

ANEJO I

En el anejo I se muestran los archivos de datos de entrada que se han utilizado para modelar el sistema bioquímico en aguas superficiales en el código RCB. Consiste en tres archivos, Che.inp, Master25.dat, Kinetics.dat, Gen.inp y Gri.inp. Cada uno de estos archivos es una herramienta complementaria para definir el sistema bioquímico y definir el medio físico. Además se realizó un balance de masa para cada reacción o proceso metabólico considerado y para cada elemento como es el Carbono, el Hidrogeno, el Oxígeno, el Nitrógeno y el Fósforo, también se realiza un balance de carga. Se obtuvo un balance de masa y de carga con unos valores que son siempre menores a 10^{-16} . Por tanto se puede considerar que el balance, tanto de masa como de carga, es correcto.

1_che.inp

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'TITLE OF PROBLEM : Nutrient Delete'
'-----'
'DEFINITION OF THE GEOCHEMICAL SYSTEM'
  25      0
'PRIMARY AQUEOUS SPECIES '
  'HCO3 '
  'HPO4 '
  'H '
  'NH4 '
  'O2 '
  'NO2 '
  'NO3 '
  'N2 '
  'SS '
  'XH '
  'XN1 '
  'XN2 '
  'XALG '
  'XS '
  'XCON '
  'XI '
  '* '
'AQUEOUS COMPLEXES '
  'CO2 '
  'CO3 '
  'OH '
  'PO4 '
  'H2PO4 '
  'NH3 '
  '* '
'MINERALS '
  'Aer.GrowthHET(NH4) '           3
  'Aer.GrowthHET(NO3) '         3
  'Aer.Resp.HET '                3
  'Anox.GrowthHET(NO3) '        3
  'Anox.GrowthHET(NO2) '        3
  'Anox.Resp.HET '                3
  'GrowthN1 '                     3
  'Aer.Resp.N1 '                   3
  'GrowthN2 '                     3
  'Aer.Resp.N2 '                   3
  'GrowthALG(NH4) '               3
  'GrowthALG(NO3) '               3
  'Aer.Resp.ALG '                  3
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'DeathALG'
'GrowthCON(ALG)'
'GrowthCON(XS)'
'GrowthCON(XH)'
'GrowthCON(XN1)'
'GrowthCON(XN2)'
'Aer.Resp.CON'
'DeathCON'
'Hidrolisis'
'O2(atm)'
'CO2(atm)'
'*'
'GasES'
'O2(g)'
'CO2(g)'
'N2(g)'
'*'
'SURFACE COMPLEXES'
'*'
-----
'INITIAL AND BOUNDARY WATER TYPES'
1 2 0
1 25
'
icon guess ctot constrain'
'HCO3' 4 5.20E-04 5.20E-04 'CO2(atm)'
'HPO4' 1 1.04E-07 1.04E-07 ' '
'H' 3 1.86E-07 1.86E-07 ' '
'NH4' 1 5.71E-07 5.71E-07 ' '
'NO3' 1 6.43E-06 6.43E-06 ' '
'O2' 4 2.00E-04 2.00E-04 'O2(atm)'
'NO2' 1 1.43E-07 1.43E-07 ' '
'N2' 5 3.60E-06 3.60E-06 'N2(g)'
'SS' 1 1.00E-09 1.00E-09 ' '
'XH' 1 1.00E-09 1.00E-09 ' '
'XN1' 1 1.00E-10 1.00E-10 ' '
'XN2' 1 1.00E-10 1.00E-10 ' '
'XALG' 1 1.12E-08 1.12E-08 ' '
'XS' 1 1.00E-10 1.00E-10 ' '
'XCON' 1 1.12E-09 1.12E-09 ' '
'XI' 1 1.00E-10 1.00E-10 ' '
'*' 0 0 0 ' '
1 25
'
icon guess ctot constrain'
'HCO3' 4 5.20E-04 5.20E-04 'CO2(atm)'
'HPO4' 1 1.04E-07 1.04E-07 ' '
'H' 3 1.86E-07 1.86E-07 ' '
'NH4' 1 5.71E-07 5.71E-07 ' '
'NO3' 1 6.43E-06 6.43E-06 ' '
'O2' 4 2.00E-04 2.00E-04 'O2(atm)'
'NO2' 1 1.43E-07 1.43E-07 ' '
'N2' 5 3.60E-06 3.60E-06 'N2(g)'
'SS' 1 4.75E-08 4.75E-08 ' '
'XH' 1 1.00E-09 1.00E-09 ' '
'XN1' 1 1.00E-10 1.00E-10 ' '
'XN2' 1 1.00E-10 1.00E-10 ' '
'XALG' 1 1.12E-07 1.12E-07 ' '
'XS' 1 1.00E-10 1.00E-10 ' '
'XCON' 1 1.12E-07 1.12E-07 ' '
'XI' 1 1.00E-10 1.00E-10 ' '
'*' 0 0 0 ' '
2 25

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'          icon      guess      ctot      constrain'
'HCO3'      1      1.43E-03  1.43E-03  ' '
'HPO4'      1      2.08E-03  2.08E-03  ' '
'H'         3      6.32E-07  6.32E-07  ' '
'NH4'      1      3.67E-03  3.67E-03  ' '
'NO3'      1      1.94E-04  1.94E-04  ' '
'O2'       1      1.00E-10  1.00E-10  ' '
'NO2'      1      4.35E-04  4.35E-04  ' '
'N2'       5      0.78E-01  0.78E-01  'N2(g) '
'SS'       1      4.00E-01  4.00E-01  ' '
'XH '      1      2.56E-02  2.56E-02  ' '
'XN1'      1      1.46E-04  1.46E-04  ' '
'XN2'      1      2.56E-05  2.56E-05  ' '
'XALG'     1      1.00E-10  1.00E-10  ' '
'XS'       1      2.78E-05  2.78E-05  ' '
'XCON'     1      1.00E-10  1.00E-10  ' '
'XI'       1      7.46E-05  7.46E-05  ' '
'*'        0      0          0          ' '
-----
' INITIAL MINERAL ZONES '
1
1
'mineral          vol.fracc.      area'
'Aer.GrowthHET(NH4) '      1.0      1.0E+00
'Aer.GrowthHET(NO3) '      1.0      1.0E+00
'Aer.Resp.HET '          1.0      1.0E+00
'Anox.GrowthHET(NO3) '      1.0      1.0E+00
'Anox.GrowthHET(NO2) '      1.0      1.0E+00
'Anox.Resp.HET '          1.0      1.0E+00
'GrowthN1 '              1.0      1.0E+00
'Aer.Resp.N1 '            1.0      1.0E+00
'GrowthN2 '              1.0      1.0E+00
'Aer.Resp.N2 '            1.0      1.0E+00
'GrowthALG(NH4) '          1.0      1.0E+00
'GrowthALG(NO3) '          1.0      1.0E+00
'Aer.Resp.ALG '            1.0      1.0E+00
'DeathALG '                1.0      1.0E+00
'GrowthCON(ALG) '          1.0      1.0E+00
'GrowthCON(XS) '           1.0      1.0E+00
'GrowthCON(XH) '           1.0      1.0E+00
'GrowthCON(XN1) '          1.0      1.0E+00
'GrowthCON(XN2) '          1.0      1.0E+00
'Aer.Resp.CON '            1.0      1.0E+00
'DeathCON '                1.0      1.0E+00
'Hidrolisis '              1.0      1.0E+00
'O2(atm) '                1.0      1.0E+00
'CO2(atm) '                1.0      1.0E+00
'*'                        0.0      0.0
-----
' INITIAL SURFACE ADSORTION ZONES '
0
-----
'end'

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master25.dat

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'temp' 1      25.0
'SS' 1      0
'NH4' 3      1
'NO2' 3     -1
'NO3' 3     -1
'N2' 3      0
'HPO4' 4    -2
'O2' 4     -1
'HCO3' 4    -1
'H' 9      1
'XH' 1      0
'XN1' 1     0
'XN2' 1     0
'XALG' 1    0
'XCON' 1    0
'XS' 1      0
'XI' 1      0
'Ca' 6      2
'null' 0     0
'OH' 2      1      'H2O' -1      'H' 13.9951 3      -1
'CO2' 3     1      'H' 1      'HCO3' -1      'H2O' -6.3447 3
'CO3' 2     -1     'H' 1      'HCO3' 10.3288 5      -2
'PO4' 2     -1     'H' 1      'HPO4' 12.3218 4      -3
'H2PO4' 2    1      'H' 1      'HPO4' -7.2054 4      -1
'NH3' 2     1      'NH4' -1     'H' 18.0385 0      2
'null' 1     0      1      'O' 0      0      0

'Aer.GrowthHET(NH4)' 1.0 16 1.6667 'SS' 0.0014 'NH4'
0.0000 'NO2' 0.0000 'NO3' 0.0000 'N2' 0.0004 'HPO4'
0.0429 'O2' -0.0358 'HCO3' -0.0364 'H' -1.0000 'XH' 0.0000
'XN1' 0.0000 'XN2' 0.0000 'XALG' 0.0000 'XCON' 0.0000 'XS'
0.0000 'XI' 0.00

'Aer.GrowthHET(NO3)' 1.0 16 1.6667 'SS' 0.0000 'NH4'
0.0000 'NO2' 0.0014 'NO3' 0.0000 'N2' 0.0004 'HPO4'
0.0401 'O2' -0.0358 'HCO3' -0.0335 'H' -1.0000 'XH' 0.0000
'XN1' 0.0000 'XN2' 0.0000 'XALG' 0.0000 'XCON' 0.0000 'XS'
0.0000 'XI' 0.00

'Aer.Resp.HET' 1.0 16 0.0000 'SS' -0.0081 'NH4'
0.0000 'NO2' 0.0000 'NO3' 0.0000 'N2' -0.0009 'HPO4'
0.0386 'O2' -0.0332 'HCO3' 0.0268 'H' 1.0000 'XH' 0.0000
'XN1' 0.0000 'XN2' 0.0000 'XALG' 0.0000 'XCON' 0.0000 'XS' -
0.2000 'XI' 0.00

'Anox.GrowthHET(NO3)' 1.0 16 2.0000 'SS' 0.0000 'NH4' -
0.1232 'NO2' 0.1232 'NO3' 0.0000 'N2' 0.0003 'HPO4' 0.0000
'O2' -0.0517 'HCO3' -0.0510 'H' -1.0000 'XH' 0.0000 'XN1'
0.0000 'XN2' 0.0000 'XALG' 0.0000 'XCON' 0.0000 'XS'
0.0000 'XI' 0.00

'Anox.GrowthHET(NO2)' 1.0 16 3.3333 'SS' 0.0000 'NH4'
0.1873 'NO2' 0.0000 'NO3' -0.0965 'N2' -0.0001 'HPO4'
0.0000 'O2' -0.1150 'HCO3' -0.0720 'H' -1.0000 'XH' 0.0000
'XN1' 0.0000 'XN2' 0.0000 'XALG' 0.0000 'XCON' 0.0000 'XS'
0.0000 'XI' 0.00

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'Anox.Resp.HET'	1.0	16	0.0000	'SS'	-0.0081	'NH4'	
0.0000	'NO2'	0.0309	'NO3'	-0.0155	'N2'	-0.0009	'HPO4'
0.0000	'O2'	-0.0332	'HCO3'	0.0041	'H'	1.0000	'XH'
'XN1'	0.0000	'XN2'	0.0000	'XALG'	0.0000	'XCON'	0.0000
0.2000	'XI'	0.00					'XS' -
'GrowthN1'	1.0	16	0.0000	'SS'	0.5495	'NH4'	-
0.5409	'NO2'	0.0000	'NO3'	0.0000	'N2'	0.0010	'HPO4'
'O2'	0.0433	'HCO3'	1.0451	'H'	0.0000	'XH'	-1.0000
0.0000	'XN2'	0.0000	'XALG'	0.0000	'XCON'	0.0000	'XS'
0.0000	'XI'	0.00					
'Aer.Resp.N1'	1.0	16	0.0000	'SS'	-0.0081	'NH4'	
0.0000	'NO2'	0.0000	'NO3'	0.0000	'N2'	-0.0009	'HPO4'
0.0386	'O2'	-0.0332	'HCO3'	-0.0268	'H'	0.0000	'XH'
'XN1'	0.0000	'XN2'	0.0000	'XALG'	0.0000	'XCON'	0.0000
0.2000	'XI'	0.00					'XS' -
'GrowthN2'	1.0	16	0.0000	'SS'	0.0000	'NH4'	
2.3810	'NO2'	-2.3724	'NO3'	0.0000	'N2'	0.0010	'HPO4'
1.1230	'O2'	0.0433	'HCO3'	0.0538	'H'	0.0000	'XH'
'XN1'	-1.0000	'XN2'	0.0000	'XALG'	0.0000	'XCON'	0.0000
0.0000	'XI'	0.00					'XS'
'Aer.Resp.N2'	1.0	16	0.0000	'SS'	-0.0081	'NH4'	
0.0000	'NO2'	0.0000	'NO3'	0.0000	'N2'	-0.0009	'HPO4'
0.0386	'O2'	-0.0332	'HCO3'	0.0268	'H'	0.0000	'XH'
'XN1'	1.0000	'XN2'	0.0000	'XALG'	0.0000	'XCON'	0.0000
0.2000	'XI'	0.00					'XS' -
'GrowthALG(NH4)'	1.0	16	0.0000	'SS'	0.0043	'NH4'	
0.0000	'NO2'	0.0000	'NO3'	0.0000	'N2'	0.0003	'HPO4'
0.0291	'O2'	0.0300	'HCO3'	0.0264	'H'	0.0000	'XH'
'XN1'	0.0000	'XN2'	-1.0000	'XALG'	0.0000	'XCON'	0.0000
0.0000	'XI'	0.00					'XS' -
'GrowthALG(NO3)'	1.0	16	0.0000	'SS'	0.0000	'NH4'	
0.0000	'NO2'	0.0043	'NO3'	0.0000	'N2'	0.0003	'HPO4'
0.0376	'O2'	0.0300	'HCO3'	-0.0349	'H'	0.0000	'XH'
'XN1'	0.0000	'XN2'	-1.0000	'XALG'	0.0000	'XCON'	0.0000
0.0000	'XI'	0.00					'XS' -
'Aer.Resp.ALG'	1.0	16	0.0000	'SS'	-0.0039	'NH4'	
0.0000	'NO2'	0.0000	'NO3'	0.0000	'N2'	-0.0003	'HPO4'
0.0174	'O2'	-0.0198	'HCO3'	0.0165	'H'	0.0000	'XH'
'XN1'	0.0000	'XN2'	1.0000	'XALG'	0.0000	'XCON'	0.0000
0.2000	'XI'	0.00					'XS' -
'DeathALG'	1.0	16	0.0000	'SS'	-0.0019	'NH4'	
0.0000	'NO2'	0.0000	'NO3'	0.0000	'N2'	-0.0001	'HPO4'
0.0059	'O2'	-0.0001	'HCO3'	0.0015	'H'	0.0000	'XH'
'XN1'	0.0000	'XN2'	1.0000	'XALG'	0.0000	'XCON'	-0.4960
0.1240	'XI'	0.00					'XS' -
'GrowthCON(ALG)'	1.0	16	0.0000	'SS'	-0.0086	'NH4'	
0.0000	'NO2'	0.0000	'NO3'	0.0000	'N2'	-0.0006	'HPO4'
0.0044	'O2'	-0.0250	'HCO3'	0.0177	'H'	0.0000	'XH'
'XN1'	0.0000	'XN2'	5.0000	'XALG'	-1.0000	'XCON'	-2.0000
0.0000	'XI'	0.00					'XS'

'GrowthCON(XS)'	1.0	16	0.0000	'SS'	-0.0086	'NH4'	
0.0000	'NO2'	0.0000	'NO3'	0.0000	'N2'	-0.0006	'HPO4'
0.1388	'O2'	-0.1125	'HCO3'	0.1052	'H'	0.0000	'XH'
'XN1'	0.0000	'XN2'	0.0000	'XALG'	-1.0000	'XCON'	3.0000
0.0000	'XI'	0.00				'XS'	
'GrowthCON(XH)'	1.0	16	0.0000	'SS'	-0.0300	'NH4'	
0.0000	'NO2'	0.0000	'NO3'	0.0000	'N2'	-0.0039	'HPO4'
0.1106	'O2'	-0.0917	'HCO3'	0.0694	'H'	5.0000	'XH'
'XN1'	0.0000	'XN2'	0.0000	'XALG'	-1.0000	'XCON'	-2.0000
0.0000	'XI'	0.00				'XS'	
'GrowthCON(XN1)'	1.0	16	0.0000	'SS'	-0.0300	'NH4'	
0.0000	'NO2'	0.0000	'NO3'	0.0000	'N2'	-0.0039	'HPO4'
0.1106	'O2'	-0.0917	'HCO3'	0.0694	'H'	0.0000	'XH'
'XN1'	0.0000	'XN2'	0.0000	'XALG'	-1.0000	'XCON'	-2.0000
0.0000	'XI'	0.00				'XS'	
'GrowthCON(XN2)'	1.0	16	0.0000	'SS'	-0.0300	'NH4'	
0.0000	'NO2'	0.0000	'NO3'	0.0000	'N2'	-0.0039	'HPO4'
0.1106	'O2'	-0.0917	'HCO3'	0.0694	'H'	0.0000	'XH'
'XN1'	5.0000	'XN2'	0.0000	'XALG'	-1.0000	'XCON'	-2.0000
0.0000	'XI'	0.00				'XS'	
'Aer.Resp.CON'	1.0	16	0.0000	'SS'	-0.0039	'NH4'	
0.0000	'NO2'	0.0000	'NO3'	0.0000	'N2'	-0.0003	'HPO4'
0.0174	'O2'	-0.0198	'HCO3'	0.0165	'H'	0.0000	'XH'
'XN1'	0.0000	'XN2'	0.0000	'XALG'	1.0000	'XCON'	-0.0000
0.2000	'XI'	0.00				'XS'	-
'DeathCON'	1.0	16	0.0000	'SS'	-0.0019	'NH4'	
0.0000	'NO2'	0.0000	'NO3'	0.0000	'N2'	-0.0001	'HPO4'
0.0059	'O2'	-0.0001	'HCO3'	0.0015	'H'	0.0000	'XH'
'XN1'	0.0000	'XN2'	0.0000	'XALG'	1.0000	'XCON'	-0.4960
0.1240	'XI'	0.00				'XS'	-
'Hidrolisis'	1.0	16	-1.0000	'SS'	0.0000	'NH4'	
0.0000	'NO2'	0.0000	'NO3'	0.0000	'N2'	0.0000	'HPO4'
0.0000	'O2'	0.0000	'HCO3'	0.0000	'H'	0.0000	'XH'
'XN1'	0.0000	'XN2'	0.0000	'XALG'	0.0000	'XCON'	1.0000
0.0000	'XI'	0.00				'XS'	
'calcita'	36.934	3	1	'Ca'	-1	'XH'	1
1.8487							'HCO3'
'O2(atm)'	1.0	1	1.0	'O2'	-3.597		
'CO2(atm)'	1.0	1	1.0	'CO2'	-3.283		
'null' 0	1	0	'0'	0			
'O2(g)'	31.9988	16.3	1	1.0		'O2'	-2.8980
'sacado de Juan por Maarteen'							
'CO2(g)'	43.9999	26.9	1	1.0	'CO2'	-1.4689	'Juan
Caldentey'							
'N2(g)'	28.0134	18.5	1	1.0	'N2'	-3.1864	'Juan
Caldentey'							
'null' 0	0	1	0	'0'	0		
Adsorption of HPO4		0					
'null' 1	0	'0'	0	0			

Kinetics.dat

'calcite'	1	15.0	2.0	'Inskeep and Bloom, 1986'
	2.25E-09		1.0	1.0 0
'Aer.GrowthHET(NH4)'	5	10.0	1.0	'Reichert P.,1996 '
	3.28E-05		1.0	1.0 1 'XH'
1.0		1.88E-03	2.0	1.0 1 'SS'
1.0		6.25E-06	2.0	1.0 1 'O2'
1.0		1.43E-05	2.0	1.0 1 'NH4'
1.0		6.45E-07	2.0	1.0 1 'HPO4'
'Aer.GrowthHET(NO3)'	5	10.0	1.0	'Reichert P.,1996 '
	3.28E-05		1.0	1.0 1 'XH'
1.0		1.88E-03	2.0	1.0 1 'SS'
1.0		6.25E-06	2.0	1.0 1 'O2'
1.0		1.43E-05	2.0	1.0 1 'NO3'
1.0		1.43E-05	3.0	1.0 1 'NH4'
'Aer.Resp.HET'	2	10.0	1.0	'Reichert P.,1996 '
	3.28E-06		1.0	1.0 1 'XH'
1.0		6.25E-06	2.0	1.0 1 'O2'
'Anox.GrowthHET(NO3)'	5	10.0	1.0	'Reichert P.,1996 '
	2.63E-05		1.0	1.0 1 'XH'
1.0		1.88E-03	2.0	1.0 1 'SS'
1.0		6.25E-06	3.0	1.0 1 'O2'
1.0		3.57E-05	2.0	1.0 1 'NO3'
1.0		6.45E-07	2.0	1.0 1 'HPO4'
'Anox.GrowthHET(NO2)'	5	10.0	1.0	'Reichert P.,1996 '
	2.63E-05		1.0	1.0 1 'XH'
1.0		1.88E-03	2.0	1.0 1 'SS'
1.0		6.25E-06	3.0	1.0 1 'O2'
1.0		1.43E-05	2.0	1.0 1 'NO2'
1.0		6.45E-07	2.0	1.0 1 'HPO4'
'Anox.Resp.HET'	3	10.0	1.0	'Reichert P.,1996 '
	3.28E-06		1.0	1.0 1 'XH'
1.0		1.88E-03	2.0	1.0 1 'SS'
1.0		3.57E-05	2.0	1.0 1 'NO3'

'GrowthN1'	4	10.0	1.0	'Reichert P.,1996'
1.0	1.51E-05	1.0	1.0	1 'XN1'
1.0	1.56E-05	2.0	1.0	1 'O2'
1.0	3.57E-05	2.0	1.0	1 'NH4'
1.0	6.45E-07	2.0	1.0	1 'HPO4'
'Aer.Resp.N1'	2	10.0	1.0	'Reichert P.,1996'
1.0	9.45E-07	1.0	1.0	1 'XN1'
1.0	1.56E-05	2.0	1.0	1 'O2'
'GrowthN2'	4	10.0	1.0	'Reichert P.,1996'
1.0	1.80E-05	1.0	1.0	1 'XN2'
1.0	1.56E-05	2.0	1.0	1 'O2'
1.0	3.57E-05	2.0	1.0	1 'NO2'
1.0	6.45E-07	2.0	1.0	1 'HPO4'
'Aer.Resp.N2'	2	10.0	1.0	'Reichert P.,1996'
1.0	8.17E-07	1.0	1.0	1 'XN2'
1.0	1.56E-05	2.0	1.0	1 'O2'
'GrowthALG(NH4)'	4	10.0	1.0	'Reichert P.,1996'
1.0	1.39E-05	1.0	1.0	1 'XALG'
1.0	7.14E-06	2.0	1.0	1 'NO3'
1.0	7.14E-06	2.0	1.0	1 'NH4'
1.0	6.45E-07	2.0	1.0	1 'HPO4'
'GrowthALG(NO3)'	4	10.0	1.0	'Reichert P.,1996'
1.0	1.39E-05	1.0	1.0	1 'XALG'
1.0	7.14E-06	2.0	1.0	1 'NO3'
1.0	7.14E-06	3.0	1.0	1 'NH4'
1.0	6.45E-07	2.0	1.0	1 'HPO4'
'Aer.Resp.ALG'	2	10.0	1.0	'Reichert P.,1996'
1.0	1.46E-06	1.0	1.0	1 'XALG'
1.0	6.25E-06	2.0	1.0	1 'O2'
'DeathALG'	1	10.0	1.0	'Reichert P.,1996'
1.0	1.46E-06	1.0	1.0	1 'XALG'
'GrowthCON(ALG)'	3	10.0	1.0	'Reichert P.,1996'
1.0	1.56E-05	2.0	1.0	1 'O2'
1.0	4.86E-07	1.0	1.0	1 'XALG'
1.0	1.00E+00	1.0	1.0	1 'XCON'

'GrowthCON(XS)'	3	10.0	1.0	'Reichert P.,1996'
1.0	1.56E-05	2.0	1.0	1 'O2'
1.0	1.53E-05	1.0	1.0	1 'XS'
1.0	1.00E+00	1.0	1.0	1 'XCON'
'GrowthCON(XH)'	3	10.0	1.0	'Reichert P.,1996'
1.0	1.56E-05	2.0	1.0	1 'O2'
1.0	1.22E-05	1.0	1.0	1 'XH'
1.0	1.00E+00	1.0	1.0	1 'XCON'
'GrowthCON(XN1)'	3	10.0	1.0	'Reichert P.,1996'
1.0	1.56E-05	2.0	1.0	1 'O2'
1.0	1.22E-05	1.0	1.0	1 'XN1'
1.0	1.00E+00	1.0	1.0	1 'XCON'
'GrowthCON(XN2)'	3	10.0	1.0	'Reichert P.,1996'
1.0	1.56E-05	2.0	1.0	1 'O2'
1.0	1.22E-05	1.0	1.0	1 'XN2'
1.0	1.00E+00	1.0	1.0	1 'XCON'
'Aer.Resp.CON'	2	10.0	1.0	'Reichert P.,1996'
1.0	1.56E-05	2.0	1.0	1 'O2'
1.0	8.63E-07	1.0	1.0	1 'XCON'
'DeathCON'	1	10.0	1.0	'Reichert P.,1996'
1.0	8.63E-07	1.0	1.0	1 'XCON'
'Hidrolisis'	1	10.0	1.0	'Reichert P.,1996'
1.0	4.93E-05	1.0	1.0	1 'XS'
'O2(atm)'	1	10.0	1.0	'Reichert P.,1996'
	1.29E-06	1.0	1.0	0
'CO2(atm)'	1	10.0	1.0	'Reichert P.,1996'
	2.66E-06	1.0	1.0	0
'NULL' 0 0.0 0.0 ' '				

GEN.inp

```

No Name (1)
 801 800      1  0  1  1
    1  4      0  1  1  3  4
    0  3
    0  1      0  0  0
    0  0      1  1  0  0  0
    0  0      0  0
      1.      1.      0.      25.      0.1
      0.      750.     750.     750.     150000.      1.
    0 10  20  0  20  2
    0.0001      0.005 1.000E-11      0.2
-1
    0.      0.      0.
    0.      750.     750.     750.     150000.      1.
1
7Intrinsic permeabili      1
Intr.Perm.1st.princi      1.      Void      0.
Intr.Perm.2nd.princi      1.      Void      0.
Intr.Perm.3rd.princi      1.      Void      0.
Reference porosity      0.999      Void      0.
Minimum porosity      0.      Void      0.
15      Liquid density      1
Reference density      1000.      Void      0.
Compressibility      1.000E-10      Void      0.
Volumetric thermal e      1.000E-10      Void      0.
Solute variation      1.000E-10      Void      0.
Reference pressure      0.      Void      0.
16      Lliquid viscosity      1
Pre-exponential para      1.178E-09      Void      0.
Exponential paramete      0.      Void      0.
      Void      0.      Void      0.
      Void      0.      Void      0.
      Void      0.      Void      0.
-1
-1
1
Prescribed mass frac      0.
Prescribed gas flow      0.
Prescribed gas press      0.
Gamma coefficient fo      0.
Beta coefficient for      0.
Prescribed gas densi      0.
Prescribed mass frac      0.
Prescribed mass frac      0.
Prescribed liquid fl      200.
Prescribed liquid pr      0.
Gamma coefficient fo      0.
Beta coefficient for      0.
Void      0.
Prescribed heat flow      0.
Prescribed temperatu      0.
Gamma coefficient fo      0.
Lambda coefficient f      0.
aq0 coefficient      0.
Delta parameter for      0.
Auxilay index (-1,1,      1
2
Prescribed mass frac      0.

```

Prescribed gas flow	0.
Prescribed gas press	0.
Gamma coefficient fo	0.
Beta coefficient for	0.
Prescribed gas densi	0.
Prescribed mass frac	0.
Prescribed mass frac	0.
Prescribed liquid fl	0.
Prescribed liquid pr	0.
Gamma coefficient fo	1000000000
Beta coefficient for	0.
Void	0.
Prescribed heat flow	0.
Prescribed temperatu	0.
Gamma coefficient fo	0.
Lambda coefficient f	0.
aq0 coefficient	0.
Delta parameter for	0.
Auxilay index (-1,1,	1
3	
Prescribed mass frac	0.
Prescribed gas flow	0.
Prescribed gas press	0.
Gamma coefficient fo	0.
Beta coefficient for	0.
Prescribed gas densi	0.
Prescribed mass frac	0.
Prescribed mass frac	0.
Prescribed liquid fl	3.
Prescribed liquid pr	0.
Gamma coefficient fo	0.
Beta coefficient for	0.
Void	0.
Prescribed heat flow	0.
Prescribed temperatu	0.
Gamma coefficient fo	0.
Lambda coefficient f	0.
aq0 coefficient	0.
Delta parameter for	0.
Auxilay index (-1,1,	1
-1	
-1	
-1	
-1	

GRI.inp

```

1      2      0
(5i5)
(2i5)
1      1      1      1      2
2      1      1      2      3
799    1      1      799    800
800    1      1      800    801
(i5,f10.0,i5,2i1,i3,2i1,f8.0)
(i5,30x,7i5)
1      0.      0      1      0.      1      1      1      0      0      0      0
2      122.5    0      0      0.      1      0      1      0      0      0      0
9      980.     0      0      0.      1      0      1      0      0      0      0
10     1102.5   0      3      0.      1      2      1      0      0      0      0
11     1225.   0      0      0.      1      0      1      0      0      0      0
800    97877.5  0      0      0.      1      0      1      0      0      0      0
801    98000.  0      2      0.      1      0      1      0      0      0      0
1      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
0.     0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
0.     0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
1      0.999 0.00000000E+00 0.00000000E+00 0.00000000E+00
0.00000000E+00 0.00000000E+00 0.00000000E+00 0.
800    0.999 0.00000000E+00 0.00000000E+00 0.00000000E+00
0.00000000E+00 0.00000000E+00 0.00000000E+00 0.
0
0
0      5
0
0
0

```