG / 150.0 8.8511e+110 -31.37001 122710 /
PLOG / 200.0 4.5373e+108 -30.48066 122600 /
PLOG / 250.0 5.4192e+106 -29.76066 122440 /
PLOG / 300.0 1.0625e+105 -29.13068 122260 /
PLOG / 350.0 3.2896e+103 -28.58062 122070 /
PLOG / 400.0 1.3659e+102 -28.08999 121870 /
PLOG / 450.0 7.7316e+100 -27.64066 121680 /
PLOG / 500.0 5.3544e+99 -27.23064 121490 /
PLOG / 600.0 4.5275e+97 -26.50999 121130 /
PLOG / 700.0 6.6363e+95 -25.87002 120800 /
PLOG / 800.0 1.5693e+94 -25.30994 120480 /
PLOG / 900.0 5.066e+92 -24.8 120180 /
PLOG / 1000.0 2.2256e+91 -24.33065 119900 /
PLOG / 1500.0 7.0211e+85 -22.47066 118690 /
PLOG / 2000.0 4.6231e+81 -21.07998 117700 /
NG<=>NG2J+H 1 0 0 !! R37
PLOG / 0.001 1.36e+60 -33.92 98759 /
PLOG / 0.01 1.16e+86 -37.82 100855 /
PLOG / 0.1 4.87e+119 -43.33 108175 /
PLOG / 1.0 1.14e+109 -35.76 107577 /
PLOG / 10.0 1.47e+114 -34.58 115151 /
PLOG / 25.0 8.43e+116 -34.63 118566 /
PLOG / 50.0 4.43e+113 -33.08 119268 /
PLOG / 75.0 3.96e+111 -32.16 119578 /
PLOG / 100.0 7.34e+109 -31.44 119674 /
PLOG / 150.0 9.32e+106 -30.31 119610 /
PLOG / 200.0 3.89e+104 -29.41 119421 /
PLOG / 250.0 4.08e+102 -28.68 119209 /
PLOG / 300.0 7.35e+100 -28.05 118979 /
PLOG / 350.0 2.16e+99 -27.5 118756 /
PLOG / 400.0 8.65e+97 -27.01 118534 /
PLOG / 450.0 4.78e+96 -26.56 118323 /
PLOG / 500.0 3.26e+95 -26.16 118117 /
PLOG / 600.0 2.75e+93 -25.44 117731 /
PLOG / 700.0 4.06e+91 -24.81 117371 /
PLOG / 800.0 9.83e+89 -24.25 117041 /
PLOG / 900.0 3.26e+88 -23.75 116727 /
PLOG / 1000.0 1.48e+87 -23.3 116436 /
PLOG / 1500.0 5.6e+81 -21.47 115199 /
PLOG / 2000.0 4.44e+77 -20.11 114207 /
NG+H<=>NG1J+H2 9.6e+08 1.5 5918.764 !! R38
NG+O<=>NG1J+OH 6.8e+08 1.5 3654.878 !! R39
NG+OH<=>NG1J+H2O 4800000 2 62.14062 !! R40
NG+CH3<=>NG1J+CH4 3240000 1.87 9100.245 !! R41
NG+NH2<=>NG1J+NH3 3680000 1.94 6739.759 !! R42
NG+O2<=>NG1J+HO2 514 3.029 47184.72 !! R43
NG+H<=>NG2J+H2 2.4e+08 1.5 4124.775 !! R44
NG+O<=>NG2J+OH 1.7e+08 1.5 1584.89 !! R45
NG+OH<=>NG2J+H2O 1200000 2 0 !! R46
NG+CH3<=>NG2J+CH4 810000 1.87 7306.256 !! R47
NG+NH2<=>NG2J+NH3 920000 1.94 6104.963 !! R48
NG+O2<=>NG2J+HO2 128.52 3.029 44424.73 !! R49
NG+H2O<=>CACACOH+HNO3 8.6424 3.03273 41089.75 !! R50
CACACOH+HNO3<=>H2O+CACACDO+HONO 0.045646 3.92247 56217.66 !! R51
NG+H2O<=>DICACOH+HNO3 7.9266 3.02909 38751.77 !! R52
DICACOH+HNO3<=>H2O+DICACDO+HONO 0.032813 3.92048 57189.65 !! R53
CACACOH+NO2<=>CACACDO+HNO2 1 0 0 !! R54
PLOG / 0.001 1.66e+11 -0.62 17255 /
PLOG / 1.0 1.66e+11 -0.62 17256 /
PLOG / 10.0 3.05e+11 -0.7 17396 /
PLOG / 25.0 1.29e+12 -0.88 17732 /
PLOG / 50.0 9.58e+12 -1.13 18204 /

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PLOG / 75.0	4.54e+13	-1.33	18575 /			
PLOG / 100.0	1.6e+14	-1.49	18879 /			
PLOG / 150.0	1.15e+15	-1.73	19361 /			
PLOG / 200.0	5.21e+15	-1.92	19737 /			
PLOG / 250.0	1.76e+16	-2.08	20044 /			
PLOG / 300.0	4.9e+16	-2.2	20305 /			
PLOG / 350.0	1.18e+17	-2.31	20530 /			
PLOG / 400.0	2.53e+17	-2.41	20729 /			
PLOG / 450.0	4.97e+17	-2.49	20907 /			
PLOG / 500.0	9.12e+17	-2.57	21068 /			
PLOG / 600.0	2.6e+18	-2.7	21350 /			
PLOG / 700.0	6.29e+18	-2.81	21590 /			
PLOG / 800.0	1.34e+19	-2.9	21799 /			
PLOG / 900.0	2.61e+19	-2.98	21985 /			
PLOG / 1000.0	4.69e+19	-3.06	22151 /			
PLOG / 1500.0	4.18e+20	-3.32	22790 /			
PLOG / 2000.0	1.81e+21	-3.5	23238 /			
CACACQJ+NO2=>CACACQJ+NO				1	0	0 !! R55
PLOG / 0.001	6.12e+13	-0.72	17939 /			
PLOG / 1.0	6.13e+13	-0.72	17940 /			
PLOG / 10.0	9.87e+13	-0.78	18050 /			
PLOG / 25.0	3.52e+14	-0.94	18345 /			
PLOG / 50.0	2.25e+15	-1.17	18781 /			
PLOG / 75.0	9.89e+15	-1.36	19133 /			
PLOG / 100.0	3.33e+16	-1.51	19425 /			
PLOG / 150.0	2.26e+17	-1.75	19892 /			
PLOG / 200.0	9.94e+17	-1.94	20258 /			
PLOG / 250.0	3.31e+18	-2.09	20560 /			
PLOG / 300.0	9.08e+18	-2.21	20816 /			
PLOG / 350.0	2.16e+19	-2.32	21038 /			
PLOG / 400.0	4.62e+19	-2.42	21235 /			
PLOG / 450.0	9.07e+19	-2.5	21411 /			
PLOG / 500.0	1.66e+20	-2.58	21571 /			
PLOG / 600.0	4.73e+20	-2.71	21850 /			
PLOG / 700.0	1.14e+21	-2.82	22089 /			
PLOG / 800.0	2.45e+21	-2.91	22298 /			
PLOG / 900.0	4.76e+21	-2.99	22482 /			
PLOG / 1000.0	8.57e+21	-3.06	22648 /			
PLOG / 1500.0	7.75e+22	-3.34	23286 /			
PLOG / 2000.0	3.4e+23	-3.52	23735 /			
DICACQJ+NO2<=>DICACDO+HNO2				1	0	0 !! R56
PLOG / 0.001	1.79e+09	0.01	16544 /			
PLOG / 0.01	2.59e+09	-0.04	16629 /			
PLOG / 0.1	1.69e+11	-0.57	17614 /			
PLOG / 1.0	9.35e+15	-1.93	20351 /			
PLOG / 10.0	1.07e+21	-3.36	23832 /			
PLOG / 25.0	1.99e+22	-3.7	25057 /			
PLOG / 50.0	6.76e+22	-3.82	25851 /			
PLOG / 75.0	9.03e+22	-3.84	26254 /			
PLOG / 100.0	9.09e+22	-3.83	26511 /			
PLOG / 150.0	6.93e+22	-3.77	26830 /			
PLOG / 200.0	4.68e+22	-3.71	27025 /			
PLOG / 250.0	3.08e+22	-3.64	27159 /			
PLOG / 300.0	2.04e+22	-3.58	27257 /			
PLOG / 350.0	1.37e+22	-3.52	27332 /			
PLOG / 400.0	9.32e+21	-3.46	27391 /			
PLOG / 450.0	6.48e+21	-3.41	27439 /			
PLOG / 500.0	4.58e+21	-3.36	27479 /			
PLOG / 600.0	2.4e+21	-3.27	27539 /			
PLOG / 700.0	1.33e+21	-3.18	27584 /			
PLOG / 800.0	7.71e+20	-3.11	27617 /			
PLOG / 900.0	4.66e+20	-3.04	27642 /			
PLOG / 1000.0	2.91e+20	-2.97	27661 /			
PLOG / 1500.0	4.08e+19	-2.7	27710 /			
PLOG / 2000.0	8.71e+18	-2.48	27719 /			
DICACQJ+NO2=>DICACQJ+NO				1	0	0 !! R57
PLOG / 0.001	4.46e+09	-0.09	15438 /			
PLOG / 0.01	8.1e+09	-0.17	15576 /			
PLOG / 0.1	1.12e+12	-0.79	16742 /			
PLOG / 1.0	9.47e+16	-2.21	19606 /			
PLOG / 10.0	9.26e+21	-3.61	23091 /			

PLOG / 25.0	1.53e+23	-3.93	24302 /			
PLOG / 50.0	4.78e+23	-4.05	25085 /			
PLOG / 75.0	6.09e+23	-4.06	25481 /			
PLOG / 100.0	5.95e+23	-4.04	25734 /			
PLOG / 150.0	4.37e+23	-3.98	26047 /			
PLOG / 200.0	2.88e+23	-3.91	26239 /			
PLOG / 250.0	1.87e+23	-3.85	26371 /			
PLOG / 300.0	1.22e+23	-3.78	26467 /			
PLOG / 350.0	8.09e+22	-3.72	26541 /			
PLOG / 400.0	5.48e+22	-3.67	26599 /			
PLOG / 450.0	3.79e+22	-3.61	26646 /			
PLOG / 500.0	2.66e+22	-3.56	26684 /			
PLOG / 600.0	1.38e+22	-3.47	26744 /			
PLOG / 700.0	7.61e+21	-3.38	26787 /			
PLOG / 800.0	4.4e+21	-3.3	26819 /			
PLOG / 900.0	2.65e+21	-3.23	26844 /			
PLOG / 1000.0	1.65e+21	-3.17	26863 /			
PLOG / 1500.0	2.28e+20	-2.89	26910 /			
PLOG / 2000.0	4.85e+19	-2.68	26918 /			
CACACDJ+NO<=>CACACDO+HNO		1		0	0	!! R58
PLOG / 0.001	3.41e+13	-1.49	3460 /			
PLOG / 0.01	6.43e+17	-2.71	6007 /			
PLOG / 0.1	5.09e+22	-4.11	9112 /			
PLOG / 1.0	2.2e+27	-5.41	12414 /			
PLOG / 10.0	3.63e+30	-6.27	15413 /			
PLOG / 25.0	1.6e+31	-6.43	16415 /			
PLOG / 50.0	2.49e+31	-6.45	17076 /			
PLOG / 75.0	2.41e+31	-6.43	17418 /			
PLOG / 100.0	2.05e+31	-6.4	17640 /			
PLOG / 150.0	1.34e+31	-6.32	17922 /			
PLOG / 200.0	8.55e+30	-6.25	18100 /			
PLOG / 250.0	5.55e+30	-6.18	18224 /			
PLOG / 300.0	3.68e+30	-6.12	18317 /			
PLOG / 350.0	2.51e+30	-6.07	18389 /			
PLOG / 400.0	1.74e+30	-6.01	18447 /			
PLOG / 450.0	1.24e+30	-5.96	18494 /			
PLOG / 500.0	8.92e+29	-5.92	18533 /			
PLOG / 600.0	4.88e+29	-5.83	18594 /			
PLOG / 700.0	2.81e+29	-5.75	18639 /			
PLOG / 800.0	1.69e+29	-5.68	18673 /			
PLOG / 900.0	1.05e+29	-5.61	18699 /			
PLOG / 1000.0	6.78e+28	-5.55	18719 /			
PLOG / 1500.0	1.05e+28	-5.29	18769 /			
PLOG / 2000.0	2.4e+27	-5.09	18778 /			
DICACDJ+NO<=>DICACDO+HNO		1		0	0	!! R59
PLOG / 0.001	1.18e+16	-2.3	3467 /			
PLOG / 0.01	3.69e+20	-3.59	6218 /			
PLOG / 0.1	2.55e+25	-4.96	9400 /			
PLOG / 1.0	4.91e+29	-6.15	12642 /			
PLOG / 10.0	2.19e+32	-6.85	15472 /			
PLOG / 25.0	5.3e+32	-6.92	16387 /			
PLOG / 50.0	5.14e+32	-6.88	16976 /			
PLOG / 75.0	3.75e+32	-6.83	17274 /			
PLOG / 100.0	2.6e+32	-6.76	17465 /			
PLOG / 150.0	1.28e+32	-6.65	17702 /			
PLOG / 200.0	6.65e+31	-6.56	17847 /			
PLOG / 250.0	3.68e+31	-6.47	17945 /			
PLOG / 300.0	2.15e+31	-6.39	18017 /			
PLOG / 350.0	1.31e+31	-6.32	18072 /			
PLOG / 400.0	8.31e+30	-6.26	18114 /			
PLOG / 450.0	5.43e+30	-6.2	18147 /			
PLOG / 500.0	3.64e+30	-6.14	18174 /			
PLOG / 600.0	1.75e+30	-6.04	18215 /			
PLOG / 700.0	9.09e+29	-5.95	18242 /			
PLOG / 800.0	4.99e+29	-5.86	18261 /			
PLOG / 900.0	2.87e+29	-5.79	18273 /			
PLOG / 1000.0	1.72e+29	-5.72	18281 /			
PLOG / 1500.0	2.04e+28	-5.42	18286 /			
PLOG / 2000.0	3.86e+27	-5.19	18262 /			
CACACDJ+H<=>CACACDO+H2		4.5704e+12		-0.00564	449.7073	!! R60
CACACDJ+HO2<=>CACACDO+H2O2		1.0559e+17		-1.3879	4563.772	!! R61

CACACDJ+O2<=>CACACDO+HO2	4.9046e+17	-1.44171	6320.362	!! R62
CACACDJ+O<=>CACACDO+OH	3.8005e+14	-0.69119	278.1383	!! R63
CACACDJ+OH<=>CACACDO+H2O	3.3696e+13	-0.22237	473.3171	!! R64
DICACDJ+H<=>DICACDO+H2	2.8788e+12	0.07148	-288.1083	!! R65
DICACDJ+HO2<=>DICACDO+H2O2	3.4534e+16	-1.11408	3349.18	!! R66
DICACDJ+O2<=>DICACDO+HO2	2.2337e+17	-1.39214	6385.461	!! R67
DICACDJ+O<=>DICACDO+OH	4.7311e+12	-0.02249	-546.6767	!! R68
DICACDJ+OH<=>DICACDO+H2O	4.8619e+11	0.09882	-1072.794	!! R69
DICACDO<=>HCOCDOCA+HONO	7.6253e+17	-1.02346	41822.75	!! R70
DICACDO<=>CACDOCOJ+NO2	5.5335e+17	-0.99995	35979.78	!! R71
DICACDO<=>DICJACDO+H	1.4268e+14	0	90969.45	!! R72
CACDOCOJ+H<=>HCOCDOCA+H2	1.7318e+09	0.06848	-300.5782	!! R73
CACDOCOJ+HO2<=>HCOCDOCA+H2O2	1.8558e+17	-1.26402	4754.271	!! R74
CACDOCOJ+NO2<=>HCOCDOCA+HNO2	9.1481e+15	-1.08952	2130.787	!! R75
CACDOCOJ+NO2<=>HCOCDOCA+HONO	4.296e+17	-1.35246	4832.271	!! R76
CACDOCOJ+O2<=>HCOCDOCA+HO2	1.6984e+17	-1.53046	4871.971	!! R77
CACDOCOJ+O<=>HCOCDOCA+OH	9.2289e+15	-0.89341	-54.35567	!! R78
CACDOCOJ+OH<=>HCOCDOCA+H2O	1.2553e+17	-1.21194	1496.191	!! R79
CACDOCOJ+NO<=>HCOCDOCA+HNO	1.4868e+17	-1.39072	4953.67	!! R80
CACDOCOJ<=>CDJOCA+CH2O	3.6056e+13	0.21005	6106.163	!! R81
CACDOCOJ<=>CJACDOCOH	6.3849e+18	-1.40743	18400.89	!! R82
CJACDOCOH<=>ODCCDOCOH+NO2	2.6923e+12	0.24941	314.6981	!! R83
DICACDO+H<=>DICJACDO+H2	9.6e+08	1.5	835.775	!! R84
DICACDO+O<=>DICJACDO+OH	6.8e+08	1.5	0	!! R85
DICACDO+OH<=>DICJACDO+H2O	4800000	2	0	!! R86
DICACDO+CH3<=>DICJACDO+CH4	3240000	1.87	4017.276	!! R87
DICACDO+NH2<=>DICJACDO+NH3	3680000	1.94	4941.17	!! R88
DICACDO+NO2<=>DICJACDO+HONO	2.5e+07	1.26	16024.9	!! R89
DICACDO+NO2<=>DICJACDO+HNO2	0.028391	4.5558	20738.87	!! R90
DICACDO+O2<=>DICJACDO+HO2	514.08	3.029	39364.76	!! R91
DICJACDO<=>HCOCDOCA+NO2	2.045e+12	0.24187	540.4367	!! R92
CACACDO<=>DICDOCA+HONO	1.3134e+18	-0.96378	43065.74	!! R93
CACACDO<=>HCOCDOCA+HONO	1.1127e+18	-1.05928	38243.77	!! R94
CACACDO<=>HCOCDOCA+NO2	4.6208e+15	-0.3946	38423.77	!! R95
CACACDO<=>HCOCACDJ+NO2	5.6184e+17	-0.89207	38147.77	!! R96
CACACDO<=>CACACDJ+H	3.04e+15	0	89609.46	!! R97
CACACDO<=>CACJACDO+H	2.27e+14	0	89059.46	!! R98
CACACDO<=>CJACACDO+H	1.1398e+17	0	98429.41	!! R99
HCOCDOCA+H<=>HCOCDOCA+H2	2.7108e+14	-0.50914	841.2249	!! R100
HCOCDOCA+HO2<=>HCOCDOCA+H2O2	1.515e+16	-1.19351	3296.98	!! R101
HCOCDOCA+NO2<=>HCOCDOCA+HNO2	4.3421e+15	-0.29258	2856.483	!! R102
HCOCDOCA+NO2<=>HCOCDOCA+HONO	8.8186e+17	-1.25579	7032.158	!! R103
HCOCDOCA+O2<=>HCOCDOCA+HO2	8.5652e+17	-1.42171	7563.254	!! R104
HCOCDOCA+O<=>HCOCDOCA+OH	5.5979e+08	1.45974	8107.451	!! R105
HCOCDOCA+OH<=>HCOCDOCA+H2O	3.7238e+14	-0.62937	31.44981	!! R106
HCOCDOCA+NO<=>HCOCDOCA+HNO	5.6854e+16	-1.20821	4508.073	!! R107
HCOCDOCA<=>CHOCHO+CH2O+NO2	3.5363e+12	0.44292	13692.92	!! R108
HCOCDOCA<=>HCOCONO2+HCO	1.0348e+13	0.32661	6877.758	!! R109
HCOCACDJ+H<=>DICDOCA+H2	4.5704e+12	-0.00564	449.7073	!! R110
HCOCACDJ+HO2<=>DICDOCA+H2O2	1.0559e+17	-1.3879	4563.772	!! R111
HCOCACDJ+NO2<=>DICDOCA+HNO2	4.0859e+16	-1.40313	1916.488	!! R112
HCOCACDJ+NO2<=>DICDOCA+HONO	1.2696e+18	-1.44131	6517.361	!! R113
HCOCACDJ+O2<=>DICDOCA+HO2	4.9046e+17	-1.44171	6320.362	!! R114
HCOCACDJ+O<=>DICDOCA+OH	3.8005e+14	-0.69119	278.1383	!! R115
HCOCACDJ+OH<=>DICDOCA+H2O	3.3696e+13	-0.22237	473.3171	!! R116
HCOCACDJ+NO<=>DICDOCA+HNO	1.656e+17	-1.43279	3590.178	!! R117
HCOCACDJ<=>HCOCJONO2+CH2O	2.6551e+12	0.25204	10254.94	!! R118
HCOCACDJ<=>ODCJCACOH	2.1819e+18	-1.49687	9413.643	!! R119
ODCJCACOH<=>CO+COHCD+NO2	2.0964e+11	0.83342	12538.92	!! R120
CACACDO+H<=>CACACDJ+H2	2.4e+08	1.5	341.7779	!! R121
CACACDO+O<=>CACACDJ+OH	1.7e+08	1.5	0	!! R122
CACACDO+OH<=>CACACDJ+H2O	1200000	2	0	!! R123
CACACDO+CH3<=>CACACDJ+CH4	810000	1.87	3523.279	!! R124
CACACDO+NH2<=>CACACDJ+NH3	920000	1.94	4766.371	!! R125
CACACDO+O2<=>CACACDJ+HO2	128.52	3.029	38604.77	!! R126
CACACDJ<=>ACCJA+CO	8.1582e+12	0.33305	12050.93	!! R127
CACACDO+NO2<=>CACACDJ+HONO	0.0043879	4.3887	11025.93	!! R128
CACACDO+NO2<=>CACACDJ+HNO2	46.308	3.2812	17578.89	!! R129
CACACDJ+NO2<=>HCOCONO2+NO2+CO2+NO	8.39e+15	-0.75	1929.988	!! R130
OH+CACACDO<=>CACACDOOJ	7250.2	0.87373	46.98472	!! R131
CACACDOOJ<=>HOCHO+HCOCONO2+NO2	3.7055e+13	0.17798	5596.566	!! R132

CACACDJO+OH<=>CACACDOOH			1	0	0	!! R133
PLOG /	0.001	1.64e+114	-35.05	22666 /		
PLOG /	0.01	5.96e+115	-34.22	25800 /		
PLOG /	0.1	3.22e+106	-30.29	26215 /		
PLOG /	1.0	4.07e+86	-23.44	22228 /		
PLOG /	10.0	9.68e+61	-15.43	15514 /		
PLOG /	25.0	1.91e+52	-12.34	12612 /		
PLOG /	50.0	2.3e+45	-10.15	10483 /		
PLOG /	75.0	4.02e+41	-8.96	9309 /		
PLOG /	100.0	1.27e+39	-8.17	8522 /		
PLOG /	150.0	6.89e+35	-7.14	7486 /		
PLOG /	200.0	5.17e+33	-6.47	6807 /		
PLOG /	250.0	1.49e+32	-5.99	6313 /		
PLOG /	300.0	9.6e+30	-5.62	5929 /		
PLOG /	350.0	1.05e+30	-5.31	5618 /		
PLOG /	400.0	1.65e+29	-5.06	5358 /		
PLOG /	450.0	3.43e+28	-4.85	5136 /		
PLOG /	500.0	8.73e+27	-4.66	4943 /		
PLOG /	600.0	8.94e+26	-4.35	4620 /		
PLOG /	700.0	1.41e+26	-4.1	4358 /		
PLOG /	800.0	3.01e+25	-3.89	4139 /		
PLOG /	900.0	8.05e+24	-3.71	3951 /		
PLOG /	1000.0	2.55e+24	-3.56	3787 /		
PLOG /	1500.0	3.94e+22	-2.99	3190 /		
PLOG /	2000.0	2.58e+21	-2.62	2799 /		
CACACDJO+OH<=>CDCONO2+CO2+HNO3			1	0	0	!! R134
PLOG /	0.001	1.57e+13	-0.06	73 /		
PLOG /	0.01	6.97e+14	-0.54	1028 /		
PLOG /	0.1	2.7e+18	-1.54	3653 /		
PLOG /	1.0	8.68e+17	-1.3	5325 /		
PLOG /	10.0	7.45e+10	0.88	4530 /		
PLOG /	25.0	4370000	2.15	3592 /		
PLOG /	50.0	1430	3.19	2726 /		
PLOG /	75.0	11.6	3.8	2178 /		
PLOG /	100.0	0.382	4.24	1779 /		
PLOG /	150.0	0.00322	4.84	1208 /		
PLOG /	200.0	0.000114	5.26	802 /		
PLOG /	250.0	8.93e-06	5.58	488 /		
PLOG /	300.0	1.14e-06	5.84	232 /		
PLOG /	350.0	2.05e-07	6.05	18 /		
PLOG /	400.0	4.71e-08	6.23	-167 /		
PLOG /	450.0	1.3e-08	6.39	-329 /		
PLOG /	500.0	4.18e-09	6.53	-472 /		
PLOG /	600.0	5.96e-10	6.77	-719 /		
PLOG /	700.0	1.18e-10	6.97	-925 /		
PLOG /	800.0	2.94e-11	7.14	-1102 /		
PLOG /	900.0	8.79e-12	7.29	-1256 /		
PLOG /	1000.0	3.02e-12	7.42	-1392 /		
PLOG /	1500.0	5.52e-14	7.91	-1904 /		
PLOG /	2000.0	3.64e-15	8.24	-2252 /		
CACACDOOH<=>CDCONO2+CO2+HNO3			1	0	0	!! R135
PLOG /	0.001	6.69e+62	-15.12	71823 /		
PLOG /	0.01	8.97e+53	-12.23	69450 /		
PLOG /	0.1	1.91e+44	-9.13	66621 /		
PLOG /	1.0	2.31e+35	-6.3	63875 /		
PLOG /	10.0	3.46e+27	-3.84	61375 /		
PLOG /	25.0	6.74e+24	-3	60492 /		
PLOG /	50.0	8.71e+22	-2.41	59874 /		
PLOG /	75.0	6.32e+21	-2.05	59498 /		
PLOG /	100.0	8.86e+20	-1.78	59217 /		
PLOG /	150.0	5.43e+19	-1.4	58815 /		
PLOG /	200.0	1.23e+19	-1.2	58602 /		
PLOG /	250.0	6.66e+18	-1.12	58514 /		
PLOG /	300.0	6.48e+18	-1.12	58510 /		
PLOG /	350.0	6.38e+18	-1.11	58508 /		
PLOG /	400.0	6.31e+18	-1.11	58506 /		
PLOG /	450.0	6.25e+18	-1.11	58505 /		
PLOG /	500.0	6.21e+18	-1.11	58504 /		
PLOG /	600.0	6.14e+18	-1.11	58502 /		
PLOG /	700.0	6.1e+18	-1.11	58501 /		
PLOG /	800.0	6.06e+18	-1.11	58500 /		

PLOG / 900.0 6.03e+18	-1.11	58500 /		
PLOG / 1000.0 6.01e+18	-1.11	58499 /		
PLOG / 1500.0 5.95e+18	-1.1	58498 /		
PLOG / 2000.0 5.91e+18	-1.1	58497 /		
CACACDO+H<=>CACJACDO+H2	2.4e+08	1.5	-15.72391	!! R136
CACACDO+O<=>CACJACDO+OH	1.7e+08	1.5	0	!! R137
CACACDO+OH<=>CACJACDO+H2O	1200000	2	0	!! R138
CACACDO+CH3<=>CACJACDO+CH4	810000	1.87	3165.781	!! R139
CACACDO+NH2<=>CACJACDO+NH3	920000	1.94	4639.872	!! R140
CACACDO+NO2<=>CACJACDO+HONO	2.5e+07	1.26	14943.91	!! R141
CACACDO+NO2<=>CACJACDO+HNO2	0.0070978	4.5558	19428.88	!! R142
CACACDO+O2<=>CACJACDO+HO2	128.52	3.029	38054.77	!! R143
CACJACDO<=>HCOCDOCA+NO2	2.4975e+12	0.15939	-1073.594	!! R144
CACACDO+H<=>CJACACDO+H2	4.8e+08	1.5	6074.763	!! R145
CACACDO+O<=>CJACACDO+OH	3.4e+08	1.5	3834.877	!! R146
CACACDO+OH<=>CJACACDO+H2O	2400000	2	182.1389	!! R147
CACACDO+CH3<=>CJACACDO+CH4	1620000	1.87	9256.244	!! R148
CACACDO+NH2<=>CJACACDO+NH3	1840000	1.94	6794.959	!! R149
CACACDO+NO2<=>CJACACDO+HONO	2.5e+07	1.26	22673.86	!! R150
CACACDO+NO2<=>CJACACDO+HNO2	0.014196	4.5558	28798.83	!! R151
CACACDO+O2<=>CJACACDO+HO2	257.04	3.029	47424.71	!! R152
CJACACDO<=>DICDOCA+NO2	2.0024e+13	-0.00058	911.0345	!! R153
HCOCDOCA<=>ODCICDO2+HONO	3.059e+17	-0.95318	39200.76	!! R154
HCOCDOCA<=>ODCCDOCOJ+NO2	4.354e+17	-0.93989	37831.77	!! R155
HCOCDOCA<=>HCOCDOCA+H	1.0272e+14	0	87799.47	!! R156
HCOCDOCA<=>CDJOCDOCA+H	7.891e+14	0	87229.47	!! R157
ODCCDOCOJ+H<=>ODCICDO2+H2	1.7318e+09	0.06848	-300.5782	!! R158
ODCCDOCOJ+HO2<=>ODCICDO2+H2O2	1.8558e+17	-1.26402	4754.271	!! R159
ODCCDOCOJ+NO2<=>ODCICDO2+HNO2	9.1481e+15	-1.08952	2130.787	!! R160
ODCCDOCOJ+NO2<=>ODCICDO2+HONO	4.296e+17	-1.35246	4832.271	!! R161
ODCCDOCOJ+O2<=>ODCICDO2+HO2	1.6984e+17	-1.53046	4871.971	!! R162
ODCCDOCOJ+O<=>ODCICDO2+OH	9.2289e+15	-0.89341	-54.35567	!! R163
ODCCDOCOJ+OH<=>ODCICDO2+H2O	1.2553e+17	-1.21194	1496.191	!! R164
ODCCDOCOJ+NO<=>ODCICDO2+HNO	1.4868e+17	-1.39072	4953.67	!! R165
HCOCDOCA+H<=>HCOCDOCA+H2	4.8e+08	1.5	-834.715	!! R166
HCOCDOCA+O<=>HCOCDOCA+OH	3.4e+08	1.5	0	!! R167
HCOCDOCA+OH<=>HCOCDOCA+H2O	2400000	2	0	!! R168
HCOCDOCA+CH3<=>HCOCDOCA+CH4	1620000	1.87	2346.786	!! R169
HCOCDOCA+NH2<=>HCOCDOCA+NH3	1840000	1.94	4350.074	!! R170
HCOCDOCA+NO2<=>HCOCDOCA+HONO	2.5e+07	1.26	13903.92	!! R171
HCOCDOCA+NO2<=>HCOCDOCA+HNO2	0.014196	4.5558	18168.89	!! R172
HCOCDOCA+O2<=>HCOCDOCA+HO2	257.04	3.029	36794.78	!! R173
HCOCDOCA<=>ODCICDO2+NO2	7.4679e+12	0.29041	4456.673	!! R174
HCOCDOCA+H<=>CDJOCDOCA+H2	2.4e+08	1.5	0	!! R175
HCOCDOCA+O<=>CDJOCDOCA+OH	1.7e+08	1.5	0	!! R176
HCOCDOCA+OH<=>CDJOCDOCA+H2O	1200000	2	0	!! R177
HCOCDOCA+CH3<=>CDJOCDOCA+CH4	810000	1.87	1976.288	!! R178
HCOCDOCA+NH2<=>CDJOCDOCA+NH3	920000	1.94	4218.975	!! R179
HCOCDOCA+O2<=>CDJOCDOCA+HO2	128.52	3.029	36224.78	!! R180
CDJOCDOCA<=>CDJOCA+CO	1.2992e+13	0.58572	8400.549	!! R181
HCOCDOCA+NO2<=>CDJOCDOCA+HONO	0.0043879	4.3887	11025.93	!! R182
HCOCDOCA+NO2<=>CDJOCDOCA+HNO2	46.308	3.2812	17578.89	!! R183
CDJOCDOCA+NO2<=>CDJOCA+CO2+NO	8.39e+15	-0.75	1929.988	!! R184
DICDOCA<=>ODCICDO2+HONO	1.8738e+18	-1.01438	39069.76	!! R185
DICDOCA<=>DICDOCOJ+NO2	4.9972e+16	-0.68315	36846.78	!! R186
DICDOCA<=>DICDOCOJ+H	5.924e+14	0	82279.5	!! R187
DICDOCA<=>DICDOCOJ+OH	7.224e+14	0	89739.46	!! R188
DICDOCOJ+H<=>ODCICDO2+H2	1.7318e+09	0.06848	-300.5782	!! R189
DICDOCOJ+HO2<=>ODCICDO2+H2O2	1.8558e+17	-1.26402	4754.271	!! R190
DICDOCOJ+NO2<=>ODCICDO2+HNO2	9.1481e+15	-1.08952	2130.787	!! R191
DICDOCOJ+NO2<=>ODCICDO2+HONO	4.296e+17	-1.35246	4832.271	!! R192
DICDOCOJ+O2<=>ODCICDO2+HO2	1.6984e+17	-1.53046	4871.971	!! R193
DICDOCOJ+O<=>ODCICDO2+OH	9.2289e+15	-0.89341	-54.35567	!! R194
DICDOCOJ+OH<=>ODCICDO2+H2O	1.2553e+17	-1.21194	1496.191	!! R195
DICDOCOJ+NO<=>ODCICDO2+HNO	1.4868e+17	-1.39072	4953.67	!! R196
DICDOCOJ<=>CHOCHO+HCO	3.1542e+12	0.38326	4902.97	!! R197
DICDOCA+H<=>DICDOCA+H2	2.4e+08	1.5	0	!! R198
DICDOCA+O<=>DICDOCA+OH	1.7e+08	1.5	0	!! R199
DICDOCA+OH<=>DICDOCA+H2O	1200000	2	0	!! R200
DICDOCA+CH3<=>DICDOCA+CH4	810000	1.87	0	!! R201
DICDOCA+NH2<=>DICDOCA+NH3	920000	1.94	3080.481	!! R202

DICDOCA+NO2<=>DICDOCJA+HONO	2.5e+07	1.26 9350.444	!! R203
DICDOCA+NO2<=>DICDOCJA+HNO2	0.0070978	4.5558 12648.92	!! R204
DICDOCA+O2<=>DICDOCJA+HO2	128.52	3.029 31274.81	!! R205
DICDOCJA<=>ODCICDO2+NO2	1.0027e+13	0.20309 1940.288	!! R206
DICDOCA+H<=>DICDJOCA+H2	4.8e+08	1.5 419.7775	!! R207
DICDOCA+O<=>DICDJOCA+OH	3.4e+08	1.5 0	!! R208
DICDOCA+OH<=>DICDJOCA+H2O	2400000	2 0	!! R209
DICDOCA+CH3<=>DICDJOCA+CH4	1620000	1.87 3601.278	!! R210
DICDOCA+NH2<=>DICDJOCA+NH3	1840000	1.94 4793.971	!! R211
DICDOCA+O2<=>DICDJOCA+HO2	257.04	3.029 38724.77	!! R212
DICDJOCA<=>HCOCJONO2+CO	5.7199e+11	0.69509 10882.93	!! R213
DICDOCA+NO2<=>DICDJOCA+HONO	0.00878	4.3887 11025.93	!! R214
DICDOCA+NO2<=>DICDJOCA+HNO2	92.6	3.2812 17578.89	!! R215
DICDJOCA+NO2<=>HCOCJONO2+CO2+NO	8.39e+15	-0.75 1929.988	!! R216
CDOCACOH<=>ODCCDOCOH+HONO	5.2059e+17	-1.04126 34888.79	!! R217
CDOCACOH<=>CDOCOJCOH+NO2	1.873e+18	-1.13877 34724.79	!! R218
CDOCACOH<=>HCOCACOJ+H	7.349e+14	0 103999.4	!! R219
CDOCACOH<=>CDOCJACOH+H	8.71e+14	0 86899.48	!! R220
CDOCACOH<=>ODCJCACOH+H	3.137e+14	0 88149.47	!! R221
CDOCOJCOH+H<=>ODCCDOCOH+H2	4.0192e+10	0.46743 -120.0993	!! R222
CDOCOJCOH+HO2<=>ODCCDOCOH+H2O2	3.24e+16	-1.12365 4591.572	!! R223
CDOCOJCOH+NO2<=>ODCCDOCOH+HNO2	6.5525e+15	-1.00316 2213.487	!! R224
CDOCOJCOH+NO2<=>ODCCDOCOH+HONO	4.7737e+17	-1.25114 5112.969	!! R225
CDOCOJCOH+O2<=>ODCCDOCOH+HO2	1.7761e+16	-1.4098 5163.269	!! R226
CDOCOJCOH+O<=>ODCCDOCOH+OH	2.7678e+12	0.30137 259.0884	!! R227
CDOCOJCOH+OH<=>ODCCDOCOH+H2O	3.7238e+14	-0.62937 31.44981	!! R228
CDOCOJCOH+NO<=>ODCCDOCOH+HNO	8.2213e+10	0.13727 -406.5575	!! R229
CDOCOJCOH<=>CHOCHO+CH2OH	1.278e+13	0.26012 7525.755	!! R230
CDOCOJCOH<=>HCO+COHCDO	3.7028e+13	0.30668 7904.852	!! R231
CDOCACOH+H<=>HCOCACOJ+H2	2.4e+08	1.5 9675.742	!! R232
CDOCACOH+O<=>HCOCACOJ+OH	1.7e+08	1.5 7989.852	!! R233
CDOCACOH+OH<=>HCOCACOJ+H2O	1200000	2 2952.082	!! R234
CDOCACOH+CH3<=>HCOCACOJ+CH4	810000	1.87 12856.92	!! R235
CDOCACOH+NH2<=>HCOCACOJ+NH3	920000	1.94 8069.151	!! R236
CDOCACOH+NO2<=>HCOCACOJ+HONO	2.5e+07	1.26 27243.84	!! R237
CDOCACOH+NO2<=>HCOCACOJ+HNO2	0.0070978	4.5558 34338.79	!! R238
CDOCACOH+O2<=>HCOCACOJ+HO2	128.52	3.029 52964.68	!! R239
CDOCACOH+H<=>CDOCJACOH+H2	2.4e+08	1.5 0	!! R240
CDOCACOH+O<=>CDOCJACOH+OH	1.7e+08	1.5 0	!! R241
CDOCACOH+OH<=>CDOCJACOH+H2O	1200000	2 0	!! R242
CDOCACOH+CH3<=>CDOCJACOH+CH4	810000	1.87 1761.789	!! R243
CDOCACOH+NH2<=>CDOCJACOH+NH3	920000	1.94 4143.075	!! R244
CDOCACOH+NO2<=>CDOCJACOH+HONO	2.5e+07	1.26 13161.92	!! R245
CDOCACOH+NO2<=>CDOCJACOH+HNO2	0.0070978	4.5558 17268.9	!! R246
CDOCACOH+O2<=>CDOCJACOH+HO2	128.52	3.029 35894.78	!! R247
CDOCACOH+H<=>ODCJCACOH+H2	2.4e+08	1.5 -607.2163	!! R248
CDOCACOH+O<=>ODCJCACOH+OH	1.7e+08	1.5 0	!! R249
CDOCACOH+OH<=>ODCJCACOH+H2O	1200000	2 0	!! R250
CDOCACOH+CH3<=>ODCJCACOH+CH4	810000	1.87 2574.284	!! R251
CDOCACOH+NH2<=>ODCJCACOH+NH3	920000	1.94 4430.573	!! R252
CDOCACOH+O2<=>ODCJCACOH+HO2	128.52	3.029 37144.78	!! R253
CDOCJACOH<=>ODCCDOCOH+NO2	1.037e+13	0.24077 -548.7967	!! R254
DICDOCA+H<=>HCOCACOJ	8e+12	0 6399.961	!! R255
CDOCACOH+NO2<=>ODCJCACOH+HONO	0.0043879	4.3887 11025.93	!! R256
CDOCACOH+NO2<=>ODCJCACOH+HNO2	46.308	3.2812 17578.89	!! R257
ODCJCACOH+NO2<=>COHCDO+NO2+CO2+NO	8.39e+15	-0.75 1929.988	!! R258
ODCCDOCOH+H<=>ODCCDOCOJ+H2	2.4e+08	1.5 12372.93	!! R259
ODCCDOCOH+O<=>ODCCDOCOJ+OH	1.7e+08	1.5 11101.93	!! R260
ODCCDOCOH+OH<=>ODCCDOCOJ+H2O	1200000	2 5027.07	!! R261
ODCCDOCOH+CH3<=>ODCCDOCOJ+CH4	810000	1.87 15554.91	!! R262
ODCCDOCOH+NH2<=>ODCCDOCOJ+NH3	920000	1.94 9023.646	!! R263
ODCCDOCOH+NO2<=>ODCCDOCOJ+HONO	2.5e+07	1.26 30667.81	!! R264
ODCCDOCOH+NO2<=>ODCCDOCOJ+HNO2	0.0070978	4.5558 38488.77	!! R265
ODCCDOCOH+O2<=>ODCCDOCOJ+HO2	128.52	3.029 57114.66	!! R266
ODCCDOCOJ<=>ODCCDOJO+CH2O	1.0497e+13	0.2086 7924.052	!! R267
ODCCDOCOJ<=>OCJCDOCOH	1.9265e+18	-1.25822 5978.864	!! R268
ODCCDOCOH+H<=>OCJCDOCOH+H2	2.4e+08	1.5 10.27594	!! R269
ODCCDOCOH+O<=>OCJCDOCOH+OH	1.7e+08	1.5 0	!! R270
ODCCDOCOH+OH<=>OCJCDOCOH+H2O	1200000	2 0	!! R271
ODCCDOCOH+CH3<=>OCJCDOCOH+CH4	810000	1.87 3191.781	!! R272
ODCCDOCOH+NH2<=>OCJCDOCOH+NH3	920000	1.94 4649.072	!! R273

ODCCDOCOH+O2<=>OCJCDOCOH+HO2	128.52	3.029	38094.77	!! R274
OCJCDOCOH<=>COHCDJO+CO	6.1642e+14	-0.00427	8743.147	!! R275
ODCCDOCOH+NO2<=>OCJCDOCOH+HONO	0.0043879	4.3887	11025.93	!! R276
ODCCDOCOH+NO2<=>OCJCDOCOH+HNO2	46.308	3.2812	17578.89	!! R277
OCJCDOCOH+NO2<=>COHCDJO+CO2+NO	8.39e+15	-0.75	1929.988	!! R278
ODCCDOCOH+H<=>ODCKCJOH+H2	4.8e+08	1.5	0	!! R279
ODCCDOCOH+O<=>ODCKCJOH+OH	3.4e+08	1.5	0	!! R280
ODCCDOCOH+OH<=>ODCKCJOH+H2O	2400000	2	0	!! R281
ODCCDOCOH+CH3<=>ODCKCJOH+CH4	1620000	1.87	0	!! R282
ODCCDOCOH+NH2<=>ODCKCJOH+NH3	1840000	1.94	1364.692	!! R283
ODCCDOCOH+NO2<=>ODCKCJOH+HONO	2.5e+07	1.26	3196.081	!! R284
ODCCDOCOH+NO2<=>ODCKCJOH+HNO2	0.014196	4.5558	5188.969	!! R285
ODCCDOCOH+O2<=>ODCKCJOH+HO2	257.04	3.029	23814.86	!! R286
ODCICDO2+H<=>ODCKCJOH	2.4e+13	0	4109.975	!! R287
ODCKCJOH+NO2<=>COHONOKK	1	0	0	!! R288
PLOG / 0.001 1.18e+60	-19.45	22934	/	
PLOG / 0.01 8.28e+64	-20.23	23744	/	
PLOG / 0.1 9.59e+69	-20.96	25010	/	
PLOG / 1.0 1.26e+73	-21.05	27099	/	
PLOG / 10.0 1.82e+70	-19.41	28357	/	
PLOG / 25.0 6.18e+66	-18.08	28094	/	
PLOG / 50.0 2.01e+63	-16.84	27551	/	
PLOG / 75.0 8.95e+60	-16.03	27100	/	
PLOG / 100.0 1.44e+59	-15.42	26724	/	
PLOG / 150.0 2.99e+56	-14.51	26119	/	
PLOG / 200.0 2.97e+54	-13.84	25642	/	
PLOG / 250.0 7.44e+52	-13.31	25246	/	
PLOG / 300.0 3.43e+51	-12.87	24907	/	
PLOG / 350.0 2.44e+50	-12.49	24610	/	
PLOG / 400.0 2.41e+49	-12.16	24347	/	
PLOG / 450.0 3.07e+48	-11.87	24109	/	
PLOG / 500.0 4.81e+47	-11.61	23893	/	
PLOG / 600.0 1.89e+46	-11.15	23511	/	
PLOG / 700.0 1.2e+45	-10.76	23181	/	
PLOG / 800.0 1.08e+44	-10.43	22891	/	
PLOG / 900.0 1.29e+43	-10.13	22631	/	
PLOG / 1000.0 1.92e+42	-9.86	22396	/	
PLOG / 1500.0 1.23e+39	-8.83	21477	/	
PLOG / 2000.0 6.76e+36	-8.11	20813	/	
ODCKCJOH+NO2<=>COHOJKK+NO	1	0	0	!! R289
PLOG / 0.001 31	3	9549	/	
PLOG / 0.01 31.1	3	9549	/	
PLOG / 0.1 33.6	2.99	9569	/	
PLOG / 1.0 359	2.69	10183	/	
PLOG / 10.0 287000	1.88	12318	/	
PLOG / 25.0 1390000	1.71	13214	/	
PLOG / 50.0 1330000	1.74	13740	/	
PLOG / 75.0 704000	1.84	13959	/	
PLOG / 100.0 333000	1.95	14069	/	
PLOG / 150.0 75800	2.15	14156	/	
PLOG / 200.0 19500	2.34	14167	/	
PLOG / 250.0 5720	2.51	14146	/	
PLOG / 300.0 1880	2.66	14109	/	
PLOG / 350.0 679	2.79	14065	/	
PLOG / 400.0 266	2.92	14018	/	
PLOG / 450.0 112	3.03	13968	/	
PLOG / 500.0 49.8	3.14	13917	/	
PLOG / 600.0 11.5	3.33	13818	/	
PLOG / 700.0 3.1	3.51	13721	/	
PLOG / 800.0 0.952	3.66	13628	/	
PLOG / 900.0 0.324	3.8	13539	/	
PLOG / 1000.0 0.121	3.93	13455	/	
PLOG / 1500.0 0.00216	4.46	13087	/	
PLOG / 2000.0 0.000103	4.85	12788	/	
ODCKCJOH+NO2<=>HONO+ODCICDO2	1	0	0	!! R290
PLOG / 0.001 20.6	2.61	9549	/	
PLOG / 0.1 21.9	2.6	9564	/	
PLOG / 1.0 231	2.31	10173	/	
PLOG / 10.0 185000	1.49	12310	/	
PLOG / 25.0 880000	1.32	13204	/	
PLOG / 50.0 822000	1.36	13726	/	

PLOG / 75.0	428000	1.46	13943 /			
PLOG / 100.0	200000	1.57	14052 /			
PLOG / 150.0	44700	1.78	14135 /			
PLOG / 200.0	11300	1.97	14144 /			
PLOG / 250.0	3290	2.13	14121 /			
PLOG / 300.0	1070	2.28	14084 /			
PLOG / 350.0	384	2.42	14038 /			
PLOG / 400.0	150	2.55	13989 /			
PLOG / 450.0	62.5	2.66	13939 /			
PLOG / 500.0	27.7	2.77	13888 /			
PLOG / 600.0	6.33	2.97	13786 /			
PLOG / 700.0	1.7	3.14	13688 /			
PLOG / 800.0	0.518	3.3	13594 /			
PLOG / 900.0	0.176	3.44	13505 /			
PLOG / 1000.0	0.065	3.57	13419 /			
PLOG / 1500.0	0.00114	4.1	13048 /			
PLOG / 2000.0	5.4e-05	4.49	12747 /			
COHONOKK<=>COHOJJK+NO		1		0	0	!! R291
PLOG / 0.001	3.13e+59	-15.11	43652 /			
PLOG / 0.01	2.05e+59	-14.7	44804 /			
PLOG / 0.1	5.06e+54	-12.97	44424 /			
PLOG / 1.0	5.06e+50	-11.48	44121 /			
PLOG / 10.0	2.48e+44	-9.32	42827 /			
PLOG / 25.0	4.5e+41	-8.41	42167 /			
PLOG / 50.0	2.2e+39	-7.66	41560 /			
PLOG / 75.0	8.71e+37	-7.2	41177 /			
PLOG / 100.0	9.06e+36	-6.88	40905 /			
PLOG / 150.0	3.61e+35	-6.43	40510 /			
PLOG / 200.0	3.55e+34	-6.11	40220 /			
PLOG / 250.0	5.9e+33	-5.86	39993 /			
PLOG / 300.0	1.4e+33	-5.66	39810 /			
PLOG / 350.0	4.11e+32	-5.49	39653 /			
PLOG / 400.0	1.4e+32	-5.34	39514 /			
PLOG / 450.0	5.56e+31	-5.21	39394 /			
PLOG / 500.0	2.46e+31	-5.1	39288 /			
PLOG / 600.0	5.8e+30	-4.9	39099 /			
PLOG / 700.0	1.81e+30	-4.74	38946 /			
PLOG / 800.0	6.22e+29	-4.59	38804 /			
PLOG / 900.0	2.54e+29	-4.47	38686 /			
PLOG / 1000.0	1.17e+29	-4.36	38583 /			
PLOG / 1500.0	5.42e+27	-3.94	38170 /			
PLOG / 2000.0	6.67e+26	-3.65	37887 /			
COHONOKK<=>HONO+ODCICDO2		1		0	0	!! R292
PLOG / 0.001	6.75e+58	-15.32	43292 /			
PLOG / 0.01	3.01e+58	-14.88	44367 /			
PLOG / 0.1	5.63e+53	-13.11	43914 /			
PLOG / 1.0	5.07e+49	-11.61	43565 /			
PLOG / 10.0	2.72e+43	-9.48	42259 /			
PLOG / 25.0	5.36e+40	-8.58	41602 /			
PLOG / 50.0	2.82e+38	-7.84	41001 /			
PLOG / 75.0	1.17e+37	-7.39	40622 /			
PLOG / 100.0	1.26e+36	-7.08	40353 /			
PLOG / 150.0	5.29e+34	-6.63	39963 /			
PLOG / 200.0	5.4e+33	-6.32	39677 /			
PLOG / 250.0	9.25e+32	-6.07	39453 /			
PLOG / 300.0	2.25e+32	-5.87	39273 /			
PLOG / 350.0	6.74e+31	-5.71	39118 /			
PLOG / 400.0	2.34e+31	-5.56	38981 /			
PLOG / 450.0	9.42e+30	-5.43	38863 /			
PLOG / 500.0	4.23e+30	-5.32	38759 /			
PLOG / 600.0	1.02e+30	-5.13	38572 /			
PLOG / 700.0	3.25e+29	-4.97	38422 /			
PLOG / 800.0	1.14e+29	-4.82	38283 /			
PLOG / 900.0	4.73e+28	-4.7	38166 /			
PLOG / 1000.0	2.21e+28	-4.6	38065 /			
PLOG / 1500.0	1.08e+27	-4.18	37659 /			
PLOG / 2000.0	1.38e+26	-3.9	37381 /			
COHOJJK<=>ODCCDJO+HOCHO		5.2441e+12		0.17929	1938.888	!! R293
COHOJJK<=>OH+ODCICDO2		4.0445e+12		0.47455	29442.82	!! R294
ODCICDO2+H<=>ODCJKIDO+H2		4.8e+08		1.5	0	!! R295
ODCICDO2+O<=>ODCJKIDO+OH		3.4e+08		1.5	0	!! R296

ODCICDO2+OH<=>ODCJKIDO+H2O	2400000	2	0	!! R297
ODCICDO2+CH3<=>ODCJKIDO+CH4	1620000	1.87	0	!! R298
ODCICDO2+NH2<=>ODCJKIDO+NH3	1840000	1.94	1601.59	!! R299
ODCICDO2+O2<=>ODCJKIDO+HO2	257.04	3.029	24844.85	!! R300
ODCJKIDO<=>ODCCDJO+CO	1.2957e+16	-0.48482	11308.93	!! R301
ODCICDO2+NO2<=>ODCJKIDO+HONO	0.00878	4.3887	11025.93	!! R302
ODCICDO2+NO2<=>ODCJKIDO+HNO2	92.6	3.2812	17578.89	!! R303
ODCCDJO+HCO<=>ODCICDO2	2e+13	0	0	!! R304
ODCJKIDO+NO2<=>CO2+ODCCDJO+NO	8.39e+15	-0.75	1929.988	!! R305
HCOCONO2<=>CHOCHO+HONO	3.0176e+17	-0.84062	38623.77	!! R306
HCOCONO2<=>CDOCOJ+NO2	4.354e+17	-0.93989	37831.77	!! R307
HCOCONO2<=>HCOCJONO2+H	2.316e+15	0	87919.47	!! R308
HCOCONO2<=>CDJOCA+H	3.375e+14	0	88349.47	!! R309
HCOCONO2+H<=>HCOCJONO2+H2	4.8e+08	1.5	-756.7154	!! R310
HCOCONO2+O<=>HCOCJONO2+OH	3.4e+08	1.5	0	!! R311
HCOCONO2+OH<=>HCOCJONO2+H2O	2400000	2	0	!! R312
HCOCONO2+CH3<=>HCOCJONO2+CH4	1620000	1.87	2424.785	!! R313
HCOCONO2+NH2<=>HCOCJONO2+NH3	1840000	1.94	4377.674	!! R314
HCOCONO2+NO2<=>HCOCJONO2+HONO	2.5e+07	1.26	14002.92	!! R315
HCOCONO2+NO2<=>HCOCJONO2+HNO2	0.014196	4.5558	18288.89	!! R316
HCOCONO2+O2<=>HCOCJONO2+HO2	257.04	3.029	36914.78	!! R317
HCOCJONO2<=>CHOCHO+NO2	7.7815e+10	0.53616	1690.59	!! R318
HCOCONO2+H<=>CDJOCA+H2	2.4e+08	1.5	-477.2171	!! R319
HCOCONO2+O<=>CDJOCA+OH	1.7e+08	1.5	0	!! R320
HCOCONO2+OH<=>CDJOCA+H2O	1200000	2	0	!! R321
HCOCONO2+CH3<=>CDJOCA+CH4	810000	1.87	2704.284	!! R322
HCOCONO2+NH2<=>CDJOCA+NH3	920000	1.94	4476.573	!! R323
HCOCONO2+O2<=>CDJOCA+HO2	128.52	3.029	37344.77	!! R324
CDJOCA<=>CO+CH2O+NO2	1.7392e+12	0.67777	13725.92	!! R325
HCOCONO2+NO2<=>CDJOCA+HONO	0.0043879	4.3887	11025.93	!! R326
HCOCONO2+NO2<=>CDJOCA+HNO2	46.308	3.2812	17578.89	!! R327
CDJOCA+NO2<=>CO2+CH2O+NO2+NO	8.39e+15	-0.75	1929.988	!! R328
OH+HCOCONO2<=>CDOOJA	570.71	1.95918	858.0248	!! R329
CDOOJA<=>HOCHO+CH2O+NO2	3.8612e+12	0.35015	9440.643	!! R330
CDJOCA+OH<=>CDOOHA	1	0	0	!! R331
PLOG / 0.001 1.3e+63	-20.24	12182	/	
PLOG / 0.01 4.9e+67	-20.56	12382	/	
PLOG / 0.1 3.87e+71	-20.52	13375	/	
PLOG / 1.0 2.19e+69	-18.69	14583	/	
PLOG / 10.0 1.75e+56	-13.91	12533	/	
PLOG / 25.0 9.86e+48	-11.49	10767	/	
PLOG / 50.0 2.13e+43	-9.64	9253	/	
PLOG / 75.0 1.15e+40	-8.58	8339	/	
PLOG / 100.0 6.24e+37	-7.85	7690	/	
PLOG / 150.0 5.12e+34	-6.86	6789	/	
PLOG / 200.0 4.12e+32	-6.19	6167	/	
PLOG / 250.0 1.13e+31	-5.69	5698	/	
PLOG / 300.0 6.65e+29	-5.3	5325	/	
PLOG / 350.0 6.54e+28	-4.98	5018	/	
PLOG / 400.0 9.3e+27	-4.71	4759	/	
PLOG / 450.0 1.74e+27	-4.48	4535	/	
PLOG / 500.0 4.05e+26	-4.28	4340	/	
PLOG / 600.0 3.53e+25	-3.95	4012	/	
PLOG / 700.0 4.89e+24	-3.67	3744	/	
PLOG / 800.0 9.43e+23	-3.45	3521	/	
PLOG / 900.0 2.32e+23	-3.26	3330	/	
PLOG / 1000.0 6.89e+22	-3.09	3164	/	
PLOG / 1500.0 9.19e+20	-2.5	2572	/	
PLOG / 2000.0 6.04e+19	-2.13	2195	/	
CDJOCA+OH<=>HONO+CH2O+CO2	1	0	0	!! R332
PLOG / 0.001 5.98e+13	-0.24	254	/	
PLOG / 0.1 6.75e+13	-0.26	284	/	
PLOG / 1.0 2.17e+15	-0.68	1301	/	
PLOG / 10.0 3.72e+15	-0.68	2877	/	
PLOG / 25.0 4.69e+13	-0.09	2872	/	
PLOG / 50.0 2.78e+11	0.59	2557	/	
PLOG / 75.0 7.53e+09	1.07	2261	/	
PLOG / 100.0 4.67e+08	1.43	2006	/	
PLOG / 150.0 7230000	1.97	1596	/	
PLOG / 200.0 330000	2.36	1274	/	
PLOG / 250.0 28600	2.68	1011	/	

PLOG / 300.0	3790	2.94	789 /			
PLOG / 350.0	683	3.16	597 /			
PLOG / 400.0	154	3.34	429 /			
PLOG / 450.0	41.6	3.51	279 /			
PLOG / 500.0	12.9	3.66	145 /			
PLOG / 600.0	1.73	3.91	-88 /			
PLOG / 700.0	0.322	4.13	-285 /			
PLOG / 800.0	0.0764	4.31	-455 /			
PLOG / 900.0	0.0218	4.46	-604 /			
PLOG / 1000.0	0.00718	4.6	-736 /			
PLOG / 1500.0	0.000117	5.11	-1228 /			
PLOG / 2000.0	7.5e-06	5.45	-1559 /			
CDOOHA<=>HONO+CH2O+CO2		1		0	0	!! R333
PLOG / 0.001	3.12e+56	-13.28	72651 /			
PLOG / 0.01	2.99e+49	-10.94	71013 /			
PLOG / 0.1	5.01e+41	-8.41	68907 /			
PLOG / 1.0	6.82e+33	-5.9	66575 /			
PLOG / 10.0	7.62e+26	-3.7	64402 /			
PLOG / 25.0	3.33e+24	-2.96	63645 /			
PLOG / 50.0	8.91e+22	-2.47	63137 /			
PLOG / 75.0	1.32e+22	-2.21	62867 /			
PLOG / 100.0	3.76e+21	-2.04	62689 /			
PLOG / 150.0	7.17e+20	-1.81	62453 /			
PLOG / 200.0	2.44e+20	-1.67	62300 /			
PLOG / 250.0	1.11e+20	-1.56	62187 /			
PLOG / 300.0	6.04e+19	-1.48	62100 /			
PLOG / 350.0	3.72e+19	-1.41	62031 /			
PLOG / 400.0	2.5e+19	-1.36	61974 /			
PLOG / 450.0	1.79e+19	-1.31	61927 /			
PLOG / 500.0	1.32e+19	-1.27	61883 /			
PLOG / 600.0	8.16e+18	-1.2	61814 /			
PLOG / 700.0	5.56e+18	-1.15	61759 /			
PLOG / 800.0	4.14e+18	-1.11	61716 /			
PLOG / 900.0	3.19e+18	-1.08	61679 /			
PLOG / 1000.0	2.51e+18	-1.04	61645 /			
PLOG / 1500.0	1.17e+18	-0.94	61535 /			
PLOG / 2000.0	7.4e+17	-0.88	61469 /			
ACCJA<=>Y3COCA+NO2		3.1603e+12		0.45156	18182.89	!! R334
Y3COCA<=>Y3COCOJ+NO2		4.5627e+19		-1.45689	29016.82	!! R335
HOYCCO+H<=>Y3COCOJ+H2		2.4e+08		1.5	5489.767	!! R336
HOYCCO+O<=>Y3COCOJ+OH		1.7e+08		1.5	3159.881	!! R337
HOYCCO+OH<=>Y3COCOJ+H2O		1200000		2	-267.8584	!! R338
HOYCCO+CH3<=>Y3COCOJ+CH4		810000		1.87	8671.248	!! R339
HOYCCO+NH2<=>Y3COCOJ+NH3		920000		1.94	6587.96	!! R340
HOYCCO+NO2<=>Y3COCOJ+HONO		2.5e+07		1.26	21931.87	!! R341
HOYCCO+NO2<=>Y3COCOJ+HNO2		0.0070978		4.5558	27898.83	!! R342
HOYCCO+O2<=>Y3COCOJ+HO2		128.52		3.029	46524.72	!! R343
Y3COCOJ<=>CJOCDO		5.7132e+12		0.14088	-56.11966	!! R344
Y3COCOJ<=>CDOCOJ		1.3791e+13		0.01795	1470.991	!! R345
HOYCCO+H<=>HOYCJCO+H2		2.4e+08		1.5	8031.252	!! R346
HOYCCO+O<=>HOYCJCO+OH		1.7e+08		1.5	6092.363	!! R347
HOYCCO+OH<=>HOYCJCO+H2O		1200000		2	1687.09	!! R348
HOYCCO+CH3<=>HOYCJCO+CH4		810000		1.87	11212.93	!! R349
HOYCCO+NH2<=>HOYCJCO+NH3		920000		1.94	7487.255	!! R350
HOYCCO+NO2<=>HOYCJCO+HONO		2.5e+07		1.26	25156.85	!! R351
HOYCCO+NO2<=>HOYCJCO+HNO2		0.0070978		4.5558	31808.81	!! R352
HOYCCO+O2<=>HOYCJCO+HO2		128.52		3.029	50434.7	!! R353
HOYCJCO<=>CJCDOOH		1.5513e+11		0.70744	11183.93	!! R354
HOYCCO+H<=>HOYCCJO+H2		4.8e+08		1.5	8115.751	!! R355
HOYCCO+O<=>HOYCCJO+OH		3.4e+08		1.5	6189.863	!! R356
HOYCCO+OH<=>HOYCCJO+H2O		2400000		2	1752.089	!! R357
HOYCCO+CH3<=>HOYCCJO+CH4		1620000		1.87	11296.93	!! R358
HOYCCO+NH2<=>HOYCCJO+NH3		1840000		1.94	7517.155	!! R359
HOYCCO+NO2<=>HOYCCJO+HONO		2.5e+07		1.26	25263.85	!! R360
HOYCCO+NO2<=>HOYCCJO+HNO2		0.014196		4.5558	31938.81	!! R361
HOYCCO+O2<=>HOYCCJO+HO2		257.04		3.029	50564.69	!! R362
HOYCCJO<=>CJOHCDO		5.4182e+12		0.1834	7300.556	!! R363
COCDO+H<=>CJOCDO+H2		7.2e+08		1.5	6113.763	!! R364
COCDO+O<=>CJOCDO+OH		5.1e+08		1.5	3879.877	!! R365
COCDO+OH<=>CJOCDO+H2O		3600000		2	212.1387	!! R366
COCDO+CH3<=>CJOCDO+CH4		2430000		1.87	9295.244	!! R367

COCDO+NH2<=>CJOCDO+NH3	2760000	1.94	6808.759	!! R368
COCDO+NO2<=>CJOCDO+HONO	2.5e+07	1.26	22723.86	!! R369
COCDO+NO2<=>CJOCDO+HNO2	0.021293	4.5558	28858.83	!! R370
COCDO+O2<=>CJOCDO+HO2	385.56	3.029	47484.71	!! R371
CJOCDO<=>CH2O+HCO	1	0	0	!! R372
PLOG / 0.001 8.273e+36	-8.38	36590 /		
PLOG / 0.004 8.019e+36	-8.18	37180 /		
PLOG / 0.018 1.548e+36	-7.77	37560 /		
PLOG / 0.075 3.744e+34	-7.1	37630 /		
PLOG / 0.316 9.931e+31	-6.16	37330 /		
PLOG / 1.334 3.999e+28	-4.99	36670 /		
PLOG / 5.623 5.007e+24	-3.69	35740 /		
PLOG / 23.714 5.007e+20	-2.38	34670 /		
PLOG / 100.0 1.105e+17	-1.21	33610 /		
COCDO+H<=>COCDO+H2	2.4e+08	1.5	5983.764	!! R373
COCDO+O<=>COCDO+OH	1.7e+08	1.5	3729.877	!! R374
COCDO+OH<=>COCDO+H2O	1200000	2	112.1393	!! R375
COCDO+CH3<=>COCDO+CH4	810000	1.87	9165.245	!! R376
COCDO+NH2<=>COCDO+NH3	920000	1.94	6762.759	!! R377
COCDO+O2<=>COCDO+HO2	128.52	3.029	47284.71	!! R378
CJOCDO<=>COCDO	2.285e+11	0.49337	39357.76	!! R379
COCDO<=>CH3+CO2	1	0	0	!! R380
PLOG / 0.05 9.72e+12	-1.31	9416.7 /		
PLOG / 1.0 1.25e+16	-1.83	11341 /		
PLOG / 10.0 1.04e+18	-2.1	12827 /		
PLOG / 100.0 8.69e+17	-1.81	13657 /		
COCDO<=>CH3O+CO	1	0	0	!! R381
PLOG / 0.05 1030	1.29	25401 /		
PLOG / 1.0 409000	0.81	21969 /		
PLOG / 10.0 9.02e+14	-1.72	21768 /		
PLOG / 100.0 2.825e+22	-3.44	23592 /		
COCDO+NO2<=>COCDO+HONO	0.0043879	4.3887	11025.93	!! R382
COCDO+NO2<=>COCDO+HNO2	46.308	3.2812	17578.89	!! R383
COCDO+NO2<=>CH3O+CO2+NO	8.39e+15	-0.75	1929.988	!! R384
CCDOOH+H<=>CJCDOOH+H2	2.4e+08	1.5	5255.768	!! R385
CCDOOH+O<=>CJCDOOH+OH	1.7e+08	1.5	2889.883	!! R386
CCDOOH+OH<=>CJCDOOH+H2O	1200000	2	-447.8573	!! R387
CCDOOH+CH3<=>CJCDOOH+CH4	810000	1.87	8437.249	!! R388
CCDOOH+NH2<=>CJCDOOH+NH3	920000	1.94	6505.161	!! R389
CCDOOH+NO2<=>CJCDOOH+HONO	2.5e+07	1.26	21634.87	!! R390
CCDOOH+NO2<=>CJCDOOH+HNO2	0.0070978	4.5558	27538.83	!! R391
CCDOOH+O2<=>CJCDOOH+HO2	128.52	3.029	46164.72	!! R392
CJCDOOH<=>CH3CO2	4.3968e+11	0.4382	41947.75	!! R393
CCDOOH+H<=>CH3CO2+H2	2.4e+08	1.5	13705.92	!! R394
CCDOOH+O<=>CH3CO2+OH	1.7e+08	1.5	12639.92	!! R395
CCDOOH+OH<=>CH3CO2+H2O	1200000	2	6052.063	!! R396
CCDOOH+CH3<=>CH3CO2+CH4	810000	1.87	16886.9	!! R397
CCDOOH+NH2<=>CH3CO2+NH3	920000	1.94	9495.143	!! R398
CCDOOH+NO2<=>CH3CO2+HONO	2.5e+07	1.26	32358.8	!! R399
CCDOOH+NO2<=>CH3CO2+HNO2	0.0070978	4.5558	40538.76	!! R400
CCDOOH+O2<=>CH3CO2+HO2	128.52	3.029	59164.64	!! R401
COHCDO+H<=>CDOCOJ+H2	2.4e+08	1.5	11872.93	!! R402
COHCDO+O<=>CDOCOJ+OH	1.7e+08	1.5	10524.94	!! R403
COHCDO+OH<=>CDOCOJ+H2O	1200000	2	4642.072	!! R404
COHCDO+CH3<=>CDOCOJ+CH4	810000	1.87	15053.91	!! R405
COHCDO+NH2<=>CDOCOJ+NH3	920000	1.94	8846.547	!! R406
COHCDO+NO2<=>CDOCOJ+HONO	2.5e+07	1.26	30032.82	!! R407
COHCDO+NO2<=>CDOCOJ+HNO2	0.0070978	4.5558	37718.77	!! R408
COHCDO+O2<=>CDOCOJ+HO2	128.52	3.029	56344.66	!! R409
CDOCOJ<=>CHOCHO+H	1.8723e+10	1.1446	22948.86	!! R410
COHCDO+H<=>CJOHCDO+H2	4.8e+08	1.5	0	!! R411
COHCDO+O<=>CJOHCDO+OH	3.4e+08	1.5	0	!! R412
COHCDO+OH<=>CJOHCDO+H2O	2400000	2	0	!! R413
COHCDO+CH3<=>CJOHCDO+CH4	1620000	1.87	0	!! R414
COHCDO+NH2<=>CJOHCDO+NH3	1840000	1.94	2121.387	!! R415
COHCDO+NO2<=>CJOHCDO+HONO	2.5e+07	1.26	5910.264	!! R416
COHCDO+NO2<=>CJOHCDO+HNO2	0.014196	4.5558	8478.949	!! R417
COHCDO+O2<=>CJOHCDO+HO2	257.04	3.029	27104.84	!! R418
CDOCOJ<=>CJOHCDO	3.3529e+11	0.51438	25334.85	!! R419
CDOCOJ<=>COHCDO	2.898e+11	0.4685	29517.82	!! R420
CJOHCDO+O<=>CHOCHO+OH	0.00146	4.73	1726.99	!! R421

CJOHCDO+OH<=>CHOCHO+H2O	0.00581	4.28	-3559.979	!! R422
CJOHCDO+H<=>CHOCHO+H2	945	3.14	8701.047	!! R423
CJOHCDO+HO2<=>CHOCHO+H2O2	6.47e-07	5.3	10533.04	!! R424
CJOHCDO+CH3<=>CHOCHO+CH4	2.035	3.57	7720.953	!! R425
CJOHCDO+CH3O2<=>CHOCHO+CH3O2H	3.236e-07	5.3	10533.04	!! R426
CJOHCDO+NO2<=>COHONOK	1	0	0	!! R427
PLOG / 0.001 3.33e+42	-14.25	20081	/	
PLOG / 0.01 6.11e+45	-14.67	20462	/	
PLOG / 0.1 4.03e+49	-15.13	20916	/	
PLOG / 1.0 4.29e+53	-15.5	21623	/	
PLOG / 10.0 2.87e+55	-15.17	22950	/	
PLOG / 25.0 3.73e+54	-14.58	23375	/	
PLOG / 50.0 1.03e+53	-13.88	23463	/	
PLOG / 75.0 5.13e+51	-13.36	23387	/	
PLOG / 100.0 4.08e+50	-12.95	23268	/	
PLOG / 150.0 6.6e+48	-12.29	23008	/	
PLOG / 200.0 2.43e+47	-11.79	22757	/	
PLOG / 250.0 1.53e+46	-11.37	22526	/	
PLOG / 300.0 1.42e+45	-11.01	22313	/	
PLOG / 350.0 1.75e+44	-10.7	22118	/	
PLOG / 400.0 2.7e+43	-10.43	21938	/	
PLOG / 450.0 5e+42	-10.18	21771	/	
PLOG / 500.0 1.07e+42	-9.95	21615	/	
PLOG / 600.0 7.01e+40	-9.56	21332	/	
PLOG / 700.0 6.61e+39	-9.21	21080	/	
PLOG / 800.0 8.24e+38	-8.92	20854	/	
PLOG / 900.0 1.28e+38	-8.65	20648	/	
PLOG / 1000.0 2.37e+37	-8.41	20458	/	
PLOG / 1500.0 3.19e+34	-7.47	19695	/	
PLOG / 2000.0 2.69e+32	-6.79	19124	/	
CJOHCDO+NO2<=>COHOJK+NO	1	0	0	!! R428
PLOG / 0.001 27.8	3.01	9534	/	
PLOG / 0.1 27.9	3.01	9535	/	
PLOG / 1.0 28.9	3	9544	/	
PLOG / 10.0 162	2.79	10019	/	
PLOG / 25.0 1160	2.55	10646	/	
PLOG / 50.0 4910	2.38	11228	/	
PLOG / 75.0 8740	2.32	11565	/	
PLOG / 100.0 10800	2.3	11788	/	
PLOG / 150.0 10300	2.32	12061	/	
PLOG / 200.0 7540	2.37	12219	/	
PLOG / 250.0 4960	2.43	12316	/	
PLOG / 300.0 3130	2.5	12378	/	
PLOG / 350.0 1940	2.56	12418	/	
PLOG / 400.0 1210	2.63	12442	/	
PLOG / 450.0 756	2.7	12456	/	
PLOG / 500.0 478	2.76	12462	/	
PLOG / 600.0 198	2.88	12458	/	
PLOG / 700.0 86.3	2.99	12441	/	
PLOG / 800.0 39.5	3.09	12415	/	
PLOG / 900.0 18.9	3.19	12385	/	
PLOG / 1000.0 9.46	3.28	12351	/	
PLOG / 1500.0 0.48	3.68	12166	/	
PLOG / 2000.0 0.0439	3.99	11985	/	
CJOHCDO+NO2<=>CHOCHO+HONO	1	0	0	!! R429
PLOG / 0.001 21	2.7	9663	/	
PLOG / 0.1 20.9	2.7	9662	/	
PLOG / 1.0 20.9	2.7	9659	/	
PLOG / 10.0 111	2.49	10103	/	
PLOG / 25.0 830	2.25	10733	/	
PLOG / 50.0 3580	2.08	11318	/	
PLOG / 75.0 6350	2.02	11656	/	
PLOG / 100.0 7770	2	11877	/	
PLOG / 150.0 7200	2.02	12146	/	
PLOG / 200.0 5100	2.08	12300	/	
PLOG / 250.0 3260	2.14	12393	/	
PLOG / 300.0 2000	2.21	12451	/	
PLOG / 350.0 1220	2.28	12488	/	
PLOG / 400.0 741	2.35	12509	/	
PLOG / 450.0 455	2.42	12519	/	
PLOG / 500.0 282	2.48	12523	/	

PLOG / 600.0	113	2.6	12514 /			
PLOG / 700.0	48.1	2.72	12492 /			
PLOG / 800.0	21.5	2.83	12462 /			
PLOG / 900.0	10.1	2.93	12428 /			
PLOG / 1000.0	4.94	3.02	12391 /			
PLOG / 1500.0	0.232	3.43	12194 /			
PLOG / 2000.0	0.0202	3.75	12003 /			
COHONOK<=>COHOJK+NO		1		0	0	!! R430
PLOG / 0.001	5.15e+51	-12.86	40948 /			
PLOG / 0.01	2.52e+53	-13.02	42486 /			
PLOG / 0.1	6.3e+50	-11.88	42740 /			
PLOG / 1.0	1.15e+48	-10.73	42937 /			
PLOG / 10.0	4.31e+43	-9.13	42373 /			
PLOG / 25.0	1.62e+41	-8.31	41852 /			
PLOG / 50.0	1.51e+39	-7.64	41363 /			
PLOG / 75.0	9.1e+37	-7.24	41054 /			
PLOG / 100.0	1.11e+37	-6.94	40813 /			
PLOG / 150.0	5.84e+35	-6.52	40470 /			
PLOG / 200.0	6.66e+34	-6.22	40209 /			
PLOG / 250.0	1.26e+34	-5.98	40008 /			
PLOG / 300.0	3.29e+33	-5.79	39842 /			
PLOG / 350.0	1.06e+33	-5.63	39702 /			
PLOG / 400.0	3.85e+32	-5.49	39576 /			
PLOG / 450.0	1.59e+32	-5.37	39466 /			
PLOG / 500.0	7.6e+31	-5.27	39373 /			
PLOG / 600.0	1.88e+31	-5.07	39195 /			
PLOG / 700.0	6.22e+30	-4.92	39053 /			
PLOG / 800.0	2.3e+30	-4.78	38925 /			
PLOG / 900.0	1.01e+30	-4.67	38819 /			
PLOG / 1000.0	4.69e+29	-4.56	38719 /			
PLOG / 1500.0	2.58e+28	-4.16	38340 /			
PLOG / 2000.0	3.4e+27	-3.88	38070 /			
COHONOK<=>CHOCHO+HONO		1		0	0	!! R431
PLOG / 0.001	2.49e+50	-12.6	39626 /			
PLOG / 0.01	1.84e+51	-12.57	40892 /			
PLOG / 0.1	8.16e+47	-11.25	40772 /			
PLOG / 1.0	4.47e+44	-10	40628 /			
PLOG / 10.0	1.24e+40	-8.4	39873 /			
PLOG / 25.0	5.65e+37	-7.62	39334 /			
PLOG / 50.0	6.73e+35	-6.99	38850 /			
PLOG / 75.0	4.84e+34	-6.61	38551 /			
PLOG / 100.0	6.81e+33	-6.33	38321 /			
PLOG / 150.0	4.41e+32	-5.95	37994 /			
PLOG / 200.0	5.91e+31	-5.67	37748 /			
PLOG / 250.0	1.27e+31	-5.45	37559 /			
PLOG / 300.0	3.69e+30	-5.28	37404 /			
PLOG / 350.0	1.3e+30	-5.13	37273 /			
PLOG / 400.0	5.14e+29	-5	37155 /			
PLOG / 450.0	2.28e+29	-4.89	37052 /			
PLOG / 500.0	1.16e+29	-4.8	36966 /			
PLOG / 600.0	3.22e+28	-4.62	36801 /			
PLOG / 700.0	1.17e+28	-4.48	36670 /			
PLOG / 800.0	4.69e+27	-4.35	36551 /			
PLOG / 900.0	2.21e+27	-4.25	36453 /			
PLOG / 1000.0	1.1e+27	-4.15	36362 /			
PLOG / 1500.0	7.78e+25	-3.79	36012 /			
PLOG / 2000.0	1.22e+25	-3.53	35764 /			
COHOJK<=>HCO+HOCHO		4.841e+12		0.17325	359.1678	!! R432
COHCDO+H<=>COHCDJO+H2		2.4e+08		1.5	1446.791	!! R433
COHCDO+O<=>COHCDJO+OH		1.7e+08		1.5	0	!! R434
COHCDO+OH<=>COHCDJO+H2O		1200000		2	0	!! R435
COHCDO+CH3<=>COHCDJO+CH4		810000		1.87	4628.272	!! R436
COHCDO+NH2<=>COHCDJO+NH3		920000		1.94	5157.369	!! R437
COHCDO+O2<=>COHCDJO+HO2		128.52		3.029	40304.76	!! R438
COHCDJO<=>CH2OH+CO		6.8055e+12		0.36185	12329.93	!! R439
COHCDO+NO2<=>COHCDJO+HONO		0.0043879		4.3887	11025.93	!! R440
COHCDO+NO2<=>COHCDJO+HNO2		46.308		3.2812	17578.89	!! R441
COHCDJO+NO2<=>CH2OH+CO2+NO		8.39e+15		-0.75	1929.988	!! R442
C2H2+OH<=>C2H2OH		1		0	0	!! R443
PLOG / 0.01	3.913e+32	-7.126	5824 /			
PLOG / 0.025	1.067e+32	-6.847	5508 /			

PLOG / 0.1	1.646e+32	-6.717	5822 /			
PLOG / 1.0	1.387e+31	-6.087	6348 /			
PLOG / 10.0	2.892e+29	-5.288	7055 /			
PLOG / 100.0	1.367e+25	-3.754	6543 /			
SC2H2OH<=>C2H2OH	2.65e+36	-8.86	51018.69	!!	R444	
SC2H2OH<=>CH2CO+H	5.69e+52	-13.38	45048.73	!!	R445	
SC2H2OH<=>HCCOH+H	5.4e+46	-11.63	44322.73	!!	R446	
SC2H2OH+O2<=>CH2CO+HO2	5.26e+17	-1.638	868.9948	!!	R447	
SC2H2OH+O2<=>HCCOH+HO2	5512	2.495	-413.9975	!!	R448	
DIOHCH2<=>H2+HOCHO	2.6887e+17	-0.89808	77652.53	!!	R449	
CH2O+2H2O<=>DIOHCH2+H2O	2.0656e-08	4.88294	12816.92	!!	R450	
DIOHCH2+H2O<=>H2+H2O+HOCHO	8214600	1.49182	50372.7	!!	R451	
DIOHCH2+H2O+CO<=>CH2O+H2O+HOCHO	8.3727e-10	5.76899	50380.7	!!	R452	
DIOHCH2+HONO<=>HOCHO+H2O+HNO	26402	2.05188	28775.83	!!	R453	
DIOHCH2+HNO3<=>HONO+H2O+HOCHO	0.040634	4.16604	46504.72	!!	R454	
DIOHCH2+CH2O<=>HOCHO+CH3OH	2427200	1.37634	19010.89	!!	R455	
NO+HOCHO<=>HNO+HOCO	53239	2.76111	51273.69	!!	R456	
NO+HOCHO<=>HONJOCHO	1.9889e+08	0.7713	41592.75	!!	R457	
HONJOCHO<=>HONO+HCO	1.3712e+11	1.01291	34662.79	!!	R458	
NO+HOCHO<=>HCJOHONO	82.374	2.64169	56533.66	!!	R459	
HCJOHONO<=>H+ONCHO	4.0406e+16	-0.49051	29114.82	!!	R460	
NO+HOCHO<=>OJNHCHO	4.3641e+07	0.86864	39541.76	!!	R461	
OJNHCHO<=>HCO+HNO2	1.8345e+11	0.89746	40397.76	!!	R462	
NO2+HCO<=>O2NCHO	1	0	0	!!	R463	
PLOG / 0.001	1.85e+17	-6.2	3736 /			
PLOG / 0.01	4.72e+19	-6.52	4308 /			
PLOG / 0.1	6.08e+19	-6.07	4385 /			
PLOG / 1.0	7.9e+19	-5.51	4399 /			
PLOG / 10.0	1.13e+20	-4.75	4399 /			
PLOG / 25.0	4.74e+20	-4.55	4542 /			
PLOG / 50.0	4.58e+21	-4.54	4739 /			
PLOG / 75.0	2.53e+22	-4.59	4856 /			
PLOG / 100.0	8.96e+22	-4.64	4920 /			
PLOG / 150.0	4.73e+23	-4.7	4957 /			
PLOG / 200.0	1.25e+24	-4.72	4934 /			
PLOG / 250.0	2.22e+24	-4.72	4883 /			
PLOG / 300.0	3.11e+24	-4.7	4821 /			
PLOG / 350.0	3.72e+24	-4.67	4754 /			
PLOG / 400.0	4.03e+24	-4.64	4686 /			
PLOG / 450.0	4.07e+24	-4.61	4620 /			
PLOG / 500.0	3.9e+24	-4.57	4555 /			
PLOG / 600.0	3.27e+24	-4.5	4433 /			
PLOG / 700.0	2.54e+24	-4.42	4322 /			
PLOG / 800.0	1.9e+24	-4.35	4220 /			
PLOG / 900.0	1.39e+24	-4.28	4128 /			
PLOG / 1000.0	1.01e+24	-4.21	4042 /			
PLOG / 1500.0	2.1e+23	-3.9	3701 /			
PLOG / 2000.0	5.12e+22	-3.66	3449 /			
NO2+HCO<=>HNO2+CO	1	0	0	!!	R464	
PLOG / 0.001	1.15e-06	5.37	254 /			
PLOG / 10.0	1.14e-06	5.37	256 /			
PLOG / 25.0	1.14e-06	5.37	259 /			
PLOG / 50.0	1.13e-06	5.38	264 /			
PLOG / 75.0	1.11e-06	5.38	269 /			
PLOG / 100.0	1.1e-06	5.38	274 /			
PLOG / 150.0	1.08e-06	5.38	283 /			
PLOG / 200.0	1.05e-06	5.39	291 /			
PLOG / 250.0	1.03e-06	5.39	300 /			
PLOG / 300.0	1e-06	5.39	308 /			
PLOG / 350.0	9.75e-07	5.4	316 /			
PLOG / 400.0	9.5e-07	5.4	323 /			
PLOG / 450.0	9.25e-07	5.4	330 /			
PLOG / 500.0	9.01e-07	5.41	337 /			
PLOG / 600.0	8.53e-07	5.42	350 /			
PLOG / 700.0	8.06e-07	5.42	361 /			
PLOG / 800.0	7.6e-07	5.43	372 /			
PLOG / 900.0	7.17e-07	5.44	382 /			
PLOG / 1000.0	6.75e-07	5.45	392 /			
PLOG / 1500.0	4.95e-07	5.49	429 /			
PLOG / 2000.0	3.6e-07	5.53	453 /			
NO2+HCO<=>HONO+CO	1	0	0	!!	R465	

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DUPLICATE    !! with R469
PLOG / 0.001 6.72e+09      0.72  -485 /
PLOG / 10.0  6.71e+09      0.72  -485 /
PLOG / 50.0  6.7e+09       0.72  -485 /
PLOG / 75.0  6.69e+09      0.72  -485 /
PLOG / 100.0 6.67e+09      0.72  -486 /
PLOG / 150.0 6.63e+09      0.72  -487 /
PLOG / 200.0 6.55e+09      0.73  -488 /
PLOG / 250.0 6.45e+09      0.73  -490 /
PLOG / 300.0 6.32e+09      0.73  -492 /
PLOG / 350.0 6.16e+09      0.73  -495 /
PLOG / 400.0 5.99e+09      0.74  -498 /
PLOG / 450.0 5.8e+09       0.74  -501 /
PLOG / 500.0 5.6e+09       0.75  -505 /
PLOG / 600.0 5.17e+09      0.76  -512 /
PLOG / 700.0 4.73e+09      0.77  -520 /
PLOG / 800.0 4.31e+09      0.78  -528 /
PLOG / 900.0 3.89e+09      0.79  -537 /
PLOG / 1000.0 3.51e+09     0.81  -545 /
PLOG / 1500.0 2.02e+09     0.88  -587 /
PLOG / 2000.0 1.15e+09     0.95  -627 /
NO2+HCO<=>ONCHO              1          0          0    !! R466
DUPLICATE    !! with R475
PLOG / 0.001 1470000      -4.98  3508 /
PLOG / 0.01  2.07e+09     -5.52  3701 /
PLOG / 0.1   1.4e+13      -6.11  3851 /
PLOG / 1.0   1.22e+17     -6.4   4072 /
PLOG / 10.0  1.92e+19     -5.75  4369 /
PLOG / 25.0  2.88e+19     -5.24  4278 /
PLOG / 50.0  6.3e+19      -4.93  4194 /
PLOG / 75.0  1.46e+20     -4.81  4164 /
PLOG / 100.0 3.09e+20     -4.76  4155 /
PLOG / 150.0 1.01e+21     -4.71  4160 /
PLOG / 200.0 2.35e+21     -4.68  4176 /
PLOG / 250.0 4.33e+21     -4.66  4195 /
PLOG / 300.0 6.74e+21     -4.64  4215 /
PLOG / 350.0 9.32e+21     -4.62  4234 /
PLOG / 400.0 1.18e+22     -4.59  4251 /
PLOG / 450.0 1.39e+22     -4.57  4268 /
PLOG / 500.0 1.56e+22     -4.54  4283 /
PLOG / 600.0 1.73e+22     -4.48  4310 /
PLOG / 700.0 1.72e+22     -4.43  4333 /
PLOG / 800.0 1.58e+22     -4.37  4351 /
PLOG / 900.0 1.38e+22     -4.31  4366 /
PLOG / 1000.0 1.16e+22    -4.25  4377 /
PLOG / 1500.0 3.62e+21    -3.97  4398 /
PLOG / 2000.0 9.5e+20     -3.7   4381 /
NO2+HCO<=>OCHO+NO           1          0          0    !! R467
PLOG / 0.001 7.33         3.18  -312 /
PLOG / 10.0  7.34         3.18  -312 /
PLOG / 25.0  7.36         3.18  -312 /
PLOG / 50.0  7.38         3.18  -312 /
PLOG / 75.0  7.41         3.18  -312 /
PLOG / 100.0 7.45         3.18  -312 /
PLOG / 150.0 7.54         3.18  -310 /
PLOG / 200.0 7.67         3.18  -306 /
PLOG / 250.0 7.83         3.17  -299 /
PLOG / 300.0 8.03         3.17  -290 /
PLOG / 350.0 8.27         3.17  -279 /
PLOG / 400.0 8.53         3.16  -266 /
PLOG / 450.0 8.82         3.16  -252 /
PLOG / 500.0 9.11         3.16  -236 /
PLOG / 600.0 9.7          3.15  -201 /
PLOG / 700.0 10.3         3.14  -164 /
PLOG / 800.0 10.7         3.14  -126 /
PLOG / 900.0 11.1         3.14   -88 /
PLOG / 1000.0 11.4         3.13   -51 /
PLOG / 1500.0 10.9         3.15   113 /
PLOG / 2000.0 8.5          3.19   239 /
NO2+HCO<=>HNO+CO2          1          0          0    !! R468
PLOG / 0.001 98.1         2.46   134 /

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PLOG / 1.0	98.2	2.46	134 /			
PLOG / 10.0	98.9	2.46	133 /			
PLOG / 25.0	100	2.46	132 /			
PLOG / 50.0	102	2.45	129 /			
PLOG / 75.0	104	2.45	125 /			
PLOG / 100.0	106	2.45	121 /			
PLOG / 150.0	111	2.44	114 /			
PLOG / 200.0	116	2.44	108 /			
PLOG / 250.0	123	2.43	104 /			
PLOG / 300.0	132	2.42	105 /			
PLOG / 350.0	142	2.41	109 /			
PLOG / 400.0	154	2.4	117 /			
PLOG / 450.0	167	2.39	128 /			
PLOG / 500.0	182	2.38	141 /			
PLOG / 600.0	216	2.36	174 /			
PLOG / 700.0	253	2.34	212 /			
PLOG / 800.0	292	2.32	253 /			
PLOG / 900.0	331	2.31	294 /			
PLOG / 1000.0	368	2.3	336 /			
PLOG / 1500.0	476	2.27	521 /			
PLOG / 2000.0	439	2.29	661 /			
NO2+HCO<=>HONO+CO		1		0	0	!! R469
DUPLICATE	!! with R465					
PLOG / 0.001	5.89	2.95	-558 /			
PLOG / 25.0	5.88	2.95	-556 /			
PLOG / 50.0	5.88	2.95	-554 /			
PLOG / 75.0	5.88	2.95	-551 /			
PLOG / 100.0	5.88	2.95	-548 /			
PLOG / 150.0	5.9	2.95	-541 /			
PLOG / 200.0	5.95	2.95	-532 /			
PLOG / 250.0	6.03	2.95	-520 /			
PLOG / 300.0	6.12	2.95	-507 /			
PLOG / 350.0	6.23	2.94	-492 /			
PLOG / 400.0	6.35	2.94	-475 /			
PLOG / 450.0	6.47	2.94	-458 /			
PLOG / 500.0	6.6	2.94	-439 /			
PLOG / 600.0	6.84	2.93	-401 /			
PLOG / 700.0	7.04	2.93	-361 /			
PLOG / 800.0	7.18	2.93	-321 /			
PLOG / 900.0	7.26	2.93	-283 /			
PLOG / 1000.0	7.27	2.93	-245 /			
PLOG / 1500.0	6.4	2.96	-80 /			
PLOG / 2000.0	4.75	3	46 /			
O2NCHO<=>HNO2+CO		1		0	0	!! R470
PLOG / 0.001	5.29e+22	-6.12	53445 /			
PLOG / 0.01	5.11e+23	-6.12	53441 /			
PLOG / 0.1	3.67e+24	-6.06	53409 /			
PLOG / 1.0	3.01e+24	-5.67	53186 /			
PLOG / 10.0	1.01e+23	-4.61	52951 /			
PLOG / 25.0	2.47e+23	-4.38	53198 /			
PLOG / 50.0	2.37e+24	-4.4	53489 /			
PLOG / 75.0	1.79e+25	-4.5	53689 /			
PLOG / 100.0	9.04e+25	-4.6	53824 /			
PLOG / 150.0	9.05e+26	-4.75	53968 /			
PLOG / 200.0	4.28e+27	-4.85	54029 /			
PLOG / 250.0	1.13e+28	-4.9	54032 /			
PLOG / 300.0	2.2e+28	-4.93	54011 /			
PLOG / 350.0	3.37e+28	-4.94	53972 /			
PLOG / 400.0	4.85e+28	-4.95	53939 /			
PLOG / 450.0	5.93e+28	-4.94	53894 /			
PLOG / 500.0	6.92e+28	-4.93	53851 /			
PLOG / 600.0	7.35e+28	-4.89	53751 /			
PLOG / 700.0	7.75e+28	-4.86	53674 /			
PLOG / 800.0	7.11e+28	-4.81	53593 /			
PLOG / 900.0	5.79e+28	-4.75	53507 /			
PLOG / 1000.0	5.12e+28	-4.71	53443 /			
PLOG / 1500.0	2.14e+28	-4.51	53174 /			
PLOG / 2000.0	9.45e+27	-4.34	52988 /			
O2NCHO<=>HONO+CO		1		0	0	!! R471
PLOG / 0.001	2.42e+37	-8.55	38574 /			
PLOG / 0.01	2.43e+38	-8.55	38575 /			

PLOG /	0.1	2.52e+39	-8.55	38577 /			
PLOG /	1.0	3.15e+40	-8.59	38588 /			
PLOG /	10.0	1.91e+41	-8.58	38461 /			
PLOG /	25.0	1.3e+41	-8.45	38305 /			
PLOG /	50.0	5.47e+40	-8.28	38159 /			
PLOG /	75.0	2.74e+40	-8.15	38071 /			
PLOG /	100.0	1.54e+40	-8.05	38006 /			
PLOG /	150.0	5.88e+39	-7.9	37905 /			
PLOG /	200.0	2.75e+39	-7.77	37829 /			
PLOG /	250.0	1.38e+39	-7.67	37759 /			
PLOG /	300.0	7.69e+38	-7.58	37699 /			
PLOG /	350.0	4.44e+38	-7.49	37641 /			
PLOG /	400.0	2.81e+38	-7.42	37594 /			
PLOG /	450.0	1.79e+38	-7.36	37547 /			
PLOG /	500.0	1.2e+38	-7.3	37504 /			
PLOG /	600.0	5.61e+37	-7.18	37421 /			
PLOG /	700.0	3.03e+37	-7.09	37355 /			
PLOG /	800.0	1.7e+37	-7.01	37291 /			
PLOG /	900.0	9.72e+36	-6.93	37227 /			
PLOG /	1000.0	6.14e+36	-6.86	37175 /			
PLOG /	1500.0	9.69e+35	-6.59	36963 /			
PLOG /	2000.0	2.67e+35	-6.41	36812 /			
O2NCHO<=>ONCHO			1		0	0	!! R472
PLOG /	0.001	2.42e+28	-5.96	38582 /			
PLOG /	0.01	2.43e+29	-5.96	38583 /			
PLOG /	0.1	2.56e+30	-5.97	38587 /			
PLOG /	1.0	3.64e+31	-6.03	38612 /			
PLOG /	10.0	3.54e+32	-6.09	38528 /			
PLOG /	25.0	3.02e+32	-5.99	38386 /			
PLOG /	50.0	1.5e+32	-5.85	38249 /			
PLOG /	75.0	8.29e+31	-5.74	38166 /			
PLOG /	100.0	4.97e+31	-5.65	38103 /			
PLOG /	150.0	2.1e+31	-5.51	38007 /			
PLOG /	200.0	1.06e+31	-5.4	37935 /			
PLOG /	250.0	5.66e+30	-5.3	37869 /			
PLOG /	300.0	3.31e+30	-5.22	37812 /			
PLOG /	350.0	2.01e+30	-5.15	37758 /			
PLOG /	400.0	1.32e+30	-5.08	37714 /			
PLOG /	450.0	8.78e+29	-5.02	37669 /			
PLOG /	500.0	6.06e+29	-4.97	37629 /			
PLOG /	600.0	3.04e+29	-4.86	37552 /			
PLOG /	700.0	1.73e+29	-4.78	37490 /			
PLOG /	800.0	1.02e+29	-4.7	37430 /			
PLOG /	900.0	6.12e+28	-4.63	37371 /			
PLOG /	1000.0	4.02e+28	-4.57	37323 /			
PLOG /	1500.0	7.47e+27	-4.33	37126 /			
PLOG /	2000.0	2.31e+27	-4.16	36987 /			
ONCHO<=>OCHO+NO			1		0	0	!! R473
PLOG /	0.001	1.09e+28	-7.06	36714 /			
PLOG /	0.01	2.53e+30	-7.37	36680 /			
PLOG /	0.1	6.6e+33	-7.88	36876 /			
PLOG /	1.0	5.26e+36	-8.06	37824 /			
PLOG /	10.0	2.1e+39	-8.22	40059 /			
PLOG /	25.0	3.35e+38	-7.79	40382 /			
PLOG /	50.0	1.98e+37	-7.3	40368 /			
PLOG /	75.0	2.6e+36	-6.97	40283 /			
PLOG /	100.0	5.33e+35	-6.72	40188 /			
PLOG /	150.0	5.01e+34	-6.35	40019 /			
PLOG /	200.0	9.14e+33	-6.1	39883 /			
PLOG /	250.0	2.17e+33	-5.88	39754 /			
PLOG /	300.0	6.72e+32	-5.71	39645 /			
PLOG /	350.0	2.43e+32	-5.56	39546 /			
PLOG /	400.0	9.1e+31	-5.42	39445 /			
PLOG /	450.0	4.24e+31	-5.3	39368 /			
PLOG /	500.0	2.07e+31	-5.2	39293 /			
PLOG /	600.0	5.95e+30	-5.02	39161 /			
PLOG /	700.0	2.03e+30	-4.87	39044 /			
PLOG /	800.0	7.88e+29	-4.73	38940 /			
PLOG /	900.0	3.52e+29	-4.62	38850 /			
PLOG /	1000.0	1.72e+29	-4.51	38769 /			
PLOG /	1500.0	1e+28	-4.11	38440 /			

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PLOG / 2000.0 1.42e+27 -3.83 38207 /
ONCHO<=>HNO+CO2 1 0 0 !! R474
PLOG / 0.001 6.09e+32 -7.53 26622 /
PLOG / 0.01 9.8e+33 -7.57 27447 /
PLOG / 0.1 1.97e+34 -7.33 28379 /
PLOG / 1.0 2e+31 -6.1 28393 /
PLOG / 10.0 8.73e+28 -5.15 28478 /
PLOG / 25.0 2.05e+27 -4.58 28186 /
PLOG / 50.0 8.52e+25 -4.12 27877 /
PLOG / 75.0 1.31e+25 -3.85 27682 /
PLOG / 100.0 3.51e+24 -3.66 27537 /
PLOG / 150.0 5.68e+23 -3.4 27332 /
PLOG / 200.0 1.67e+23 -3.22 27191 /
PLOG / 250.0 6.31e+22 -3.09 27075 /
PLOG / 300.0 2.91e+22 -2.98 26983 /
PLOG / 350.0 1.52e+22 -2.89 26904 /
PLOG / 400.0 8.2e+21 -2.8 26827 /
PLOG / 450.0 5.12e+21 -2.73 26769 /
PLOG / 500.0 3.31e+21 -2.67 26715 /
PLOG / 600.0 1.57e+21 -2.57 26621 /
PLOG / 700.0 8.34e+20 -2.48 26542 /
PLOG / 800.0 4.81e+20 -2.4 26472 /
PLOG / 900.0 3.04e+20 -2.34 26413 /
PLOG / 1000.0 2.02e+20 -2.28 26361 /
PLOG / 1500.0 4.15e+19 -2.07 26156 /
PLOG / 2000.0 1.44e+19 -1.92 26017 /
ONCHO<=>HCO+NO2 1 0 0 !! R475
DUPLICATE !! with R466
PLOG / 0.001 6.13e+07 -5.28 75187 /
PLOG / 0.01 1.38e+10 -5.59 75117 /
PLOG / 0.1 3.1e+13 -6.07 75001 /
PLOG / 1.0 1.35e+17 -6.43 74692 /
PLOG / 10.0 1.94e+25 -7.97 75840 /
PLOG / 25.0 3.1e+28 -8.51 76203 /
PLOG / 50.0 7.96e+30 -8.89 76439 /
PLOG / 75.0 2.48e+32 -9.12 76606 /
PLOG / 100.0 3.08e+33 -9.28 76739 /
PLOG / 150.0 1.32e+35 -9.54 76984 /
PLOG / 200.0 2.29e+36 -9.74 77209 /
PLOG / 250.0 1.76e+37 -9.87 77379 /
PLOG / 300.0 9.99e+37 -9.98 77551 /
PLOG / 350.0 3.94e+38 -10.06 77692 /
PLOG / 400.0 1.02e+39 -10.1 77792 /
PLOG / 450.0 2.88e+39 -10.16 77923 /
PLOG / 500.0 6.54e+39 -10.19 78029 /
PLOG / 600.0 2.62e+40 -10.26 78229 /
PLOG / 700.0 7.41e+40 -10.29 78397 /
PLOG / 800.0 1.6e+41 -10.3 78539 /
PLOG / 900.0 3.3e+41 -10.32 78683 /
PLOG / 1000.0 5.9e+41 -10.32 78808 /
PLOG / 1500.0 2.5e+42 -10.24 79249 /
PLOG / 2000.0 4.01e+42 -10.12 79540 /
ONCHO<=>HONO+CO 1 0 0 !! R476
PLOG / 0.001 2.97e+27 -7.64 41143 /
PLOG / 0.01 6.74e+29 -7.95 41083 /
PLOG / 0.1 1.6e+33 -8.45 41062 /
PLOG / 1.0 6.71e+36 -8.81 41425 /
PLOG / 10.0 2.38e+42 -9.7 44123 /
PLOG / 25.0 4.6e+42 -9.51 44876 /
PLOG / 50.0 1.11e+42 -9.15 45172 /
PLOG / 75.0 2.69e+41 -8.87 45246 /
PLOG / 100.0 7.68e+40 -8.65 45251 /
PLOG / 150.0 1e+40 -8.3 45203 /
PLOG / 200.0 2.11e+39 -8.05 45139 /
PLOG / 250.0 5.2e+38 -7.83 45053 /
PLOG / 300.0 1.61e+38 -7.64 44976 /
PLOG / 350.0 5.68e+37 -7.48 44897 /
PLOG / 400.0 2.01e+37 -7.33 44808 /
PLOG / 450.0 8.95e+36 -7.2 44743 /
PLOG / 500.0 4.14e+36 -7.09 44677 /
PLOG / 600.0 1.06e+36 -6.89 44554 /

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PLOG / 700.0	3.24e+35	-6.71	44442 /			
PLOG / 800.0	1.11e+35	-6.55	44339 /			
PLOG / 900.0	4.48e+34	-6.42	44249 /			
PLOG / 1000.0	1.97e+34	-6.3	44167 /			
PLOG / 1500.0	7.26e+32	-5.82	43818 /			
PLOG / 2000.0	7.11e+31	-5.49	43562 /			
NO+HOCO<=>HOC DONO				1	0	0 !! R477
PLOG / 0.001	5.78e+30	-7.79	1243 /			
PLOG / 0.01	7.31e+31	-7.81	1415 /			
PLOG / 0.1	9.45e+32	-7.83	2016 /			
PLOG / 1.0	2.49e+33	-7.63	2879 /			
PLOG / 10.0	1.1e+32	-6.91	3401 /			
PLOG / 25.0	5.63e+30	-6.4	3361 /			
PLOG / 50.0	2.82e+29	-5.93	3209 /			
PLOG / 75.0	3.65e+28	-5.61	3068 /			
PLOG / 100.0	7.53e+27	-5.37	2945 /			
PLOG / 150.0	6.84e+26	-5.01	2739 /			
PLOG / 200.0	1.11e+26	-4.75	2571 /			
PLOG / 250.0	2.55e+25	-4.53	2429 /			
PLOG / 300.0	7.39e+24	-4.35	2305 /			
PLOG / 350.0	2.53e+24	-4.19	2195 /			
PLOG / 400.0	9.82e+23	-4.06	2096 /			
PLOG / 450.0	4.21e+23	-3.94	2006 /			
PLOG / 500.0	1.95e+23	-3.83	1923 /			
PLOG / 600.0	5.07e+22	-3.63	1776 /			
PLOG / 700.0	1.59e+22	-3.47	1647 /			
PLOG / 800.0	5.77e+21	-3.32	1532 /			
PLOG / 900.0	2.34e+21	-3.19	1429 /			
PLOG / 1000.0	1.03e+21	-3.08	1335 /			
PLOG / 1500.0	4.28e+19	-2.63	960 /			
PLOG / 2000.0	4.33e+18	-2.31	683 /			
NO+HOCO<=>HNO+CO2				1	0	0 !! R478
PLOG / 0.001	6.38e+07	0.74	-3768 /			
PLOG / 0.01	1.05e+08	0.68	-3637 /			
PLOG / 0.1	9.65e+08	0.4	-3024 /			
PLOG / 1.0	9.82e+10	-0.16	-1607 /			
PLOG / 10.0	1.24e+13	-0.73	385 /			
PLOG / 25.0	2.72e+13	-0.8	1127 /			
PLOG / 50.0	2.08e+13	-0.74	1585 /			
PLOG / 75.0	1.16e+13	-0.66	1794 /			
PLOG / 100.0	6.25e+12	-0.57	1911 /			
PLOG / 150.0	1.91e+12	-0.4	2028 /			
PLOG / 200.0	6.57e+11	-0.25	2075 /			
PLOG / 250.0	2.52e+11	-0.12	2091 /			
PLOG / 300.0	1.05e+11	-0.01	2089 /			
PLOG / 350.0	4.76e+10	0.1	2077 /			
PLOG / 400.0	2.29e+10	0.2	2060 /			
PLOG / 450.0	1.16e+10	0.29	2038 /			
PLOG / 500.0	6.14e+09	0.37	2015 /			
PLOG / 600.0	1.93e+09	0.53	1963 /			
PLOG / 700.0	6.87e+08	0.67	1910 /			
PLOG / 800.0	2.69e+08	0.79	1856 /			
PLOG / 900.0	1.14e+08	0.9	1804 /			
PLOG / 1000.0	5.17e+07	1.01	1752 /			
PLOG / 1500.0	2010000	1.43	1515 /			
PLOG / 2000.0	167000	1.76	1311 /			
HOC DONO<=>HNO+CO2				1	0	0 !! R479
PLOG / 0.001	7.16e+43	-11.08	38696 /			
PLOG / 0.01	8.26e+44	-11.09	38863 /			
PLOG / 0.1	8.4e+45	-11.08	39442 /			
PLOG / 1.0	2.13e+46	-10.88	40298 /			
PLOG / 10.0	7.02e+44	-10.13	40768 /			
PLOG / 25.0	3.17e+43	-9.6	40707 /			
PLOG / 50.0	1.36e+42	-9.11	40529 /			
PLOG / 75.0	1.76e+41	-8.79	40387 /			
PLOG / 100.0	3.62e+40	-8.55	40263 /			
PLOG / 150.0	3.45e+39	-8.2	40063 /			
PLOG / 200.0	5.35e+38	-7.93	39887 /			
PLOG / 250.0	1.3e+38	-7.72	39752 /			
PLOG / 300.0	3.97e+37	-7.55	39635 /			
PLOG / 350.0	1.43e+37	-7.4	39532 /			

PLOG / 400.0	5.84e+36	-7.27	39440 /			
PLOG / 450.0	2.56e+36	-7.15	39353 /			
PLOG / 500.0	1.24e+36	-7.04	39276 /			
PLOG / 600.0	3.5e+35	-6.86	39140 /			
PLOG / 700.0	1.18e+35	-6.71	39021 /			
PLOG / 800.0	4.72e+34	-6.58	38919 /			
PLOG / 900.0	2.04e+34	-6.46	38824 /			
PLOG / 1000.0	9.55e+33	-6.35	38737 /			
PLOG / 1500.0	5.64e+32	-5.95	38408 /			
PLOG / 2000.0	8.45e+31	-5.68	38184 /			
HOCO+NO<=>HONO+CO		32953	2.01974	24504.85		!! R480
HOCO+NO<=>HNO+CO2		4.087e+08	1.24264	9476.243		!! R481
OCHO+NO2<=>HNO2+CO2		2.282	2.26588	6366.562		!! R482
OCHO+NO2<=>HONO+CO2		440940	0.41278	10447.94		!! R483
DUPLICATE !! with R484						
OCHO+NO2<=>HONO+CO2		3.7916	2.10497	3980.276		!! R484
DUPLICATE !! with R483						
NO2+HOCO<=>HNO2+CO2		2813600	1.62494	4820.871		!! R485
NO2+HOCO<=>HOCDOONO		1	0	0		!! R486
PLOG / 0.001	3.81e-19	2.49	12152 /			
PLOG / 0.01	3.45e-18	2.51	12127 /			
PLOG / 0.1	1.59e-17	2.6	11926 /			
PLOG / 1.0	4.55e-19	3.33	10281 /			
PLOG / 10.0	4.61e-12	1.38	8970 /			
PLOG / 25.0	3420000	-3.79	13708 /			
PLOG / 50.0	1.57e+21	-7.86	18070 /			
PLOG / 75.0	3.05e+26	-9.17	19565 /			
PLOG / 100.0	1.88e+28	-9.47	19960 /			
PLOG / 150.0	7.33e+29	-9.59	20185 /			
PLOG / 200.0	7.95e+30	-9.64	20301 /			
PLOG / 250.0	5.16e+31	-9.67	20390 /			
PLOG / 300.0	2.4e+32	-9.7	20463 /			
PLOG / 350.0	8.67e+32	-9.72	20523 /			
PLOG / 400.0	2.59e+33	-9.74	20575 /			
PLOG / 450.0	6.61e+33	-9.75	20618 /			
PLOG / 500.0	1.49e+34	-9.76	20655 /			
PLOG / 600.0	5.57e+34	-9.77	20715 /			
PLOG / 700.0	1.53e+35	-9.76	20758 /			
PLOG / 800.0	3.35e+35	-9.74	20791 /			
PLOG / 900.0	6.15e+35	-9.72	20815 /			
PLOG / 1000.0	9.83e+35	-9.69	20831 /			
PLOG / 1500.0	2.83e+36	-9.49	20850 /			
PLOG / 2000.0	2.64e+36	-9.26	20809 /			
NO2+HOCO<=>HNO2+CO2		1	0	0		!! R487
PLOG / 0.001	1.24	3.4	10782 /			
PLOG / 200.0	1.23	3.4	10782 /			
PLOG / 450.0	1.22	3.4	10782 /			
PLOG / 600.0	1.22	3.41	10782 /			
PLOG / 700.0	1.21	3.41	10782 /			
PLOG / 800.0	1.21	3.41	10783 /			
PLOG / 900.0	1.2	3.41	10783 /			
PLOG / 1500.0	1.18	3.41	10785 /			
PLOG / 2000.0	1.16	3.41	10788 /			
NO2+HOCO<=>HONO+CO2		1	0	0		!! R488
DUPLICATE !! with R492						
PLOG / 0.001	11.4	3.21	10953 /			
PLOG / 150.0	11.5	3.21	10953 /			
PLOG / 400.0	11.5	3.21	10952 /			
PLOG / 800.0	11.6	3.21	10952 /			
PLOG / 1500.0	11.7	3.21	10952 /			
PLOG / 2000.0	11.8	3.21	10954 /			
HOCDOONO<=>HNO2+CO2		1	0	0		!! R489
PLOG / 0.001	3.63e+22	-5.42	21121 /			
PLOG / 0.01	1.14e+24	-5.52	21256 /			
PLOG / 0.1	1.27e+27	-6.01	21828 /			
PLOG / 1.0	1.27e+30	-6.45	22559 /			
PLOG / 10.0	1.42e+31	-6.32	23499 /			
PLOG / 25.0	3.4e+31	-6.28	24059 /			
PLOG / 50.0	3.34e+31	-6.16	24412 /			
PLOG / 75.0	1.7e+31	-6.01	24522 /			
PLOG / 100.0	9.57e+30	-5.89	24581 /			

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PLOG / 150.0 3.24e+30 -5.69 24615 /
PLOG / 200.0 1.24e+30 -5.52 24605 /
PLOG / 250.0 5.29e+29 -5.38 24579 /
PLOG / 300.0 2.57e+29 -5.27 24550 /
PLOG / 350.0 1.31e+29 -5.16 24515 /
PLOG / 400.0 7.26e+28 -5.07 24481 /
PLOG / 450.0 4.18e+28 -4.98 24446 /
PLOG / 500.0 2.59e+28 -4.91 24415 /
PLOG / 600.0 1.04e+28 -4.77 24348 /
PLOG / 700.0 4.84e+27 -4.65 24289 /
PLOG / 800.0 2.43e+27 -4.55 24232 /
PLOG / 900.0 1.3e+27 -4.45 24178 /
PLOG / 1000.0 7.46e+26 -4.37 24129 /
PLOG / 1500.0 8.17e+25 -4.04 23919 /
PLOG / 2000.0 1.64e+25 -3.81 23755 /
HOCDOONO<=>HONO+CO2 1 0 0 !! R490
PLOG / 0.001 3.32e+26 -5.82 16697 /
PLOG / 0.01 4.84e+27 -5.88 16866 /
PLOG / 0.1 2.82e+29 -6.1 17692 /
PLOG / 1.0 5.23e+30 -6.17 18803 /
PLOG / 10.0 1.11e+30 -5.66 19487 /
PLOG / 25.0 5.66e+29 -5.47 19759 /
PLOG / 50.0 2.06e+29 -5.26 19880 /
PLOG / 75.0 7.17e+28 -5.08 19875 /
PLOG / 100.0 3.22e+28 -4.95 19856 /
PLOG / 150.0 8.81e+27 -4.74 19796 /
PLOG / 200.0 3.13e+27 -4.58 19732 /
PLOG / 250.0 1.32e+27 -4.45 19670 /
PLOG / 300.0 6.46e+26 -4.34 19615 /
PLOG / 350.0 3.4e+26 -4.25 19562 /
PLOG / 400.0 1.94e+26 -4.16 19515 /
PLOG / 450.0 1.17e+26 -4.09 19469 /
PLOG / 500.0 7.5e+25 -4.02 19430 /
PLOG / 600.0 3.32e+25 -3.9 19353 /
PLOG / 700.0 1.68e+25 -3.8 19288 /
PLOG / 800.0 9.21e+24 -3.71 19228 /
PLOG / 900.0 5.37e+24 -3.64 19173 /
PLOG / 1000.0 3.34e+24 -3.57 19124 /
PLOG / 1500.0 5.21e+23 -3.3 18925 /
PLOG / 2000.0 1.4e+23 -3.11 18778 /
NO2+HOCO<=>HOCDONO2 1 0 0 !! R491
PLOG / 0.001 6.59e-21 2.14 -6822 /
PLOG / 0.01 6.71e-20 2.14 -6821 /
PLOG / 0.1 8e-19 2.11 -6807 /
PLOG / 1.0 4e-17 1.9 -6681 /
PLOG / 10.0 1.07e-11 0.56 -5789 /
PLOG / 25.0 1.06e-06 -0.82 -4709 /
PLOG / 50.0 0.642 -2.45 -3284 /
PLOG / 75.0 17300 -3.71 -2114 /
PLOG / 100.0 7.95e+07 -4.75 -1113 /
PLOG / 150.0 5.62e+13 -6.4 527 /
PLOG / 200.0 1.88e+18 -7.67 1816 /
PLOG / 250.0 7.55e+21 -8.68 2849 /
PLOG / 300.0 6.31e+24 -9.48 3685 /
PLOG / 350.0 1.54e+27 -10.13 4364 /
PLOG / 400.0 1.38e+29 -10.65 4912 /
PLOG / 450.0 5.35e+30 -11.07 5350 /
PLOG / 500.0 1.05e+32 -11.4 5698 /
PLOG / 600.0 8.94e+33 -11.87 6194 /
PLOG / 700.0 2e+35 -12.17 6516 /
PLOG / 800.0 2.08e+36 -12.39 6741 /
PLOG / 900.0 1.37e+37 -12.55 6913 /
PLOG / 1000.0 6.81e+37 -12.68 7053 /
PLOG / 1500.0 2.75e+40 -13.14 7566 /
PLOG / 2000.0 2.2e+42 -13.48 7953 /
NO2+HOCO<=>HONO+CO2 1 0 0 !! R492
DUPLICATE !! with R488
PLOG / 0.001 120 2.52 -2564 /
PLOG / 2000.0 120 2.52 -2564 /
HOCDONO2<=>HONO+CO2 1 0 0 !! R493
PLOG / 0.001 1.36e+14 -2.24 6523 /

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PLOG / 0.01	1.35e+15	-2.24	6523 /	
PLOG / 0.1	1.39e+16	-2.25	6528 /	
PLOG / 1.0	1.13e+17	-2.22	6529 /	
PLOG / 10.0	8.32e+18	-2.49	7083 /	
PLOG / 25.0	4.21e+19	-2.59	7402 /	
PLOG / 50.0	2.57e+20	-2.74	7782 /	
PLOG / 75.0	4.18e+20	-2.75	7945 /	
PLOG / 100.0	1.32e+20	-2.56	7843 /	
PLOG / 150.0	2.54e+20	-2.6	8036 /	
PLOG / 200.0	4.01e+20	-2.62	8179 /	
PLOG / 250.0	5.66e+20	-2.64	8291 /	
PLOG / 300.0	7.46e+20	-2.66	8385 /	
PLOG / 350.0	9.34e+20	-2.67	8463 /	
PLOG / 400.0	1.12e+21	-2.68	8530 /	
PLOG / 450.0	1.31e+21	-2.68	8589 /	
PLOG / 500.0	1.49e+21	-2.69	8641 /	
PLOG / 600.0	1.85e+21	-2.7	8730 /	
PLOG / 700.0	2.18e+21	-2.7	8804 /	
PLOG / 800.0	2.48e+21	-2.7	8866 /	
PLOG / 900.0	2.76e+21	-2.71	8919 /	
PLOG / 1000.0	3e+21	-2.71	8966 /	
PLOG / 1500.0	3.77e+21	-2.69	9131 /	
PLOG / 2000.0	4.06e+21	-2.68	9235 /	
HOC DONO+H2O<=>HONO+CO+H2O	3672500	1.8014	53005.68	!! R494
HOCHO+HONO<=>ONCHO+H2O	8091.7	2.18323	10632.94	!! R495
HOCO+HONO<=>CO2+H2O+NO	631680	1.64203	12581.92	!! R496
OCHO+HONO<=>CO2+H2O+NO	3619100	1.74616	1288.692	!! R497
ONCHO+H2O<=>CO2+HNO+H2O	6.0617e+08	1.5955	46884.72	!! R498
HOCHO+CO<=>CO2+CH2O	5.9646e+08	0.9894	53414.68	!! R499
HOCHO+CO+H2O<=>CO2+CH2O+H2O	4.2409e-05	3.0518	99879.4	!! R500
CO+OCHO<=>CO2+HCO	2.5233e+08	1.70266	758.6354	!! R501
C2H3+NO2<=>CH2CHO+NO	7.73e+14	-0.6	0	!! R502
C2H4+NO2<=>C2H3+HONO	2.5e+07	1.26	30048.82	!! R503
C2H4+NO2<=>C2H3+HNO2	0.028391	4.5558	37738.77	!! R504
CH2O+NO2<=>HCO+HNO2	3.48e+13	0	23719.86	!! R505
CH2OH+NO2<=>CH2O+HONO	1.17e+15	-0.54	0	!! R506
CH2CO+NO2<=>HCCO+HONO	2.5e+07	1.26	29199.82	!! R507
CH2CO+NO2<=>HCCO+HNO2	0.014196	4.5558	36708.78	!! R508
NO2+HCCO<=>CO+HCO+NO	8.76e+12	-0.34	0	!! R509
NO2+HCCO<=>CO2+HCNO	5.84e+12	-0.34	0	!! R510
CH4+CO<=>CH2CO+H2	15.267	3.9464	117699.3	!! R511
NH3+CO<=>HNCO+H2	51.286	3.20426	87537.47	!! R512
NH3+CO<=>H2NCHO	2006.9	2.85582	74465.55	!! R513
H2NCHO<=>HNCO+H2	2.0221e+09	1.21417	73164.56	!! R514
H2NCHO<=>NH2+HCO	2.1764e+16	-0.10942	95525.42	!! R515
HNCO+CO<=>HNCO+CO	255.3	2.62569	80143.52	!! R516
C3H3+NO2<=>CDCJCDO+NO	6.49e+15	-1.06	0	!! R517
HCO+H2CC<=>CDCJCDO	1e+13	0	0	!! R518
CDCJCDO<=>VCDJO	1.7505e+11	0.58233	29829.82	!! R519
VCDJO+H<=>CDCJCDO+H2	2.4e+08	1.5	12249.93	!! R520
VCDJO+O<=>CDCJCDO+OH	1.7e+08	1.5	10959.93	!! R521
VCDJO+OH<=>CDCJCDO+H2O	1200000	2	4932.07	!! R522
VCDJO+CH3<=>CDCJCDO+CH4	810000	1.87	15430.91	!! R523
VCDJO+NH2<=>CDCJCDO+NH3	920000	1.94	8979.646	!! R524
VCDJO+HO2<=>CDCJCDO+H2O2	14000	2.69	23656.86	!! R525
VCDJO+NO2<=>CDCJCDO+HONO	2.5e+07	1.26	30510.82	!! R526
VCDJO+O2<=>CDCJCDO+HO2	2.5e+07	1.26	54889.67	!! R527
H2CC+NO2<=>CH2CO+NO	5e+13	0	0	!! R528
CHOCHO+CH3<=>ODCCDJO+CH4	1620000	1.87	1436.791	!! R529
CHOCHO+HO2<=>ODCCDJO+H2O2	14000	2.69	10735.94	!! R530
CHOCHO+O2<=>ODCCDJO+HO2	2.5e+07	1.26	37127.78	!! R531
CHOCHO+NH2<=>ODCCDJO+NH3	1840000	1.94	4028.076	!! R532
CHOCHO+NO2<=>ODCCDJO+HONO	0.0043879	4.3887	8600.948	!! R533
ODCCDJO<=>HCO+CO	1.89e+13	0	9499.943	!! R534
ODCCDJO+NO2<=>CO2+HCO+NO	8.39e+15	-0.75	1929.988	!! R535
ODCCDJO+HO2<=>CO2+HCO+OH	3.01e+13	0	0	!! R536
ODCCDJO+O<=>CO2+HCO	9.64e+12	0	0	!! R537
HCCOH+H<=>HCCO+H2	2.4e+08	1.5	0	!! R538
HCCOH+O<=>HCCO+OH	1.7e+08	1.5	0	!! R539
HCCOH+OH<=>HCCO+H2O	1200000	2	0	!! R540
HCCOH+CH3<=>HCCO+CH4	810000	1.87	0	!! R541

HCCOH+HO2<=>HCCO+H2O2	14000	2.69	1978.588	!!	R542
HCCOH+O2<=>HCCO+HO2	2.5e+07	1.26	25090.85	!!	R543
HCCOH+NH2<=>HCCO+NH3	920000	1.94	672.3659	!!	R544
HCCOH+NO2<=>HCCO+HONO	2.5e+07	1.26	717.0157	!!	R545
HOCHO+M<=>CO+H2O+M	9.04e+14	0	50299.7	!!	R546
HOCHO+M<=>CO2+H2+M	2.02e+15	0	51349.69	!!	R547
HOCHO+OH+M<=>H2O+OCHO+M	1.36e+10	0	-1559.991	!!	R548
HOCHO+H<=>HOCO+H2	2.4e+08	1.5	5678.266	!!	R549
HOCHO+O<=>HOCO+OH	1.7e+08	1.5	3369.88	!!	R550
HOCHO+OH<=>HOCO+H2O	1200000	2	-122.8593	!!	R551
HOCHO+CH3<=>HOCO+CH4	810000	1.87	8859.747	!!	R552
HOCHO+NH2<=>HOCO+NH3	920000	1.94	6654.66	!!	R553
HOCHO+NO2<=>HOCO+HONO	2.5e+07	1.26	22170.87	!!	R554
HOCHO+NO2<=>HOCO+HNO2	0.0070978	4.5558	28188.83	!!	R555
HOCHO+O2<=>HOCO+HO2	128.52	3.029	46814.72	!!	R556
HOCHO+H<=>OCHO+H2	2.4e+08	1.5	10903.93	!!	R557
HOCHO+O<=>OCHO+OH	1.7e+08	1.5	9407.343	!!	R558
HOCHO+CH3<=>OCHO+CH4	810000	1.87	14091.91	!!	R559
HOCHO+NH2<=>OCHO+NH3	920000	1.94	8503.849	!!	R560
HOCHO+NO2<=>OCHO+HONO	2.5e+07	1.26	28811.83	!!	R561
HOCHO+NO2<=>OCHO+HNO2	0.0070978	4.5558	36238.78	!!	R562
CH2O+OCHO<=>HCO+HOCHO	5.6e+12	0	13599.92	!!	R563
OCHO+HO2<=>HOCHO+O2	3.5e+10	0	-3274.98	!!	R564
OCHO+H2O2<=>HOCHO+HO2	2.4e+12	0	9999.94	!!	R565
CH3CHO+OH<=>CH3+HOCHO	3e+15	-1.076	0	!!	R566
HOCO<=>CO+OH	1	0	0	!!	R567
PLOG / 0.001 1.55e-08	2.93	8768	/		
PLOG / 0.003 1770	0.34	18076	/		
PLOG / 0.0296 2.02e+13	-1.87	22755	/		
PLOG / 0.0987 1.68e+18	-3.05	24323	/		
PLOG / 0.2961 2.5e+24	-4.63	27067	/		
PLOG / 0.9869 4.54e+26	-5.12	27572	/		
PLOG / 2.9607 7.12e+28	-5.6	28535	/		
PLOG / 9.869 5.48e+29	-5.7	28899	/		
PLOG / 29.607 9.89e+31	-6.19	30518	/		
PLOG / 98.69 5.74e+33	-6.53	32068	/		
PLOG / 296.07 2.61e+33	-6.29	32231	/		
PLOG / 986.9 6.3e+32	-5.96	32470	/		
HOCO<=>CO2+H	1	0	0	!!	R568
PLOG / 0.001 4.758e+18	-3.817	17676	/		
PLOG / 0.003 2.225e+20	-4.149	19037	/		
PLOG / 0.0099 7.564e+21	-4.434	20325	/		
PLOG / 0.0296 9.107e+24	-5.189	22419	/		
PLOG / 0.0987 3.144e+29	-6.376	25233	/		
PLOG / 0.2961 1.15e+32	-7.037	26662	/		
PLOG / 0.9869 1.069e+36	-8.107	29064	/		
PLOG / 2.9607 2.438e+36	-8.153	29336	/		
PLOG / 9.869 6.663e+35	-7.919	29217	/		
PLOG / 29.607 1.723e+38	-8.506	31273	/		
PLOG / 98.69 3.007e+41	-9.29	33966	/		
PLOG / 296.07 6.767e+36	-7.832	31613	/		
PLOG / 986.9 1.897e+38	-8.047	34240	/		
HOCO+O<=>CO2+OH	8.67e+12	0	0	!!	R569
HOCO+OH<=>CO2+H2O	6.2e+12	0	0	!!	R570
HOCO+O2<=>CO2+HO2	1.26e+12	0	0	!!	R571
CO+HOCO<=>CO2+HCO	6.03e+09	0	0	!!	R572
C2H2+HOCO<=>CO2+C2H3	1.81e+10	0	0	!!	R573
C2H4+HOCO<=>CO2+C2H5	6.03e+09	0	0	!!	R574
HOCO<=>OCHO	2.8432e+11	0.60011	32064.81	!!	R575
HOCO+NO2<=>OH+CO2+NO	1e+11	0	0	!!	R576
OCHO<=>H+CO2	1.3391e+18	-1.34264	2181.187	!!	R577
OCHO+H<=>CO2+H2	1.7318e+09	0.06848	-300.5782	!!	R578
OCHO+HO2<=>CO2+H2O2	1.8558e+17	-1.26402	4754.271	!!	R579
OCHO+O2<=>CO2+HO2	1.6984e+17	-1.53046	4871.971	!!	R580
OCHO+O<=>CO2+OH	9.2289e+15	-0.89341	-54.35567	!!	R581
OCHO+OH<=>CO2+H2O	1.2553e+17	-1.21194	1496.191	!!	R582
OCHO+NO<=>CO2+HNO	1.4868e+17	-1.39072	4953.67	!!	R583
O2+H<=>O+OH	3.52e+16	-0.7	17069.9	!!	R584
O+H2<=>H+OH	50800	2.67	6291.962	!!	R585
OH+H2<=>H+H2O	4.38e+13	0	6989.958	!!	R586
O+H2O<=>2OH	2970000	2.02	13399.92	!!	R587

H2+M<=>2H+M	4.577e+19	-1.4	104399.4	!! R588
H2 / 2.5 / H2O / 12 / HE / 0.83 / CO / 1.9 / CO2 / 3.8 /				
2O+M<=>O2+M	6.165e+15	-0.5	0	!! R589
H2 / 2.5 / H2O / 12 / AR / 0.83 / HE / 0.83 / CO / 1.9 / CO2 / 3.8 /				
O+H+M<=>OH+M	4.714e+18	-1	0	!! R590
H2 / 2.5 / H2O / 12 / AR / 0.75 / HE / 0.75 / CO / 1.5 / CO2 / 2 /				
H+OH+M<=>H2O+M	3.5e+22	-2	0	!! R591
H2 / 0.73 / H2O / 3.65 / AR / 0.38 / HE / 0.38 / CO / 1.9 /				
CO2 / 3.8 /				
H+O2 (+M) <=> HO2 (+M)	4.65e+12	0.44	0	!! R592
LOW / 1.737e+19	-1.23	0 /		
H2 / 1.3 / H2O / 10 / AR / 0 / HE / 0 / CO / 1.9 / CO2 / 3.8 /				
H+O2 (+AR) <=> HO2 (+AR)	4.65e+12	0.44	0	!! R593
LOW / 6.81e+18	-1.2	0 /		
H+O2 (+HE) <=> HO2 (+HE)	4.65e+12	0.44	0	!! R594
LOW / 9.19e+18	-1.2	0 /		
H2+O2<=>H+HO2	517600	2.43	53499.68	!! R595
HO2+H<=>2OH	7.079e+13	0	294.9982	!! R596
HO2+O<=>OH+O2	3.25e+13	0	0	!! R597
HO2+OH<=>H2O+O2	2.456e+13	0	-496.997	!! R598
2HO2<=>H2O2+O2	1.3e+11	0	-1629.99	!! R599
DUPLICATE !! with R600				
2HO2<=>H2O2+O2	3.658e+14	0	11999.93	!! R600
DUPLICATE !! with R599				
H2O2 (+M) <=> 2OH (+M)	2e+12	0.9	48749.71	!! R601
LOW / 2.49e+24	-2.3	48749.71 /		
H2 / 3.7 / N2 / 1.5 / O2 / 1.2 / HE / 0.65 / H2O2 / 7.7 /				
H2O / 0 / CO / 2.8 / CO2 / 1.6 /				
H2O2 (+H2O) <=> 2OH (+H2O)	2e+12	0.9	48749.71	!! R602
LOW / 1.865e+25	-2.3	48749.71 /		
H2O2+H<=>H2O+OH	2.41e+13	0	3969.976	!! R603
H2O2+H<=>H2+HO2	2.15e+10	1	5999.964	!! R604
H2O2+O<=>OH+HO2	9550000	2	3969.976	!! R605
H2O2+OH<=>H2O+HO2	1.74e+12	0	317.9981	!! R606
DUPLICATE !! with R607				
H2O2+OH<=>H2O+HO2	7.59e+13	0	7268.956	!! R607
DUPLICATE !! with R606				
CO+O (+M) <=> CO2 (+M)	1.36e+10	0	2383.986	!! R608
LOW / 1.173e+24	-2.79	4190.975 /		
H2 / 2 / H2O / 12 / HE / 0.7 / AR / 0.7 / CO / 1.75 / CO2 / 3.6 /				
CO+O2<=>CO2+O	1.119e+12	0	47699.71	!! R609
CO+OH<=>CO2+H	70150	2.05	-355.6979	!! R610
DUPLICATE !! with R611				
CO+OH<=>CO2+H	5.757e+12	-0.66	331.798	!! R611
DUPLICATE !! with R610				
CO+HO2<=>CO2+OH	157000	2.18	17939.89	!! R612
HCO+M<=>H+CO+M	4.75e+11	0.66	14869.91	!! R613
H2 / 2 / H2O / 12 / CO / 1.5 / CO2 / 2 /				
HCO+O2<=>CO+HO2	7.58e+12	0	409.9975	!! R614
HCO+H<=>CO+H2	7.34e+13	0	0	!! R615
HCO+O<=>CO+OH	3.02e+13	0	0	!! R616
HCO+O<=>CO2+H	3e+13	0	0	!! R617
HCO+OH<=>CO+H2O	1.02e+14	0	0	!! R618
HCO+HO2<=>CO2+H+OH	3e+13	0	0	!! R619
2HCO<=>H2+2CO	3e+12	0	0	!! R620
H+O+M<=>OH*+M	1.5e+13	0	5974.964	!! R621
H2O / 6.5 / O2 / 0.4 / N2 / 0.4 / AR / 0.35 /				
OH*+O2<=>OH+O2	2.1e+12	0.5	-481.9971	!! R622
OH*+H2<=>OH+H2	2.95e+12	0.5	-443.9973	!! R623
OH*+N2<=>OH+N2	1.08e+11	0.5	-1241.993	!! R624
OH*+AR<=>OH+AR	1.69e+12	0	4134.975	!! R625
OH*+H2O<=>OH+H2O	5.93e+12	0.5	-860.9948	!! R626
OH*+CO2<=>OH+CO2	2.75e+12	0.5	-967.9942	!! R627
OH*+CO<=>OH+CO	3.23e+12	0.5	-786.9952	!! R628
OH*+OH<=>2OH	6.01e+12	0.5	-763.9954	!! R629
OH*<=>OH+HV	1450000	0	0	!! R630
NH2+OH<=>NH2OH	2.98e+14	-0.272	-55.63566	!! R631
NH2+OH<=>NH+H2O	2840000	1.97	-2245.296	!! R632
NH2+OH<=>NH3+O	3.72	3.5	-202.6728	!! R633
NH2OH+OH<=>HNOH+H2O	15400	2.61	-3536.839	!! R634
NH2OH+OH<=>NH2O+H2O	153000	2.28	-1295.516	!! R635

NH2OH+NH2<=>HNOH+NH3	0.108	4	-97.36241	!! R636
NH2OH+NH2<=>NH2O+NH3	9.45	3.42	-1013.364	!! R637
NH2OH+NH<=>HNOH+NH2	0.00291	4.4	1563.76	!! R638
NH2OH+NH<=>NH2O+NH2	0.00146	4.6	2424.125	!! R639
NH+OH<=>H2O+N	1.59e+07	1.737	-576.2265	!! R640
NH+OH<=>HNO+H	3.24e+14	-0.376	-45.70072	!! R641
2NH<=>N2H2	6.26e+13	-0.036	-160.946	!! R642
2NH<=>N+NH2	0.566	3.88	341.7619	!! R643
NH2+NH<=>N2H2+H	4.26e+14	-0.272	-77.49253	!! R644
NH2+NH<=>N+NH3	9570	2.46	107.2974	!! R645
2NH2<=>N2H2+H2	1.74e+08	1.02	11782.84	!! R646
2NH2<=>H2NN+H2	71600	1.88	8802.357	!! R647
2NH2<=>NH+NH3	5.63	3.53	552.3827	!! R648
N2H4+H<=>NH2+NH3	2.4e+09	0	3099.981	!! R649
N2H4+O<=>N2H2+H2O	4.4e+11	0	-1269.992	!! R650
N2H4+N<=>N2H3+NH	1e+10	1	1999.988	!! R651
N2H4+NH<=>NH2+N2H3	1e+09	1.5	1999.988	!! R652
N2H4+NH2<=>NH3+N2H3	4.82	3.6	769.9954	!! R653
N2H3+N2H2<=>N2H4+NNH	1e+13	0	5999.964	!! R654
2N2H3<=>N2H4+N2H2	1.2e+13	0	0	!! R655
N2H4+NO2<=>N2H3+HONO	56033	2.54027	7786.953	!! R656
N2H3<=>N2H2+H	3.6e+47	-10.38	68969.58	!! R657
N2H3+H<=>NH+NH3	1e+11	0	0	!! R658
NH3+NH2<=>N2H3+H2	1e+11	0.5	21599.87	!! R659
N2H3+N<=>N2H2+NH	1000000	2	0	!! R660
N2H3+NH<=>N2H2+NH2	2e+13	0	0	!! R661
N2H3+NNH<=>2N2H2	1e+13	0	3999.976	!! R662
2N2H3<=>2NH3+N2	3e+12	0	0	!! R663
N2H3+O<=>NH2+NO+H	3e+13	0	6799.959	!! R664
N2H2+N<=>NNH+NH	1000000	2	0	!! R665
2NNH<=>N2H2+N2	1e+13	0	3999.976	!! R666
NH3+M<=>H2+NH+M	6.31e+14	0	93399.44	!! R667
NH3+HNO3<=>H2NONO+H2O	23.2	3.5	44929.73	!! R668
NH3+HNO3<=>H2O+H2NNO2	0.81	3.47	43059.74	!! R669
NH3+HOONO<=>H2NONO+H2O	23.2	3.5	29409.82	!! R670
NH3+HONO<=>H2O+NH2NO	2200000	0	0	!! R671
NH3+NH<=>N2H4	6.5e+11	0	-1629.99	!! R672
HO2+NH<=>HNO+OH	1.52e+10	0	0	!! R673
2NH<=>N2+H2	1e+08	1	0	!! R674
2NH<=>NNH+H	5.1e+13	0	0	!! R675
NH+OH<=>NO+H2	2e+13	0	0	!! R676
NH+N2O<=>N2+HNO	2e+12	0	5999.964	!! R677
NH+HONO<=>NH2+NO2	1e+13	0	0	!! R678
NH+O2<=>H+NO2	2.3e+10	0	2481.985	!! R679
NH2+M<=>NH+H+M	3.16e+23	-2	91399.45	!! R680
NH2+O<=>H2+NO	5e+12	0	0	!! R681
NH2+HO2<=>HNO+H2O	5.68e+15	-1.12	706.9957	!! R682
NH2+HO2<=>NH2O+OH	2.9e+17	-1.32	1249.992	!! R683
NH2+O2<=>NH2QJ	1	0	0	!! R684
PLOG / 0.001 5.99e+16	-3.86	4269	/	
PLOG / 0.01 5.99e+17	-3.86	4269	/	
PLOG / 0.1 6e+18	-3.86	4270	/	
PLOG / 1.0 6.07e+19	-3.86	4274	/	
PLOG / 10.0 6.7e+20	-3.87	4316	/	
PLOG / 25.0 1.9e+21	-3.89	4374	/	
PLOG / 50.0 4.35e+21	-3.9	4449	/	
PLOG / 75.0 7.14e+21	-3.91	4508	/	
PLOG / 100.0 1.01e+22	-3.92	4557	/	
PLOG / 150.0 1.64e+22	-3.93	4636	/	
PLOG / 200.0 2.28e+22	-3.93	4698	/	
PLOG / 250.0 2.91e+22	-3.94	4750	/	
PLOG / 300.0 3.53e+22	-3.94	4795	/	
PLOG / 350.0 4.14e+22	-3.94	4835	/	
PLOG / 400.0 4.73e+22	-3.94	4871	/	
PLOG / 450.0 5.29e+22	-3.94	4903	/	
PLOG / 500.0 5.84e+22	-3.94	4933	/	
PLOG / 600.0 6.86e+22	-3.93	4985	/	
PLOG / 700.0 7.81e+22	-3.93	5031	/	
PLOG / 800.0 8.67e+22	-3.92	5072	/	
PLOG / 900.0 9.46e+22	-3.92	5108	/	
PLOG / 1000.0 1.02e+23	-3.92	5141	/	

PLOG / 1500.0	1.28e+23	-3.89	5271 /			
PLOG / 2000.0	1.43e+23	-3.87	5364 /			
NH2+O2<=>NH2O+O			1	0	0	!! R685
PLOG / 0.001	7.37e+10	0.62	29871 /			
PLOG / 2000.0	7.37e+10	0.62	29871 /			
NH2+O2<=>NJH2Q			1	0	0	!! R686
PLOG / 0.001	3.92e-70	18.37	6485 /			
PLOG / 0.01	3.92e-69	18.37	6485 /			
PLOG / 0.1	3.91e-68	18.37	6485 /			
PLOG / 1.0	3.84e-67	18.38	6487 /			
PLOG / 10.0	3.27e-66	18.41	6508 /			
PLOG / 25.0	6.5e-66	18.46	6548 /			
PLOG / 50.0	9.81e-66	18.52	6630 /			
PLOG / 75.0	1.26e-65	18.57	6732 /			
PLOG / 100.0	1.65e-65	18.6	6854 /			
PLOG / 150.0	3.52e-65	18.61	7158 /			
PLOG / 200.0	1.13e-64	18.55	7544 /			
PLOG / 250.0	5.79e-64	18.42	8010 /			
PLOG / 300.0	4.74e-63	18.22	8554 /			
PLOG / 350.0	6.17e-62	17.95	9172 /			
PLOG / 400.0	1.28e-60	17.63	9861 /			
PLOG / 450.0	4.16e-59	17.24	10618 /			
PLOG / 500.0	2.1e-57	16.79	11438 /			
PLOG / 600.0	1.88e-53	15.71	13252 /			
PLOG / 700.0	9.04e-49	14.41	15276 /			
PLOG / 800.0	1.75e-43	12.92	17433 /			
PLOG / 900.0	4.78e-38	11.36	19498 /			
PLOG / 1000.0	2.16e-33	10.02	21023 /			
PLOG / 1500.0	4.79e-26	7.92	20450 /			
PLOG / 2000.0	6.31e-22	6.76	19439 /			
NH2+O2<=>NH+HO2			1	0	0	!! R687
PLOG / 0.001	6.3e+07	1	40526 /			
PLOG / 25.0	6.31e+07	1	40527 /			
PLOG / 100.0	6.31e+07	1	40528 /			
PLOG / 150.0	6.32e+07	1	40528 /			
PLOG / 200.0	6.32e+07	1	40529 /			
PLOG / 250.0	6.33e+07	1	40529 /			
PLOG / 300.0	6.33e+07	1	40530 /			
PLOG / 350.0	6.34e+07	1	40531 /			
PLOG / 450.0	6.35e+07	1	40532 /			
PLOG / 500.0	6.35e+07	1	40533 /			
PLOG / 600.0	6.36e+07	1	40534 /			
PLOG / 700.0	6.38e+07	1	40535 /			
PLOG / 800.0	6.39e+07	1	40537 /			
PLOG / 900.0	6.4e+07	1	40538 /			
PLOG / 1000.0	6.41e+07	1	40539 /			
PLOG / 1500.0	6.47e+07	1	40546 /			
PLOG / 2000.0	6.52e+07	1	40553 /			
NH2+O2<=>HNO+OH			1	0	0	!! R688
PLOG / 0.001	850000	1.52	22767 /			
PLOG / 2000.0	849000	1.52	22767 /			
NH2QJ<=>NH2O+O			1	0	0	!! R689
PLOG / 0.001	3.57e-17	5.33	67164 /			
PLOG / 0.01	3.56e-16	5.33	67163 /			
PLOG / 0.1	3.41e-15	5.33	67149 /			
PLOG / 1.0	2.26e-14	5.38	67015 /			
PLOG / 10.0	5.55e-15	5.84	65779 /			
PLOG / 25.0	9.54e-17	6.45	64043 /			
PLOG / 50.0	3.49e-19	7.21	61715 /			
PLOG / 75.0	4.84e-21	7.78	59846 /			
PLOG / 100.0	1.4e-22	8.24	58252 /			
PLOG / 150.0	5.42e-25	8.95	55619 /			
PLOG / 200.0	8.15e-27	9.48	53480 /			
PLOG / 250.0	2.84e-28	9.9	51667 /			
PLOG / 300.0	1.82e-29	10.25	50093 /			
PLOG / 350.0	1.43e-30	10.57	48668 /			
PLOG / 400.0	2.33e-31	10.79	47443 /			
PLOG / 450.0	4.45e-32	11	46320 /			
PLOG / 500.0	1.09e-32	11.17	45300 /			
PLOG / 600.0	1.25e-33	11.44	43517 /			
PLOG / 700.0	2.21e-34	11.65	41973 /			

PLOG / 800.0	5.59e-35	11.82	40623 /			
PLOG / 900.0	2.36e-35	11.92	39467 /			
PLOG / 1000.0	1.44e-35	11.98	38457 /			
PLOG / 1500.0	1.43e-35	11.97	34796 /			
PLOG / 2000.0	1.58e-34	11.66	32560 /			
NH2QJ<=>NJH2Q				1	0	0 !! R690
PLOG / 0.001	4.55e-14	4.13	52989 /			
PLOG / 0.01	4.53e-13	4.13	52988 /			
PLOG / 0.1	4.35e-12	4.13	52975 /			
PLOG / 1.0	2.94e-11	4.18	52846 /			
PLOG / 10.0	8.66e-12	4.61	51670 /			
PLOG / 25.0	2.02e-13	5.18	50033 /			
PLOG / 50.0	1.21e-15	5.89	47867 /			
PLOG / 75.0	2.71e-17	6.39	46156 /			
PLOG / 100.0	1.25e-18	6.79	44717 /			
PLOG / 150.0	1.19e-20	7.4	42383 /			
PLOG / 200.0	4.16e-22	7.83	40532 /			
PLOG / 250.0	3.25e-23	8.15	38994 /			
PLOG / 300.0	4.46e-24	8.4	37685 /			
PLOG / 350.0	7.28e-25	8.63	36515 /			
PLOG / 400.0	2.36e-25	8.77	35534 /			
PLOG / 450.0	8.71e-26	8.9	34646 /			
PLOG / 500.0	3.99e-26	9	33853 /			
PLOG / 600.0	1.45e-26	9.12	32499 /			
PLOG / 700.0	7.33e-27	9.21	31354 /			
PLOG / 800.0	4.79e-27	9.26	30375 /			
PLOG / 900.0	4.7e-27	9.26	29561 /			
PLOG / 1000.0	6.18e-27	9.23	28872 /			
PLOG / 1500.0	1.01e-25	8.88	26517 /			
PLOG / 2000.0	6.02e-24	8.38	25245 /			
NJH2Q<=>NH+HO2				1	0	0 !! R691
PLOG / 0.001	4.91e-08	2.89	111648 /			
PLOG / 0.01	2.42e-25	8.45	104118 /			
PLOG / 0.1	5.49e-29	9.75	101152 /			
PLOG / 1.0	1.35e-33	11.34	97788 /			
PLOG / 10.0	2.63e-32	11.08	95770 /			
PLOG / 25.0	3.37e-45	15.1	89585 /			
PLOG / 50.0	8.66e-50	16.49	85552 /			
PLOG / 75.0	1.48e-51	16.98	82774 /			
PLOG / 100.0	1.91e-45	15.02	82867 /			
PLOG / 150.0	4.21e-60	19.47	74496 /			
PLOG / 200.0	5.12e-61	19.66	71208 /			
PLOG / 250.0	7.25e-62	19.86	68352 /			
PLOG / 300.0	4.15e-60	19.24	66566 /			
PLOG / 350.0	1.66e-68	21.82	61703 /			
PLOG / 400.0	4.15e-66	21.04	60650 /			
PLOG / 450.0	1.66e-59	19	61359 /			
PLOG / 500.0	1.59e-67	21.44	56964 /			
PLOG / 600.0	1.62e-69	22.02	53442 /			
PLOG / 700.0	2.78e-69	21.92	51094 /			
PLOG / 800.0	8.11e-70	22.07	48752 /			
PLOG / 900.0	4.57e-69	21.86	47218 /			
PLOG / 1000.0	1.41e-68	21.72	45748 /			
PLOG / 1500.0	1.1e-64	20.62	40921 /			
PLOG / 2000.0	7.3e-60	19.29	38654 /			
NJH2Q<=>HNO+OH				1	0	0 !! R692
PLOG / 0.001	7.42e+10	-1.43	3632 /			
PLOG / 0.01	6.25	2.01	-72 /			
PLOG / 0.1	24400	1.21	795 /			
PLOG / 1.0	1.09e+07	0.69	1338 /			
PLOG / 10.0	9.97e+15	-1.79	4018 /			
PLOG / 25.0	3.09e+07	0.99	1074 /			
PLOG / 50.0	2.75e+07	1.1	983 /			
PLOG / 75.0	4.95e+08	0.76	1368 /			
PLOG / 100.0	1.62e+17	-1.85	4212 /			
PLOG / 150.0	7800000	1.41	739 /			
PLOG / 200.0	5.19e+09	0.57	1677 /			
PLOG / 250.0	4.97e+09	0.61	1689 /			
PLOG / 300.0	9.31e+14	-1.01	3438 /			
PLOG / 350.0	8.05e+08	0.9	1426 /			
PLOG / 400.0	6.69e+10	0.32	2089 /			

PLOG / 450.0	2.8e+16	-1.39	4059 /			
PLOG / 500.0	6e+10	0.37	2118 /			
PLOG / 600.0	1.92e+10	0.55	1940 /			
PLOG / 700.0	2.82e+10	0.51	1996 /			
PLOG / 800.0	1.66e+10	0.59	1907 /			
PLOG / 900.0	2.16e+10	0.57	1969 /			
PLOG / 1000.0	1.99e+10	0.6	1965 /			
PLOG / 1500.0	1.84e+10	0.65	1959 /			
PLOG / 2000.0	2.41e+10	0.64	2022 /			
NH2+NO2<=>H2O+N2O		2.59e+18		-2.191	455.0203	!! R693
NH2+NO2<=>NO+NH2O		9.03e+11		0.032	-1512.098	!! R694
NH2+NO2<=>H2NNO2		1		0	0	!! R695
PLOG / 0.001	1.17e+14	-2.65	13993 /			
PLOG / 0.01	1.62e+15	-2.65	9467 /			
PLOG / 0.1	4.28e+20	-3.81	4683 /			
PLOG / 1.0	4.3e+27	-5.44	3490 /			
PLOG / 10.0	2.89e+29	-5.63	3572 /			
PLOG / 25.0	1.5e+29	-5.44	3505 /			
PLOG / 50.0	5.38e+28	-5.23	3407 /			
PLOG / 75.0	2.47e+28	-5.08	3339 /			
PLOG / 100.0	1.31e+28	-4.97	3285 /			
PLOG / 150.0	4.72e+27	-4.79	3199 /			
PLOG / 200.0	2.07e+27	-4.66	3130 /			
PLOG / 250.0	1.03e+27	-4.55	3069 /			
PLOG / 300.0	5.62e+26	-4.45	3016 /			
PLOG / 350.0	3.27e+26	-4.36	2967 /			
PLOG / 400.0	2e+26	-4.29	2923 /			
PLOG / 450.0	1.28e+26	-4.22	2881 /			
PLOG / 500.0	8.5e+25	-4.16	2843 /			
PLOG / 600.0	4.07e+25	-4.04	2773 /			
PLOG / 700.0	2.13e+25	-3.95	2710 /			
PLOG / 800.0	1.2e+25	-3.86	2654 /			
PLOG / 900.0	7.13e+24	-3.78	2602 /			
PLOG / 1000.0	4.44e+24	-3.71	2554 /			
PLOG / 1500.0	6.67e+23	-3.43	2358 /			
PLOG / 2000.0	1.65e+23	-3.23	2209 /			
NH2+NO2<=>HNNDOOH_Z		1		0	0	!! R696
PLOG / 0.001	3.54e+16	-3.71	14136 /			
PLOG / 0.01	1.7e+18	-3.86	9875 /			
PLOG / 0.1	2.27e+24	-5.23	5245 /			
PLOG / 1.0	1.39e+31	-6.8	3956 /			
PLOG / 10.0	1.49e+32	-6.75	3901 /			
PLOG / 25.0	1.39e+31	-6.32	3757 /			
PLOG / 50.0	7.7e+29	-5.86	3599 /			
PLOG / 75.0	9.14e+28	-5.54	3484 /			
PLOG / 100.0	1.65e+28	-5.29	3389 /			
PLOG / 150.0	1.12e+27	-4.9	3230 /			
PLOG / 200.0	1.37e+26	-4.6	3097 /			
PLOG / 250.0	2.46e+25	-4.36	2983 /			
PLOG / 300.0	5.68e+24	-4.15	2882 /			
PLOG / 350.0	1.59e+24	-3.98	2792 /			
PLOG / 400.0	5.14e+23	-3.82	2710 /			
PLOG / 450.0	1.87e+23	-3.68	2635 /			
PLOG / 500.0	7.46e+22	-3.56	2566 /			
PLOG / 600.0	1.49e+22	-3.34	2443 /			
PLOG / 700.0	3.72e+21	-3.15	2334 /			
PLOG / 800.0	1.11e+21	-2.98	2237 /			
PLOG / 900.0	3.75e+20	-2.84	2149 /			
PLOG / 1000.0	1.42e+20	-2.71	2070 /			
PLOG / 1500.0	3.22e+18	-2.2	1749 /			
PLOG / 2000.0	2.12e+17	-1.84	1511 /			
NH2+NO2<=>HNNO+OH		1		0	0	!! R697
DUPLICATE	!! with R699					
PLOG / 0.001	1.32e+20	-2.27	14568 /			
PLOG / 10.0	1.35e+20	-2.27	14573 /			
PLOG / 25.0	1.37e+20	-2.27	14579 /			
PLOG / 50.0	1.32e+20	-2.26	14596 /			
PLOG / 75.0	1.19e+20	-2.25	14616 /			
PLOG / 100.0	1e+20	-2.22	14634 /			
PLOG / 150.0	6.52e+19	-2.16	14659 /			
PLOG / 200.0	3.98e+19	-2.1	14670 /			

PLOG / 250.0	2.38e+19	-2.03	14671 /			
PLOG / 300.0	1.43e+19	-1.96	14665 /			
PLOG / 350.0	8.66e+18	-1.9	14654 /			
PLOG / 400.0	5.33e+18	-1.83	14640 /			
PLOG / 450.0	3.34e+18	-1.77	14624 /			
PLOG / 500.0	2.13e+18	-1.71	14606 /			
PLOG / 600.0	9.08e+17	-1.6	14569 /			
PLOG / 700.0	4.13e+17	-1.5	14529 /			
PLOG / 800.0	1.99e+17	-1.41	14489 /			
PLOG / 900.0	1.01e+17	-1.32	14450 /			
PLOG / 1000.0	5.32e+16	-1.24	14412 /			
PLOG / 1500.0	3.65e+15	-0.89	14236 /			
PLOG / 2000.0	4.51e+14	-0.63	14089 /			
NH2+NO2<=>HNND00H				1	0	0 !! R698
PLOG / 0.001	1.9e+17	-3.89	14245 /			
PLOG / 0.01	7.4e+18	-4.01	9968 /			
PLOG / 0.1	1e+25	-5.4	5365 /			
PLOG / 1.0	6.38e+31	-7.01	4114 /			
PLOG / 10.0	5.08e+32	-6.95	4140 /			
PLOG / 25.0	2.96e+31	-6.47	4194 /			
PLOG / 50.0	6.31e+29	-5.9	4183 /			
PLOG / 75.0	3.15e+28	-5.47	4124 /			
PLOG / 100.0	2.7e+27	-5.13	4051 /			
PLOG / 150.0	5.43e+25	-4.59	3900 /			
PLOG / 200.0	2.56e+24	-4.17	3757 /			
PLOG / 250.0	2.08e+23	-3.83	3626 /			
PLOG / 300.0	2.46e+22	-3.55	3506 /			
PLOG / 350.0	3.85e+21	-3.3	3397 /			
PLOG / 400.0	7.47e+20	-3.08	3297 /			
PLOG / 450.0	1.72e+20	-2.89	3204 /			
PLOG / 500.0	4.54e+19	-2.71	3118 /			
PLOG / 600.0	4.41e+18	-2.41	2962 /			
PLOG / 700.0	5.98e+17	-2.15	2825 /			
PLOG / 800.0	1.04e+17	-1.92	2702 /			
PLOG / 900.0	2.21e+16	-1.72	2590 /			
PLOG / 1000.0	5.5e+15	-1.54	2489 /			
PLOG / 1500.0	2.5e+13	-0.85	2080 /			
PLOG / 2000.0	5.37e+11	-0.36	1777 /			
NH2+NO2<=>HNNO+OH				1	0	0 !! R699
DUPLICATE !! with R697						
PLOG / 0.001	8.45e+23	-3.67	15267 /			
PLOG / 1.0	8.47e+23	-3.67	15266 /			
PLOG / 10.0	8.74e+23	-3.67	15265 /			
PLOG / 25.0	9.05e+23	-3.67	15271 /			
PLOG / 50.0	9.27e+23	-3.67	15333 /			
PLOG / 75.0	8.59e+23	-3.66	15421 /			
PLOG / 100.0	7.08e+23	-3.63	15505 /			
PLOG / 150.0	3.76e+23	-3.54	15632 /			
PLOG / 200.0	1.69e+23	-3.43	15712 /			
PLOG / 250.0	7.2e+22	-3.31	15759 /			
PLOG / 300.0	3.04e+22	-3.2	15785 /			
PLOG / 350.0	1.31e+22	-3.09	15797 /			
PLOG / 400.0	5.77e+21	-2.98	15798 /			
PLOG / 450.0	2.62e+21	-2.88	15793 /			
PLOG / 500.0	1.23e+21	-2.78	15783 /			
PLOG / 600.0	3e+20	-2.6	15753 /			
PLOG / 700.0	8.18e+19	-2.43	15715 /			
PLOG / 800.0	2.47e+19	-2.28	15673 /			
PLOG / 900.0	8.18e+18	-2.14	15630 /			
PLOG / 1000.0	2.92e+18	-2.01	15587 /			
PLOG / 1500.0	4.13e+16	-1.47	15378 /			
PLOG / 2000.0	1.58e+15	-1.06	15196 /			
H2NNO2<=>HNND00H_Z				1	0	0 !! R700
PLOG / 0.001	1.36e+31	-6.71	40260 /			
PLOG / 0.01	2.65e+31	-6.54	40179 /			
PLOG / 0.1	1.56e+31	-6.21	40392 /			
PLOG / 1.0	4.21e+29	-5.5	40422 /			
PLOG / 10.0	1.11e+27	-4.57	40016 /			
PLOG / 25.0	7.87e+25	-4.19	39729 /			
PLOG / 50.0	9e+24	-3.89	39470 /			
PLOG / 75.0	2.56e+24	-3.71	39315 /			

PLOG / 100.0	1e+24	-3.58	39198 /			
PLOG / 150.0	2.86e+23	-3.4	39040 /			
PLOG / 200.0	1.19e+23	-3.28	38930 /			
PLOG / 250.0	6.26e+22	-3.19	38848 /			
PLOG / 300.0	3.53e+22	-3.11	38774 /			
PLOG / 350.0	2.28e+22	-3.05	38717 /			
PLOG / 400.0	1.51e+22	-2.99	38663 /			
PLOG / 450.0	1.03e+22	-2.94	38614 /			
PLOG / 500.0	7.95e+21	-2.91	38580 /			
PLOG / 600.0	4.72e+21	-2.83	38512 /			
PLOG / 700.0	2.94e+21	-2.77	38449 /			
PLOG / 800.0	2.07e+21	-2.72	38403 /			
PLOG / 900.0	1.44e+21	-2.67	38354 /			
PLOG / 1000.0	1.1e+21	-2.63	38320 /			
PLOG / 1500.0	3.47e+20	-2.47	38165 /			
PLOG / 2000.0	1.58e+20	-2.37	38060 /			
HNND00H_Z<=>HNNO+OH		1		0	0	!! R701
PLOG / 0.001	5640000	-0.41	81292 /			
PLOG / 0.01	2.57e+07	-0.32	80827 /			
PLOG / 0.1	3160000	0.2	77500 /			
PLOG / 1.0	6270000	0.37	67474 /			
PLOG / 10.0	1.24e+18	-2.41	57913 /			
PLOG / 25.0	9.09e+23	-3.82	56798 /			
PLOG / 50.0	2.06e+27	-4.56	56665 /			
PLOG / 75.0	4.27e+28	-4.81	56710 /			
PLOG / 100.0	2.36e+29	-4.93	56791 /			
PLOG / 150.0	1.04e+30	-5	56893 /			
PLOG / 200.0	1.88e+30	-4.99	56965 /			
PLOG / 250.0	2.34e+30	-4.96	57010 /			
PLOG / 300.0	2.62e+30	-4.93	57057 /			
PLOG / 350.0	2.19e+30	-4.87	57060 /			
PLOG / 400.0	2.13e+30	-4.83	57091 /			
PLOG / 450.0	1.84e+30	-4.79	57103 /			
PLOG / 500.0	1.45e+30	-4.74	57100 /			
PLOG / 600.0	9.6e+29	-4.65	57097 /			
PLOG / 700.0	5.51e+29	-4.55	57062 /			
PLOG / 800.0	4.08e+29	-4.48	57064 /			
PLOG / 900.0	2.95e+29	-4.42	57056 /			
PLOG / 1000.0	1.8e+29	-4.34	57016 /			
PLOG / 1500.0	5.3e+28	-4.13	56951 /			
PLOG / 2000.0	3.21e+28	-4.04	56940 /			
HNND00H_Z<=>HNND00H		1		0	0	!! R702
PLOG / 0.001	2.28e+30	-6.59	34948 /			
PLOG / 0.01	2.22e+31	-6.59	34960 /			
PLOG / 0.1	1.65e+32	-6.56	35039 /			
PLOG / 1.0	2.7e+32	-6.36	35192 /			
PLOG / 10.0	2.53e+31	-5.84	35224 /			
PLOG / 25.0	2.43e+30	-5.47	35064 /			
PLOG / 50.0	2.19e+29	-5.11	34841 /			
PLOG / 75.0	3.98e+28	-4.86	34660 /			
PLOG / 100.0	1.17e+28	-4.68	34524 /			
PLOG / 150.0	1.84e+27	-4.42	34310 /			
PLOG / 200.0	5.14e+26	-4.24	34158 /			
PLOG / 250.0	1.91e+26	-4.1	34038 /			
PLOG / 300.0	9.13e+25	-3.99	33947 /			
PLOG / 350.0	4.75e+25	-3.9	33866 /			
PLOG / 400.0	2.91e+25	-3.83	33805 /			
PLOG / 450.0	1.89e+25	-3.77	33752 /			
PLOG / 500.0	1.26e+25	-3.72	33699 /			
PLOG / 600.0	6.81e+24	-3.63	33621 /			
PLOG / 700.0	3.97e+24	-3.56	33551 /			
PLOG / 800.0	2.67e+24	-3.5	33500 /			
PLOG / 900.0	1.89e+24	-3.45	33455 /			
PLOG / 1000.0	1.35e+24	-3.41	33410 /			
PLOG / 1500.0	5.07e+23	-3.27	33282 /			
PLOG / 2000.0	3.23e+23	-3.21	33223 /			
HNND00H<=>N2O+H2O		1		0	0	!! R703
PLOG / 0.001	3.25e+29	-6.46	34529 /			
PLOG / 0.01	3.24e+30	-6.46	34553 /			
PLOG / 0.1	2.58e+31	-6.43	34688 /			
PLOG / 1.0	3.41e+31	-6.18	34933 /			

PLOG /	10.0	1.24e+30	-5.48	35028 /			
PLOG /	25.0	5.9e+28	-4.99	34853 /			
PLOG /	50.0	2.55e+27	-4.52	34584 /			
PLOG /	75.0	3.04e+26	-4.21	34374 /			
PLOG /	100.0	6e+25	-3.97	34203 /			
PLOG /	150.0	5.42e+24	-3.63	33936 /			
PLOG /	200.0	1e+24	-3.39	33742 /			
PLOG /	250.0	2.81e+23	-3.21	33594 /			
PLOG /	300.0	9.48e+22	-3.05	33463 /			
PLOG /	350.0	3.82e+22	-2.92	33353 /			
PLOG /	400.0	1.9e+22	-2.83	33269 /			
PLOG /	450.0	9.87e+21	-2.73	33188 /			
PLOG /	500.0	5.85e+21	-2.66	33124 /			
PLOG /	600.0	2.28e+21	-2.53	33006 /			
PLOG /	700.0	1e+21	-2.41	32901 /			
PLOG /	800.0	5.26e+20	-2.32	32819 /			
PLOG /	900.0	2.83e+20	-2.24	32738 /			
PLOG /	1000.0	1.77e+20	-2.17	32678 /			
PLOG /	1500.0	2.67e+19	-1.91	32429 /			
PLOG /	2000.0	8.86e+18	-1.76	32283 /			
HNND00H<=>HNNO+OH				1	0	0	!! R704
PLOG /	0.001	4.05e+08	-1.02	79357 /			
PLOG /	0.01	8.17e+08	-0.83	78645 /			
PLOG /	0.1	1340000	0.21	73946 /			
PLOG /	1.0	12500	0.99	62065 /			
PLOG /	10.0	6.19e+17	-2.54	54166 /			
PLOG /	25.0	2.46e+25	-4.44	54363 /			
PLOG /	50.0	4.98e+29	-5.44	55039 /			
PLOG /	75.0	2.82e+31	-5.8	55456 /			
PLOG /	100.0	2.16e+32	-5.96	55724 /			
PLOG /	150.0	1.43e+33	-6.06	56058 /			
PLOG /	200.0	3.25e+33	-6.07	56268 /			
PLOG /	250.0	4.79e+33	-6.05	56420 /			
PLOG /	300.0	4.92e+33	-6	56513 /			
PLOG /	350.0	4.07e+33	-5.93	56563 /			
PLOG /	400.0	4.11e+33	-5.9	56641 /			
PLOG /	450.0	3.3e+33	-5.84	56673 /			
PLOG /	500.0	2.82e+33	-5.79	56710 /			
PLOG /	600.0	1.69e+33	-5.69	56733 /			
PLOG /	700.0	9.36e+32	-5.57	56729 /			
PLOG /	800.0	5.67e+32	-5.48	56723 /			
PLOG /	900.0	2.95e+32	-5.37	56686 /			
PLOG /	1000.0	2.1e+32	-5.31	56687 /			
PLOG /	1500.0	2.63e+31	-4.97	56558 /			
PLOG /	2000.0	8.38e+30	-4.79	56498 /			
NH2+NO2<=>H2NONO				1	0	0	!! R705
PLOG /	0.001	5.1e-33	9.57	1261 /			
PLOG /	0.01	6.05e-32	9.54	1289 /			
PLOG /	0.1	3.16e-30	9.33	1564 /			
PLOG /	1.0	1.44e-23	7.69	3713 /			
PLOG /	10.0	0.327	1.45	10551 /			
PLOG /	25.0	49.5	0.91	7964 /			
PLOG /	50.0	1160	0.6	5266 /			
PLOG /	75.0	24600	0.28	3821 /			
PLOG /	100.0	396000	-0.03	2921 /			
PLOG /	150.0	4.46e+07	-0.55	1884 /			
PLOG /	200.0	2.04e+09	-0.97	1334 /			
PLOG /	250.0	4.75e+10	-1.31	1016 /			
PLOG /	300.0	6.69e+11	-1.6	824 /			
PLOG /	350.0	6.4e+12	-1.85	708 /			
PLOG /	400.0	4.51e+13	-2.06	638 /			
PLOG /	450.0	2.49e+14	-2.24	599 /			
PLOG /	500.0	1.13e+15	-2.4	580 /			
PLOG /	600.0	1.45e+16	-2.67	582 /			
PLOG /	700.0	1.16e+17	-2.89	612 /			
PLOG /	800.0	6.57e+17	-3.06	658 /			
PLOG /	900.0	2.85e+18	-3.21	710 /			
PLOG /	1000.0	1e+19	-3.34	766 /			
PLOG /	1500.0	7.4e+20	-3.76	1032 /			
PLOG /	2000.0	8.74e+21	-3.98	1248 /			
H2NONO<=>NH2O+NO				1	0	0	!! R706

PLOG / 0.001	2.26e+15	-2.6	12067	/			
PLOG / 0.01	2.27e+16	-2.6	12069	/			
PLOG / 0.1	2.29e+17	-2.61	12084	/			
PLOG / 1.0	2.25e+18	-2.6	12180	/			
PLOG / 10.0	1.84e+19	-2.59	12526	/			
PLOG / 25.0	3.12e+19	-2.54	12738	/			
PLOG / 50.0	2.76e+16	-1.5	11868	/			
PLOG / 75.0	8.99e+16	-1.6	12142	/			
PLOG / 100.0	1.67e+17	-1.65	12310	/			
PLOG / 150.0	4.56e+17	-1.74	12576	/			
PLOG / 200.0	6.78e+17	-1.76	12723	/			
PLOG / 250.0	6.62e+17	-1.73	12793	/			
PLOG / 300.0	8.35e+17	-1.74	12887	/			
PLOG / 350.0	9.54e+17	-1.74	12959	/			
PLOG / 400.0	1.72e+18	-1.8	13090	/			
PLOG / 450.0	2.13e+18	-1.82	13162	/			
PLOG / 500.0	2.49e+18	-1.83	13221	/			
PLOG / 600.0	2.96e+18	-1.83	13310	/			
PLOG / 700.0	3.2e+18	-1.83	13375	/			
PLOG / 800.0	3.31e+18	-1.82	13426	/			
PLOG / 900.0	3.61e+18	-1.82	13478	/			
PLOG / 1000.0	3.73e+18	-1.81	13519	/			
PLOG / 1500.0	4.13e+18	-1.79	13662	/			
PLOG / 2000.0	3.96e+18	-1.76	13744	/			
H2NONO<=>H2NNO2		1	0	0	!!	R707	
PLOG / 0.001	6.62e-20	4.95	120844	/			
PLOG / 0.01	3.76e-26	7.06	116993	/			
PLOG / 0.1	1.69e-32	9.19	112934	/			
PLOG / 1.0	7.17e-39	11.31	107712	/			
PLOG / 10.0	4.41e-42	12.47	99915	/			
PLOG / 25.0	7.55e-43	12.77	94754	/			
PLOG / 50.0	6.09e-47	14.1	88299	/			
PLOG / 75.0	1.08e-46	14.06	84755	/			
PLOG / 100.0	1.84e-46	14.02	81972	/			
PLOG / 150.0	9.51e-46	13.85	77834	/			
PLOG / 200.0	5.37e-45	13.67	74748	/			
PLOG / 250.0	2.76e-44	13.5	72310	/			
PLOG / 300.0	2.41e-43	13.26	70387	/			
PLOG / 350.0	4.57e-42	12.91	68910	/			
PLOG / 400.0	5.28e-41	12.63	67614	/			
PLOG / 450.0	5.09e-40	12.37	66492	/			
PLOG / 500.0	4.83e-39	12.11	65530	/			
PLOG / 600.0	3.11e-37	11.63	63935	/			
PLOG / 700.0	1.7e-35	11.17	62705	/			
PLOG / 800.0	6.82e-34	10.75	61716	/			
PLOG / 900.0	2.96e-32	10.31	60957	/			
PLOG / 1000.0	8.6e-31	9.92	60315	/			
PLOG / 1500.0	1.58e-24	8.26	58403	/			
PLOG / 2000.0	9.61e-20	7	57565	/			
H2NNO2+HONO<=>NH3+N2O4	6.6687	3.27419	38262.77	!!	R708		
H2NNO2+HNO3<=>NH3+N2O5	1.5452	3.3116	34265.79	!!	R709		
H2NNO2+HONO<=>H2O+NO2+HNNO	0.0979	3.83639	17649.89	!!	R710		
H2NNO2+HNO3<=>H2O+HNNO+NO3	0.015431	3.84372	45279.73	!!	R711		
H2NNO2+OH<=>HNJNO2+H2O	2040000	2.04	565.9966	!!	R712		
H2NNO2+H<=>HNJNO2+H2	542000	2.4	9916.94	!!	R713		
H2NNO2+O<=>HNJNO2+OH	9400000	1.94	6459.961	!!	R714		
H2NNO2+NO<=>HNJNO2+HNO	1.04e+07	1.73	56639.66	!!	R715		
H2NNO2+NO2<=>HNJNO2+HONO	7.32	3.3	22259.87	!!	R716		
H2NNO2+NH<=>HNJNO2+NH2	3.16e+14	0	26829.84	!!	R717		
H2NNO2+NH2<=>HNJNO2+NH3	4.82	3.6	769.9954	!!	R718		
NH+NO2<=>HNJNO2	1e+13	0	0	!!	R719		
HNJNO2+NO2<=>HNOJNO2+NO	8.45e+08	1.21	-674.9959	!!	R720		
HNOJNO2<=>HNO+NO2	3.7561e+13	0.31051	12342.93	!!	R721		
H2NNO2+H2O<=>HNNDOOH_Z+H2O	15.868	2.86125	10624.94	!!	R722		
HNNDOOH_Z+H2O<=>HNNDOOH+H2O	1.5734	2.93013	1709.09	!!	R723		
HNNDOOH+H2O<=>N2O+2H2O	1.0214	3.23914	9501.343	!!	R724		
H2NNO2+NH3<=>HNNDOOH_Z+NH3	551.11	2.46549	6344.562	!!	R725		
HNNDOOH_Z+NH3<=>HNNDOOH+NH3	31.034	2.64427	-3333.98	!!	R726		
HNNDOOH+NH3<=>N2O+H2O+NH3	2.6639	3.27134	5351.868	!!	R727		
H2NNO2+HNO3<=>HNNDOOH_Z+HNO3	0.1661	3.70954	19775.88	!!	R728		
HNNDOOH_Z+HNO3<=>HNNDOOH+HNO3	0.75015	3.08437	569.6966	!!	R729		

HNND ₂ OOH+HNO ₃ <=>N ₂ O+H ₂ O+HNO ₃	1.2819	2.93528	3121.481	!!	R730
2H ₂ NNO ₂ <=>HNND ₂ OOH_Z+H ₂ NNO ₂	0.16555	3.4305	15364.91	!!	R731
HNND ₂ OOH_Z+H ₂ NNO ₂ <=>HNND ₂ OOH+H ₂ NNO ₂	0.014435	3.50592	7153.357	!!	R732
HNND ₂ OOH+H ₂ NNO ₂ <=>N ₂ O+H ₂ O+H ₂ NNO ₂	0.0009309	4.16666	14685.91	!!	R733
H ₂ NNO ₂ +HONO<=>HNND ₂ OOH_Z+HONO	0.072872	3.57002	14150.91	!!	R734
HNND ₂ OOH_Z+HONO<=>HNND ₂ OOH+HONO	0.059065	3.33854	7201.957	!!	R735
HNND ₂ OOH+HONO<=>N ₂ O+H ₂ O+HONO	0.0095661	3.85096	13827.92	!!	R736
NH ₂ OH+NO ₂ <=>NH ₂ O+HNO ₂	46.308	3.2812	4368.974	!!	R737
NH ₂ OH+NO ₂ <=>NH ₂ O+HONO	0.0043879	4.3887	555.9966	!!	R738
NH ₂ OH(+M)<=>NH ₂ OH(+M)	1.4e+20	-1.31	64079.61	!!	R739
LOW / 5.4e+37	-5.96	66782.6	/		
TROE / 0.31	1e-30	1e+30	1e+30 /		
NH ₂ OH+H<=>HNOH+H ₂	4.8e+08	1.5	6245.962	!!	R740
NH ₂ OH+H<=>NH ₂ O+H ₂	2.4e+08	1.5	5063.969	!!	R741
NH ₂ OH+O<=>HNOH+OH	3.3e+08	1.5	3862.977	!!	R742
NH ₂ OH+O<=>NH ₂ O+OH	1.7e+08	1.5	3008.982	!!	R743
NH ₂ O+HO ₂ <=>O ₂ +NH ₂ OH	29000	2.69	-1598.99	!!	R744
HNOH+HO ₂ <=>NH ₂ OH+O ₂	29000	2.69	-1598.99	!!	R745
NH ₂ OH+HO ₂ <=>HNOH+H ₂ O ₂	29000	2.69	9551.942	!!	R746
NH ₂ OH+HO ₂ <=>NH ₂ O+H ₂ O ₂	14000	2.69	6413.961	!!	R747
N ₂ H ₄ +O<=>NH ₂ OH+NH	2.9e+11	0	-1269.992	!!	R748
NH ₂ O+M<=>HNO+H+M	2.8e+24	-2.8	64914.61	!!	R749
H ₂ O / 10 /					
NH ₂ O+M<=>HNOH+M	1.1e+29	-4	43999.73	!!	R750
H ₂ O / 10 /					
NH ₂ O+NO<=>2HNO	3024.5	2.13814	16081.9	!!	R751
NH ₂ O+HO ₂ <=>HNO+H ₂ O ₂	29000	2.69	-1598.99	!!	R752
NH ₂ O+NO ₂ <=>HNO+HONO	56033	2.54027	0	!!	R753
NH ₂ O+NH<=>NH ₂ +HNO	38775	2.38685	8598.448	!!	R754
DUPLICATE !! with R755					
NH ₂ O+NH<=>NH ₂ +HNO	4.14e+12	-0.65	227.9986	!!	R755
DUPLICATE !! with R754					
NH ₂ O+NH<=>NH ₃ +NO	5830	1.17	-148.9991	!!	R756
NH ₂ O+NH<=>NH ₂ +HNO	2.35e+14	-0.48	332.998	!!	R757
DUPLICATE !! with R754					
HNO+HONO<=>H ₂ O+2NO	0.17389	3.56423	19675.88	!!	R758
HNO ₂ +HONO<=>H ₂ O+N ₂ O ₃	0.013846	4.02863	11810.93	!!	R759
N ₂ O ₄ +H ₂ O<=>HONO+HNO ₃	0.0458122	4.53	29826.72	!!	R760
HNO ₃ +HONO<=>H ₂ O+ONONO ₂	2000000	2.092	6463.661	!!	R761
2NO ₂ <=>ONONO ₂	14.384	2.92679	6332.862	!!	R762
HNO ₃ +HNO ₂ <=>H ₂ O+2NO ₂	0.0016442	4.23642	31164.81	!!	R763
2HNO ₃ <=>H ₂ O+NO ₂ +NO ₃	0.0060433	3.76508	31309.81	!!	R764
N ₂ O ₅ +H ₂ O<=>2HNO ₃	0.28399	3.35585	15696.91	!!	R765
HNO ₃ +O<=>HONO+O ₂	2e+13	0	7999.952	!!	R766
HNO ₃ +OH<=>HONO+HO ₂	2e+13	0	7999.952	!!	R767
OH+HNO ₃ <=>H ₂ O ₂ +NO ₂	4.82e+08	0	0	!!	R768
HO ₂ +NO<=>HOONO	2.62e+13	-0.24	-199.9988	!!	R769
OH+NO ₂ <=>HOONO	2.47e+13	0	0	!!	R770
HOONO+NO<=>HONO+NO ₂	5e+12	0	1999.988	!!	R771
HOONO<=>HNO ₃	5e+10	0	17999.89	!!	R772
HOONO+OH<=>H ₂ O+NO ₃	9.03e+10	0	0	!!	R773
HNO ₂ (+M)<=>HONO(+M)	2.5e+14	0	32299.8	!!	R774
LOW / 3.1e+18	0	31499.81	/		
TROE / 1.149	1e-30	3125	1e+30 /		
NO ₂ +HO ₂ <=>HNO ₂ +O ₂	19	3.26	4982.97	!!	R775
NO ₃ <=>NO+O ₂	2500000	0	12121.93	!!	R776
HNNO+NO ₂ <=>NNH+NO ₃	1e+13	0	12269.93	!!	R777
N ₂ O ₃ (+M)<=>NO+NO ₂ (+M)	4.8e+14	0.4	9699.941	!!	R778
LOW / 3.86e+38	-8.7	9699.941	/		
N ₂ O ₅ (+M)<=>NO ₃ +NO ₂ (+M)	5.49e+14	0.1	22059.87	!!	R779
LOW / 2.75e+29	-3.5	21859.87	/		
HNOH+M<=>H+HNO+M	2e+24	-2.84	58900.64	!!	R780
HNOH+HO ₂ <=>HNO+H ₂ O ₂	29000	2.69	-1598.99	!!	R781
HNOH+NH ₂ <=>HNO+NH ₃	1800000	1.94	-1151.993	!!	R782
HNNO+NO<=>N ₂ O+HNO	1e+12	0	0	!!	R783
NNH+OH<=>HONNH	5e+13	0	0	!!	R784
HONNH<=>H ₂ O+N ₂	2.552e+11	0.70142	9923.64	!!	R785
NH ₂ NO<=>N ₂ +H ₂ O	3.1e+34	-7.11	36261.78	!!	R786
NH ₂ NO+H<=>HNNO+H ₂	4.8e+08	1.5	7406.955	!!	R787
N ₂ H ₃ +O<=>NH ₂ NO+H	3e+13	0	0	!!	R788
H ₂ NN+OH<=>NH ₂ NO+H	2e+12	0	0	!!	R789

NH2NO+O<=>HNNO+OH	3.3e+08	1.5	4696.972	!!	R790
NH2NO+OH<=>HNNO+H2O	2400000	2	-69.99958	!!	R791
H2NN+HO2<=>NH2NO+OH	660000	1.94	7049.957	!!	R792
NH2NO+HO2<=>HNNO+H2O2	29000	2.69	12619.92	!!	R793
NH2NO+NH2<=>HNNO+NH3	1800000	1.94	4537.973	!!	R794
NH2NO+NO2<=>HNNO+HNO2	46.308	3.2812	14368.91	!!	R795
NH2NO+NO2<=>HNNO+HONO	0.0043879	4.3887	10555.94	!!	R796
NH2NO+O2<=>HNNO+HO2	3.01e+13	0	39389.76	!!	R797
N2O+NH2<=>N2+NH2O	95528	2.25418	32569.8	!!	R798
NH2+NO<=>H2+N2O	1e+13	0	33699.8	!!	R799
NNH+O2<=>N2O+OH	2.9e+11	-0.34	148.9991	!!	R800
N2H2+NO<=>N2O+NH2	4e+12	0	11914.93	!!	R801
HNNO+NO2<=>N2O+HONO	1e+12	0	0	!!	R802
N2O+O2<=>N2+O3	6.4586e+08	2.46972	66568.6	!!	R803
N2O+NH3<=>N2+NH2OH	2470800	2.52827	49181.7	!!	R804
N2O+N2H4<=>N2+H2O+N2H2	78630	2.69939	46466.72	!!	R805
N2O+NO2<=>N2+NO3	1030.9	2.81686	48601.71	!!	R806
N2O+NH2NO<=>N2+NH2O+NO	3171200	1.94399	57985.65	!!	R807
N2O+H2NNO2<=>N2+HNO+HONO	172490	2.76199	53321.68	!!	R808
HO2+H2O2<=>OH+H2O+O2	6.03e+10	0	0	!!	R809
O+OH+M<=>HO2+M	5e+16	0	0	!!	R810
H+HO2+M<=>H2O2+M	3.61e+17	-0.72	0	!!	R811
H2O+O<=>H2+O2	1.07e+10	0.97	68699.59	!!	R812
NNH+O2<=>N2+H+O2	5e+13	0	0	!!	R813
NNH+HO2<=>N2+H2O2	14000	2.69	-1598.99	!!	R814
NNH+N<=>NH+N2	3e+13	0	1999.988	!!	R815
O2+O (+M) <=> O3 (+M)	1.69e+12	0	0	!!	R816
LOW / 2e+19	2	0	/		
O3+O<=>2O2	5.66e+12	0	4199.975	!!	R817
O3+H<=>OH+O2	8.43e+13	0	929.9944	!!	R818
O3+H<=>HO2+O	4.52e+11	0	0	!!	R819
O3+OH<=>O2+HO2	1.54e+12	0	2099.987	!!	R820
O3+NO<=>O2+NO2	1.25e+12	0	2.799983	!!	R821
O3+NO2<=>O2+NO3	9.74e+10	0	4999.97	!!	R822
NO2 (+M) <=> NO+O (+M)	7.6e+18	-1.3	73289.56	!!	R823
LOW / 2.47e+28	-3.37	74799.55	/		
TROE / 0.9555018	1.3	8406.763	72766.09 /		
N2O / 1.5 / H2O / 4.4 / N2 / 1 /		CO2 / 2.3 /			
N2O (+M) <=> N2+O (+M)	1.26e+12	0	62619.62	!!	R824
LOW / 5.97e+14	0	56639.66	/		
N2O / 5 / H2O / 9 / N2 / 1 /		CO2 / 3.2 / O2 / 0.82 /			
H+NO (+M) <=> HNO (+M)	1.52e+15	-0.41	0	!!	R825
LOW / 4e+20	-1.75	0	/		
N2O / 5 / H2O / 5 / N2 / 1 /		CO2 / 1.3 /			
NO+OH (+M) <=> HONO (+M)	1.99e+12	-0.1	-720.9956	!!	R826
LOW / 5.08e+23	-2.51	-67.59959	/		
TROE / 0.62	1.3	5.826064e+11	40701.21 /		
N2O / 5 / H2O / 8.3 / N2 / 1 /		CO2 / 1.5 /			
HCN (+M) <=> H+CN (+M)	8.3e+17	-0.9	123799.3	!!	R827
LOW / 3.57e+26	-2.6	124899.2	/		
TROE / 0.9555018	1.3	8406.763	72766.09 /		
N2O / 5 / H2O / 5 / N2 / 1 /		CO2 / 1.6 /			
2CN (+M) <=> C2N2 (+M)	5.66e+12	0	0	!!	R828
LOW / 3.43e+25	-2.61	0	/		
TROE / 0.5	0.001	1.33e+10	/		
N2O / 5 / H2O / 5 / N2 / 1 /		CO2 / 1.6 /			
HNCO (+M) <=> NH+CO (+M)	6e+13	0	99799.4	!!	R829
LOW / 2.17e+28	-3.1	101899.4	/		
TROE / 0.927009	1.3	3416.917	50813.93 /		
N2O / 5 / H2O / 5 / N2 / 1 /		CO2 / 1.6 /			
HCN+H (+M) <=> H2CN (+M)	3.31e+13	0	4843.971	!!	R830
LOW / 1.6e+24	-2.73	7659.954	/		
TROE / 0.9555018	1.3	8406.763	72766.09 /		
N2O / 5 / H2O / 5 / N2 / 1 /		CO2 / 2 /			
CN+NO (+M) <=> NCNO (+M)	3.98e+13	0	0	!!	R831
LOW / 1.56e+36	-6.2	4877.971	/		
TROE / 0.65	1.3	7.044767e+11	45411.24 /		
N2O / 5 / H2O / 5 / N2 / 1 /		CO2 / 2 /			
CN+M<=>C+N+M	2.5e+14	0	141099.1	!!	R832
N2 / 1.5 / CO2 / 2.4 /					
NO+M<=>N+O+M	1.4e+15	0	148429.1	!!	R833

N2 / 1 /	H2 / 2.2 /	H2O / 6.7 /	CO2 / 3 /	N2O / 2.2 /	
N2+M<=>2N+M		3.71e+21		-1.6 224998.6	!! R834
NO2+N<=>N2O+O		3.49e+12		0 -436.9974	!! R835
2NO2<=>NO+NO3		9.64e+09		0.73 20919.87	!! R836
2NO2<=>2NO+O2		4.51e+12		0 27599.83	!! R837
NO2+NO3<=>NO+NO2+O2		2.71e+10		0 2499.985	!! R838
HNO+NO<=>N2O+OH		1.7e+13		0 29589.82	!! R839
HNO+O2<=>HO2+NO		1e+13		0 24999.85	!! R840
HNO+NO2<=>HONO+NO		44200		2.64 8791.947	!! R841
HONO+O<=>OH+NO2		1.2e+13		0 5960.964	!! R842
HONO+OH<=>H2O+NO2		1.27e+10		1 134.9992	!! R843
HONO+NH2<=>NO2+NH3		920000		1.94 1919.988	!! R844
HNO+O<=>OH+NO		3.61e+13		0 0	!! R845
NH+O<=>NO+H		5.5e+13		0 0	!! R846
NH+O<=>N+OH		3.72e+13		0 0	!! R847
2NH<=>N2+2H		5.1e+13		0 0	!! R848
NH+M<=>N+H+M		2.65e+14		0 75509.54	!! R849
CH+O2<=>HCO+O		3.3e+13		0 0	!! R850
CH+O<=>CO+H		5.7e+13		0 0	!! R851
CH+OH<=>HCO+H		3e+13		0 0	!! R852
CH+CO2<=>HCO+CO		3.4e+12		0 689.9958	!! R853
CH+H<=>C+H2		1.5e+14		0 0	!! R854
C+O2<=>CO+O		2e+13		0 0	!! R855
C+OH<=>CO+H		5e+13		0 0	!! R856
O+HCCO<=>H+2CO		1e+14		0 0	!! R857
HCCO+O2<=>2CO+OH		1.6e+12		0 853.9948	!! R858
H+HO2<=>O+H2O		3.01e+13		0 1720.99	!! R859
2H+H2<=>2H2		9.2e+16		-0.6 0	!! R860
2H+H2O<=>H2+H2O		6e+19		-1.25 0	!! R861
2H+CO2<=>H2+CO2		5.49e+20		-2 0	!! R862
CH+N2<=>NCN+H		2.22e+07		1.48 23366.86	!! R863
H+NCN<=>HCN+N		1.89e+14		0 8424.949	!! R864
NCN+N<=>CN+N2		2e+13		0 0	!! R865
CN+N<=>C+N2		1.04e+15		-0.5 0	!! R866
C+NO<=>CN+O		6.6e+13		0 0	!! R867
HCCO+NO<=>HCNO+CO		2e+13		0 0	!! R868
CH+N<=>CN+H		1.3e+13		0 0	!! R869
HCCO+N<=>HCN+CO		5e+13		0 0	!! R870
HCN+OH<=>CN+H2O		3900000		1.83 10289.94	!! R871
OH+HCN<=>HNCO+H		0.00198		4 999.994	!! R872
OH+HCN<=>NH2+CO		0.000783		4 3999.976	!! R873
HCN+O<=>NCO+H		13800		2.64 4979.97	!! R874
HCN+O<=>NH+CO		3450		2.64 4979.97	!! R875
HCN+O<=>CN+OH		2.7e+09		1.58 26599.84	!! R876
CN+H2<=>HCN+H		3.61e+08		1.55 2999.982	!! R877
CN+O<=>CO+N		2.05e+13		0 416.9975	!! R878
CN+O2<=>NCO+O		2.6e+14		-0.5 0	!! R879
CN+OH<=>NCO+H		4e+13		0 0	!! R880
CN+HCN<=>C2N2+H		1.51e+07		1.71 1529.991	!! R881
CN+NO2<=>NCO+NO		6.16e+15		-0.752 343.9979	!! R882
CN+CO2<=>NCO+CO		3670000		2.16 26899.84	!! R883
CN+N2O<=>NCN+NO		6e+13		0 15359.91	!! R884
C2N2+O<=>NCO+CN		4.57e+12		0 8879.946	!! R885
NO+HO2<=>NO2+OH		2.11e+12		0 -478.9971	!! R886
NO2+H<=>NO+OH		1.3e+14		0 360.9978	!! R887
NO2+O<=>NO+O2		3.9e+12		0 -237.9986	!! R888
NCO+H<=>NH+CO		5.4e+13		0 0	!! R889
NCO+O<=>NO+CO		4.52e+13		0 0	!! R890
NCO+O2<=>NO+CO2		2e+12		0 19999.88	!! R891
NCO+N<=>N2+CO		2e+13		0 0	!! R892
NCO+OH<=>NO+CO+H		2e+13		0 7499.955	!! R893
NCO+M<=>N+CO+M		1.14e+23		-1.95 59929.64	!! R894
N2O / 5 /	H2O / 5 /	N2 / 1 /	CO2 / 1.5 /		
NCO+NO<=>N2O+CO		3.98e+19		-2.19 1742.989	!! R895
NCO+NO<=>CO2+N2		1.46e+21		-2.74 1823.989	!! R896
NCO+H2<=>HNCO+H		2070000		2 6019.964	!! R897
NCO+NO2<=>CO2+N2O		1.95e+13		-0.258 -619.9963	!! R898
NCO+NO2<=>CO+2NO		1.77e+12		-0.258 -619.9963	!! R899
NH+O2<=>HNO+O		461000		2 6499.961	!! R900
NH+O2<=>NO+OH		1280000		1.5 99.9994	!! R901
NH+NO<=>N2O+H		3.5e+14		-0.46 16.0999	!! R902

NH+NO<=>N2+OH	2.16e+13	-0.23	0	!! R903
N2O+OH<=>N2+HO2	0.0129	4.72	36560.78	!! R904
N2O+H<=>N2+OH	1.3e+11	0.938	15209.91	!! R905
NNH+O<=>N2O+H	1.4e+14	-0.4	476.9971	!! R906
NNH+O<=>NO+NH	3.3e+14	-0.23	-1012.994	!! R907
N2O+O<=>N2+O2	3.692e+12	0	15939.9	!! R908
N2O+O<=>2NO	9.155e+13	0	27679.83	!! R909
NH+N<=>N2+H	3e+13	0	0	!! R910
N+H2<=>NH+H	2.33e+14	0	30829.81	!! R911
NH2+O<=>HNO+H	4.6e+13	0	0	!! R912
NH2+O<=>NH+OH	7e+12	0	0	!! R913
DUPLICATE	!! with R914			
NH2+O<=>NH+OH	3.33e+08	1.5	5076.969	!! R914
DUPLICATE	!! with R913			
NH2+H<=>NH+H2	4e+13	0	3649.978	!! R915
NH2+N<=>N2+2H	7.2e+13	0	0	!! R916
NH2+O2<=>HNO+OH	4.5e+12	0	24999.85	!! R917
2NH2<=>N2H3+H	1.79e+13	-0.35	11319.93	!! R918
2NH2<=>N2H4	1	0	0	!! R919
PLOG / 0.001 1.5e+28	-5.76	3333	/	
PLOG / 0.01 1.54e+29	-5.77	3438	/	
PLOG / 0.1 8.08e+29	-5.7	3743	/	
PLOG / 1.0 3.04e+29	-5.32	4075	/	
PLOG / 10.0 6.44e+26	-4.3	3791	/	
PLOG / 25.0 1.23e+25	-3.72	3414	/	
PLOG / 50.0 4.33e+23	-3.23	3050	/	
PLOG / 75.0 5.71e+22	-2.95	2816	/	
PLOG / 100.0 1.34e+22	-2.74	2644	/	
PLOG / 150.0 1.77e+21	-2.46	2396	/	
PLOG / 200.0 4.28e+20	-2.26	2219	/	
PLOG / 250.0 1.45e+20	-2.11	2083	/	
PLOG / 300.0 6.11e+19	-1.99	1972	/	
PLOG / 350.0 2.97e+19	-1.89	1879	/	
PLOG / 400.0 1.61e+19	-1.8	1800	/	
PLOG / 450.0 9.47e+18	-1.73	1730	/	
PLOG / 500.0 5.93e+18	-1.66	1669	/	
PLOG / 600.0 2.69e+18	-1.55	1565	/	
PLOG / 700.0 1.4e+18	-1.46	1478	/	
PLOG / 800.0 8.08e+17	-1.39	1405	/	
PLOG / 900.0 5.03e+17	-1.32	1342	/	
PLOG / 1000.0 3.33e+17	-1.27	1286	/	
PLOG / 1500.0 7.37e+16	-1.06	1082	/	
PLOG / 2000.0 2.76e+16	-0.93	949	/	
NH+NO2<=>N2O+OH	4e+12	0	0	!! R920
NH+NO2<=>NO+HNO	5.7e+12	0	0	!! R921
N2H4+H<=>N2H3+H2	5.5e+12	0	2267.986	!! R922
N2H4+O<=>N2H3+OH	6.7e+08	1.5	2850.983	!! R923
N2H4+OH<=>N2H3+H2O	4800000	2	-645.9961	!! R924
N2H3+H<=>N2H2+H2	2.4e+08	1.5	-9.99994	!! R925
N2H3+O<=>NH2+HNO	3e+13	0	0	!! R926
N2H3+O<=>N2H2+OH	1.7e+08	1.5	-645.9961	!! R927
N2H3+OH<=>N2H2+H2O	1200000	2	-1191.993	!! R928
N2H3+NH2<=>N2H2+NH3	920000	1.94	-1151.993	!! R929
N2H3+HO2<=>N2H2+H2O2	29000	2.69	-1599.99	!! R930
N2H3+HO2<=>N2H4+O2	920000	1.94	2125.987	!! R931
N2H2+M<=>NNH+H+M	5e+16	0	49999.7	!! R932
H2O / 15 / O2 / 2 / N2 / 2 / H2 / 2 /				
N2H2+H<=>NNH+H2	5e+13	0	999.994	!! R933
N2H2+O<=>NH2+NO	1e+13	0	0	!! R934
N2H2+O<=>NNH+OH	2e+13	0	999.994	!! R935
N2H2+OH<=>NNH+H2O	1e+13	0	999.994	!! R936
N2H2+NH<=>NNH+NH2	1e+13	0	999.994	!! R937
N2H2+NH2<=>NH3+NNH	1e+13	0	999.994	!! R938
NH2+NO<=>NNH+OH	2.29e+10	0.425	-814.9951	!! R939
NH2+NO<=>N2+H2O	2.77e+20	-2.65	1257.992	!! R940
NH3+OH<=>NH2+H2O	2040000	2.04	565.9966	!! R941
NH3+H<=>NH2+H2	542000	2.4	9916.94	!! R942
NH3 (+M) <=>NH2+H (+M)	5.5e+15	0	107791.3	!! R943
LOW / 2.2e+16	0 93469.44 /			
NNH+NO<=>N2+HNO	2e+13	0	0	!! R944
NNH+H<=>N2+H2	1e+14	0	0	!! R945

NNH+OH<=>N2+H2O	5e+13	0	0	!! R946
NNH+NH2<=>N2+NH3	5e+13	0	0	!! R947
NNH+NH<=>N2+NH2	5e+13	0	0	!! R948
HNO+OH<=>NO+H2O	1.295e+07	1.884	-957.9942	!! R949
H+HNO<=>H2+NO	4.46e+11	0.72	654.996	!! R950
HNO+NH2<=>NH3+NO	2e+13	0	999.994	!! R951
N+NO<=>N2+O	3.27e+12	0.3	0	!! R952
O+NO<=>N+O2	3.8e+09	1	41374.75	!! R953
NO+H<=>N+OH	1.7e+14	0	48799.71	!! R954
2HNO<=>N2O+H2O	0.00363	3.98	1189.993	!! R955
HNC+O<=>NH+CO	5.44e+12	0	0	!! R956
HNC+O<=>H+NCO	16	3.08	-223.9986	!! R957
HNC+OH<=>HNCO+H	2.8e+13	0	3695.978	!! R958
N2O+NO<=>N2+NO2	4.29e+13	0	47129.72	!! R959
3NO<=>N2O+NO2	1.07e+10	0	26799.84	!! R960
HNC+OH<=>CN+H2O	1.5e+12	0	7679.954	!! R961
HNC+NO2<=>HNCO+NO	1e+12	0	31999.81	!! R962
HNCO+O<=>CO2+NH	1.95e+14	-0.34	13019.92	!! R963
HNCO+O<=>NCO+OH	0.000667	4.55	-1769.989	!! R964
HNCO+O<=>HNO+CO	1.49e+08	1.57	44009.73	!! R965
HNCO+OH<=>H2O+NCO	479000	2	2559.985	!! R966
HNCO+OH<=>NH2+CO2	160000	2	2559.985	!! R967
HNCO+HO2<=>NCO+H2O2	3e+11	0	23699.86	!! R968
HNCO+NH<=>NH2+NCO	2e+13	0	19299.88	!! R969
HNCO+H<=>NH2+CO	2.25e+07	1.7	3799.977	!! R970
HNCO+NO2<=>HNNO+CO2	2.5e+12	0	25999.84	!! R971
CH+NO<=>HCN+O	1.1e+14	0	0	!! R972
CN+NO<=>NCO+N	5.5e+12	0	30619.82	!! R973
CN+NO<=>N2+CO	3.9e+11	0	27819.83	!! R974
CN+NO<=>NCN+O	1.8e+13	0	38189.77	!! R975
CO+NO2<=>NO+CO2	9.04e+13	0	33779.8	!! R976
CH+NO2<=>HCO+NO	1.01e+14	0	0	!! R977
H2+NO2<=>HONO+H	13000	2.76	29769.82	!! R978
HONO+H<=>HNO+OH	5.63e+10	0.86	4968.97	!! R979
HONO+H<=>H2O+NO	8130000	1.89	3846.977	!! R980
2HONO<=>NO+NO2+H2O	0.349	3.64	12139.93	!! R981
NNH (+M) <=>N2+H (+M)	4.1e+09	1.13	5185.969	!! R982
LOW / 1e+13 0.5 3059.982 /				
N2O / 5 / H2O / 9 / N2 / 1 / O2 / 0.82 / HNO3 / 5 / NH3 / 5 /				
NO3 / 5 /				
NNH<=>N2+H	3e+08	0	0	!! R983
HCN+M<=>HNC+M	4.36e+26	-3.34	50193.7	!! R984
HNO+2NO<=>HNNO+NO2	1.7e+11	0	2099.987	!! R985
HNNO+NO<=>NNH+NO2	3.2e+12	0	269.9984	!! R986
HNNO+NO<=>N2+HONO	2.6e+11	0	809.9951	!! R987
HNNO+M<=>H+N2O+M	2.2e+15	0	21599.87	!! R988
HNNO+M<=>N2+OH+M	1e+15	0	25599.85	!! R989
HNNO+OH<=>H2O+N2O	2e+13	0	0	!! R990
HNNO+H<=>H2+N2O	2e+13	0	0	!! R991
HCO+NO<=>HNO+CO	7.23e+12	0	0	!! R992
O+CH2<=>H+HCO	8e+13	0	0	!! R993
O+CH2 (S) <=>H2+CO	1.5e+13	0	0	!! R994
O+CH2 (S) <=>H+HCO	1.5e+13	0	0	!! R995
O+CH3<=>H+CH2O	5.06e+13	0	0	!! R996
O+CH4<=>OH+CH3	1.02e+09	1.5	8599.948	!! R997
O+CH2O<=>OH+HCO	3.9e+13	0	3539.979	!! R998
O+CH2OH<=>OH+CH2O	1e+13	0	0	!! R999
O+CH3O<=>OH+CH2O	1e+13	0	0	!! R1000
O+CH3OH<=>OH+CH2OH	388000	2.5	3099.981	!! R1001
O+CH3OH<=>OH+CH3O	130000	2.5	4999.97	!! R1002
O+C2H<=>CH+CO	5e+13	0	0	!! R1003
O+C2H2<=>H+HCCO	1.35e+07	2	1899.989	!! R1004
O+C2H2<=>OH+C2H	4.6e+19	-1.41	28949.83	!! R1005
O+C2H2<=>CO+CH2	6940000	2	1899.989	!! R1006
O+C2H3<=>H+CH2CO	3e+13	0	0	!! R1007
O+C2H4<=>CH3+HCO	1.25e+07	1.83	219.9987	!! R1008
O+C2H5<=>CH3+CH2O	2.24e+13	0	0	!! R1009
O+C2H6<=>OH+C2H5	8.98e+07	1.92	5689.966	!! R1010
O+CH2CO<=>OH+HCCO	1e+13	0	7999.952	!! R1011
O+CH2CO<=>CH2+CO2	1.75e+12	0	1349.992	!! R1012
O2+CH2O<=>HO2+HCO	1e+14	0	39999.76	!! R1013

H+CH2 (+M) <=> CH3 (+M)	6e+14	0	0	!! R1014
LOW / 1.04e+26	-2.76 1599.99 /			
TROE / 0.562	91 5836	8552 /		
H2 / 2 / H2O / 6 / CH4 / 2 / CO / 1.5 / CO2 / 2 / C2H6 / 3 /				
H+CH2 (S) <=> CH+H2	3e+13	0	0	!! R1015
H+CH3 (+M) <=> CH4 (+M)	1.39e+16	-0.534 535.9968		!! R1016
LOW / 2.62e+33	-4.76 2439.985 /			
TROE / 0.783	74 2941	6964 /		
H2 / 2 / H2O / 6 / CH4 / 3 / CO / 1.5 / CO2 / 2 / C2H6 / 3 /				
H+CH4 <=> CH3+H2	6.6e+08	1.62 10839.93		!! R1017
H+HCO (+M) <=> CH2O (+M)	1.09e+12	0.48 -259.9984		!! R1018
LOW / 2.47e+24	-2.57 424.9974 /			
TROE / 0.7824	271 2755	6570 /		
H2 / 2 / H2O / 6 / CH4 / 2 / CO / 1.5 / CO2 / 2 / C2H6 / 3 /				
H+CH2O (+M) <=> CH2OH (+M)	5.4e+11	0.454 3599.978		!! R1019
LOW / 1.27e+32	-4.82 6529.961 /			
TROE / 0.7187	103 1291	4160 /		
H2 / 2 / H2O / 6 / CH4 / 2 / CO / 1.5 / CO2 / 2 / C2H6 / 3 /				
H+CH2O <=> HCO+H2	5.74e+07	1.9 2741.983		!! R1020
H+CH2OH (+M) <=> CH3OH (+M)	1.055e+12	0.5 85.99948		!! R1021
LOW / 4.36e+31	-4.65 5079.969 /			
TROE / 0.6	100 90000	10000 /		
H2 / 2 / H2O / 6 / CH4 / 2 / CO / 1.5 / CO2 / 2 / C2H6 / 3 /				
H+CH2OH <=> H2+CH2O	2e+13	0	0	!! R1022
H+CH2OH <=> OH+CH3	1.65e+11	0.65 -283.9983		!! R1023
H+CH2OH <=> CH2 (S) +H2O	3.28e+13	-0.09 609.9963		!! R1024
H+CH3O (+M) <=> CH3OH (+M)	2.43e+12	0.515 49.9997		!! R1025
LOW / 4.66e+41	-7.44 14079.91 /			
TROE / 0.7	100 90000	10000 /		
H2 / 2 / H2O / 6 / CH4 / 2 / CO / 1.5 / CO2 / 2 / C2H6 / 3 /				
H+CH3O <=> H+CH2OH	4.15e+07	1.63 1923.988		!! R1026
H+CH3O <=> H2+CH2O	2e+13	0	0	!! R1027
H+CH3O <=> OH+CH3	1.5e+12	0.5 -109.9993		!! R1028
H+CH3O <=> CH2 (S) +H2O	2.62e+14	-0.23 1069.994		!! R1029
H+CH3OH <=> CH2OH+H2	1.7e+07	2.1 4869.971		!! R1030
H+CH3OH <=> CH3O+H2	4200000	2.1 4869.971		!! R1031
H+C2H (+M) <=> C2H2 (+M)	1e+17	-1	0	!! R1032
LOW / 3.75e+33	-4.8 1899.989 /			
TROE / 0.6464	132 1315	5566 /		
H2 / 2 / H2O / 6 / CH4 / 2 / CO / 1.5 / CO2 / 2 / C2H6 / 3 /				
H+C2H2 (+M) <=> C2H3 (+M)	5.6e+12	0 2399.986		!! R1033
LOW / 3.8e+40	-7.27 7219.956 /			
TROE / 0.7507	98.5 1302	4167 /		
H2 / 2 / H2O / 6 / CH4 / 2 / CO / 1.5 / CO2 / 2 / C2H6 / 3 /				
H+C2H3 (+M) <=> C2H4 (+M)	6.08e+12	0.27 279.9983		!! R1034
LOW / 1.4e+30	-3.86 3319.98 /			
TROE / 0.782	207.5 2663	6095 /		
H2 / 2 / H2O / 6 / CH4 / 2 / CO / 1.5 / CO2 / 2 / C2H6 / 3 /				
H+C2H3 <=> H2+C2H2	3e+13	0	0	!! R1035
H+C2H4 (+M) <=> C2H5 (+M)	5.4e+11	0.454 1819.989		!! R1036
LOW / 6e+41	-7.62 6969.958 /			
TROE / 0.9753	210 984	4374 /		
H2 / 2 / H2O / 6 / CH4 / 2 / CO / 1.5 / CO2 / 2 / C2H6 / 3 /				
H+C2H4 <=> C2H3+H2	1325000	2.53 12239.93		!! R1037
H+C2H5 (+M) <=> C2H6 (+M)	5.21e+17	-0.99 1579.99		!! R1038
LOW / 1.99e+41	-7.08 6684.96 /			
TROE / 0.8422	125 2219	6882 /		
H2 / 2 / H2O / 6 / CH4 / 2 / CO / 1.5 / CO2 / 2 / C2H6 / 3 /				
H+C2H5 <=> H2+C2H4	2e+12	0	0	!! R1039
H+C2H6 <=> C2H5+H2	1.15e+08	1.9 7529.955		!! R1040
H+HCCO <=> CH2 (S) +CO	1e+14	0	0	!! R1041
H+HCCOH <=> H+CH2CO	1e+13	0	0	!! R1042
H2+CO (+M) <=> CH2O (+M)	4.3e+07	1.5 79599.52		!! R1043
LOW / 5.07e+27	-3.42 84349.49 /			
TROE / 0.932	197 1540	10300 /		
H2 / 2 / H2O / 6 / CH4 / 2 / CO / 1.5 / CO2 / 2 / C2H6 / 3 /				
OH+CH2 <=> H+CH2O	2e+13	0	0	!! R1044
OH+CH2 <=> CH+H2O	1.13e+07	2 2999.982		!! R1045
OH+CH2 (S) <=> H+CH2O	3e+13	0	0	!! R1046
OH+CH3 (+M) <=> CH3OH (+M)	2.79e+18	-1.43 1329.992		!! R1047
LOW / 4e+36	-5.92 3139.981 /			

TROE /	0.412	195	5900	6394 /	
H2 / 2 /	H2O / 6 /	CH4 / 2 /	CO / 1.5 /	CO2 / 2 /	C2H6 / 3 /
OH+CH3<=>CH2+H2O			5.6e+07	1.6 5419.967	!! R1048
OH+CH3<=>CH2(S)+H2O			6.44e+17	-1.34 1416.991	!! R1049
OH+CH4<=>CH3+H2O			1e+08	1.6 3119.981	!! R1050
OH+CH2O<=>HCO+H2O			3.43e+09	1.18 -446.9973	!! R1051
OH+CH2OH<=>H2O+CH2O			5e+12	0 0	!! R1052
OH+CH3O<=>H2O+CH2O			5e+12	0 0	!! R1053
OH+CH3OH<=>CH2OH+H2O			1440000	2 -839.9949	!! R1054
OH+CH3OH<=>CH3O+H2O			6300000	2 1499.991	!! R1055
OH+C2H<=>H+HCCO			2e+13	0 0	!! R1056
OH+C2H2<=>H+CH2CO			0.000218	4.5 -999.994	!! R1057
OH+C2H2<=>H+HCCOH			504000	2.3 13499.92	!! R1058
OH+C2H2<=>C2H+H2O			3.37e+07	2 13999.92	!! R1059
OH+C2H2<=>CH3+CO			0.000483	4 -1999.988	!! R1060
OH+C2H3<=>H2O+C2H2			5e+12	0 0	!! R1061
OH+C2H4<=>C2H3+H2O			3600000	2 2499.985	!! R1062
OH+C2H6<=>C2H5+H2O			3540000	2.12 869.9947	!! R1063
OH+CH2CO<=>HCCO+H2O			7.5e+12	0 1999.988	!! R1064
HO2+CH2<=>OH+CH2O			2e+13	0 0	!! R1065
HO2+CH3<=>O2+CH4			1e+12	0 0	!! R1066
HO2+CH3<=>OH+CH3O			2e+13	0 0	!! R1067
HO2+CH2O<=>HCO+H2O2			5600000	2 11999.93	!! R1068
C+CH2<=>H+C2H			5e+13	0 0	!! R1069
C+CH3<=>H+C2H2			5e+13	0 0	!! R1070
CH+H2<=>H+CH2			1.08e+14	0 3109.981	!! R1071
CH+H2O<=>H+CH2O			5.71e+12	0 -754.9954	!! R1072
CH+CH2<=>H+C2H2			4e+13	0 0	!! R1073
CH+CH3<=>H+C2H3			3e+13	0 0	!! R1074
CH+CH4<=>H+C2H4			6e+13	0 0	!! R1075
CH+CO(+M)<=>HCCO(+M)			5e+13	0 0	!! R1076
LOW /	2.69e+28	-3.74 1935.988 /			
TROE /	0.5757	237	1652	5069 /	
H2 / 2 /	H2O / 6 /	CH4 / 2 /	CO / 1.5 /	CO2 / 2 /	C2H6 / 3 /
CH+CH2O<=>H+CH2CO			9.46e+13	0 -514.9969	!! R1077
CH+HCCO<=>CO+C2H2			5e+13	0 0	!! R1078
CH2+O2=>OH+H+CO			5e+12	0 1499.991	!! R1079
CH2+H2<=>H+CH3			500000	2 7229.956	!! R1080
2CH2<=>H2+C2H2			1.6e+15	0 11943.93	!! R1081
CH2+CH3<=>H+C2H4			4e+13	0 0	!! R1082
CH2+CH4<=>2CH3			2460000	2 8269.95	!! R1083
CH2+HCCO<=>C2H3+CO			3e+13	0 0	!! R1084
CH2(S)+N2<=>CH2+N2			1.5e+13	0 599.9964	!! R1085
CH2(S)+O2<=>H+OH+CO			2.8e+13	0 0	!! R1086
CH2(S)+O2<=>CO+H2O			1.2e+13	0 0	!! R1087
CH2(S)+H2<=>CH3+H			7e+13	0 0	!! R1088
CH2(S)+H2O(+M)<=>CH3OH(+M)			4.82e+17	-1.16 1144.993	!! R1089
LOW /	1.88e+38	-6.36 5039.97 /			
TROE /	0.6027	208	3922	10180 /	
H2 / 2 /	H2O / 6 /	CH4 / 2 /	CO / 1.5 /	CO2 / 2 /	C2H6 / 3 /
CH2(S)+H2O<=>CH2+H2O			3e+13	0 0	!! R1090
CH2(S)+CH3<=>H+C2H4			1.2e+13	0 -569.9966	!! R1091
CH2(S)+CH4<=>2CH3			1.6e+13	0 -569.9966	!! R1092
CH2(S)+CO<=>CH2+CO			9e+12	0 0	!! R1093
CH2(S)+CO2<=>CH2+CO2			7e+12	0 0	!! R1094
CH2(S)+CO2<=>CO+CH2O			1.4e+13	0 0	!! R1095
CH2(S)+C2H6<=>CH3+C2H5			4e+13	0 -549.9967	!! R1096
CH3+O2<=>O+CH3O			3.56e+13	0 30479.82	!! R1097
CH3+O2<=>OH+CH2O			2.31e+12	0 20314.88	!! R1098
CH3+H2O2<=>HO2+CH4			24500	2.47 5179.969	!! R1099
2CH3(+M)<=>C2H6(+M)			6.77e+16	-1.18 653.9961	!! R1100
LOW /	3.4e+41	-7.03 2761.983 /			
TROE /	0.619	73.2	1180	9999 /	
H2 / 2 /	H2O / 6 /	CH4 / 2 /	CO / 1.5 /	CO2 / 2 /	C2H6 / 3 /
2CH3<=>H+C2H5			6.84e+12	0.1 10599.94	!! R1101
CH3+HCO<=>CH4+CO			2.648e+13	0 0	!! R1102
CH3+CH2O<=>HCO+CH4			3320	2.81 5859.965	!! R1103
CH3+CH3OH<=>CH2OH+CH4			3e+07	1.5 9939.94	!! R1104
CH3+CH3OH<=>CH3O+CH4			1e+07	1.5 9939.94	!! R1105
CH3+C2H4<=>C2H3+CH4			227000	2 9199.944	!! R1106
CH3+C2H6<=>C2H5+CH4			6140000	1.74 10449.94	!! R1107

CH2OH+O2<=>HO2+CH2O	1.8e+13	0	899.9946	!!	R1108
CH3O+O2<=>HO2+CH2O	4.28e-13	7.6	-3529.979	!!	R1109
C2H+O2<=>HCO+CO	1e+13	0	-754.9954	!!	R1110
C2H+H2<=>H+C2H2	5.68e+10	0.9	1992.988	!!	R1111
C2H3+O2<=>HCO+CH2O	4.58e+16	-1.39	1014.994	!!	R1112
C2H4 (+M) <=>H2+C2H2 (+M)	8e+12	0.44	86769.48	!!	R1113
LOW / 1.58e+51	-9.3	97799.41	/		
TROE / 0.7345	180	1035	5417 /		
H2 / 2 / H2O / 6 / CH4 / 2 / CO / 1.5 / CO2 / 2 / C2H6 / 3 /					
C2H5+O2<=>HO2+C2H4	8.4e+11	0	3874.977	!!	R1114
2HCCO<=>2CO+C2H2	1e+13	0	0	!!	R1115
NNH+CH3<=>CH4+N2	2.5e+13	0	0	!!	R1116
NNH+O2<=>HO2+N2	5e+12	0	0	!!	R1117
NNH+O<=>OH+N2	2.5e+13	0	0	!!	R1118
H2CN+N<=>N2+CH2	6e+13	0	399.9976	!!	R1119
CH2+N2<=>HCN+NH	1e+13	0	73999.55	!!	R1120
CH2 (S) +N2<=>NH+HCN	1e+11	0	64999.61	!!	R1121
C+NO<=>CO+N	2.9e+13	0	0	!!	R1122
CH+NO<=>H+NCO	1.62e+13	0	0	!!	R1123
CH+NO<=>N+HCO	2.46e+13	0	0	!!	R1124
CH2+NO<=>H+HNCO	3.1e+17	-1.38	1269.992	!!	R1125
CH2+NO<=>OH+HCN	2.9e+14	-0.69	759.9954	!!	R1126
CH2+NO<=>H+HCNO	3.8e+13	-0.36	579.9965	!!	R1127
CH2 (S) +NO<=>H+HNCO	3.1e+17	-1.38	1269.992	!!	R1128
CH2 (S) +NO<=>OH+HCN	2.9e+14	-0.69	759.9954	!!	R1129
CH2 (S) +NO<=>H+HCNO	3.8e+13	-0.36	579.9965	!!	R1130
CH3+NO<=>HCN+H2O	9.6e+13	0	28799.83	!!	R1131
CH3+NO<=>H2CN+OH	1e+12	0	21749.87	!!	R1132
HCNO+H<=>H+HNCO	2.1e+15	-0.69	2849.983	!!	R1133
HCNO+H<=>OH+HCN	2.7e+11	0.18	2119.987	!!	R1134
HCNO+H<=>NH2+CO	1.7e+14	-0.75	2889.983	!!	R1135
CH3+N<=>H2CN+H	6.1e+14	-0.31	289.9982	!!	R1136
CH3+N<=>HCN+H2	3.7e+12	0.15	-89.99946	!!	R1137
OH+NO2 (+M) <=>HNO3 (+M)	2.41e+13	0	0	!!	R1138
LOW / 6.42e+32	-5.49	2349.986	/		
TROE / 0.7873789	1.3	1833.02	85500 /		
N2O / 5 / H2O / 9 / N2 / 1 / HNO3 / 5 / NH3 / 5 / NO3 / 5 /					
HNO3+H<=>NO3+H2	2.4e+08	1.5	11599.93	!!	R1139
HNO3+H<=>NO2+H2O	6e+13	0	9799.941	!!	R1140
HNO3+H<=>HNO2+OH	6e+13	0	6999.958	!!	R1141
HNO3+H<=>HONO+OH	2e+13	0	7999.952	!!	R1142
HNO3+O<=>NO3+OH	2e+13	0	11999.93	!!	R1143
HNO3+OH<=>H2O+NO3	4.34e+09	0	-1559.991	!!	R1144
HNO3+OH (+M) <=>H2O+NO3 (+M)	2.47e+08	0	-2859.983	!!	R1145
LOW / 6.89e+14	0	-1439.991	/		
N2O / 5 / H2O / 9 / N2 / 1 / HNO3 / 5 / NH3 / 5 / NO3 / 5 /					
NO3+H2O2<=>HNO3+HO2	1e+12	0	8499.949	!!	R1146
HNO3+NH<=>HNOH+NO2	1.5e+13	0	5999.964	!!	R1147
HNO3+NH2<=>NO3+NH3	900000	2	7299.956	!!	R1148
HNO3+NH2<=>NH2O+HNO2	3e+12	0	8999.946	!!	R1149
HNO3+NH3<=>NH2O+H2O+NO	23.2	3.5	44929.73	!!	R1150
HNO3+NO<=>HONO+NO2	8000000	2	10999.93	!!	R1151
HONO+NO3<=>HNO3+NO2	1e+12	0	5999.964	!!	R1152
HNO2+NO3<=>HNO3+NO2	1e+12	0	4999.97	!!	R1153
O+NO2 (+M) <=>NO3 (+M)	1.33e+13	0	0	!!	R1154
LOW / 1.49e+28	-4.08	2469.985	/		
TROE / 0.8151151	1.3	3306.395	71553.9 /		
N2O / 5 / H2O / 9 / N2 / 1 / HNO3 / 5 / NH3 / 5 / NO3 / 5 /					
NO3+H<=>NO2+OH	6e+13	0	0	!!	R1155
NO3+O<=>NO2+O2	1e+13	0	0	!!	R1156
NO3+OH<=>HO2+NO2	1.2e+13	0	0	!!	R1157
NO3+HO2<=>NO2+O2+OH	2.5e+12	0	0	!!	R1158
NO3+NH<=>HNO+NO2	1.5e+13	0	0	!!	R1159
NO3+NH<=>HNO3+N	1e+12	0	4999.97	!!	R1160
NO3+NH2<=>HNO3+NH	1e+12	0	9999.94	!!	R1161
NO3+NH2<=>NH2O+NO2	900000	0	99.9994	!!	R1162
2NO3<=>2NO2+O2	5.12e+11	0	4869.971	!!	R1163
NO2+HO2<=>HONO+O2	1e+12	0	4999.97	!!	R1164
HNOH+NO2<=>HONO+HNO	6e+11	0	1999.988	!!	R1165
HNOH+H<=>NH2+OH	4e+13	0	0	!!	R1166
HNOH+H<=>HNO+H2	4.8e+08	1.5	377.9977	!!	R1167

HNOH+O<=>HNO+OH	7e+13	0	0	!! R1168
DUPLICATE !! with R1169				
HNOH+O<=>HNO+OH	3.3e+08	1.5	-357.9978	!! R1169
DUPLICATE !! with R1168				
HNOH+OH<=>HNO+H2O	2400000	2	-1191.993	!! R1170
NH2O+H<=>NH2+OH	4e+13	0	0	!! R1171
NH2O+H<=>HNO+H2	4.8e+08	1.5	1559.991	!! R1172
NH2O+O<=>HNO+OH	3.3e+08	1.5	486.9971	!! R1173
NH2O+OH<=>HNO+H2O	2400000	2	-1191.993	!! R1174
NH2O+NH2<=>HNO+NH3	1800000	1.94	-1151.993	!! R1175
HNO2+H<=>H2+NO2	2.4e+08	1.5	4162.975	!! R1176
HNO2+O<=>OH+NO2	1.7e+08	1.5	2364.986	!! R1177
HNO2+OH<=>H2O+NO2	1200000	2	-794.9952	!! R1178
HNO2+NH2<=>NO2+NH3	920000	1.94	873.9947	!! R1179
NO3+CH2O<=>HNO3+HCO	1.7e+12	0	4999.97	!! R1180
NO3+HCO<=>H+CO2+NO2	2e+13	0	0	!! R1181
NO3+C2H4<=>C2H4O+NO2	2e+12	0	5719.965	!! R1182
C2H4O<=>CH4+CO	1.21e+13	0	57199.65	!! R1183
C2H4O<=>CH3CHO	7.26e+13	0	57199.65	!! R1184
C2H4O<=>CH3+HCO	3.63e+13	0	57199.65	!! R1185
C2H4O+CH3<=>CH4+CH2CHO	1.1e+12	0	11799.93	!! R1186
C2H4O+OH<=>H2O+CH2CHO	1.4e+13	0	3359.98	!! R1187
C2H4O+H<=>H2+CH2CHO	3.8e+13	0	9196.944	!! R1188
C2H4O+NO2<=>HONO+CH2CHO	1.3e+12	0	3699.978	!! R1189
C2H4O+NO3<=>HNO3+CH2CHO	1e+12	0	5999.964	!! R1190
H+CH2CHO<=>CH3+HCO	2.2e+13	0	0	!! R1191
H+CH2CHO<=>CH2CO+H2	1.1e+13	0	0	!! R1192
OH+CH2CHO<=>HCO+CH2OH	3.01e+13	0	0	!! R1193
OH+CH2CHO<=>H2O+CH2CO	1.2e+13	0	0	!! R1194
CH2CHO+NO<=>HNO+CH2CO	1e+12	0	8599.948	!! R1195
CH2CHO+NO2<=>HONO+CH2CO	8.9e+12	0	-159.999	!! R1196
CH2CHO+NO3<=>HNO3+CH2CO	1e+12	0	0	!! R1197
CH3+NO3<=>CH3O+NO2	2e+13	0	0	!! R1198
O+C2H5<=>H+CH3CHO	1.096e+14	0	0	!! R1199
O+CH3CHO<=>OH+CH2CHO	2.92e+12	0	1807.989	!! R1200
O+CH3CHO<=>OH+CH3+CO	2.92e+12	0	1807.989	!! R1201
O2+CH3CHO=>HO2+CH3+CO	3.01e+13	0	39149.76	!! R1202
H+CH3CHO<=>CH2CHO+H2	2.05e+09	1.16	2404.985	!! R1203
H+CH3CHO=>CH3+H2+CO	2.05e+09	1.16	2404.985	!! R1204
OH+CH3CHO=>CH3+H2O+CO	2.343e+10	0.73	-1112.993	!! R1205
HO2+CH3CHO=>CH3+H2O2+CO	3.01e+12	0	11922.93	!! R1206
CH3+CH3CHO=>CH3+CH4+CO	2720000	1.77	5919.964	!! R1207
O+C2H4<=>H+CH2CHO	6700000	1.83	219.9987	!! R1208
C2H3+O2<=>O+CH2CHO	3.03e+11	0.29	10.99993	!! R1209
C2H3+O2<=>HO2+C2H2	1337000	1.61	-383.9977	!! R1210
H+CH2CO (+M) <=>CH2CHO (+M)	4.865e+11	0.422	-1754.989	!! R1211
LOW / 1.012e+42	-7.63	3853.977	/	
TROE / 0.465	201	1773		5333 /
H2 / 2 / H2O / 6 / CO / 1.5 / CO2 / 2 /				
O+CH2CHO=>H+CH2+CO2	1.5e+14	0	0	!! R1212
O2+CH2CHO=>OH+CO+CH2O	1.81e+10	0	0	!! R1213
CH3+NH<=>H2CN+H2	3.5e+13	0	289.9982	!! R1214
HCO+HNO<=>CH2O+NO	6e+11	0	1999.988	!! R1215
CH2O+NO2<=>HCO+HONO	8.35e-11	6.68	8309.95	!! R1216
HCO+NO2<=>CO+HONO	1.24e+23	-3.29	2354.986	!! R1217
HCO+NO2<=>H+CO2+NO	8.39e+15	-0.75	1929.988	!! R1218
2HCO<=>CH2O+CO	3e+13	0	0	!! R1219
CH4+NO2<=>CH3+HONO	1.2e+13	0	29999.82	!! R1220
CH3+NO2<=>CH3O+NO	1.4e+13	0	0	!! R1221
CH2+NO2<=>CH2O+NO	5e+13	0	0	!! R1222
H2CN+N<=>HCN+NH	7.2e+13	0	399.9976	!! R1223
H2CN+H<=>HCN+H2	4e+13	0	0	!! R1224
OH+HCN<=>HOCN+H	1100000	2.03	13372.92	!! R1225
HOCN+H<=>H+HNCO	2e+07	2	1999.988	!! R1226
HOCN+H<=>NH2+CO	1.2e+08	0.61	2075.987	!! R1227
HOCN+H<=>H2+NCO	2.4e+08	1.5	6616.96	!! R1228
CH3NHNH2+M<=>CH3NH+NH2+M	2.5e+14	0	40939.75	!! R1229
CH3NHNH2+H<=>CH3NNH2+H2	1.3e+13	0	2499.985	!! R1230
CH3NHNH2+H<=>CH3NH+NH3	4.46e+09	0	3099.981	!! R1231
CH3NHNH2+CH3<=>CH4+CH3NNH2	1e+13	0	6989.958	!! R1232
CH3NHNH2+NH2<=>NH3+CH3NNH2	1e+11	0.5	1989.988	!! R1233

CH3NNH2+M<=>CH3NNH+H+M	1e+17	0	35769.78	!!	R1234
CH3NH+M<=>CH2NH+H+M	1e+16	0	23799.86	!!	R1235
CH3NH+H<=>CH2NH+H2	1e+08	2	0	!!	R1236
CH3NH+H<=>CH3+NH2	6e+13	0	0	!!	R1237
CH3NNH+CH3<=>CH4+CH3NN	4.6e+13	0	4849.971	!!	R1238
CH3NNH+NH2<=>NH3+CH3NN	4.6e+13	0	4849.971	!!	R1239
CH3NN<=>CH3+N2	3000000	0	0	!!	R1240
CH3NNCH3<=>CH3NN+CH3	6.9e+15	0	50879.69	!!	R1241
CH3NNCH3<=>C2H6+N2	2e+11	0	32999.8	!!	R1242
CH2NH+M<=>HCN+H2+M	1e+14	0	9999.94	!!	R1243
CH3NHNH2<=>CH3NNH+H2	3.16e+13	0	56999.66	!!	R1244
CH3NHNH2<=>CH2NH+NH3	1.58e+13	0	53999.67	!!	R1245
CH3NNH2+HO2<=>CH3NHNH2+O2	1000000	2	0	!!	R1246
CH3NN+HO2<=>CH3NNH+O2	1000000	2	0	!!	R1247
CH3NHNH2+O<=>CH3NNH+H2O	9.6e+12	0	0	!!	R1248
CH3NNH2+OH<=>CH3NNH+H2O	1e+08	2	0	!!	R1249
CH3NNH2+O<=>CH3NNH+OH	1e+08	2	0	!!	R1250
CH3NNH2+HO2<=>CH3NNH+H2O2	1e+08	2	0	!!	R1251
CH3NNH2+O2<=>CH3NNH+HO2	4e+12	0	0	!!	R1252
CH3NHNH2+HO2<=>CH3NNH2+H2O2	2.7e+11	0	1986.988	!!	R1253
CH3NNH+HO2<=>CH3NN+H2O2	1e+11	0	1986.988	!!	R1254
CH3NHNH2+OH<=>CH3NNH2+H2O	3.92e+13	0	0	!!	R1255
CH3NNH+OH<=>CH3NN+H2O	3.92e+13	0	0	!!	R1256
CH3NHNH2+O<=>CH3NNH2+OH	9.6e+12	0	0	!!	R1257
CH3NNH+O<=>CH3NN+OH	9.6e+12	0	0	!!	R1258
CH3NH+OH<=>CH2NH+H2O	1e+08	2	0	!!	R1259
CH3NH+O<=>CH2NH+OH	1e+08	2	0	!!	R1260
CH3NH+O2<=>CH2NH+HO2	1e+07	2	6299.962	!!	R1261
CH3NH+O<=>CH3O+NH	6e+13	0	0	!!	R1262
CH3NH+OH<=>CH4+HNO	6e+12	0	0	!!	R1263
CH3NH+O2<=>CH3O+HNO	6e+12	0	3999.976	!!	R1264
CH2NH+O<=>CH2O+NH	1e+07	2	2799.983	!!	R1265
CH2NH+OH<=>CH2O+NH2	180000	2	14799.91	!!	R1266
CH2NH+O<=>H2CN+OH	3.16e+08	2	6099.963	!!	R1267
H2CN+HO2<=>CH2NH+O2	78700	2	21699.87	!!	R1268
CH2NH+OH<=>H2CN+H2O	1e+07	2	3999.976	!!	R1269
H2CN+O<=>HCN+OH	1e+07	2	6099.963	!!	R1270
H2CN+OH<=>HCN+H2O	1e+07	2	3699.978	!!	R1271
H2CN+O2<=>HCN+HO2	27000	2	17299.9	!!	R1272
H2CN+NO<=>HCN+HNO	1e+07	2	4399.973	!!	R1273
CH3NNH2+NO2 (+M) <=>CH3N (NH2) NO2 (+M)	1e+13	0	0	!!	R1274
LOW / 1e+17 0 /					
CH3NNH2+NO2 (+M) <=>CH3N (NH2) ONO (+M)	1e+13	0	0	!!	R1275
LOW / 1e+17 0 /					
CH3NHNH2+NO2<=>CH3NNH2+HONO	2.2e+11	0	5899.964	!!	R1276
CH3NNH+NO2<=>CH3NN+HONO	2.2e+11	0	5899.964	!!	R1277
CH3NNH2+NO2<=>CH3NNH+HONO	1e+08	2	0	!!	R1278
NH2+HO2<=>NH3+O2	2e+13	0	0	!!	R1279
N2O4 (+M) <=>2NO2 (+M)	4.05e+18	-1.1	12839.92	!!	R1280
LOW / 1.96e+28 -3.8 12799.92 /					
CH3NHNH2+HNO3<=>NAMMH	2e+13	0	0	!!	R1281
CH3NO2<=>CH3+NO2	1	0	0	!!	R1282
PLOG / 0.0001 2.556152e+26 -5.05792 55587.39 /					
PLOG / 0.001 3.271875e+28 -5.3395 57248.17 /					
PLOG / 0.01 1.150893e+30 -5.46502 58762.07 /					
PLOG / 0.1 6.713705e+30 -5.37576 60024.17 /					
PLOG / 1.0 2.690981e+30 -4.96974 60840.67 /					
PLOG / 10.0 4.083542e+28 -4.18468 61042.8 /					
PLOG / 100.0 4.106111e+25 -3.10885 60625.78 /					
PLOG / 1000.0 3.238862e+23 -2.35221 60350.22 /					
PLOG / 10000.0 2.004937e+22 -1.88195 60364.52 /					
CH3NO2+H<=>CH3+HONO	3.3e+12	0	3729.977	!!	R1283
CH3NO2+H<=>CH3NO+OH	1.4e+12	0	3729.977	!!	R1284
CH3NO2+H<=>H2CNO2+H2	540	3.5	5199.969	!!	R1285
CH3NO2+O<=>H2CNO2+OH	1.5e+13	0	5349.968	!!	R1286
CH3NO2+OH<=>H2CNO2+H2O	500000	2	999.994	!!	R1287
CH3NO2+OH<=>CH3OH+NO2	2e+10	0	-999.994	!!	R1288
CH3NO2+CH3<=>H2CNO2+CH4	0.55	4	8299.95	!!	R1289
CH3NO2+CH2 (S) <=>H2CNO2+CH3	1.2e+14	0	0	!!	R1290
CH3NO2+CH2<=>H2CNO2+CH3	6.5e+12	0	7899.952	!!	R1291
H2CNO2<=>CH2O+NO	1e+13	0	35999.78	!!	R1292

CH3+NO (+M) <=> CH3NO (+M)	9e+12	0	118.9993	!! R1293
LOW / 3.2e+23	-1.87	0 /		
CH3O+NO<=>CH2O+HNO	1.3e+14	-0.7	0	!! R1294
CH3O+NO (+M) <=> CH3ONO (+M)	6.6e+14	-0.6	0	!! R1295
LOW / 2.7e+27	-3.5	0 /		
CH3O+NO2<=>CH2O+HONO	6e+12	0	2284.986	!! R1296
CHOCHO (+M) <=> 2HCO (+M)	2.94e+14	0	67899.59	!! R1297
LOW / 9.19e+49	-9.43	74015.55 /		
H2O / 12 / N2 / 1.5 / NO / 1.5 / CO2 / 5 / CH2O / 2 /				
NO2 / 5 / CO / 5 / CHOCHO / 5 / H2 / 1.5 /				
CHOCHO+OH<=>H2O+CO+HCO	3.4e+09	1.18	446.9973	!! R1298
CHOCHO+H<=>H2+CO+HCO	4.58e+10	1.05	3279.98	!! R1299
CHOCHO+O<=>OH+CO+HCO	4.13e+11	0.57	2761.983	!! R1300
CHOCHO+NO2<=>HONO+CO+HCO	7.94e+11	0	19799.88	!! R1301
CHOCHO+NO<=>HNO+HCO+CO	1e+13	0	40999.75	!! R1302
HCO+CHOCHO<=>CH2O+CO+HCO	1e+13	0	10999.93	!! R1303
CH2CO+O<=>CH2O+CO	7.63e+11	0	1350.992	!! R1304
CH2CO+O<=>HCO+H+CO	7.63e+11	0	1350.992	!! R1305
CH2CO+O<=>2HCO	7.63e+11	0	1350.992	!! R1306
CH2CO+OH<=>CH2O+HCO	3.33e+12	0	0	!! R1307
CH2CO+OH<=>CH2OH+CO	3.33e+12	0	0	!! R1308
CH2CO+OH<=>CH3+CO2	3.33e+12	0	0	!! R1309
H+2O2<=>HO2+O2	2.08e+19	-1.24	0	!! R1310
H+CH2O (+M) <=> CH3O (+M)	5.4e+11	0.454	2599.984	!! R1311
LOW / 2.2e+30	-4.8	5559.966 /		
TROE / 0.758	94	1555	4200 /	
H2 / 2 / H2O / 6 / CH4 / 2 / CO / 1.5 / CO2 / 2 / C2H6 / 3 /				
H+CH2CO<=>HCCO+H2	5e+13	0	7999.952	!! R1312
H+CH2CO<=>CH3+CO	1.13e+13	0	3427.979	!! R1313
CH2+CO (+M) <=> CH2CO (+M)	8.1e+11	0.5	4509.973	!! R1314
LOW / 2.69e+33	-5.11	7094.957 /		
TROE / 0.5907	275	1226	5185 /	
H2 / 2 / H2O / 6 / CH4 / 2 / CO / 1.5 / CO2 / 2 / C2H6 / 3 /				
O+CH3<=>H+H2+CO	3.37e+13	0	0	!! R1315
OH+CH3<=>H2+CH2O	5.88e-14	6.72	-3019.982	!! R1316
CH+H2 (+M) <=> CH3 (+M)	1.97e+12	0.43	-369.9978	!! R1317
LOW / 4.82e+25	-2.8	589.9964 /		
TROE / 0.578	122	2535	9365 /	
H2 / 2 / H2O / 6 / CH4 / 2 / CO / 1.5 / CO2 / 2 / C2H6 / 3 /				
CH2+O2<=>2H+CO2	5.8e+12	0	1499.991	!! R1318
CH2+O2<=>O+CH2O	2.4e+12	0	1499.991	!! R1319
2CH2=>2H+C2H2	2e+14	0	10988.93	!! R1320
CH2 (S) +H2O=>H2+CH2O	6.82e+10	0.25	-934.9944	!! R1321
CH3+C2H5 (+M) <=> C3H8 (+M)	9.43e+12	0	0	!! R1322
LOW / 2.71e+74	-16.82	13064.92 /		
TROE / 0.1527	291	2742	7748 /	
H2 / 2 / H2O / 6 / CH4 / 2 / CO / 1.5 / CO2 / 2 / C2H6 / 3 /				
O+C3H8<=>OH+C3H7	193000	2.68	3715.978	!! R1323
H+C3H8<=>C3H7+H2	1320000	2.54	6755.959	!! R1324
OH+C3H8<=>C3H7+H2O	3.16e+07	1.8	933.9944	!! R1325
C3H7+H2O2<=>HO2+C3H8	378	2.72	1499.991	!! R1326
CH3+C3H8<=>C3H7+CH4	0.903	3.65	7153.957	!! R1327
CH3+C2H4 (+M) <=> C3H7 (+M)	2550000	1.6	5699.966	!! R1328
LOW / 3e+63	-14.6	18169.89 /		
TROE / 0.1894	277	8748	7891 /	
H2 / 2 / H2O / 6 / CH4 / 2 / CO / 1.5 / CO2 / 2 / C2H6 / 3 /				
O+C3H7<=>C2H5+CH2O	9.64e+13	0	0	!! R1329
H+C3H7 (+M) <=> C3H8 (+M)	3.613e+13	0	0	!! R1330
LOW / 4.42e+61	-13.545	11356.93 /		
TROE / 0.315	369	3285	6667 /	
H2 / 2 / H2O / 6 / CH4 / 2 / CO / 1.5 / CO2 / 2 / C2H6 / 3 /				
H+C3H7<=>CH3+C2H5	4060000	2.19	889.9946	!! R1331
OH+C3H7<=>C2H5+CH2OH	2.41e+13	0	0	!! R1332
O2+C3H8<=>HO2+C3H7	4.3253e+12	0.33415	47503.71	!! R1333
HO2+C3H7=>OH+C2H5+CH2O	2.41e+13	0	0	!! R1334
CH3+C3H7<=>2C2H5	1.927e+13	-0.32	0	!! R1335
CH3ONO2+O2<=>CH2O+NO2+HO2	276620	3.1454	48117.71	!! R1336
CH3ONO2+NO2<=>CH2O+NO2+HNO2	1.4151	4.1299	28244.83	!! R1337
CH3ONO2+NO2<=>CH2O+NO2+HONO	7.5012e-10	7.12727	22639.86	!! R1338
CH3ONO2<=>CH3O+NO2	1	0	0	!! R1339
PLOG / 0.001	9.49e+41	-9.7	45990 /	

PLOG / 0.01	3.2e+42	-9.58	46041 /			
PLOG / 0.1	4.24e+42	-9.33	46334 /			
PLOG / 1.0	1.93e+42	-8.95	46868 /			
PLOG / 10.0	3.97e+39	-7.86	46774 /			
PLOG / 25.0	4.73e+37	-7.18	46437 /			
PLOG / 50.0	1.55e+36	-6.67	46153 /			
PLOG / 75.0	2.03e+35	-6.36	45972 /			
PLOG / 100.0	4.53e+34	-6.14	45831 /			
PLOG / 150.0	5.33e+33	-5.83	45620 /			
PLOG / 200.0	1.07e+33	-5.6	45453 /			
PLOG / 250.0	3.06e+32	-5.42	45320 /			
PLOG / 300.0	1.09e+32	-5.27	45207 /			
PLOG / 350.0	4.56e+31	-5.14	45111 /			
PLOG / 400.0	2.13e+31	-5.03	45027 /			
PLOG / 450.0	1.04e+31	-4.93	44944 /			
PLOG / 500.0	5.83e+30	-4.85	44879 /			
PLOG / 600.0	1.85e+30	-4.69	44743 /			
PLOG / 700.0	7.6e+29	-4.56	44639 /			
PLOG / 800.0	3.55e+29	-4.45	44550 /			
PLOG / 900.0	1.69e+29	-4.35	44460 /			
PLOG / 1000.0	9.48e+28	-4.27	44391 /			
PLOG / 1500.0	8.25e+27	-3.93	44090 /			
PLOG / 2000.0	1.54e+27	-3.69	43881 /			
CH3ONO2<=>CH2O+HONO		1		0	0	!! R1340
PLOG / 0.001	2.59e+28	-6.54	48507 /			
PLOG / 0.01	8.13e+29	-6.67	47813 /			
PLOG / 0.1	6.41e+30	-6.63	47470 /			
PLOG / 1.0	1.48e+31	-6.42	47944 /			
PLOG / 10.0	1.71e+29	-5.52	48084 /			
PLOG / 25.0	3.34e+27	-4.9	47844 /			
PLOG / 50.0	1.43e+26	-4.41	47620 /			
PLOG / 75.0	2.08e+25	-4.11	47469 /			
PLOG / 100.0	4.88e+24	-3.9	47345 /			
PLOG / 150.0	6.02e+23	-3.59	47154 /			
PLOG / 200.0	1.22e+23	-3.35	46999 /			
PLOG / 250.0	3.5e+22	-3.17	46872 /			
PLOG / 300.0	1.23e+22	-3.02	46763 /			
PLOG / 350.0	5.11e+21	-2.89	46671 /			
PLOG / 400.0	2.35e+21	-2.78	46588 /			
PLOG / 450.0	1.13e+21	-2.67	46506 /			
PLOG / 500.0	6.27e+20	-2.59	46442 /			
PLOG / 600.0	1.93e+20	-2.42	46307 /			
PLOG / 700.0	7.73e+19	-2.29	46203 /			
PLOG / 800.0	3.52e+19	-2.18	46113 /			
PLOG / 900.0	1.63e+19	-2.07	46021 /			
PLOG / 1000.0	8.97e+18	-1.99	45952 /			
PLOG / 1500.0	7.04e+17	-1.63	45645 /			
PLOG / 2000.0	1.22e+17	-1.38	45429 /			
CH3ONO2<=>CH3+NO3		1		0	0	!! R1341
PLOG / 0.001	2.05e-12	3.45	127260 /			
PLOG / 0.01	4.24e-10	3.12	125974 /			
PLOG / 0.1	2.38e-06	2.4	123224 /			
PLOG / 1.0	3.31	1.06	118711 /			
PLOG / 10.0	7.89e+07	-0.51	110717 /			
PLOG / 25.0	2.33e+11	-1.26	106469 /			
PLOG / 50.0	3.02e+14	-1.95	102971 /			
PLOG / 75.0	2.75e+16	-2.4	100849 /			
PLOG / 100.0	6.63e+17	-2.72	99312 /			
PLOG / 150.0	5.64e+19	-3.16	97149 /			
PLOG / 200.0	1.14e+21	-3.45	95645 /			
PLOG / 250.0	1.12e+22	-3.67	94509 /			
PLOG / 300.0	6.17e+22	-3.83	93607 /			
PLOG / 350.0	2.73e+23	-3.98	92881 /			
PLOG / 400.0	8.42e+23	-4.08	92258 /			
PLOG / 450.0	2.26e+24	-4.17	91735 /			
PLOG / 500.0	5.57e+24	-4.25	91284 /			
PLOG / 600.0	1.95e+25	-4.36	90519 /			
PLOG / 700.0	6.12e+25	-4.46	89934 /			
PLOG / 800.0	1.6e+26	-4.54	89459 /			
PLOG / 900.0	3.29e+26	-4.6	89057 /			
PLOG / 1000.0	7.29e+26	-4.67	88742 /			

PLOG / 1500.0	6.65e+27	-4.83	87625 /			
PLOG / 2000.0	3.29e+28	-4.96	87040 /			
CH3ONO2<=>CH3OONO		1		0	0	!! R1342
PLOG / 0.001	1.43e+16	-3.52	69220 /			
PLOG / 0.01	2.89e+18	-3.85	67944 /			
PLOG / 0.1	1.26e+22	-4.54	65284 /			
PLOG / 1.0	1.56e+27	-5.6	61549 /			
PLOG / 10.0	9.27e+29	-5.95	58206 /			
PLOG / 25.0	1.55e+30	-5.82	57665 /			
PLOG / 50.0	1.86e+30	-5.71	57550 /			
PLOG / 75.0	1.66e+30	-5.61	57544 /			
PLOG / 100.0	1.28e+30	-5.52	57545 /			
PLOG / 150.0	6.98e+29	-5.37	57543 /			
PLOG / 200.0	3.5e+29	-5.23	57523 /			
PLOG / 250.0	1.88e+29	-5.11	57501 /			
PLOG / 300.0	1.01e+29	-5	57470 /			
PLOG / 350.0	5.86e+28	-4.91	57442 /			
PLOG / 400.0	3.46e+28	-4.82	57413 /			
PLOG / 450.0	2.01e+28	-4.73	57374 /			
PLOG / 500.0	1.31e+28	-4.66	57349 /			
PLOG / 600.0	4.88e+27	-4.5	57270 /			
PLOG / 700.0	2.25e+27	-4.38	57211 /			
PLOG / 800.0	1.13e+27	-4.27	57157 /			
PLOG / 900.0	5.41e+26	-4.16	57090 /			
PLOG / 1000.0	3.11e+26	-4.07	57046 /			
PLOG / 1500.0	2.23e+25	-3.68	56796 /			
PLOG / 2000.0	3.19e+24	-3.39	56601 /			
CH3OONO<=>CH2O+HNO2		1		0	0	!! R1343
PLOG / 0.001	1.9e+42	-10.58	43560 /			
PLOG / 0.01	1.9e+43	-10.58	43561 /			
PLOG / 0.1	1.93e+44	-10.58	43572 /			
PLOG / 1.0	2.01e+45	-10.6	43646 /			
PLOG / 10.0	1.3e+46	-10.63	43830 /			
PLOG / 25.0	1.99e+46	-10.64	43897 /			
PLOG / 50.0	2.43e+46	-10.65	43934 /			
PLOG / 75.0	2.44e+46	-10.64	43934 /			
PLOG / 100.0	2.87e+46	-10.66	43959 /			
PLOG / 150.0	2.88e+46	-10.66	43964 /			
PLOG / 200.0	2.88e+46	-10.66	43966 /			
PLOG / 250.0	2.88e+46	-10.66	43967 /			
PLOG / 300.0	2.88e+46	-10.65	43968 /			
PLOG / 350.0	2.88e+46	-10.65	43969 /			
PLOG / 450.0	2.88e+46	-10.65	43970 /			
PLOG / 700.0	2.88e+46	-10.65	43971 /			
PLOG / 1500.0	2.88e+46	-10.65	43972 /			
PLOG / 2000.0	2.88e+46	-10.65	43972 /			
CH3OONO<=>CH3OONOI		1		0	0	!! R1344
PLOG / 0.001	2.62e+46	-11.1	43538 /			
PLOG / 0.01	2.63e+47	-11.1	43540 /			
PLOG / 0.1	2.67e+48	-11.1	43551 /			
PLOG / 1.0	2.8e+49	-11.12	43629 /			
PLOG / 10.0	1.81e+50	-11.14	43820 /			
PLOG / 25.0	2.76e+50	-11.16	43887 /			
PLOG / 50.0	3.36e+50	-11.16	43925 /			
PLOG / 75.0	3.38e+50	-11.16	43924 /			
PLOG / 100.0	3.98e+50	-11.18	43950 /			
PLOG / 150.0	3.98e+50	-11.17	43954 /			
PLOG / 200.0	3.98e+50	-11.17	43957 /			
PLOG / 250.0	3.98e+50	-11.17	43958 /			
PLOG / 300.0	3.98e+50	-11.17	43959 /			
PLOG / 350.0	3.98e+50	-11.17	43960 /			
PLOG / 500.0	3.98e+50	-11.17	43961 /			
PLOG / 800.0	3.98e+50	-11.17	43962 /			
PLOG / 1500.0	3.98e+50	-11.17	43963 /			
PLOG / 2000.0	3.98e+50	-11.17	43963 /			
CH3OONOI<=>CH3O+NO2		1		0	0	!! R1345
PLOG / 0.001	4.57e+43	-10.3	42142 /			
PLOG / 0.01	4.57e+44	-10.3	42142 /			
PLOG / 0.1	4.57e+45	-10.3	42142 /			
PLOG / 1.0	4.57e+46	-10.3	42142 /			
PLOG / 10.0	4.5e+47	-10.3	42142 /			


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PLOG / 25.0 1.1e+48 -10.3 42141 /
PLOG / 50.0 2.11e+48 -10.29 42140 /
PLOG / 75.0 3.04e+48 -10.29 42138 /
PLOG / 100.0 3.9e+48 -10.29 42137 /
PLOG / 150.0 5.44e+48 -10.28 42136 /
PLOG / 200.0 6.79e+48 -10.28 42134 /
PLOG / 250.0 7.96e+48 -10.27 42133 /
PLOG / 300.0 9e+48 -10.27 42132 /
PLOG / 350.0 9.91e+48 -10.26 42131 /
PLOG / 400.0 1.07e+49 -10.26 42130 /
PLOG / 450.0 1.14e+49 -10.25 42129 /
PLOG / 500.0 1.21e+49 -10.25 42129 /
PLOG / 600.0 1.31e+49 -10.24 42128 /
PLOG / 700.0 1.4e+49 -10.23 42126 /
PLOG / 800.0 1.47e+49 -10.22 42126 /
PLOG / 900.0 1.52e+49 -10.22 42125 /
PLOG / 1000.0 1.57e+49 -10.21 42124 /
PLOG / 1500.0 1.66e+49 -10.18 42120 /
PLOG / 2000.0 1.63e+49 -10.15 42115 /
CH3OONOI<=>CH3O2+NO 1 0 0 !! R1346
PLOG / 0.001 2.69e+37 -9.49 41771 /
PLOG / 0.01 2.69e+38 -9.49 41771 /
PLOG / 0.1 2.68e+39 -9.49 41770 /
PLOG / 1.0 2.67e+40 -9.49 41770 /
PLOG / 10.0 2.52e+41 -9.48 41765 /
PLOG / 25.0 5.71e+41 -9.47 41756 /
PLOG / 50.0 9.78e+41 -9.45 41742 /
PLOG / 75.0 1.26e+42 -9.43 41728 /
PLOG / 100.0 1.45e+42 -9.41 41715 /
PLOG / 150.0 1.64e+42 -9.38 41689 /
PLOG / 200.0 1.67e+42 -9.34 41665 /
PLOG / 250.0 1.62e+42 -9.31 41642 /
PLOG / 300.0 1.52e+42 -9.28 41620 /
PLOG / 350.0 1.4e+42 -9.25 41599 /
PLOG / 400.0 1.28e+42 -9.22 41579 /
PLOG / 450.0 1.16e+42 -9.19 41560 /
PLOG / 500.0 1.04e+42 -9.16 41541 /
PLOG / 600.0 8.36e+41 -9.11 41506 /
PLOG / 700.0 6.67e+41 -9.06 41472 /
PLOG / 800.0 5.38e+41 -9.01 41442 /
PLOG / 900.0 4.32e+41 -8.97 41412 /
PLOG / 1000.0 3.48e+41 -8.92 41384 /
PLOG / 1500.0 1.28e+41 -8.74 41261 /
PLOG / 2000.0 5.26e+40 -8.58 41160 /
CH3OONOI<=>CH2O+HONO 1 0 0 !! R1347
DUPLICATE !! with R1348
PLOG / 0.001 6.03e+28 -7.15 41652 /
PLOG / 0.01 6.03e+29 -7.15 41652 /
PLOG / 0.1 6.03e+30 -7.15 41652 /
PLOG / 1.0 5.99e+31 -7.15 41652 /
PLOG / 10.0 5.58e+32 -7.14 41645 /
PLOG / 25.0 1.24e+33 -7.12 41635 /
PLOG / 50.0 2.06e+33 -7.1 41617 /
PLOG / 75.0 2.58e+33 -7.07 41601 /
PLOG / 100.0 2.88e+33 -7.05 41584 /
PLOG / 150.0 3.09e+33 -7.01 41553 /
PLOG / 200.0 2.99e+33 -6.96 41524 /
PLOG / 250.0 2.75e+33 -6.92 41496 /
PLOG / 300.0 2.47e+33 -6.88 41469 /
PLOG / 350.0 2.18e+33 -6.85 41444 /
PLOG / 400.0 1.9e+33 -6.81 41419 /
PLOG / 450.0 1.65e+33 -6.78 41396 /
PLOG / 500.0 1.43e+33 -6.74 41374 /
PLOG / 600.0 1.07e+33 -6.68 41331 /
PLOG / 700.0 8.02e+32 -6.62 41290 /
PLOG / 800.0 6.09e+32 -6.57 41254 /
PLOG / 900.0 4.63e+32 -6.51 41219 /
PLOG / 1000.0 3.54e+32 -6.46 41185 /
PLOG / 1500.0 1.05e+32 -6.25 41043 /
PLOG / 2000.0 3.73e+31 -6.07 40927 /
CH3OONOI<=>CH2O+HONO 1 0 0 !! R1348

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DUPLICATE    !! with R1347
PLOG / 0.001 2.89e+13      -3.82  47775 /
PLOG / 0.01  2.89e+14      -3.82  47775 /
PLOG / 0.1   2.88e+15      -3.82  47775 /
PLOG / 1.0   2.86e+16      -3.82  47768 /
PLOG / 10.0  2.63e+17      -3.81  47699 /
PLOG / 25.0  5.71e+17      -3.78  47590 /
PLOG / 50.0  9.18e+17      -3.75  47420 /
PLOG / 75.0  1.12e+18      -3.71  47263 /
PLOG / 100.0 1.23e+18      -3.67  47117 /
PLOG / 150.0 1.28e+18      -3.61  46854 /
PLOG / 200.0 1.23e+18      -3.55  46624 /
PLOG / 250.0 1.14e+18      -3.5   46422 /
PLOG / 300.0 1.05e+18      -3.45  46242 /
PLOG / 350.0 9.55e+17      -3.41  46081 /
PLOG / 400.0 8.56e+17      -3.37  45934 /
PLOG / 450.0 7.83e+17      -3.33  45803 /
PLOG / 500.0 7.22e+17      -3.29  45685 /
PLOG / 600.0 6.06e+17      -3.23  45475 /
PLOG / 700.0 5.17e+17      -3.17  45296 /
PLOG / 800.0 4.76e+17      -3.13  45152 /
PLOG / 900.0 4.28e+17      -3.09  45023 /
PLOG / 1000.0 3.91e+17     -3.05  44911 /
PLOG / 1500.0 3.16e+17     -2.91  44532 /
PLOG / 2000.0 3.13e+17     -2.84  44326 /
CH3O+NO2<=>CH3O2+NO      1      0      0      !! R1349
PLOG / 0.001 3.86e+11      0.06  17230 /
PLOG / 1.0   3.87e+11      0.06  17230 /
PLOG / 10.0  3.96e+11      0.06  17235 /
PLOG / 25.0  3.99e+11      0.06  17245 /
PLOG / 50.0  3.62e+11      0.07  17239 /
PLOG / 75.0  3.15e+11      0.09  17223 /
PLOG / 100.0 2.75e+11      0.11  17204 /
PLOG / 150.0 2.15e+11      0.14  17168 /
PLOG / 200.0 1.76e+11      0.16  17137 /
PLOG / 250.0 1.5e+11       0.18  17110 /
PLOG / 300.0 1.31e+11      0.2   17088 /
PLOG / 350.0 1.17e+11      0.22  17068 /
PLOG / 400.0 1.06e+11      0.23  17052 /
PLOG / 450.0 9.77e+10      0.24  17037 /
PLOG / 500.0 9.1e+10       0.25  17024 /
PLOG / 600.0 8.12e+10      0.26  17003 /
PLOG / 700.0 7.43e+10      0.27  16986 /
PLOG / 800.0 6.94e+10      0.28  16972 /
PLOG / 900.0 6.57e+10      0.29  16961 /
PLOG / 1000.0 6.29e+10     0.29  16952 /
PLOG / 1500.0 5.6e+10      0.31  16926 /
PLOG / 2000.0 5.44e+10     0.31  16919 /
CH3O+NO2<=>CH2O+HONO      1      0      0      !! R1350
PLOG / 0.001 22900         2.09  18871 /
PLOG / 10.0  23200         2.09  18874 /
PLOG / 25.0  23600         2.09  18883 /
PLOG / 50.0  22100         2.1   18882 /
PLOG / 75.0  19600         2.11  18869 /
PLOG / 100.0 17300         2.13  18853 /
PLOG / 150.0 13700         2.16  18820 /
PLOG / 200.0 11200         2.19  18790 /
PLOG / 250.0 9530          2.21  18764 /
PLOG / 300.0 8290          2.23  18741 /
PLOG / 350.0 7370          2.24  18721 /
PLOG / 400.0 6660          2.25  18704 /
PLOG / 450.0 6110          2.27  18689 /
PLOG / 500.0 5670          2.28  18676 /
PLOG / 600.0 5010          2.29  18653 /
PLOG / 700.0 4560          2.3   18635 /
PLOG / 800.0 4230          2.31  18621 /
PLOG / 900.0 3980          2.32  18609 /
PLOG / 1000.0 3800         2.32  18599 /
PLOG / 1500.0 3320         2.34  18568 /
PLOG / 2000.0 3180         2.34  18556 /
CH3O+NO2<=>CH2O+HNO2      1      0      0      !! R1351

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PLOG / 0.001	518000	1.77	13434 /			
PLOG / 0.01	518000	1.77	13433 /			
PLOG / 0.1	517000	1.77	13432 /			
PLOG / 1.0	512000	1.77	13423 /			
PLOG / 10.0	2260000	1.59	13805 /			
PLOG / 25.0	1.22e+07	1.39	14414 /			
PLOG / 50.0	2.04e+07	1.34	14889 /			
PLOG / 75.0	1.37e+07	1.41	15093 /			
PLOG / 100.0	6950000	1.51	15186 /			
PLOG / 150.0	1440000	1.72	15228 /			
PLOG / 200.0	303000	1.94	15190 /			
PLOG / 250.0	70900	2.13	15121 /			
PLOG / 300.0	18700	2.31	15040 /			
PLOG / 350.0	5480	2.47	14955 /			
PLOG / 400.0	1770	2.62	14870 /			
PLOG / 450.0	624	2.75	14787 /			
PLOG / 500.0	237	2.88	14706 /			
PLOG / 600.0	41.2	3.11	14554 /			
PLOG / 700.0	8.84	3.31	14414 /			
PLOG / 800.0	2.24	3.49	14285 /			
PLOG / 900.0	0.65	3.65	14167 /			
PLOG / 1000.0	0.211	3.79	14058 /			
PLOG / 1500.0	0.00249	4.36	13621 /			
PLOG / 2000.0	0.0001	4.77	13302 /			
2CH3O<=>CH2O+CH3OH		6.03e+13		0	0	!! R1352
CH3O+CH2O<=>CH3OH+HCO		1.02e+11		0	2979.982	!! R1353
CH3O2+M<=>CH3+O2+M		4.343e+27		-3.42	30469.82	!! R1354
REV/ 5.44e+25	-3.3	0 /				
CH3O2H<=>CH3O+OH		6.31e+14		0	42299.74	!! R1355
CH3O2+CH2O<=>CH3O2H+HCO		1.99e+12		0	11669.93	!! R1356
C2H4+CH3O2<=>C2H3+CH3O2H		1.13e+13		0	30429.82	!! R1357
CH4+CH3O2<=>CH3+CH3O2H		1.81e+11		0	18479.89	!! R1358
CH3OH+CH3O2<=>CH2OH+CH3O2H		1.81e+12		0	13709.92	!! R1359
CH3O2+CH3<=>2CH3O		7e+12		0	-999.994	!! R1360
CH3O2+C2H5<=>CH3O+C2H5O		7e+12		0	-999.994	!! R1361
CH3O2+HO2<=>CH3O2H+O2		1.75e+10		0	-3274.98	!! R1362
2CH3O2=>CH2O+CH3OH+O2		3.11e+14		-1.61	-1050.994	!! R1363
2CH3O2=>O2+2CH3O		1.4e+16		-1.61	1859.989	!! R1364
C2H6+CH3O2<=>C2H5+CH3O2H		1.7e+13		0	20459.88	!! R1365
CH3O2+CH3CHO<=>CH3O2H+CH3CO		3.01e+12		0	11929.93	!! R1366
ETONO2+OH<=>CJCONO2+H2O		5.5e+12		0	2399.986	!! R1367
ETONO2+H<=>CJCONO2+H2		3.18e+13		0	8699.947	!! R1368
ETONO2+O<=>CJCONO2+OH		670000		2.4	4699.972	!! R1369
ETONO2+O2<=>CJCONO2+HO2		1.97e+11		0.6	50089.7	!! R1370
ETONO2+NO2<=>CJCONO2+HNO2		8e+13		0	33799.8	!! R1371
ETONO2+NO2<=>CJCONO2+HONO		1.1e+13		0	31099.81	!! R1372
CJCONO2<=>C2H4+NO3		3.187e+11		0.66616	22352.87	!! R1373
CJCONO2<=>CDCONO2+H		6.5483e+08		1.39014	37641.77	!! R1374
CJCONO2<=>C2H4O+NO2		3.3567e+08		1.25851	18997.89	!! R1375
C2H4O+NO2<=>YC2JO+HNO2		1.8868		4.1299	28244.83	!! R1376
C2H4O+NO2<=>YC2JO+HONO		9.0736e-08		6.5038	23231.86	!! R1377
C2H4O+O2<=>YC2JO+HO2		368820		3.1454	48117.71	!! R1378
C2H4O+H<=>YC2JO+H2		9.6e+08		1.5	9071.225	!! R1379
C2H4O+O<=>YC2JO+OH		6.8e+08		1.5	7382.365	!! R1380
C2H4O+OH<=>YC2JO+H2O		4800000		2	0	!! R1381
C2H4O+CH3<=>YC2JO+CH4		3240000		1.87	12272.27	!! R1382
YC2JO<=>CH2CHO		2.1967e+12		0.37094	14333.91	!! R1383
CJCONO2+OH<=>CDCONO2+H2O		2.41e+13		0	0	!! R1384
CJCONO2+H<=>CDCONO2+H2		1.81e+12		0	0	!! R1385
CJCONO2+O<=>CDCONO2+OH		3.17e+12		0.03	-389.9976	!! R1386
CJCONO2+O2<=>CDCONO2+HO2		8.43e+11		0	3879.977	!! R1387
CJCONO2+NO2<=>COJCONO2+NO		1		0	0	!! R1388
PLOG / 0.001	2.03e+13	0	0 /			
PLOG / 0.1	3.25e+13	-0.06	112 /			
PLOG / 1.0	6.95e+15	-0.73	1490 /			
PLOG / 10.0	1.96e+19	-1.69	4110 /			
PLOG / 25.0	4.49e+19	-1.77	4921 /			
PLOG / 50.0	1.3e+19	-1.58	5243 /			
PLOG / 75.0	2.55e+18	-1.36	5278 /			
PLOG / 100.0	5.25e+17	-1.15	5228 /			
PLOG / 150.0	3.2e+16	-0.79	5054 /			

PLOG / 200.0	3.04e+15	-0.48	4861 /		
PLOG / 250.0	4.07e+14	-0.22	4676 /		
PLOG / 300.0	7.11e+13	0	4504 /		
PLOG / 350.0	1.53e+13	0.2	4345 /		
PLOG / 400.0	3.88e+12	0.38	4200 /		
PLOG / 450.0	1.13e+12	0.53	4065 /		
PLOG / 500.0	3.66e+11	0.68	3941 /		
PLOG / 600.0	5.06e+10	0.93	3718 /		
PLOG / 700.0	9.27e+09	1.14	3522 /		
PLOG / 800.0	2.1e+09	1.33	3349 /		
PLOG / 900.0	5.64e+08	1.5	3193 /		
PLOG / 1000.0	1.73e+08	1.65	3053 /		
PLOG / 1500.0	1870000	2.21	2504 /		
PLOG / 2000.0	79000	2.61	2114 /		
COJCONO2<=>2CH2O+NO2	2.8145e+09	1.34319	13865.92	!!	R1389
CJCONO2+O2<=>CQJCONO2	6e+12	0	0	!!	R1390
CQJCONO2<=>CDCONO2+HO2	506690	1.50437	29253.82	!!	R1391
CQJCONO2<=>CDOCQ+NO2	1346.8	2.51831	21509.87	!!	R1392
CH2CHO+HO2<=>CDOCQ	1e+11	0	0	!!	R1393
CDOCOJ+OH<=>CDOCQ	1e+13	0	0	!!	R1394
CDOCQ+NO2<=>CDJOCQ+HNO2	46.3	3.2812	17498.89	!!	R1395
CDOCQ+NO2<=>CDJOCQ+HONO	0.00439	4.3887	10945.93	!!	R1396
CDOCQ+O2<=>CDJOCQ+HO2	3.01e+13	0	39069.76	!!	R1397
CDOCQ+H<=>CDJOCQ+H2	2.4e+08	1.5	-555.2166	!!	R1398
CDOCQ+O<=>CDJOCQ+OH	1.7e+08	1.5	0	!!	R1399
CDOCQ+OH<=>CDJOCQ+H2O	1200000	2	0	!!	R1400
CDOCQ+CH3<=>CDJOCQ+CH4	810000	1.87	2645.824	!!	R1401
CDJOCQ<=>CH2O+OH+CO	3.0612e+18	-1.09822	13071.92	!!	R1402
CDOCQ+NO2<=>CHOCHO+OH+HNO2	0.0070978	4.5558	15318.91	!!	R1403
CDOCQ+NO2<=>CHOCHO+OH+HONO	1.1118e-06	5.9266	10435.94	!!	R1404
CDOCQ+O2<=>CHOCHO+OH+HO2	128.52	3.029	35204.79	!!	R1405
CDOCQ+H<=>CHOCHO+OH+H2	4.8e+08	1.5	-1874.709	!!	R1406
CDOCQ+O<=>CHOCHO+2OH	3.4e+08	1.5	-5247.558	!!	R1407
CDOCQ+OH<=>CHOCHO+OH+H2O	2400000	2	0	!!	R1408
CDOCQ+CH3<=>CHOCHO+OH+CH4	1620000	1.87	1326.332	!!	R1409
CNO2CDO<=>CH2CHO+NO2	1.2725e+17	-0.69104	50944.69	!!	R1410
CONOCDO<=>CDOCOJ+NO	5.7821e+16	-0.64694	39376.76	!!	R1411
CDCONO2<=>CH2CHO+NO2	2.7292e+13	0.23932	22571.86	!!	R1412
CNO2CDO<=>HONO+CH2CO	1.0569e+07	1.31327	63477.62	!!	R1413
CDCONO2<=>CONOCDO	1.3114e+11	0.27608	24546.85	!!	R1414
CDCONO2+H<=>CDCJONO2+H2	2.4e+08	1.5	13419.92	!!	R1415
CDCONO2+O<=>CDCJONO2+OH	1.7e+08	1.5	12309.93	!!	R1416
CDCONO2+OH<=>CDCJONO2+H2O	1200000	2	5832.065	!!	R1417
CDCONO2+CH3<=>CDCJONO2+CH4	810000	1.87	16600.9	!!	R1418
CDCONO2+NH2<=>CDCJONO2+NH3	920000	1.94	9393.943	!!	R1419
CDCONO2+NO2<=>CDCJONO2+HONO	2.5e+07	1.26	31995.81	!!	R1420
CDCONO2+NO2<=>CDCJONO2+HNO2	0.0070978	4.5558	40098.76	!!	R1421
CDCONO2+O2<=>CDCJONO2+HO2	128.52	3.029	58724.65	!!	R1422
CDCJONO2<=>CH2CO+NO2	6.094e+11	0.48527	1781.589	!!	R1423
CONOCDO+H<=>CJONOCDO+H2	4.8e+08	1.5	0	!!	R1424
CONOCDO+O<=>CJONOCDO+OH	3.4e+08	1.5	0	!!	R1425
CONOCDO+OH<=>CJONOCDO+H2O	2400000	2	0	!!	R1426
CONOCDO+CH3<=>CJONOCDO+CH4	1620000	1.87	871.3347	!!	R1427
CONOCDO+NH2<=>CJONOCDO+NH3	1840000	1.94	3827.977	!!	R1428
CONOCDO+NO2<=>CJONOCDO+HONO	2.5e+07	1.26	12031.93	!!	R1429
CONOCDO+NO2<=>CJONOCDO+HNO2	0.014196	4.5558	15898.9	!!	R1430
CONOCDO+O2<=>CJONOCDO+HO2	257.04	3.029	34524.79	!!	R1431
CJONOCDO<=>NO+CHOCHO	7.0112e+11	0.49949	1870.389	!!	R1432
CONOCDO+H<=>CONOCDJO+H2	2.4e+08	1.5	-139.2192	!!	R1433
CONOCDO+O<=>CONOCDJO+OH	1.7e+08	1.5	0	!!	R1434
CONOCDO+OH<=>CONOCDJO+H2O	1200000	2	0	!!	R1435
CONOCDO+CH3<=>CONOCDJO+CH4	810000	1.87	3042.282	!!	R1436
CONOCDO+NH2<=>CONOCDJO+NH3	920000	1.94	4596.172	!!	R1437
CONOCDO+NO2<=>CONOCDJO+HONO	2.5e+07	1.26	14786.91	!!	R1438
CONOCDO+NO2<=>CONOCDJO+HNO2	0.0070978	4.5558	19238.88	!!	R1439
CONOCDO+O2<=>CONOCDJO+HO2	128.52	3.029	37864.77	!!	R1440
CONOCDJO<=>NO2+CH2CO	5.1392e+11	0.58445	15546.91	!!	R1441
CONOCDJO<=>CO+CH2O+NO	8.4942e+11	0.7367	12466.92	!!	R1442
CNO2CDO+H<=>CJNO2CDO+H2	4.8e+08	1.5	3026.282	!!	R1443
CNO2CDO+O<=>CJNO2CDO+OH	3.4e+08	1.5	317.4081	!!	R1444
CNO2CDO+OH<=>CJNO2CDO+H2O	2400000	2	0	!!	R1445

CNO2CDO+CH3<=>CJNO2CDO+CH4	1620000	1.87	6207.763	!!	R1446
CNO2CDO+NH2<=>CJNO2CDO+NH3	1840000	1.94	5716.265	!!	R1447
CNO2CDO+NO2<=>CJNO2CDO+HONO	2.5e+07	1.26	18804.89	!!	R1448
CNO2CDO+NO2<=>CJNO2CDO+HNO2	0.014196	4.5558	24108.85	!!	R1449
CNO2CDO+O2<=>CJNO2CDO+HO2	257.04	3.029	42734.74	!!	R1450
CJNO2CDO<=>KDCNOHOJ	1.866e+10	0.61297	19165.88	!!	R1451
KDCNOHOJ<=>HCCO+HONO	7461400	2.67751	16961.9	!!	R1452
CNO2CDO+H<=>CNO2CDJO+H2	2.4e+08	1.5	484.7771	!!	R1453
CNO2CDO+O<=>CNO2CDJO+OH	1.7e+08	1.5	0	!!	R1454
CNO2CDO+OH<=>CNO2CDJO+H2O	1200000	2	0	!!	R1455
CNO2CDO+CH3<=>CNO2CDJO+CH4	810000	1.87	3666.278	!!	R1456
CNO2CDO+NH2<=>CNO2CDJO+NH3	920000	1.94	4816.971	!!	R1457
CNO2CDO+NO2<=>CNO2CDJO+HONO	2.5e+07	1.26	15578.91	!!	R1458
CNO2CDO+NO2<=>CNO2CDJO+HNO2	0.0070978	4.5558	20198.88	!!	R1459
CNO2CDO+O2<=>CNO2CDJO+HO2	128.52	3.029	38824.77	!!	R1460
CNO2CDJO<=>H2CNO2+CO	7.3922e+11	0.74481	10566.94	!!	R1461
ETONO2+H<=>CH3CHO+NO2+H2	4.8e+08	1.5	5151.749	!!	R1462
ETONO2+O<=>CH3CHO+NO2+OH	3.4e+08	1.5	2859.893	!!	R1463
ETONO2+OH<=>CH3CHO+NO2+H2O	2400000	2	-557.8566	!!	R1464
ETONO2+CH3<=>CH3CHO+NO2+CH4	1620000	1.87	8352.79	!!	R1465
ETONO2+O2<=>CH3CHO+NO2+HO2	128.52	3.029	46014.72	!!	R1466
ETONO2+NO2<=>CH3CHO+NO2+HNO2	0.0070978	4.5558	26128.84	!!	R1467
ETONO2+NO2<=>CH3CHO+NO2+HONO	3.7229e-07	6.07713	21098.87	!!	R1468
ETONO2<=>C2H5O+NO2	1	0	0	!!	R1469
PLOG / 0.001 9.95e+50	-12.42	45970	/		
PLOG / 0.01 1.27e+52	-12.44	47228	/		
PLOG / 0.1 1.4e+48	-10.9	46975	/		
PLOG / 1.0 6.09e+43	-9.28	46541	/		
PLOG / 10.0 4.05e+39	-7.78	45975	/		
PLOG / 25.0 1.82e+37	-6.99	45451	/		
PLOG / 50.0 2.15e+35	-6.36	44974	/		
PLOG / 75.0 1.32e+34	-5.96	44658	/		
PLOG / 100.0 1.85e+33	-5.68	44429	/		
PLOG / 150.0 1.02e+32	-5.27	44083	/		
PLOG / 200.0 1.28e+31	-4.98	43830	/		
PLOG / 250.0 2.53e+30	-4.75	43629	/		
PLOG / 300.0 6.93e+29	-4.57	43467	/		
PLOG / 350.0 2.32e+29	-4.42	43330	/		
PLOG / 400.0 8.52e+28	-4.28	43203	/		
PLOG / 450.0 3.53e+28	-4.16	43090	/		
PLOG / 500.0 1.72e+28	-4.06	42998	/		
PLOG / 600.0 4.47e+27	-3.87	42824	/		
PLOG / 700.0 1.33e+27	-3.7	42666	/		
PLOG / 800.0 4.98e+26	-3.57	42537	/		
PLOG / 900.0 1.98e+26	-3.44	42415	/		
PLOG / 1000.0 8.69e+25	-3.33	42307	/		
PLOG / 1500.0 3.03e+24	-2.87	41857	/		
PLOG / 2000.0 2.98e+23	-2.55	41546	/		
ETONO2<=>CH3CHO+HONO	1	0	0	!!	R1470
PLOG / 0.001 1.53e+40	-10.39	47797	/		
PLOG / 0.01 5.64e+43	-11.06	49359	/		
PLOG / 0.1 1.86e+41	-9.89	49569	/		
PLOG / 1.0 7.27e+37	-8.49	49655	/		
PLOG / 10.0 1.47e+34	-7.07	49476	/		
PLOG / 25.0 6.1e+31	-6.25	49013	/		
PLOG / 50.0 5.67e+29	-5.57	48551	/		
PLOG / 75.0 2.84e+28	-5.14	48230	/		
PLOG / 100.0 3.39e+27	-4.84	47994	/		
PLOG / 150.0 1.44e+26	-4.39	47632	/		
PLOG / 200.0 1.48e+25	-4.07	47363	/		
PLOG / 250.0 2.48e+24	-3.82	47148	/		
PLOG / 300.0 5.91e+23	-3.62	46975	/		
PLOG / 350.0 1.76e+23	-3.45	46826	/		
PLOG / 400.0 5.8e+22	-3.29	46688	/		
PLOG / 450.0 2.18e+22	-3.15	46566	/		
PLOG / 500.0 9.78e+21	-3.04	46466	/		
PLOG / 600.0 2.19e+21	-2.83	46276	/		
PLOG / 700.0 5.69e+20	-2.65	46103	/		
PLOG / 800.0 1.91e+20	-2.5	45963	/		
PLOG / 900.0 6.82e+19	-2.35	45829	/		
PLOG / 1000.0 2.74e+19	-2.23	45711	/		

PLOG / 1500.0	6.71e+17	-1.71	45222 /			
PLOG / 2000.0	5.27e+16	-1.36	44884 /			
ETONO2<=>C2H4+HNO3			1	0	0	!! R1471
PLOG / 0.001	1.03e+35	-9.03	49675 /			
PLOG / 0.01	6.28e+40	-10.32	50841 /			
PLOG / 0.1	8.6e+39	-9.57	51279 /			
PLOG / 1.0	3.84e+37	-8.42	51785 /			
PLOG / 10.0	3.53e+34	-7.16	52001 /			
PLOG / 25.0	1.7e+32	-6.34	51624 /			
PLOG / 50.0	1.49e+30	-5.64	51196 /			
PLOG / 75.0	6.79e+28	-5.19	50882 /			
PLOG / 100.0	7.41e+27	-4.87	50648 /			
PLOG / 150.0	2.67e+26	-4.4	50282 /			
PLOG / 200.0	2.41e+25	-4.06	50006 /			
PLOG / 250.0	3.61e+24	-3.79	49784 /			
PLOG / 300.0	7.86e+23	-3.57	49604 /			
PLOG / 350.0	2.15e+23	-3.39	49450 /			
PLOG / 400.0	6.58e+22	-3.22	49305 /			
PLOG / 450.0	2.31e+22	-3.08	49176 /			
PLOG / 500.0	9.77e+21	-2.96	49072 /			
PLOG / 600.0	1.96e+21	-2.73	48872 /			
PLOG / 700.0	4.63e+20	-2.53	48689 /			
PLOG / 800.0	1.43e+20	-2.37	48541 /			
PLOG / 900.0	4.76e+19	-2.21	48400 /			
PLOG / 1000.0	1.8e+19	-2.08	48275 /			
PLOG / 1500.0	3.41e+17	-1.53	47759 /			
PLOG / 2000.0	2.29e+16	-1.16	47406 /			
ETONO2<=>C2H5+NO3			1	0	0	!! R1472
PLOG / 0.001	4.37e-07	1.52	127157 /			
PLOG / 0.01	0.19	0.2	122448 /			
PLOG / 0.1	73.2	-0.13	113817 /			
PLOG / 1.0	9.2e+07	-1.46	102335 /			
PLOG / 10.0	4.39e+22	-5.17	91430 /			
PLOG / 25.0	3.21e+30	-7.14	89347 /			
PLOG / 50.0	1.71e+36	-8.53	88923 /			
PLOG / 75.0	1.25e+39	-9.18	89002 /			
PLOG / 100.0	1.09e+41	-9.62	89219 /			
PLOG / 150.0	2.02e+43	-10.11	89608 /			
PLOG / 200.0	5.7e+44	-10.41	89967 /			
PLOG / 250.0	6.35e+45	-10.62	90285 /			
PLOG / 300.0	4.67e+46	-10.8	90586 /			
PLOG / 350.0	2.28e+47	-10.94	90846 /			
PLOG / 400.0	7.44e+47	-11.04	91055 /			
PLOG / 450.0	2.02e+48	-11.12	91242 /			
PLOG / 500.0	5.8e+48	-11.22	91438 /			
PLOG / 600.0	2.62e+49	-11.35	91744 /			
PLOG / 700.0	7.1e+49	-11.42	91970 /			
PLOG / 800.0	1.83e+50	-11.5	92178 /			
PLOG / 900.0	3.68e+50	-11.55	92347 /			
PLOG / 1000.0	7.41e+50	-11.61	92514 /			
PLOG / 1500.0	4.05e+51	-11.71	92997 /			
PLOG / 2000.0	1.28e+52	-11.79	93329 /			
ETONO2<=>CCOONO			1	0	0	!! R1473
PLOG / 0.001	3.69e+24	-6.37	62830 /			
PLOG / 0.01	1.32e+31	-7.94	59422 /			
PLOG / 0.1	2.11e+36	-8.93	57178 /			
PLOG / 1.0	2.81e+40	-9.54	58208 /			
PLOG / 10.0	3.28e+41	-9.3	59931 /			
PLOG / 25.0	1.4e+40	-8.69	60090 /			
PLOG / 50.0	3.12e+38	-8.06	59967 /			
PLOG / 75.0	1.75e+37	-7.62	59781 /			
PLOG / 100.0	2.01e+36	-7.29	59618 /			
PLOG / 150.0	6.3e+34	-6.77	59319 /			
PLOG / 200.0	4.63e+33	-6.38	59070 /			
PLOG / 250.0	5.6e+32	-6.08	58859 /			
PLOG / 300.0	9.99e+31	-5.83	58682 /			
PLOG / 350.0	2.27e+31	-5.61	58528 /			
PLOG / 400.0	5.77e+30	-5.41	58378 /			
PLOG / 450.0	1.7e+30	-5.24	58243 /			
PLOG / 500.0	6.24e+29	-5.1	58134 /			
PLOG / 600.0	9.47e+28	-4.83	57921 /			

PLOG / 700.0	1.71e+28	-4.58	57722 /			
PLOG / 800.0	4.27e+27	-4.39	57560 /			
PLOG / 900.0	1.16e+27	-4.2	57406 /			
PLOG / 1000.0	3.69e+26	-4.04	57270 /			
PLOG / 1500.0	3.56e+24	-3.39	56703 /			
PLOG / 2000.0	1.6e+23	-2.95	56323 /			
CCOONO<=>CH3CHO+HNO2				1	0	0 !! R1474
PLOG / 0.001	7.31e+45	-12.52	41677 /			
PLOG / 0.01	7.32e+46	-12.52	41678 /			
PLOG / 0.1	7.41e+47	-12.52	41683 /			
PLOG / 1.0	8.05e+48	-12.53	41723 /			
PLOG / 10.0	1.01e+50	-12.57	41950 /			
PLOG / 25.0	2.08e+50	-12.55	42103 /			
PLOG / 50.0	2.47e+50	-12.5	42196 /			
PLOG / 75.0	2.53e+50	-12.47	42251 /			
PLOG / 100.0	2.24e+50	-12.43	42262 /			
PLOG / 150.0	2.14e+50	-12.4	42294 /			
PLOG / 200.0	1.86e+50	-12.37	42299 /			
PLOG / 250.0	2.15e+50	-12.38	42341 /			
PLOG / 300.0	1.78e+50	-12.35	42323 /			
PLOG / 350.0	1.39e+50	-12.31	42290 /			
PLOG / 400.0	1.39e+50	-12.31	42299 /			
PLOG / 450.0	1.51e+50	-12.31	42323 /			
PLOG / 500.0	1.62e+50	-12.32	42339 /			
PLOG / 600.0	1.63e+50	-12.32	42348 /			
PLOG / 700.0	1.59e+50	-12.31	42352 /			
PLOG / 800.0	1.62e+50	-12.31	42361 /			
PLOG / 900.0	1.72e+50	-12.32	42379 /			
PLOG / 1000.0	1.68e+50	-12.31	42378 /			
PLOG / 1500.0	1.55e+50	-12.3	42374 /			
PLOG / 2000.0	1.48e+50	-12.29	42372 /			
CCOONO<=>CCOONO_I				1	0	0 !! R1475
PLOG / 0.001	1.29e+52	-12.82	41644 /			
PLOG / 0.01	1.29e+53	-12.82	41644 /			
PLOG / 0.1	1.31e+54	-12.82	41649 /			
PLOG / 1.0	1.43e+55	-12.83	41693 /			
PLOG / 10.0	1.82e+56	-12.87	41930 /			
PLOG / 25.0	3.68e+56	-12.85	42087 /			
PLOG / 50.0	4.3e+56	-12.8	42181 /			
PLOG / 75.0	4.37e+56	-12.76	42235 /			
PLOG / 100.0	3.85e+56	-12.73	42246 /			
PLOG / 150.0	3.65e+56	-12.69	42277 /			
PLOG / 200.0	3.17e+56	-12.66	42283 /			
PLOG / 250.0	3.64e+56	-12.67	42324 /			
PLOG / 300.0	3.02e+56	-12.64	42306 /			
PLOG / 350.0	2.36e+56	-12.6	42273 /			
PLOG / 400.0	2.36e+56	-12.6	42283 /			
PLOG / 450.0	2.56e+56	-12.61	42305 /			
PLOG / 500.0	2.74e+56	-12.61	42322 /			
PLOG / 600.0	2.74e+56	-12.61	42331 /			
PLOG / 700.0	2.67e+56	-12.6	42335 /			
PLOG / 800.0	2.72e+56	-12.6	42343 /			
PLOG / 900.0	2.89e+56	-12.61	42362 /			
PLOG / 1000.0	2.82e+56	-12.61	42360 /			
PLOG / 1500.0	2.6e+56	-12.59	42356 /			
PLOG / 2000.0	2.5e+56	-12.58	42354 /			
CCOONO_I<=>C2H5O+NO2				1	0	0 !! R1476
PLOG / 0.001	6.37e+52	-13.1	42526 /			
PLOG / 0.01	6.37e+53	-13.1	42526 /			
PLOG / 0.1	6.36e+54	-13.1	42527 /			
PLOG / 1.0	6.25e+55	-13.1	42535 /			
PLOG / 10.0	5.14e+56	-13.07	42597 /			
PLOG / 25.0	9.14e+56	-13.03	42653 /			
PLOG / 50.0	1.13e+57	-12.97	42702 /			
PLOG / 75.0	1.15e+57	-12.93	42733 /			
PLOG / 100.0	1.1e+57	-12.89	42754 /			
PLOG / 150.0	9.88e+56	-12.83	42787 /			
PLOG / 200.0	8.65e+56	-12.78	42809 /			
PLOG / 250.0	7.58e+56	-12.74	42825 /			
PLOG / 300.0	6.51e+56	-12.7	42835 /			
PLOG / 350.0	5.61e+56	-12.66	42842 /			

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PLOG / 400.0 4.87e+56 -12.63 42848 /
PLOG / 450.0 4.1e+56 -12.6 42846 /
PLOG / 500.0 3.62e+56 -12.57 42850 /
PLOG / 600.0 2.64e+56 -12.51 42844 /
PLOG / 700.0 1.88e+56 -12.45 42830 /
PLOG / 800.0 1.38e+56 -12.4 42816 /
PLOG / 900.0 9.12e+55 -12.33 42784 /
PLOG / 1000.0 5.94e+55 -12.26 42748 /
PLOG / 1500.0 5.88e+53 -11.6 42185 /
PLOG / 2000.0 6.88e+53 -11.6 42292 /
CCOONO_I<=>C2H5O2+NO 1 0 0 !! R1477
PLOG / 0.001 2.08e+46 -11.79 42432 /
PLOG / 0.01 2.08e+47 -11.79 42432 /
PLOG / 0.1 2.07e+48 -11.79 42433 /
PLOG / 1.0 2.04e+49 -11.78 42441 /
PLOG / 10.0 1.64e+50 -11.76 42501 /
PLOG / 25.0 2.78e+50 -11.71 42552 /
PLOG / 50.0 3.15e+50 -11.63 42594 /
PLOG / 75.0 2.94e+50 -11.58 42617 /
PLOG / 100.0 2.58e+50 -11.52 42629 /
PLOG / 150.0 1.94e+50 -11.44 42644 /
PLOG / 200.0 1.44e+50 -11.36 42648 /
PLOG / 250.0 1.08e+50 -11.3 42649 /
PLOG / 300.0 8e+49 -11.24 42642 /
PLOG / 350.0 5.99e+49 -11.18 42634 /
PLOG / 400.0 4.56e+49 -11.13 42625 /
PLOG / 450.0 3.37e+49 -11.08 42610 /
PLOG / 500.0 2.66e+49 -11.04 42602 /
PLOG / 600.0 1.56e+49 -10.94 42571 /
PLOG / 700.0 9.05e+48 -10.85 42534 /
PLOG / 800.0 5.54e+48 -10.77 42501 /
PLOG / 900.0 3.04e+48 -10.68 42449 /
PLOG / 1000.0 1.67e+48 -10.59 42393 /
PLOG / 1500.0 5.43e+45 -9.77 41692 /
PLOG / 2000.0 5.58e+45 -9.75 41799 /
CCOONO_I<=>CH3CHO+HONO 1 0 0 !! R1478
DUPLICATE !! with R1479
PLOG / 0.001 1.64e+39 -10.56 41915 /
PLOG / 0.01 1.64e+40 -10.56 41915 /
PLOG / 0.1 1.63e+41 -10.56 41916 /
PLOG / 1.0 1.59e+42 -10.56 41923 /
PLOG / 10.0 1.12e+43 -10.51 41972 /
PLOG / 25.0 1.51e+43 -10.42 42005 /
PLOG / 50.0 1.14e+43 -10.28 42014 /
PLOG / 75.0 7.23e+42 -10.16 42003 /
PLOG / 100.0 4.36e+42 -10.05 41983 /
PLOG / 150.0 1.69e+42 -9.86 41940 /
PLOG / 200.0 7.03e+41 -9.7 41896 /
PLOG / 250.0 3.23e+41 -9.56 41856 /
PLOG / 300.0 1.54e+41 -9.43 41813 /
PLOG / 350.0 7.9e+40 -9.32 41775 /
PLOG / 400.0 4.35e+40 -9.21 41743 /
PLOG / 450.0 2.36e+40 -9.11 41704 /
PLOG / 500.0 1.48e+40 -9.03 41682 /
PLOG / 600.0 5.63e+39 -8.87 41626 /
PLOG / 700.0 2.31e+39 -8.73 41570 /
PLOG / 800.0 1.09e+39 -8.6 41528 /
PLOG / 900.0 4.57e+38 -8.47 41463 /
PLOG / 1000.0 2.03e+38 -8.34 41400 /
PLOG / 1500.0 1.68e+35 -7.31 40596 /
PLOG / 2000.0 2.63e+35 -7.33 40836 /
CCOONO_I<=>CH3CHO+HONO 1 0 0 !! R1479
DUPLICATE !! with R1478
PLOG / 0.001 1.44e+19 -5.93 45048 /
PLOG / 0.01 1.44e+20 -5.93 45046 /
PLOG / 0.1 1.4e+21 -5.92 45030 /
PLOG / 1.0 1.12e+22 -5.89 44873 /
PLOG / 10.0 6.32e+22 -5.82 43935 /
PLOG / 25.0 5.08e+23 -5.95 43417 /
PLOG / 50.0 9.79e+24 -6.19 43269 /
PLOG / 75.0 8.49e+25 -6.38 43330 /

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PLOG / 100.0	4.07e+26	-6.5	43431 /			
PLOG / 150.0	4.06e+27	-6.68	43668 /			
PLOG / 200.0	2.08e+28	-6.81	43895 /			
PLOG / 250.0	7.61e+28	-6.91	44107 /			
PLOG / 300.0	2.08e+29	-6.98	44292 /			
PLOG / 350.0	5.02e+29	-7.04	44466 /			
PLOG / 400.0	1.12e+30	-7.1	44630 /			
PLOG / 450.0	2.1e+30	-7.15	44770 /			
PLOG / 500.0	4.37e+30	-7.21	44925 /			
PLOG / 600.0	1.32e+31	-7.29	45178 /			
PLOG / 700.0	3.16e+31	-7.36	45391 /			
PLOG / 800.0	7.29e+31	-7.43	45594 /			
PLOG / 900.0	1.17e+32	-7.45	45736 /			
PLOG / 1000.0	1.83e+32	-7.47	45870 /			
PLOG / 1500.0	9.88e+30	-6.95	45730 /			
PLOG / 2000.0	6.54e+32	-7.43	46550 /			
C2H5O+NO2<=>CH3CHO+HNO2	2.929	3.42488	-917.0345	!!	R1480	
C2H5O+NO2<=>CH3CHO+HONO	0.21748	3.62892	-1048.394	!!	R1481	
C2H5O+NO<=>CH3CHO+HNO	1.0583	3.43642	-923.6844	!!	R1482	
CH3CHO+NO2<=>CH3CO+HONO	2.5e+07	1.26	15397.91	!!	R1483	
CH3CHO+NO2<=>CH3CO+HNO2	0.0070978	4.5558	19978.88	!!	R1484	
CH3CHO+NO2<=>CH2CHO+HONO	2.5e+07	1.26	22673.86	!!	R1485	
CH3CHO+NO2<=>CH2CHO+HNO2	0.014196	4.5558	28798.83	!!	R1486	
CH3CO+NO2<=>CH3CO2+NO	4.51e+13	0	0	!!	R1487	
CH2CHO+NO2<=>CDOCOJ+NO	2.35e+13	0	0	!!	R1488	
CDOCOJ<=>HCO+CH2O	2.5284e+13	0.37546	8090.251	!!	R1489	
CDOCOJ+H<=>CHOCHO+H2	1.7318e+09	0.06848	-300.5782	!!	R1490	
CDOCOJ+HO2<=>CHOCHO+H2O2	1.8558e+17	-1.26402	4754.271	!!	R1491	
CDOCOJ+NO2<=>CHOCHO+HNO2	9.1481e+15	-1.08952	2130.787	!!	R1492	
CDOCOJ+NO2<=>CHOCHO+HONO	4.296e+17	-1.35246	4832.271	!!	R1493	
CDOCOJ+O2<=>CHOCHO+HO2	1.6984e+17	-1.53046	4871.971	!!	R1494	
CDOCOJ+O<=>CHOCHO+OH	9.2289e+15	-0.89341	-54.35567	!!	R1495	
CDOCOJ+OH<=>CHOCHO+H2O	1.2553e+17	-1.21194	1496.191	!!	R1496	
CDOCOJ+NO<=>CHOCHO+HNO	1.4868e+17	-1.39072	4953.67	!!	R1497	
C2H5O+NO2<=>C2H5O2+NO	1	0	0	!!	R1498	
PLOG / 0.001	19300	2.02	6217 /			
PLOG / 0.1	19200	2.02	6215 /			
PLOG / 1.0	25000	1.99	6279 /			
PLOG / 10.0	389000	1.65	7019 /			
PLOG / 25.0	2650000	1.42	7614 /			
PLOG / 50.0	1.17e+07	1.24	8149 /			
PLOG / 75.0	2.57e+07	1.15	8480 /			
PLOG / 100.0	4.15e+07	1.09	8716 /			
PLOG / 150.0	6.94e+07	1.04	9041 /			
PLOG / 200.0	8.63e+07	1.02	9260 /			
PLOG / 250.0	9.24e+07	1.02	9419 /			
PLOG / 300.0	9.06e+07	1.03	9541 /			
PLOG / 350.0	8.42e+07	1.04	9637 /			
PLOG / 400.0	7.56e+07	1.06	9715 /			
PLOG / 450.0	6.64e+07	1.08	9778 /			
PLOG / 500.0	5.73e+07	1.1	9831 /			
PLOG / 600.0	4.15e+07	1.15	9913 /			
PLOG / 700.0	2.94e+07	1.2	9972 /			
PLOG / 800.0	2.07e+07	1.25	10015 /			
PLOG / 900.0	1.45e+07	1.3	10047 /			
PLOG / 1000.0	1.02e+07	1.35	10070 /			
PLOG / 1500.0	1960000	1.58	10111 /			
PLOG / 2000.0	447000	1.78	10092 /			
C2H5O+NO2<=>CH3CHO+HONO	1	0	0	!!	R1499	
PLOG / 0.001	1.18e+08	0.76	18420 /			
PLOG / 10.0	1.18e+08	0.76	18419 /			
PLOG / 25.0	1.37e+08	0.74	18456 /			
PLOG / 50.0	2.02e+08	0.69	18562 /			
PLOG / 75.0	2.84e+08	0.65	18666 /			
PLOG / 100.0	3.73e+08	0.62	18758 /			
PLOG / 150.0	5.53e+08	0.57	18910 /			
PLOG / 200.0	7.2e+08	0.54	19033 /			
PLOG / 250.0	8.67e+08	0.52	19135 /			
PLOG / 300.0	9.89e+08	0.51	19223 /			
PLOG / 350.0	1.09e+09	0.5	19298 /			
PLOG / 400.0	1.16e+09	0.49	19365 /			

PLOG / 450.0	1.21e+09	0.49	19424 /			
PLOG / 500.0	1.23e+09	0.49	19477 /			
PLOG / 600.0	1.24e+09	0.49	19568 /			
PLOG / 700.0	1.19e+09	0.5	19642 /			
PLOG / 800.0	1.11e+09	0.51	19704 /			
PLOG / 900.0	1.02e+09	0.53	19756 /			
PLOG / 1000.0	9.14e+08	0.55	19801 /			
PLOG / 1500.0	4.73e+08	0.64	19944 /			
PLOG / 2000.0	2.25e+08	0.75	20011 /			
C2H5O+NO2<=>CH3CHO+HNO2		1		0	0	!! R1500
PLOG / 0.001	5230000	0.92	14471 /			
PLOG / 1.0	5170000	0.92	14468 /			
PLOG / 10.0	7070000	0.88	14539 /			
PLOG / 25.0	3.23e+07	0.69	14923 /			
PLOG / 50.0	3.35e+08	0.4	15557 /			
PLOG / 75.0	1.94e+09	0.19	16069 /			
PLOG / 100.0	7.44e+09	0.02	16486 /			
PLOG / 150.0	4.98e+10	-0.2	17129 /			
PLOG / 200.0	1.76e+11	-0.35	17608 /			
PLOG / 250.0	4.21e+11	-0.45	17983 /			
PLOG / 300.0	7.84e+11	-0.52	18287 /			
PLOG / 350.0	1.22e+12	-0.57	18539 /			
PLOG / 400.0	1.68e+12	-0.61	18752 /			
PLOG / 450.0	2.1e+12	-0.63	18935 /			
PLOG / 500.0	2.43e+12	-0.64	19093 /			
PLOG / 600.0	2.77e+12	-0.64	19354 /			
PLOG / 700.0	2.71e+12	-0.63	19559 /			
PLOG / 800.0	2.39e+12	-0.61	19724 /			
PLOG / 900.0	1.97e+12	-0.57	19859 /			
PLOG / 1000.0	1.54e+12	-0.53	19969 /			
PLOG / 1500.0	3.12e+11	-0.3	20303 /			
PLOG / 2000.0	5.12e+10	-0.04	20442 /			
CH3CHO<=>CH3+HCO		2.614e+15		0.15	80549.51	!! R1501
C2H5OH (+M) <=>CH3CHO+H2 (+M)		7.24e+11		0.1	91009.45	!! R1502
LOW / 3.11e+85	-18.84	113099.3 /				
TROE / 0.5	550	825	6100 /			
H2 / 2 / H2O / 5 / CO / 2 / CO2 / 3 /						
SC2H4OH+M<=>CH3CHO+H+M		1e+14		0	24999.85	!! R1503
REV/ 8.166e+12	0.37	729.9956 /				
SC2H4OH+O2<=>CH3CHO+HO2		3810000		2	1640.99	!! R1504
CH2O+OH<=>HOCH2O		1		0	0	!! R1505
PLOG / 0.001	3.13e+08	-2.77	14790 /			
PLOG / 0.01	7.97e+08	-2.65	12271 /			
PLOG / 0.1	3.84e+10	-2.93	8150 /			
PLOG / 1.0	1.78e+17	-4.64	4428 /			
PLOG / 10.0	1.63e+31	-8.28	6165 /			
PLOG / 25.0	1.94e+36	-9.54	7862 /			
PLOG / 50.0	2.95e+39	-10.28	9217 /			
PLOG / 75.0	1.06e+41	-10.63	9994 /			
PLOG / 100.0	9.59e+41	-10.83	10525 /			
PLOG / 150.0	1.27e+43	-11.04	11233 /			
PLOG / 200.0	5.38e+43	-11.15	11698 /			
PLOG / 250.0	1.31e+44	-11.2	12033 /			
PLOG / 300.0	2.33e+44	-11.22	12290 /			
PLOG / 350.0	3.42e+44	-11.22	12494 /			
PLOG / 400.0	4.39e+44	-11.21	12661 /			
PLOG / 450.0	5.17e+44	-11.2	12801 /			
PLOG / 500.0	5.7e+44	-11.18	12919 /			
PLOG / 600.0	6.09e+44	-11.14	13110 /			
PLOG / 700.0	5.85e+44	-11.09	13258 /			
PLOG / 800.0	5.26e+44	-11.04	13375 /			
PLOG / 900.0	4.55e+44	-10.99	13471 /			
PLOG / 1000.0	3.85e+44	-10.94	13551 /			
PLOG / 1500.0	1.46e+44	-10.7	13807 /			
PLOG / 2000.0	5.6e+43	-10.5	13941 /			
CH2O+OH<=>HOCHO+H		1		0	0	!! R1506
PLOG / 0.001	6330000	1.63	4280 /			
PLOG / 10.0	7260000	1.61	4313 /			
PLOG / 25.0	1.4e+07	1.53	4477 /			
PLOG / 50.0	4.58e+07	1.38	4781 /			
PLOG / 75.0	1.25e+08	1.26	5048 /			

PLOG / 100.0	2.86e+08	1.15	5275 /			
PLOG / 150.0	1.04e+09	1	5644 /			
PLOG / 200.0	2.72e+09	0.88	5932 /			
PLOG / 250.0	5.75e+09	0.79	6167 /			
PLOG / 300.0	1.05e+10	0.71	6363 /			
PLOG / 350.0	1.72e+10	0.65	6531 /			
PLOG / 400.0	2.6e+10	0.61	6678 /			
PLOG / 450.0	3.68e+10	0.56	6807 /			
PLOG / 500.0	4.96e+10	0.53	6921 /			
PLOG / 600.0	7.99e+10	0.47	7118 /			
PLOG / 700.0	1.15e+11	0.43	7280 /			
PLOG / 800.0	1.51e+11	0.4	7418 /			
PLOG / 900.0	1.88e+11	0.38	7536 /			
PLOG / 1000.0	2.21e+11	0.36	7638 /			
PLOG / 1500.0	3.23e+11	0.33	8000 /			
PLOG / 2000.0	3.17e+11	0.34	8218 /			
HOCH2O<=>HOCHO+H		1		0	0	!! R1507
PLOG / 0.001	1.52e+17	-3.09	11241 /			
PLOG / 0.01	3.8e+18	-3.21	11673 /			
PLOG / 0.1	9.04e+20	-3.62	12744 /			
PLOG / 1.0	2.46e+26	-4.91	15382 /			
PLOG / 10.0	1.28e+28	-5.11	16886 /			
PLOG / 25.0	9.83e+26	-4.64	16866 /			
PLOG / 50.0	1.7e+27	-4.64	17220 /			
PLOG / 75.0	1.99e+27	-4.61	17408 /			
PLOG / 100.0	2.32e+27	-4.6	17542 /			
PLOG / 150.0	1.55e+27	-4.5	17650 /			
PLOG / 200.0	9.81e+26	-4.41	17698 /			
PLOG / 250.0	8.74e+26	-4.37	17768 /			
PLOG / 300.0	6.54e+26	-4.31	17797 /			
PLOG / 350.0	4.78e+26	-4.26	17811 /			
PLOG / 400.0	3.72e+26	-4.21	17825 /			
PLOG / 450.0	2.82e+26	-4.16	17829 /			
PLOG / 500.0	2.18e+26	-4.12	17831 /			
PLOG / 600.0	1.33e+26	-4.03	17826 /			
PLOG / 700.0	8.74e+25	-3.96	17821 /			
PLOG / 800.0	5.67e+25	-3.89	17806 /			
PLOG / 900.0	3.91e+25	-3.83	17793 /			
PLOG / 1000.0	2.69e+25	-3.77	17777 /			
PLOG / 1500.0	5.28e+24	-3.52	17680 /			
PLOG / 2000.0	1.26e+24	-3.3	17570 /			
CH3CO (+M) <=> CH3+CO (+M)		3e+12		0	16719.9	!! R1508
LOW / 1.2e+15	0	12517.92 /				
CH3CO+H<=>CH2CO+H2		2e+13		0	9.99994e-11	!! R1509
CH3CO+O<=>CH2CO+OH		2e+13		0	9.99994e-11	!! R1510
CH3CO+CH3<=>CH2CO+CH4		5e+13		0	9.99994e-11	!! R1511
CH3CO2+M<=>CH3+CO2+M		4.4e+15		0	10499.94	!! R1512
REV/ 9.648e+12	0.2	21039.87 /				
C2H5+HO2<=>C2H5O+OH		3.2e+13		0	0	!! R1513
C2H5OH (+M) <=> CH2OH+CH3 (+M)		5.71e+23		-1.68	94409.43	!! R1514
LOW / 3.11e+85	-18.84	113099.3 /				
TROE / 0.5	550	825		6100 /		
H2 / 2 / H2O / 5 / CO / 2 / CO2 / 3 /						
C2H5OH (+M) <=> C2H5+OH (+M)		2.4e+23		-1.62	99539.4	!! R1515
LOW / 5.11e+85	-18.8	118769.3 /				
TROE / 0.5	650	800		1e+15 /		
H2 / 2 / H2O / 5 / CO / 2 / CO2 / 3 /						
C2H5OH (+M) <=> C2H4+H2O (+M)		2.79e+13		0.09	66139.6	!! R1516
LOW / 2.57e+83	-18.85	86452.48 /				
TROE / 0.7	350	800		3800 /		
H2O / 5 /						
C2H5OH+O2<=>PC2H4OH+HO2		2e+13		0	52799.68	!! R1517
C2H5OH+O2<=>SC2H4OH+HO2		1.5e+13		0	50149.7	!! R1518
C2H5OH+OH<=>PC2H4OH+H2O		1.74e+11		0.27	599.9964	!! R1519
C2H5OH+OH<=>SC2H4OH+H2O		4.64e+11		0.15	0	!! R1520
C2H5OH+OH<=>C2H5O+H2O		7.46e+11		0.3	1633.99	!! R1521
C2H5OH+H<=>PC2H4OH+H2		1.23e+07		1.8	5097.969	!! R1522
C2H5OH+H<=>SC2H4OH+H2		2.58e+07		1.65	2826.983	!! R1523
C2H5OH+H<=>C2H5O+H2		1.5e+07		1.6	3037.982	!! R1524
C2H5OH+HO2<=>PC2H4OH+H2O2		12300		2.55	15749.9	!! R1525
C2H5OH+HO2<=>SC2H4OH+H2O2		8200		2.55	10749.94	!! R1526

C2H5OH+H2O<=>C2H5O+H2O2	2.5e+12	0	23999.86	!! R1527
C2H5OH+O<=>PC2H4OH+OH	9.41e+07	1.7	5458.967	!! R1528
C2H5OH+O<=>SC2H4OH+OH	1.88e+07	1.85	1823.989	!! R1529
C2H5OH+O<=>C2H5O+OH	1.58e+07	2	4447.973	!! R1530
C2H5OH+CH3<=>PC2H4OH+CH4	133	3.18	9361.943	!! R1531
C2H5OH+CH3<=>SC2H4OH+CH4	444	2.9	7689.954	!! R1532
C2H5OH+CH3<=>C2H5O+CH4	134	2.92	7451.955	!! R1533
C2H5OH+C2H5<=>PC2H4OH+C2H6	5e+10	0	13399.92	!! R1534
C2H5OH+C2H5<=>SC2H4OH+C2H6	5e+10	0	10399.94	!! R1535
C2H5O<=>CH3+CH2O	1	0	0	!! R1536
PLOG / 0.001 1.9e+12	-1.74	16096	/	
PLOG / 0.01 2.38e+12	-1.58	13425	/	
PLOG / 0.1 3.42e+23	-4.56	16708	/	
PLOG / 1.0 1e+28	-5.46	18903	/	
PLOG / 10.0 3.26e+27	-4.93	19638	/	
PLOG / 25.0 6.33e+24	-3.95	19155	/	
PLOG / 50.0 5.45e+24	-3.83	19472	/	
PLOG / 75.0 3.73e+24	-3.73	19606	/	
PLOG / 100.0 3.06e+24	-3.67	19706	/	
PLOG / 150.0 1.85e+24	-3.56	19808	/	
PLOG / 200.0 1.26e+24	-3.47	19875	/	
PLOG / 250.0 9.12e+23	-3.4	19923	/	
PLOG / 300.0 6.62e+23	-3.34	19952	/	
PLOG / 350.0 5.28e+23	-3.3	19980	/	
PLOG / 400.0 4.86e+23	-3.27	20023	/	
PLOG / 450.0 4.34e+23	-3.24	20052	/	
PLOG / 500.0 4.17e+23	-3.23	20086	/	
PLOG / 600.0 4.09e+23	-3.21	20150	/	
PLOG / 700.0 4.6e+23	-3.21	20218	/	
PLOG / 800.0 4.32e+23	-3.2	20249	/	
PLOG / 900.0 4.5e+23	-3.19	20287	/	
PLOG / 1000.0 4.48e+23	-3.19	20312	/	
PLOG / 1500.0 2.94e+23	-3.12	20315	/	
PLOG / 2000.0 2.46e+23	-3.09	20292	/	
C2H5O<=>CH3CHO+H	1	0	0	!! R1537
PLOG / 0.001 7.98e+19	-3.86	14837	/	
PLOG / 0.01 2.1e+22	-4.26	15949	/	
PLOG / 0.1 3.18e+23	-4.28	17232	/	
PLOG / 1.0 2.43e+21	-3.37	17357	/	
PLOG / 10.0 1.32e+19	-2.45	17351	/	
PLOG / 25.0 1.41e+16	-1.43	16684	/	
PLOG / 50.0 6.84e+15	-1.27	16836	/	
PLOG / 75.0 3.59e+15	-1.15	16882	/	
PLOG / 100.0 2.45e+15	-1.07	16921	/	
PLOG / 150.0 1.2e+15	-0.95	16945	/	
PLOG / 200.0 7.04e+14	-0.85	16957	/	
PLOG / 250.0 4.5e+14	-0.78	16961	/	
PLOG / 300.0 2.99e+14	-0.71	16958	/	
PLOG / 350.0 2.18e+14	-0.65	16958	/	
PLOG / 400.0 1.8e+14	-0.62	16971	/	
PLOG / 450.0 1.47e+14	-0.58	16975	/	
PLOG / 500.0 1.29e+14	-0.56	16985	/	
PLOG / 600.0 1.07e+14	-0.52	17008	/	
PLOG / 700.0 1.03e+14	-0.51	17040	/	
PLOG / 800.0 8.9e+13	-0.48	17048	/	
PLOG / 900.0 8.58e+13	-0.47	17067	/	
PLOG / 1000.0 8.12e+13	-0.46	17078	/	
PLOG / 1500.0 5.39e+13	-0.39	17066	/	
PLOG / 2000.0 4.63e+13	-0.37	17047	/	
C2H5O+O2<=>CH3CHO+HO2	4.28e+10	0	1096.993	!! R1538
C2H5O2<=>C2H5+O2	4.93e+50	-11.5	42249.74	!! R1539
C2H5O2<=>C2H4O2H	5.64e+47	-11.44	37319.77	!! R1540
C2H5O2<=>C2H4+HO2	3.37e+55	-13.42	44669.73	!! R1541
C2H5O2+CH2O<=>C2H5O2H+HCO	1.99e+12	0	11669.93	!! R1542
C2H5O2+C2H4<=>C2H3+C2H5O2H	1.13e+13	0	30429.82	!! R1543
C2H5O2+CH4<=>CH3+C2H5O2H	1.81e+11	0	18479.89	!! R1544
C2H5O2+CH3OH<=>CH2OH+C2H5O2H	1.81e+12	0	13709.92	!! R1545
C2H5O2+HO2<=>C2H5O2H+O2	1.75e+10	0	-3274.98	!! R1546
C2H5O2+C2H6<=>C2H5+C2H5O2H	1.7e+13	0	20459.88	!! R1547
C2H5O2+C2H4=>C2H4O+C2H5O	2.82e+12	0	17109.9	!! R1548
C2H5O2H<=>C2H5O+OH	6.31e+14	0	42299.74	!! R1549

PC2H4OH<=>C2H4+OH	1.293e+12	-0.37	26849.84	!!	R1550
O2C2H4OH<=>PC2H4OH+O2	3.9e+16	-1	29999.82	!!	R1551
O2C2H4OH=>OH+2CH2O	1.25e+10	0	18899.89	!!	R1552
C2H4O2H=>C2H4O+OH	4.25e+22	-4.18	22349.87	!!	R1553
C2H4O2H<=>C2H4+HO2	9.29e+30	-6.1	19929.88	!!	R1554
C2H4O2H<=>C2H5+O2	2.15e+37	-8.21	28019.83	!!	R1555
C2H5O+OH<=>CH3CHO+H2O	1e+14	0	0	!!	R1556
C2H5O+H<=>CH3CHO+H2	1e+14	0	0	!!	R1557
C2H5O+O<=>CH3CHO+OH	1.21e+14	0	0	!!	R1558
C2H5O+HO2<=>CH3CHO+H2O2	1e+14	0	0	!!	R1559
SC2H4OH+H<=>CH3CHO+H2	2e+13	0	0	!!	R1560
SC2H4OH+OH<=>CH3CHO+H2O	1.5e+13	0	0	!!	R1561
SC2H4OH+O<=>CH3CHO+OH	9.04e+13	0	0	!!	R1562
SC2H4OH+HO2=>CH3CHO+2OH	1e+13	0	0	!!	R1563
PC2H4OH<=>H+CDCOH	2.9128e+09	1.09411	33073.8	!!	R1564
PC2H4OH<=>SC2H4OH	1e+11	0	26999.84	!!	R1565
C2H5OH<=>CH2OH+CH3	3.1e+15	0	80599.51	!!	R1566
C2H5OH+H=>C2H5+H2O	2.4e+10	0	0	!!	R1567
C2H5OH+CH3O<=>SC2H4OH+CH3OH	2e+11	0	6999.958	!!	R1568
C2H5OH+CH2O<=>C2H5O+CH3O	1.5e+12	0	79499.52	!!	R1569
C2H5OH+C2H5O<=>C2H5OH+SC2H4OH	2e+11	0	6999.958	!!	R1570
C2H5OH<=>C2H5+OH	5e+16	0	91211.45	!!	R1571
C2H5OH<=>C2H4+H2O	1e+14	0	76705.54	!!	R1572
C2H5OH+O2<=>C2H5O+HO2	2e+13	0	55999.66	!!	R1573
C2H5OH+CH2OH<=>SC2H4OH+CH3OH	4e+11	0	9699.941	!!	R1574
CH3CHO+C2H5O2<=>CH3CO+C2H5O2H	1.15e+11	0	9999.94	!!	R1575
C2H5O2H+O<=>OH+C2H5O2	2e+13	0	4749.971	!!	R1576
C2H5O2H+OH<=>C2H5O2+H2O	2e+12	0	-369.9978	!!	R1577
C2H5OH+CH3O2<=>SC2H4OH+CH3O2H	1e+13	0	9999.94	!!	R1578
C2H5+NO2<=>C2H5ONO	1	0	0	!!	R1579
PLOG / 0.001 8.86e-38	10.57	-4213	/		
PLOG / 0.01 3.88e-28	8.08	-742	/		
PLOG / 0.1 2.8e-06	2.04	7038	/		
PLOG / 1.0 1.08e+12	-2.8	9212	/		
PLOG / 10.0 1.58e+18	-4.26	2860	/		
PLOG / 25.0 1.51e+23	-5.52	1798	/		
PLOG / 50.0 3.48e+27	-6.62	1851	/		
PLOG / 75.0 1.08e+30	-7.23	2145	/		
PLOG / 100.0 4.78e+31	-7.63	2432	/		
PLOG / 150.0 5.75e+33	-8.11	2905	/		
PLOG / 200.0 1.09e+35	-8.39	3266	/		
PLOG / 250.0 8.05e+35	-8.57	3549	/		
PLOG / 300.0 3.43e+36	-8.69	3780	/		
PLOG / 350.0 1.03e+37	-8.78	3972	/		
PLOG / 400.0 2.41e+37	-8.85	4135	/		
PLOG / 450.0 4.75e+37	-8.9	4276	/		
PLOG / 500.0 8.22e+37	-8.93	4399	/		
PLOG / 600.0 1.87e+38	-8.98	4603	/		
PLOG / 700.0 3.28e+38	-9	4767	/		
PLOG / 800.0 4.88e+38	-9.01	4902	/		
PLOG / 900.0 6.45e+38	-9	5015	/		
PLOG / 1000.0 7.81e+38	-8.99	5111	/		
PLOG / 1500.0 9.94e+38	-8.9	5427	/		
PLOG / 2000.0 7.33e+38	-8.77	5596	/		
C2H5+NO2<=>C2H5O+NO	1	0	0	!!	R1580
PLOG / 0.001 2.08e+13	0	3	/		
PLOG / 50.0 2.09e+13	0	3	/		
PLOG / 75.0 2.1e+13	0	5	/		
PLOG / 100.0 2.14e+13	-0.01	10	/		
PLOG / 150.0 2.31e+13	-0.02	29	/		
PLOG / 200.0 2.59e+13	-0.03	59	/		
PLOG / 250.0 2.98e+13	-0.05	96	/		
PLOG / 300.0 3.48e+13	-0.07	138	/		
PLOG / 350.0 4.09e+13	-0.09	182	/		
PLOG / 400.0 4.82e+13	-0.11	228	/		
PLOG / 450.0 5.67e+13	-0.13	274	/		
PLOG / 500.0 6.66e+13	-0.15	319	/		
PLOG / 600.0 9.07e+13	-0.19	409	/		
PLOG / 700.0 1.21e+14	-0.22	494	/		
PLOG / 800.0 1.58e+14	-0.25	576	/		
PLOG / 900.0 2.01e+14	-0.28	652	/		

PLOG / 1000.0	2.52e+14	-0.31	725 /			
PLOG / 1500.0	6.12e+14	-0.42	1029 /			
PLOG / 2000.0	1.12e+15	-0.49	1262 /			
C2H5+NO2<=>C2H4+HNO2		1		0	0	!! R1581
PLOG / 0.001	339	1.57	461 /			
PLOG / 1.0	339	1.57	462 /			
PLOG / 10.0	347	1.56	469 /			
PLOG / 25.0	362	1.56	481 /			
PLOG / 50.0	392	1.55	504 /			
PLOG / 75.0	427	1.54	530 /			
PLOG / 100.0	469	1.53	557 /			
PLOG / 150.0	575	1.5	614 /			
PLOG / 200.0	710	1.48	675 /			
PLOG / 250.0	878	1.45	735 /			
PLOG / 300.0	1080	1.42	795 /			
PLOG / 350.0	1330	1.4	854 /			
PLOG / 400.0	1610	1.38	911 /			
PLOG / 450.0	1940	1.35	967 /			
PLOG / 500.0	2330	1.33	1020 /			
PLOG / 600.0	3250	1.29	1121 /			
PLOG / 700.0	4420	1.25	1215 /			
PLOG / 800.0	5850	1.22	1302 /			
PLOG / 900.0	7570	1.19	1384 /			
PLOG / 1000.0	9580	1.16	1460 /			
PLOG / 1500.0	24400	1.04	1779 /			
PLOG / 2000.0	47100	0.97	2022 /			
C2H5ONO<=>C2H5O+NO		1		0	0	!! R1582
PLOG / 0.001	6.2e+48	-11.66	47370 /			
PLOG / 0.01	6.77e+49	-11.67	47713 /			
PLOG / 0.1	6.24e+50	-11.66	48404 /			
PLOG / 1.0	2.78e+51	-11.54	49388 /			
PLOG / 10.0	3.11e+50	-10.95	50064 /			
PLOG / 25.0	8.67e+45	-9.42	48948 /			
PLOG / 50.0	3.18e+44	-8.9	48771 /			
PLOG / 75.0	1.56e+44	-8.76	48837 /			
PLOG / 100.0	9.03e+43	-8.65	48874 /			
PLOG / 150.0	3.27e+43	-8.48	48887 /			
PLOG / 200.0	1.35e+43	-8.33	48866 /			
PLOG / 250.0	5.71e+42	-8.2	48824 /			
PLOG / 300.0	2.82e+42	-8.09	48785 /			
PLOG / 350.0	1.34e+42	-7.97	48732 /			
PLOG / 400.0	7.53e+41	-7.88	48693 /			
PLOG / 450.0	4.19e+41	-7.79	48647 /			
PLOG / 500.0	2.63e+41	-7.72	48614 /			
PLOG / 600.0	1.08e+41	-7.59	48543 /			
PLOG / 700.0	4.44e+40	-7.46	48462 /			
PLOG / 800.0	2.28e+40	-7.36	48405 /			
PLOG / 900.0	1.23e+40	-7.27	48352 /			
PLOG / 1000.0	6.66e+39	-7.18	48292 /			
PLOG / 1500.0	6.12e+38	-6.83	48059 /			
PLOG / 2000.0	1.11e+38	-6.58	47885 /			
C2H5ONO<=>C2H4+HNO2		1		0	0	!! R1583
PLOG / 0.001	2.28e+24	-6.77	63860 /			
PLOG / 0.01	2.38e+24	-6.52	61261 /			
PLOG / 0.1	1.66e+26	-6.79	57668 /			
PLOG / 1.0	1.27e+32	-8.17	55202 /			
PLOG / 10.0	1.9e+40	-10.06	56368 /			
PLOG / 25.0	2.73e+38	-9.23	55950 /			
PLOG / 50.0	1.09e+39	-9.23	56470 /			
PLOG / 75.0	4.58e+39	-9.33	56906 /			
PLOG / 100.0	1.21e+40	-9.39	57219 /			
PLOG / 150.0	3.34e+40	-9.43	57621 /			
PLOG / 200.0	4.95e+40	-9.43	57860 /			
PLOG / 250.0	5.18e+40	-9.39	58010 /			
PLOG / 300.0	5.08e+40	-9.35	58122 /			
PLOG / 350.0	4.05e+40	-9.29	58188 /			
PLOG / 400.0	3.53e+40	-9.24	58252 /			
PLOG / 450.0	2.76e+40	-9.19	58288 /			
PLOG / 500.0	2.37e+40	-9.15	58332 /			
PLOG / 600.0	1.56e+40	-9.06	58381 /			
PLOG / 700.0	8.81e+39	-8.96	58391 /			

PLOG / 800.0	5.95e+39	-8.88	58412 /			
PLOG / 900.0	4.02e+39	-8.81	58425 /			
PLOG / 1000.0	2.56e+39	-8.73	58418 /			
PLOG / 1500.0	3.76e+38	-8.42	58364 /			
PLOG / 2000.0	8.14e+37	-8.17	58290 /			
C2H5ONO<=>C2H5NO2				1	0	0 !! R1584
PLOG / 0.001	5.53e+10	-3.43	89152 /			
PLOG / 0.01	5.01e+10	-3.16	86499 /			
PLOG / 0.1	9.53e+11	-3.27	82396 /			
PLOG / 1.0	3.63e+14	-3.74	76445 /			
PLOG / 10.0	8.46e+19	-4.97	69104 /			
PLOG / 25.0	3.65e+20	-4.9	65928 /			
PLOG / 50.0	6.47e+24	-5.97	65362 /			
PLOG / 75.0	6.79e+27	-6.75	65513 /			
PLOG / 100.0	1.22e+30	-7.33	65796 /			
PLOG / 150.0	1.43e+33	-8.1	66345 /			
PLOG / 200.0	1.33e+35	-8.59	66781 /			
PLOG / 250.0	3.08e+36	-8.92	67129 /			
PLOG / 300.0	3.49e+37	-9.17	67428 /			
PLOG / 350.0	2.04e+38	-9.34	67666 /			
PLOG / 400.0	9.61e+38	-9.49	67886 /			
PLOG / 450.0	3.1e+39	-9.6	68062 /			
PLOG / 500.0	9.71e+39	-9.71	68243 /			
PLOG / 600.0	5.11e+40	-9.86	68526 /			
PLOG / 700.0	1.54e+41	-9.95	68737 /			
PLOG / 800.0	4.28e+41	-10.04	68938 /			
PLOG / 900.0	9.9e+41	-10.11	69116 /			
PLOG / 1000.0	1.81e+42	-10.15	69255 /			
PLOG / 1500.0	1.1e+43	-10.25	69758 /			
PLOG / 2000.0	2.54e+43	-10.27	70071 /			
C2H5+NO2<=>C2H5NO2				1	0	0 !! R1585
PLOG / 0.001	3.1e+45	-11.85	5350 /			
PLOG / 0.01	6.27e+46	-11.63	7275 /			
PLOG / 0.1	4.8e+43	-10.28	7511 /			
PLOG / 1.0	4.56e+38	-8.44	6877 /			
PLOG / 10.0	5.61e+31	-6.1	5377 /			
PLOG / 25.0	3.7e+28	-5.05	4568 /			
PLOG / 50.0	1.13e+26	-4.23	3893 /			
PLOG / 75.0	3.6e+24	-3.75	3479 /			
PLOG / 100.0	3.09e+23	-3.4	3180 /			
PLOG / 150.0	9.93e+21	-2.92	2754 /			
PLOG / 200.0	9.07e+20	-2.59	2454 /			
PLOG / 250.0	1.48e+20	-2.33	2225 /			
PLOG / 300.0	3.52e+19	-2.13	2042 /			
PLOG / 350.0	1.08e+19	-1.97	1890 /			
PLOG / 400.0	3.99e+18	-1.83	1762 /			
PLOG / 450.0	1.71e+18	-1.71	1652 /			
PLOG / 500.0	8.15e+17	-1.61	1557 /			
PLOG / 600.0	2.4e+17	-1.44	1397 /			
PLOG / 700.0	9.01e+16	-1.31	1269 /			
PLOG / 800.0	4.04e+16	-1.2	1164 /			
PLOG / 900.0	2.06e+16	-1.1	1076 /			
PLOG / 1000.0	1.17e+16	-1.02	1000 /			
PLOG / 1500.0	1.68e+15	-0.76	743 /			
PLOG / 2000.0	5.44e+14	-0.6	592 /			
C2H5+NO2<=>C2H4+HONO				1	0	0 !! R1586
PLOG / 0.001	9.83e+17	-2.16	252 /			
PLOG / 0.01	2.39e+20	-2.82	2032 /			
PLOG / 0.1	1.57e+21	-3	3805 /			
PLOG / 1.0	2.34e+19	-2.38	4827 /			
PLOG / 10.0	3.45e+14	-0.89	4751 /			
PLOG / 25.0	6.66e+11	-0.07	4394 /			
PLOG / 50.0	3.37e+09	0.62	4010 /			
PLOG / 75.0	1.29e+08	1.04	3746 /			
PLOG / 100.0	1.21e+07	1.34	3543 /			
PLOG / 150.0	417000	1.77	3241 /			
PLOG / 200.0	38500	2.08	3019 /			
PLOG / 250.0	6210	2.31	2844 /			
PLOG / 300.0	1430	2.49	2701 /			
PLOG / 350.0	426	2.64	2581 /			
PLOG / 400.0	152	2.77	2479 /			

PLOG / 450.0	62.6	2.88	2390 /			
PLOG / 500.0	28.8	2.97	2311 /			
PLOG / 600.0	7.86	3.13	2179 /			
PLOG / 700.0	2.75	3.26	2072 /			
PLOG / 800.0	1.15	3.36	1983 /			
PLOG / 900.0	0.549	3.45	1907 /			
PLOG / 1000.0	0.291	3.52	1843 /			
PLOG / 1500.0	0.032	3.77	1619 /			
PLOG / 2000.0	0.00834	3.92	1487 /			
C2H5NO2<=>C2H4+HONO		1		0	0	!! R1587
PLOG / 0.001	1.64e+45	-10.4	55490 /			
PLOG / 0.01	7.22e+37	-7.93	53777 /			
PLOG / 0.1	3.28e+33	-6.49	52742 /			
PLOG / 1.0	2.04e+29	-5.12	51608 /			
PLOG / 10.0	7.31e+24	-3.69	50322 /			
PLOG / 25.0	1.05e+23	-3.1	49770 /			
PLOG / 50.0	3.34e+21	-2.63	49312 /			
PLOG / 75.0	3.77e+20	-2.33	49020 /			
PLOG / 100.0	7.73e+19	-2.11	48807 /			
PLOG / 150.0	9.41e+18	-1.82	48522 /			
PLOG / 200.0	2.65e+18	-1.65	48350 /			
PLOG / 250.0	1.29e+18	-1.55	48254 /			
PLOG / 300.0	7.68e+17	-1.48	48183 /			
PLOG / 350.0	5.61e+17	-1.43	48140 /			
PLOG / 400.0	4.68e+17	-1.41	48116 /			
PLOG / 450.0	4.11e+17	-1.39	48098 /			
PLOG / 500.0	3.75e+17	-1.38	48084 /			
PLOG / 600.0	3.64e+17	-1.37	48080 /			
PLOG / 700.0	3.56e+17	-1.37	48077 /			
PLOG / 800.0	3.5e+17	-1.37	48075 /			
PLOG / 900.0	3.46e+17	-1.37	48073 /			
PLOG / 1000.0	3.42e+17	-1.37	48072 /			
PLOG / 1500.0	3.32e+17	-1.36	48068 /			
PLOG / 2000.0	3.27e+17	-1.36	48066 /			
C2H5O+NO3<=>C2H5O2+NO2		1.99e+12		0	0	!! R1588
2C2H5O<=>C2H5OH+CH3CHO		1.44e+13		0	0	!! R1589
C2H5O+C2H5<=>C2H6+CH3CHO		1.56e+12		0	0	!! R1590
C2H5O+C2H5<=>C2H5OH+C2H4		2.76e+12		0	0	!! R1591
END						

List of Symbols, Abbreviations, and Acronyms

DOD	Department of Defense
DZ	dark-zone
NGg	gaseous nitroglycerin
PLOG	pressure-dependent reactions using the logarithmic interpolation
RRK	Rice–Ramsperger–Kassel [theory]
TH	Tsang–Herron
TROE	(four-parameter) Troe formula