


1	 <b>TEAM EAT</b> Calgary, Alberta CANADA	Case Name:	C:\Documents and Settings\Cherna\Escritorio\Proyecto\HYSYS\24-11-20
2		Unit Set:	SI
3		Date/Time:	Mon Nov 25 11:24:34 2002
4			
5			

6	<b>Material Stream: Air</b>	Fluid Package:	Basis-1
7		Property Package:	SRK
8			

**CONDITIONS**

	Overall	Vapour Phase		
12	Vapour / Phase Fraction	1.0000	1.0000	
13	Temperature: (C)	25.00 *	25.00	
14	Pressure: (kPa)	110.0 *	110.0	
15	Molar Flow (kgmole/h)	6.946e+004	6.946e+004	
16	Mass Flow (kg/h)	2.004e+006 *	2.004e+006	
17	Liquid Volume Flow (m3/h)	2317	2317	
18	Molar Enthalpy (kJ/kgmole)	-7.388	-7.388	
19	Molar Entropy (kJ/kgmole-C)	155.0	155.0	
20	Heat Flow (kJ/h)	-5.132e+005	-5.132e+005	
21	Std Liq Volume Flow (m3/h)	---	---	


**PROPERTIES**

	Overall	Vapour Phase		
25	Vapour / Phase Fraction	1.0000	1.0000	
26	Temperature: (C)	25.00 *	25.00	
27	Pressure: (kPa)	110.0 *	110.0	
28	Actual Volume Flow (m3/h)	1.565e+006	1.565e+006	
29	Mass Enthalpy (kJ/kg)	-0.2561	-0.2561	
30	Mass Entropy (kJ/kg-C)	5.373	5.373	
31	Molecular Weight	28.85	28.85	
32	Molar Density (kgmole/m3)	4.438e-002	4.438e-002	
33	Mass Density (kg/m3)	1.280	1.280	
34	Std Liquid Mass Density (kg/m3)	---	---	
35	Molar Heat Capacity (kJ/kgmole-C)	29.23	29.23	
36	Mass Heat Capacity (kJ/kg-C)	1.013	1.013	
37	Thermal Conductivity (W/m-K)	2.596e-002	2.596e-002	
38	Viscosity (cP)	1.881e-002	1.881e-002	
39	Surface Tension (dyne/cm)	---	---	
40	Z Factor	0.9998	0.9998	
41	Molar Vapour Fraction	1.0000	1.0000	
42	Mass Vapour Fraction	1.0000	1.0000	
43	Volume Vapour Fraction	1.0000	1.0000	
44	Molar Volume (m3/kgmole)	22.53	22.53	
45	Actual Gas Flow (ACT_m3/h)	1.565e+006	1.565e+006	
46	Actual Liquid Flow (m3/s)	---	---	
47	Std. Gas Flow (STD_m3/h)	1.642e+006	1.642e+006	
48	Std. Liquid Volume Flow (m3/h)	---	---	
49	Watson K	6.042	6.042	
50	Kinematic Viscosity (cSt)	14.69	14.69	
51	Cp/Cv	1.401	1.401	
52	Lower Heating Value (kJ/kgmole)	0.0000	0.0000	
53	Mass Lower Heating Value (kJ/kg)	0.0000	0.0000	
54	Liquid Fraction	0.0000	0.0000	
55	Partial Pressure (kPa)	0.0000	0.0000	

**COMPOSITION**

58	<b>Overall Phase</b>	Vapour Fraction	1.0000
----	----------------------	-----------------	--------

	COMPONENTS	MOLAR FLOW (kgmole/h)	MOLE FRACTION	MASS FLOW (kg/h)	MASS FRACTION	LIQUID VOLUME FLOW (m3/h)	LIQUID VOLUME FRACTION
62	Methane	0.0000 *	0.0000 *	0.0000 *	0.0000 *	0.0000 *	0.0000 *
63	Ethane	0.0000 *	0.0000 *	0.0000 *	0.0000 *	0.0000 *	0.0000 *
64	CO2	0.0000 *	0.0000 *	0.0000 *	0.0000 *	0.0000 *	0.0000 *
65	Nitrogen	54875.0489 *	0.7900 *	1.537214773e+06 *	0.7671 *	1906.3297 *	0.8229 *
66	Oxygen	14587.0383 *	0.2100 *	466785.2264 *	0.2329 *	410.2957 *	0.1771 *
67	H2O	0.0000 *	0.0000 *	0.0000 *	0.0000 *	0.0000 *	0.0000 *
68	Total	69462.0873	1.0000	2.003999999e+06	1.0000	2316.6254	1.0000

1	 <b>TEAM EAT</b> Calgary, Alberta CANADA	Case Name:	C:\Documents and Settings\Cherna\Escritorio\Proyecto\HYSYS\24-11-20	
2		Unit Set:	SI	
3		Date/Time:	Mon Nov 25 11:24:34 2002	
4				
5				

6	<b>Material Stream: Air (continued)</b>	Fluid Package:	Basis-1
7		Property Package:	SRK
8			

**COMPOSITION**

9	<b>Vapour Phase</b>						Phase Fraction	1.000
10								
11								
12								
13	<b>COMPONENTS</b>	<b>MOLAR FLOW</b>	<b>MOLE FRACTION</b>	<b>MASS FLOW</b>	<b>MASS FRACTION</b>	<b>LIQUID VOLUME FLOW</b>	<b>LIQUID VOLUME FRACTION</b>	
14		(kgmole/h)		(kg/h)		(m3/h)		
15	Methane	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
16	Ethane	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
17	CO2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
18	Nitrogen	54875.0489	0.7900	1.537214773e+06	0.7671	1906.3297	0.8229	
19	Oxygen	14587.0383	0.2100	466785.2264	0.2329	410.2957	0.1771	
20	H2O	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
21	Total	69462.0873	1.0000	2.003999999e+06	1.0000	2316.6254	1.0000	

**K VALUE**

22							
23							
24	<b>COMPONENTS</b>		<b>MIXED</b>		<b>LIGHT</b>		<b>HEAVY</b>
25		Methane	---		---		---
26		Ethane	---		---		---
27		CO2	---		---		---
28		Nitrogen	---		---		---
29		Oxygen	---		---		---
30		H2O	---		---		---

**UNIT OPERATIONS**

31			
32			
33	<b>FEED TO</b>	<b>PRODUCT FROM</b>	<b>LOGICAL CONNECTION</b>
34	Valve:	VLV-101	

**UTILITIES**

( No utilities reference this stream )

**DYNAMICS**

35	Pressure Specification (Active):	110.0 kPa *
36	Flow Specification (Inactive) Molar:	.946e+004 kgmole/h
37	Mass:	2.004e+006 kg/h *
38	Liquid Volume:	2317 m3/h

**User Variables**


39			
40			
41			
42			
43			
44	<b>Material Stream: Air-in</b>	Fluid Package:	Basis-1
45		Property Package:	SRK
46			

**CONDITIONS**

47				
48				
49		<b>Overall</b>	<b>Vapour Phase</b>	
50	Vapour / Phase Fraction	1.0000	1.0000	
51	Temperature: (C)	24.98	24.98	
52	Pressure: (kPa)	101.3 *	101.3	
53	Molar Flow (kgmole/h)	6.946e+004	6.946e+004	
54	Mass Flow (kg/h)	2.004e+006	2.004e+006	
55	Liquid Volume Flow (m3/h)	2317	2317	
56	Molar Enthalpy (kJ/kgmole)	-7.388	-7.388	
57	Molar Entropy (kJ/kgmole-C)	155.7	155.7	
58	Heat Flow (kJ/h)	-5.132e+005	-5.132e+005	
59	Std Liq Volume Flow (m3/h)	---	---	

**PROPERTIES**

60				
61				
62		<b>Overall</b>	<b>Vapour Phase</b>	
63	Vapour / Phase Fraction	1.0000	1.0000	
64	Temperature: (C)	24.98	24.98	
65	Pressure: (kPa)	101.3 *	101.3	
66	Actual Volume Flow (m3/h)	1.699e+006	1.699e+006	
67	Mass Enthalpy (kJ/kg)	-0.2561	-0.2561	
68	Mass Entropy (kJ/kg-C)	5.397	5.397	

1	 <b>TEAM EAT</b> Calgary, Alberta CANADA	Case Name:	C:\Documents and Settings\Cherna\Escritorio\Proyecto\HYSYS\24-11-20
2		Unit Set:	SI
3		Date/Time:	Mon Nov 25 11:24:34 2002
4			
5			

**Material Stream: Air-in (continued)**

Fluid Package: Basis-1  
 Property Package: SRK

**PROPERTIES**

	Overall	Vapour Phase		
12	Molecular Weight	28.85	28.85	
13	Molar Density (kgmole/m3)	4.087e-002	4.087e-002	
14	Mass Density (kg/m3)	1.179	1.179	
15	Std Liquid Mass Density (kg/m3)	---	---	
16	Molar Heat Capacity (kJ/kgmole-C)	29.23	29.23	
17	Mass Heat Capacity (kJ/kg-C)	1.013	1.013	
18	Thermal Conductivity (W/m-K)	2.596e-002	2.596e-002	
19	Viscosity (cP)	1.880e-002	1.880e-002	
20	Surface Tension (dyne/cm)	---	---	
21	Z Factor	0.9998	0.9998	
22	Molar Vapour Fraction	1.0000	1.0000	
23	Mass Vapour Fraction	1.0000	1.0000	
24	Volume Vapour Fraction	1.0000	1.0000	
25	Molar Volume (m3/kgmole)	24.47	24.47	
26	Actual Gas Flow (ACT_m3/h)	1.699e+006	1.699e+006	
27	Actual Liquid Flow (m3/s)	---	---	
28	Std. Gas Flow (STD_m3/h)	1.642e+006	1.642e+006	
29	Std. Liquid Volume Flow (m3/h)	---	---	
30	Watson K	6.042	6.042	
31	Kinematic Viscosity (cSt)	15.95	15.95	
32	Cp/Cv	1.400	1.400	
33	Lower Heating Value (kJ/kgmole)	0.0000	0.0000	
34	Mass Lower Heating Value (kJ/kg)	0.0000	0.0000	
35	Liquid Fraction	0.0000	0.0000	
36	Partial Pressure (kPa)	0.0000	0.0000	

**COMPOSITION**

**Overall Phase**

Vapour Fraction 1.0000

COMPONENTS	MOLAR FLOW (kgmole/h)	MOLE FRACTION	MASS FLOW (kg/h)	MASS FRACTION	LIQUID VOLUME FLOW (m3/h)	LIQUID VOLUME FRACTION
43	Methane	0.0000	0.0000	0.0000	0.0000	0.0000
44	Ethane	0.0000	0.0000	0.0000	0.0000	0.0000
45	CO2	0.0000	0.0000	0.0000	0.0000	0.0000
46	Nitrogen	54875.0489	0.7900	1.537214773e+06	0.7671	1906.3297
47	Oxygen	14587.0383	0.2100	466785.2264	0.2329	410.2957
48	H2O	0.0000	0.0000	0.0000	0.0000	0.0000
49	Total	69462.0873	1.0000	2.003999999e+06	1.0000	2316.6254


**Vapour Phase**

Phase Fraction 1.000

COMPONENTS	MOLAR FLOW (kgmole/h)	MOLE FRACTION	MASS FLOW (kg/h)	MASS FRACTION	LIQUID VOLUME FLOW (m3/h)	LIQUID VOLUME FRACTION
54	Methane	0.0000	0.0000	0.0000	0.0000	0.0000
55	Ethane	0.0000	0.0000	0.0000	0.0000	0.0000
56	CO2	0.0000	0.0000	0.0000	0.0000	0.0000
57	Nitrogen	54875.0489	0.7900	1.537214773e+06	0.7671	1906.3297
58	Oxygen	14587.0383	0.2100	466785.2264	0.2329	410.2957
59	H2O	0.0000	0.0000	0.0000	0.0000	0.0000
60	Total	69462.0873	1.0000	2.003999999e+06	1.0000	2316.6254

**K VALUE**

COMPONENTS	MIXED	LIGHT	HEAVY
64	Methane	---	---
65	Ethane	---	---
66	CO2	---	---
67	Nitrogen	---	---
68	Oxygen	---	---

1	 <b>TEAM EAT</b> Calgary, Alberta CANADA	Case Name:	C:\Documents and Settings\Cherna\Escritorio\Proyecto\HYSYS\24-11-20
2		Unit Set:	SI
3		Date/Time:	Mon Nov 25 11:24:34 2002
4			

5	<b>Material Stream: Air-in (continued)</b>		Fluid Package:	Basis-1
6			Property Package:	SRK

7	<b>K VALUE</b>			
8	COMPONENTS	MIXED	LIGHT	HEAVY
9	H2O	---	---	---

10	<b>UNIT OPERATIONS</b>			
11	FEED TO	PRODUCT FROM	LOGICAL CONNECTION	
12	Compressor: K-100	Valve: VLV-101		

13	<b>UTILITIES</b>			
14	( No utilities reference this stream )			

15	<b>DYNAMICS</b>			
16	Pressure Specification (Inactive)	101.3 kPa *		
17	Flow Specification (Inactive)	Molar: 1.946e+004 kgmole/h	Mass: 2.004e+006 kg/h	Liquid Volume: 2317 m3/h

18	<b>User Variables</b>			
----	-----------------------	--	--	--

19	<b>Material Stream: Air-Out</b>		Fluid Package:	Basis-1
20			Property Package:	SRK

21	<b>CONDITIONS</b>			
22		Overall	Vapour Phase	
23	Vapour / Phase Fraction	1.0000	1.0000	
24	Temperature: (C)	510.8	510.8	
25	Pressure: (kPa)	2301 *	2301	
26	Molar Flow (kgmole/h)	6.946e+004	6.946e+004	
27	Mass Flow (kg/h)	2.004e+006	2.004e+006	
28	Liquid Volume Flow (m3/h)	2317	2317	
29	Molar Enthalpy (kJ/kgmole)	1.491e+004	1.491e+004	
30	Molar Entropy (kJ/kgmole-C)	159.1	159.1	
31	Heat Flow (kJ/h)	1.036e+009	1.036e+009	
32	Std Liq Volume Flow (m3/h)	---	---	

33	<b>PROPERTIES</b>			
34		Overall	Vapour Phase	
35	Vapour / Phase Fraction	1.0000	1.0000	
36	Temperature: (C)	510.8	510.8	
37	Pressure: (kPa)	2301 *	2301	
38	Actual Volume Flow (m3/h)	1.985e+005	1.985e+005	
39	Mass Enthalpy (kJ/kg)	516.9	516.9	
40	Mass Entropy (kJ/kg-C)	5.515	5.515	
41	Molecular Weight	28.85	28.85	
42	Molar Density (kgmole/m3)	0.3499	0.3499	
43	Mass Density (kg/m3)	10.10	10.10	
44	Std Liquid Mass Density (kg/m3)	---	---	
45	Molar Heat Capacity (kJ/kgmole-C)	32.14	32.14	
46	Mass Heat Capacity (kJ/kg-C)	1.114	1.114	
47	Thermal Conductivity (W/m-K)	5.599e-002	5.599e-002	
48	Viscosity (cP)	3.902e-002	3.902e-002	
49	Surface Tension (dyne/cm)	---	---	
50	Z Factor	1.009	1.009	
51	Molar Vapour Fraction	1.0000	1.0000	
52	Mass Vapour Fraction	1.0000	1.0000	
53	Volume Vapour Fraction	1.0000	1.0000	
54	Molar Volume (m3/kgmole)	2.858	2.858	
55	Actual Gas Flow (ACT_m3/h)	1.985e+005	1.985e+005	
56	Actual Liquid Flow (m3/s)	---	---	
57	Std. Gas Flow (STD_m3/h)	1.642e+006	1.642e+006	
58	Std. Liquid Volume Flow (m3/h)	---	---	

**Material Stream: Air-Out (continued)**

Fluid Package: Basis-1  
Property Package: SRK

**PROPERTIES**

	Overall	Vapour Phase		
Watson K	6.042	6.042		
Kinematic Viscosity (cSt)	3.865	3.865		
Cp/Cv	1.351	1.351		
Lower Heating Value (kJ/kgmole)	0.0000	0.0000		
Mass Lower Heating Value (kJ/kg)	0.0000	0.0000		
Liquid Fraction	0.0000	0.0000		
Partial Pressure (kPa)	0.0000	0.0000		

**COMPOSITION**

**Overall Phase** Vapour Fraction 1.0000

COMPONENTS	MOLAR FLOW (kgmole/h)	MOLE FRACTION	MASS FLOW (kg/h)	MASS FRACTION	LIQUID VOLUME FLOW (m3/h)	LIQUID VOLUME FRACTION
Methane	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Ethane	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
CO2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Nitrogen	54875.0489	0.7900	1.537214773e+06	0.7671	1906.3297	0.8229
Oxygen	14587.0383	0.2100	466785.2264	0.2329	410.2957	0.1771
H2O	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>	<b>69462.0873</b>	<b>1.0000</b>	<b>2.003999999e+06</b>	<b>1.0000</b>	<b>2316.6254</b>	<b>1.0000</b>

**Vapour Phase** Phase Fraction 1.000

COMPONENTS	MOLAR FLOW (kgmole/h)	MOLE FRACTION	MASS FLOW (kg/h)	MASS FRACTION	LIQUID VOLUME FLOW (m3/h)	LIQUID VOLUME FRACTION
Methane	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Ethane	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
CO2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Nitrogen	54875.0489	0.7900	1.537214773e+06	0.7671	1906.3297	0.8229
Oxygen	14587.0383	0.2100	466785.2264	0.2329	410.2957	0.1771
H2O	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>	<b>69462.0873</b>	<b>1.0000</b>	<b>2.003999999e+06</b>	<b>1.0000</b>	<b>2316.6254</b>	<b>1.0000</b>

**K VALUE**

COMPONENTS	MIXED	LIGHT	HEAVY
Methane	---	---	---
Ethane	---	---	---
CO2	---	---	---
Nitrogen	---	---	---
Oxygen	---	---	---
H2O	---	---	---

**UNIT OPERATIONS**

FEED TO	PRODUCT FROM	LOGICAL CONNECTION
Conversion Reactor: CRV-100	Compressor: K-100	

**UTILITIES**

( No utilities reference this stream )


**DYNAMICS**

Pressure Specification (Inactive) 2301 kPa *	Flow Specification (Inactive) Molar: .946e+004 kgmole/h	Mass: 2.004e+006 kg/h	Liquid Volume: 2317 m3/h
--	---	-----------------------	--------------------------

**User Variables**

Licensed to: TEAM EAT

\* Specified by user.

1		<b>TEAM EAT</b> Calgary, Alberta CANADA	Case Name:	C:\Documents and Settings\Cherna\Escritorio\Proyecto\HYSYS\24-11-20
2			Unit Set:	SI
3			Date/Time:	Mon Nov 25 11:24:34 2002
4				
5				

## Material Stream: Combustion

Fluid Package: Basis-1

Property Package: SRK

### CONDITIONS

	Overall	Vapour Phase	Liquid Phase	
Vapour / Phase Fraction	1.0000	1.0000	0.0000	
Temperature: (C)	1521	1521	1521	
Pressure: (kPa)	2300	2300	2300	
Molar Flow (kgmole/h)	1.012e+005	1.012e+005	0.0000	
Mass Flow (kg/h)	2.529e+006	2.529e+006	0.0000	
Liquid Volume Flow (m3/h)	3876	3876	0.0000	
Molar Enthalpy (kJ/kgmole)	-1.296e+004	-1.296e+004	-1.296e+004	
Molar Entropy (kJ/kgmole-C)	220.5	220.5	220.5	
Heat Flow (kJ/h)	-1.312e+009	-1.312e+009	0.0000	
Std Liq Volume Flow (m3/h)	---	---	0.0000	

### PROPERTIES


	Overall	Vapour Phase	Liquid Phase	
Vapour / Phase Fraction	1.0000	1.0000	0.0000	
Temperature: (C)	1521	1521	1521	
Pressure: (kPa)	2300	2300	2300	
Actual Volume Flow (m3/h)	6.585e+005	6.585e+005	0.0000	
Mass Enthalpy (kJ/kg)	-518.6	-518.6	-518.6	
Mass Entropy (kJ/kg-C)	8.820	8.820	8.820	
Molecular Weight	25.00	25.00	25.00	
Molar Density (kgmole/m3)	0.1537	0.1537	0.1537	
Mass Density (kg/m3)	3.842	3.842	3.842	
Std Liquid Mass Density (kg/m3)	---	---	---	
Molar Heat Capacity (kJ/kgmole-C)	62.09	62.09	62.09	
Mass Heat Capacity (kJ/kg-C)	2.484	2.484	2.484	
Thermal Conductivity (W/m-K)	0.1406	0.1406	7.307e-002	
Viscosity (cP)	6.083e-002	6.083e-002	4.184e-003	
Surface Tension (dyne/cm)	---	---	0.0000	
Z Factor	1.003	1.003	1.003	
Molar Vapour Fraction	1.0000	1.0000	0.0000	
Mass Vapour Fraction	1.0000	1.0000	0.0000	
Volume Vapour Fraction	1.0000	1.0000	0.0000	
Molar Volume (m3/kgmole)	6.507	6.507	6.507	
Actual Gas Flow (ACT_m3/h)	6.585e+005	6.585e+005	---	
Actual Liquid Flow (m3/s)	---	---	0.0000	
Std. Gas Flow (STD_m3/h)	2.393e+006	2.393e+006	0.0000	
Std. Liquid Volume Flow (m3/h)	---	---	0.0000	
Watson K	8.933	8.933	8.933	
Kinematic Viscosity (cSt)	15.83	15.83	1.089	
Cp/Cv	1.154	1.154	1.154	
Lower Heating Value (kJ/kgmole)	1.927e+005	1.927e+005	1.927e+005	
Mass Lower Heating Value (kJ/kg)	7709	7709	7709	
Liquid Fraction	0.0000	0.0000	1.000	
Partial Pressure (kPa)	165.8	165.8	165.8	

### COMPOSITION

#### Overall Phase

Vapour Fraction 1.0000

COMPONENTS	MOLAR FLOW (kgmole/h)	MOLE FRACTION	MASS FLOW (kg/h)	MASS FRACTION	LIQUID VOLUME FLOW (m3/h)	LIQUID VOLUME FRACTION
Methane	23164.7404	0.2289	371629.6165	0.1469	1241.2727	0.3203
Ethane	634.5471	0.0063	19080.7674	0.0075	53.6454	0.0138
CO2	7293.5191	0.0721	320985.5927	0.1269	388.9155	0.1004
Nitrogen	55509.5960	0.5486	1.554990340e+06	0.6147	1928.3736	0.4976
Oxygen	0.0001	0.0000	0.0047	0.0000	0.0000	0.0000
H2O	14587.0382	0.1442	262786.9585	0.1039	263.3173	0.0679
Total	101189.4409	1.0000	2.529473280e+06	1.0000	3875.5245	1.0000

1	 <b>TEAM EAT</b> Calgary, Alberta CANADA	Case Name:	C:\Documents and Settings\Chema\Escritorio\Proyecto\HYSYS\24-11-20	
2		Unit Set:	SI	
3		Date/Time:	Mon Nov 25 11:24:34 2002	
4				
5				

**Material Stream: Combustion (continued)**

Fluid Package: Basis-1  
 Property Package: SRK

**COMPOSITION**

**Vapour Phase**

Phase Fraction 1.000

13	COMPONENTS	MOLAR FLOW (kgmole/h)	MOLE FRACTION	MASS FLOW (kg/h)	MASS FRACTION	LIQUID VOLUME FLOW (m3/h)	LIQUID VOLUME FRACTION
15	Methane	23164.7404	0.2289	371629.6165	0.1469	1241.2727	0.3203
16	Ethane	634.5471	0.0063	19080.7674	0.0075	53.6454	0.0138
17	CO2	7293.5191	0.0721	320985.5927	0.1269	388.9155	0.1004
18	Nitrogen	55509.5960	0.5486	1.554990340e+06	0.6147	1928.3736	0.4976
19	Oxygen	0.0001	0.0000	0.0047	0.0000	0.0000	0.0000
20	H2O	14587.0382	0.1442	262786.9585	0.1039	263.3173	0.0679
21	Total	101189.4409	1.0000	2.529473280e+06	1.0000	3875.5245	1.0000

**Liquid Phase**

Phase Fraction 0.0000

24	COMPONENTS	MOLAR FLOW (kgmole/h)	MOLE FRACTION	MASS FLOW (kg/h)	MASS FRACTION	LIQUID VOLUME FLOW (m3/h)	LIQUID VOLUME FRACTION
26	Methane	0.0000	0.2289	0.0000	0.1469	0.0000	0.3203
27	Ethane	0.0000	0.0063	0.0000	0.0075	0.0000	0.0138
28	CO2	0.0000	0.0721	0.0000	0.1269	0.0000	0.1004
29	Nitrogen	0.0000	0.5486	0.0000	0.6147	0.0000	0.4976
30	Oxygen	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
31	H2O	0.0000	0.1442	0.0000	0.1039	0.0000	0.0679
32	Total	0.0000	1.0000	0.0000	1.0000	0.0000	1.0000

**K VALUE**

35	COMPONENTS	MIXED	LIGHT	HEAVY
36	Methane	1.000	1.000	---
37	Ethane	1.000	1.000	---
38	CO2	1.000	1.000	---
39	Nitrogen	1.000	1.000	---
40	Oxygen	1.000	1.000	---
41	H2O	1.000	1.000	---

**UNIT OPERATIONS**

44	FEED TO	PRODUCT FROM	LOGICAL CONNECTION
45	Expander: K-101	Conversion Reactor: CRV-100	

**UTILITIES**

( No utilities reference this stream )

**DYNAMICS**

51	Pressure Specification (Inactive)	2300 kPa		
52	Flow Specification (Inactive)	Molar: .012e+005 kgmole/h	Mass: 2.529e+006 kg/h	Liquid Volume: 3876 m3/h


**User Variables**

**Material Stream: Ex-Exit**

Fluid Package: Basis-1  
 Property Package: SRK

**CONDITIONS**

60		Overall	Vapour Phase
61	Vapour / Phase Fraction	1.0000	1.0000
62	Temperature: (C)	159.8	159.8
63	Pressure: (kPa)	95.00	95.00
64	Molar Flow (kgmole/h)	1.489e+004	1.489e+004
65	Mass Flow (kg/h)	2.682e+005	2.682e+005
66	Liquid Volume Flow (m3/h)	268.7	268.7
67	Molar Enthalpy (kJ/kgmole)	-2.365e+005	-2.365e+005
68	Molar Entropy (kJ/kgmole-C)	186.8	186.8

1	 TEAM EAT Calgary, Alberta CANADA	Case Name:	C:\Documents and Settings\Cherna\Escritorio\Proyecto\HYSYS\24-11-20	
2		Unit Set:	SI	
3		Date/Time:	Mon Nov 25 11:24:34 2002	
4				
5				

**Material Stream: Ex-Exit (continued)**

Fluid Package: Basis-1  
 Property Package: SRK

**CONDITIONS**

		Overall	Vapour Phase		
12	Heat Flow (kJ/h)	-3.520e+009	-3.520e+009		
13	Std Liq Volume Flow (m3/h)	264.3	264.3		

**PROPERTIES**

		Overall	Vapour Phase		
17	Vapour / Phase Fraction	1.0000	1.0000		
18	Temperature: (C)	159.8	159.8		
19	Pressure: (kPa)	95.00	95.00		
20	Actual Volume Flow (m3/h)	5.612e+005	5.612e+005		
21	Mass Enthalpy (kJ/kg)	-1.313e+004	-1.313e+004		
22	Mass Entropy (kJ/kg-C)	10.37	10.37		
23	Molecular Weight	18.02	18.02		
24	Molar Density (kgmole/m3)	2.653e-002	2.653e-002		
25	Mass Density (kg/m3)	0.4779	0.4779		
26	Std Liquid Mass Density (kg/m3)	1015	1015		
27	Molar Heat Capacity (kJ/kgmole-C)	34.81	34.81		
28	Mass Heat Capacity (kJ/kg-C)	1.932	1.932		
29	Thermal Conductivity (W/m-K)	2.946e-002	2.946e-002		
30	Viscosity (cP)	1.455e-002	1.455e-002		
31	Surface Tension (dyne/cm)	---	---		
32	Z Factor	0.9948	0.9948		
33	Molar Vapour Fraction	1.0000	1.0000		
34	Mass Vapour Fraction	1.0000	1.0000		
35	Volume Vapour Fraction	1.0000	1.0000		
36	Molar Volume (m3/kgmole)	37.70	37.70		
37	Actual Gas Flow (ACT_m3/h)	5.612e+005	5.612e+005		
38	Actual Liquid Flow (m3/s)	---	---		
39	Std. Gas Flow (STD_m3/h)	3.520e+005	3.520e+005		
40	Std. Liquid Volume Flow (m3/h)	264.3	264.3		
41	Watson K	---	---		
42	Kinematic Viscosity (cSt)	30.44	30.44		
43	Cp/Cv	1.322	1.322		
44	Lower Heating Value (kJ/kgmole)	0.0000	0.0000		
45	Mass Lower Heating Value (kJ/kg)	0.0000	0.0000		
46	Liquid Fraction	0.0000	0.0000		
47	Partial Pressure (kPa)	0.0000	0.0000		

**COMPOSITION**

**Overall Phase**

Vapour Fraction 1.0000


COMPONENTS	MOLAR FLOW (kgmole/h)	MOLE FRACTION	MASS FLOW (kg/h)	MASS FRACTION	LIQUID VOLUME FLOW (m3/h)	LIQUID VOLUME FRACTION
54	Methane	0.0000	0.0000	0.0000	0.0000	0.0000
55	Ethane	0.0000	0.0000	0.0000	0.0000	0.0000
56	CO2	0.0000	0.0000	0.0000	0.0000	0.0000
57	Nitrogen	0.0000	0.0000	0.0000	0.0000	0.0000
58	Oxygen	0.0000	0.0000	0.0000	0.0000	0.0000
59	H2O	14887.7882	1.0000	268205.0000	1.0000	268.7462
60	Total	14887.7882	1.0000	268205.0000	1.0000	268.7462

**Vapour Phase**

Phase Fraction 1.000

COMPONENTS	MOLAR FLOW (kgmole/h)	MOLE FRACTION	MASS FLOW (kg/h)	MASS FRACTION	LIQUID VOLUME FLOW (m3/h)	LIQUID VOLUME FRACTION
65	Methane	0.0000	0.0000	0.0000	0.0000	0.0000
66	Ethane	0.0000	0.0000	0.0000	0.0000	0.0000
67	CO2	0.0000	0.0000	0.0000	0.0000	0.0000
68	Nitrogen	0.0000	0.0000	0.0000	0.0000	0.0000



1	 TEAM EAT Calgary, Alberta CANADA	Case Name:	C:\Documents and Settings\Cherna\Escritorio\Proyecto\HYSYS\124-11-20	
2		Unit Set:	SI	
3		Date/Time:	Mon Nov 25 11:24:34 2002	
4				
5				

**Material Stream: Ex-Exit (continued)**

Fluid Package: Basis-1  
 Property Package: SRK

**COMPOSITION**

**Vapour Phase (continued)**

Phase Fraction 1.000

13	COMPONENTS	MOLAR FLOW (kgmole/h)	MOLE FRACTION	MASS FLOW (kg/h)	MASS FRACTION	LIQUID VOLUME FLOW (m3/h)	LIQUID VOLUME FRACTION
15	Oxygen	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
16	H2O	14887.7882	1.0000	268205.0000	1.0000	268.7462	1.0000
17	Total	14887.7882	1.0000	268205.0000	1.0000	268.7462	1.0000

**K VALUE**

20	COMPONENTS	MIXED	LIGHT	HEAVY
21	Methane	---	---	---
22	Ethane	---	---	---
23	CO2	---	---	---
24	Nitrogen	---	---	---
25	Oxygen	---	---	---
26	H2O	---	---	---

**UNIT OPERATIONS**

29	FEED TO	PRODUCT FROM	LOGICAL CONNECTION
30	Tank: V-100	Heater: E-104	

**UTILITIES**

( No utilities reference this stream )

**DYNAMICS**

36	Pressure Specification (Inactive)	95.00 kPa			
37	Flow Specification (Inactive)	Molar: .489e+004 kgmole/h	Mass: 2.682e+005 kg/h	Liquid Volume: 268.7 m3/h	

**User Variables**

**Material Stream: Exit Gas**


Fluid Package: Basis-1  
 Property Package: SRK

**CONDITIONS**

45		Overall	Vapour Phase		
46	Vapour / Phase Fraction	1.0000	1.0000		
47	Temperature: (C)	778.0	778.0		
48	Pressure: (kPa)	100.0 *	100.0		
49	Molar Flow (kgmole/h)	1.012e+005	1.012e+005		
50	Mass Flow (kg/h)	2.529e+006	2.529e+006		
51	Liquid Volume Flow (m3/h)	3876	3876		
52	Molar Enthalpy (kJ/kgmole)	-5.124e+004	-5.124e+004		
53	Molar Entropy (kJ/kgmole-C)	219.4	219.4		
54	Heat Flow (kJ/h)	-5.185e+009	-5.185e+009		
55	Std Liq Volume Flow (m3/h)	---	---		

**PROPERTIES**

58		Overall	Vapour Phase		
59	Vapour / Phase Fraction	1.0000	1.0000		
60	Temperature: (C)	778.0	778.0		
61	Pressure: (kPa)	100.0 *	100.0		
62	Actual Volume Flow (m3/h)	8.846e+006	8.846e+006		
63	Mass Enthalpy (kJ/kg)	-2050	-2050		
64	Mass Entropy (kJ/kg-C)	8.776	8.776		
65	Molecular Weight	25.00	25.00		
66	Molar Density (kgmole/m3)	1.144e-002	1.144e-002		
67	Mass Density (kg/m3)	0.2859	0.2859		
68	Std Liquid Mass Density (kg/m3)	---	---		

1	 <b>TEAM EAT</b> Calgary, Alberta CANADA	Case Name:	C:\Documents and Settings\Cherna\Escritorio\Proyecto\HYSYS\24-11-20
2		Unit Set:	SI
3		Date/Time:	Mon Nov 25 11:24:34 2002
4			
5			

**Material Stream: Exit Gas (continued)**

Fluid Package: Basis-1  
 Property Package: SRK

**PROPERTIES**

	Overall	Vapour Phase		
12	Molar Heat Capacity (kJ/kgmole-C)	45.64	45.64	
13	Mass Heat Capacity (kJ/kg-C)	1.826	1.826	
14	Thermal Conductivity (W/m-K)	9.353e-002	9.353e-002	
15	Viscosity (cP)	3.803e-002	3.803e-002	
16	Surface Tension (dyne/cm)	---	---	
17	Z Factor	1.000	1.000	
18	Molar Vapour Fraction	1.0000	1.0000	
19	Mass Vapour Fraction	1.0000	1.0000	
20	Volume Vapour Fraction	1.0000	1.0000	
21	Molar Volume (m3/kgmole)	87.42	87.42	
22	Actual Gas Flow (ACT_m3/h)	8.846e+006	8.846e+006	
23	Actual Liquid Flow (m3/s)	---	---	
24	Std. Gas Flow (STD_m3/h)	2.393e+006	2.393e+006	
25	Std. Liquid Volume Flow (m3/h)	---	---	
26	Watson K	8.933	8.933	
27	Kinematic Viscosity (cSt)	133.0	133.0	
28	Cp/Cv	1.223	1.223	
29	Lower Heating Value (kJ/kgmole)	1.927e+005	1.927e+005	
30	Mass Lower Heating Value (kJ/kg)	7709	7709	
31	Liquid Fraction	0.0000	0.0000	
32	Partial Pressure (kPa)	7.208	7.208	

**COMPOSITION**

**Overall Phase**

Vapour Fraction 1.0000

COMPONENTS	MOLAR FLOW (kgmole/h)	MOLE FRACTION	MASS FLOW (kg/h)	MASS FRACTION	LIQUID VOLUME FLOW (m3/h)	LIQUID VOLUME FRACTION	
39	Methane	23164.7404	0.2289	371629.6165	0.1469	1241.2727	0.3203
40	Ethane	634.5471	0.0063	19080.7674	0.0075	53.6454	0.0138
41	CO2	7293.5191	0.0721	320985.5927	0.1269	388.9155	0.1004
42	Nitrogen	55509.5960	0.5486	1.554990340e+06	0.6147	1928.3736	0.4976
43	Oxygen	0.0001	0.0000	0.0047	0.0000	0.0000	0.0000
44	H2O	14587.0382	0.1442	262786.9585	0.1039	263.3173	0.0679
45	Total	101189.4409	1.0000	2.529473280e+06	1.0000	3875.5245	1.0000


**Vapour Phase**

Phase Fraction 1.000

COMPONENTS	MOLAR FLOW (kgmole/h)	MOLE FRACTION	MASS FLOW (kg/h)	MASS FRACTION	LIQUID VOLUME FLOW (m3/h)	LIQUID VOLUME FRACTION	
50	Methane	23164.7404	0.2289	371629.6165	0.1469	1241.2727	0.3203
51	Ethane	634.5471	0.0063	19080.7674	0.0075	53.6454	0.0138
52	CO2	7293.5191	0.0721	320985.5927	0.1269	388.9155	0.1004
53	Nitrogen	55509.5960	0.5486	1.554990340e+06	0.6147	1928.3736	0.4976
54	Oxygen	0.0001	0.0000	0.0047	0.0000	0.0000	0.0000
55	H2O	14587.0382	0.1442	262786.9585	0.1039	263.3173	0.0679
56	Total	101189.4409	1.0000	2.529473280e+06	1.0000	3875.5245	1.0000

**K VALUE**

COMPONENTS	MIXED	LIGHT	HEAVY
60	Methane	---	---
61	Ethane	---	---
62	CO2	---	---
63	Nitrogen	---	---
64	Oxygen	---	---
65	H2O	---	---

1	 TEAM EAT Calgary, Alberta CANADA	Case Name:	C:\Documents and Settings\Cherna\Escritorio\Proyecto\HYSYS\24-11-20
2		Unit Set:	SI
3		Date/Time:	Mon Nov 25 11:24:34 2002
4			

5	<b>Material Stream: Exit Gas (continued)</b>		Fluid Package:	Basis-1
6			Property Package:	SRK

**UNIT OPERATIONS**

7	FEED TO	PRODUCT FROM	LOGICAL CONNECTION
8		Heat Exchanger:	HRSG

**UTILITIES**

( No utilities reference this stream )

**DYNAMICS**

18	Pressure Specification (Active):	100.0 kPa *
19	Flow Specification (Inactive) Molar:	.012e+005 kgmole/h
20	Mass:	2.529e+006 kg/h
21	Liquid Volume:	3876 m3/h

**User Variables**


22	<b>Material Stream: Gas</b>		Fluid Package:	Basis-1
23			Property Package:	SRK

**CONDITIONS**

	Overall	Vapour Phase
27		
28	Vapour / Phase Fraction	1.0000
29	Temperature: (C)	25.00 *
30	Pressure: (kPa)	2310 *
31	Molar Flow (kgmole/h)	3.173e+004
32	Mass Flow (kg/h)	5.255e+005 *
33	Liquid Volume Flow (m3/h)	1708
34	Molar Enthalpy (kJ/kgmole)	-7.399e+004
35	Molar Entropy (kJ/kgmole-C)	157.7
36	Heat Flow (kJ/h)	-2.348e+009
37	Std Liq Volume Flow (m3/h)	---

**PROPERTIES**

	Overall	Vapour Phase
40		
41	Vapour / Phase Fraction	1.0000
42	Temperature: (C)	25.00 *
43	Pressure: (kPa)	2310 *
44	Actual Volume Flow (m3/h)	3.272e+004
45	Mass Enthalpy (kJ/kg)	-4467
46	Mass Entropy (kJ/kg-C)	9.521
47	Molecular Weight	16.56
48	Molar Density (kgmole/m3)	0.9696
49	Mass Density (kg/m3)	16.06
50	Std Liquid Mass Density (kg/m3)	---
51	Molar Heat Capacity (kJ/kgmole-C)	38.65
52	Mass Heat Capacity (kJ/kg-C)	2.334
53	Thermal Conductivity (W/m-K)	3.510e-002
54	Viscosity (cP)	1.174e-002
55	Surface Tension (dyne/cm)	---
56	Z Factor	0.9610
57	Molar Vapour Fraction	1.0000
58	Mass Vapour Fraction	1.0000
59	Volume Vapour Fraction	1.0000
60	Molar Volume (m3/kgmole)	1.031
61	Actual Gas Flow (ACT_m3/h)	3.272e+004
62	Actual Liquid Flow (m3/s)	---
63	Std. Gas Flow (STD_m3/h)	7.502e+005
64	Std. Liquid Volume Flow (m3/h)	---
65	Watson K	19.06
66	Kinematic Viscosity (cSt)	0.7313
67	Cp/Cv	1.371
68	Lower Heating Value (kJ/kgmole)	7.992e+005

1	 TEAM EAT Calgary, Alberta CANADA	Case Name:	C:\Documents and Settings\Cherna\Escritorio\Proyecto\HYSYS\24-11-20
2		Unit Set:	SI
3		Date/Time:	Mon Nov 25 11:24:34 2002
4			
5			

**Material Stream: Gas (continued)**

Fluid Package: Basis-1  
 Property Package: SRK

**PROPERTIES**

	Overall	Vapour Phase		
12	Mass Lower Heating Value (kJ/kg)	4.825e+004	4.825e+004	
13	Liquid Fraction	0.0000	0.0000	
14	Partial Pressure (kPa)	0.0000	0.0000	

**COMPOSITION**

**Overall Phase**

Vapour Fraction 1.0000

19	COMPONENTS	MOLAR FLOW (kgmole/h)	MOLE FRACTION	MASS FLOW (kg/h)	MASS FRACTION	LIQUID VOLUME FLOW (m3/h)	LIQUID VOLUME FRACTION
21	Methane	30458.2595 *	0.9600 *	488638.8146 *	0.9299 *	1632.0928 *	0.9557 *
22	Ethane	634.5471 *	0.0200 *	19080.7674 *	0.0363 *	53.6454 *	0.0314 *
23	CO2	0.0000 *	0.0000 *	0.0000 *	0.0000 *	0.0000 *	0.0000 *
24	Nitrogen	634.5471 *	0.0200 *	17775.5675 *	0.0338 *	22.0438 *	0.0129 *
25	Oxygen	0.0000 *	0.0000 *	0.0000 *	0.0000 *	0.0000 *	0.0000 *
26	H2O	0.0000 *	0.0000 *	0.0000 *	0.0000 *	0.0000 *	0.0000 *
27	Total	31727.3537	1.0000	525495.1494	1.0000	1707.7821	1.0000

**Vapour Phase**

Phase Fraction 1.000

30	COMPONENTS	MOLAR FLOW (kgmole/h)	MOLE FRACTION	MASS FLOW (kg/h)	MASS FRACTION	LIQUID VOLUME FLOW (m3/h)	LIQUID VOLUME FRACTION
32	Methane	30458.2595	0.9600	488638.8146	0.9299	1632.0928	0.9557
33	Ethane	634.5471	0.0200	19080.7674	0.0363	53.6454	0.0314
34	CO2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
35	Nitrogen	634.5471	0.0200	17775.5675	0.0338	22.0438	0.0129
36	Oxygen	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
37	H2O	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
38	Total	31727.3537	1.0000	525495.1494	1.0000	1707.7821	1.0000

**K VALUE**

41	COMPONENTS	MIXED	LIGHT	HEAVY
42	Methane	---	---	---
43	Ethane	---	---	---
44	CO2	---	---	---
45	Nitrogen	---	---	---
46	Oxygen	---	---	---
47	H2O	---	---	---

**UNIT OPERATIONS**

50	FEED TO	PRODUCT FROM	LOGICAL CONNECTION
51	Valve: VLV-100		PID Controller: FIC-100

**UTILITIES**

( No utilities reference this stream )

**DYNAMICS**

57	Pressure Specification (Active):	2310 kPa *
58	Flow Specification (Inactive) Molar:	1.173e+004 kgmole/h
	Mass:	5.255e+005 kg/h *
	Liquid Volume:	1708 m3/h


**User Variables**

**Material Stream: Gas-in**

Fluid Package: Basis-1  
 Property Package: SRK

**CONDITIONS**

	Overall	Vapour Phase		
67	Vapour / Phase Fraction	1.0000	1.0000	
68	Temperature: (C)	24.96	24.96	

1	 TEAM EAT Calgary, Alberta CANADA	Case Name:	C:\Documents and Settings\Cherna\Escritorio\Proyecto\HYSYS\24-11-20	
2		Unit Set:	SI	
3		Date/Time:	Mon Nov 25 11:24:34 2002	
4				
5				

**Material Stream: Gas-in (continued)**

Fluid Package: Basis-1  
 Property Package: SRK

**CONDITIONS**

		Overall	Vapour Phase		
12	Pressure: (kPa)	2300 *	2300		
13	Molar Flow (kgmole/h)	3.173e+004	3.173e+004		
14	Mass Flow (kg/h)	5.255e+005	5.255e+005		
15	Liquid Volume Flow (m3/h)	1708	1708		
16	Molar Enthalpy (kJ/kgmole)	-7.399e+004	-7.399e+004		
17	Molar Entropy (kJ/kgmole-C)	157.7	157.7		
18	Heat Flow (kJ/h)	-2.348e+009	-2.348e+009		
19	Std Liq Volume Flow (m3/h)	---	---		

**PROPERTIES**


		Overall	Vapour Phase		
23	Vapour / Phase Fraction	1.0000	1.0000		
24	Temperature: (C)	24.96	24.96		
25	Pressure: (kPa)	2300 *	2300		
26	Actual Volume Flow (m3/h)	3.286e+004	3.286e+004		
27	Mass Enthalpy (kJ/kg)	-4467	-4467		
28	Mass Entropy (kJ/kg-C)	9.523	9.523		
29	Molecular Weight	16.56	16.56		
30	Molar Density (kgmole/m3)	0.9654	0.9654		
31	Mass Density (kg/m3)	15.99	15.99		
32	Std Liquid Mass Density (kg/m3)	---	---		
33	Molar Heat Capacity (kJ/kgmole-C)	38.64	38.64		
34	Mass Heat Capacity (kJ/kg-C)	2.333	2.333		
35	Thermal Conductivity (W/m-K)	3.509e-002	3.509e-002		
36	Viscosity (cP)	1.174e-002	1.174e-002		
37	Surface Tension (dyne/cm)	---	---		
38	Z Factor	0.9612	0.9612		
39	Molar Vapour Fraction	1.0000	1.0000		
40	Mass Vapour Fraction	1.0000	1.0000		
41	Volume Vapour Fraction	1.0000	1.0000		
42	Molar Volume (m3/kgmole)	1.036	1.036		
43	Actual Gas Flow (ACT_m3/h)	3.286e+004	3.286e+004		
44	Actual Liquid Flow (m3/s)	---	---		
45	Std. Gas Flow (STD_m3/h)	7.502e+005	7.502e+005		
46	Std. Liquid Volume Flow (m3/h)	---	---		
47	Watson K	19.06	19.06		
48	Kinematic Viscosity (cSt)	0.7342	0.7342		
49	Cp/Cv	1.370	1.370		
50	Lower Heating Value (kJ/kgmole)	7.992e+005	7.992e+005		
51	Mass Lower Heating Value (kJ/kg)	4.825e+004	4.825e+004		
52	Liquid Fraction	0.0000	0.0000		
53	Partial Pressure (kPa)	0.0000	0.0000		

**COMPOSITION**

**Overall Phase**

Vapour Fraction 1.0000

COMPONENTS	MOLAR FLOW (kgmole/h)	MOLE FRACTION	MASS FLOW (kg/h)	MASS FRACTION	LIQUID VOLUME FLOW (m3/h)	LIQUID VOLUME FRACTION	
60	Methane	30458.2595	0.9600	488638.8146	0.9299	1632.0928	0.9557
61	Ethane	634.5471	0.0200	19080.7674	0.0363	53.6454	0.0314
62	CO2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
63	Nitrogen	634.5471	0.0200	17775.5675	0.0338	22.0438	0.0129
64	Oxygen	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
65	H2O	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
66	Total	31727.3537	1.0000	525495.1494	1.0000	1707.7821	1.0000

1	 TEAM EAT Calgary, Alberta CANADA	Case Name:	C:\Documents and Settings\Cherna\Escritorio\Proyecto\HYSYS\24-11-20	
2		Unit Set:	SI	
3		Date/Time:	Mon Nov 25 11:24:34 2002	
4				
5				

**Material Stream: Gas-in (continued)**

Fluid Package: Basis-1  
 Property Package: SRK

**COMPOSITION**

**Vapour Phase**

Phase Fraction 1.000

COMPONENTS	MOLAR FLOW (kgmole/h)	MOLE FRACTION	MASS FLOW (kg/h)	MASS FRACTION	LIQUID VOLUME FLOW (m3/h)	LIQUID VOLUME FRACTION
Methane	30458.2595	0.9600	488638.8146	0.9299	1632.0928	0.9557
Ethane	634.5471	0.0200	19080.7674	0.0363	53.6454	0.0314
CO2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Nitrogen	634.5471	0.0200	17775.5675	0.0338	22.0438	0.0129
Oxygen	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
H2O	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	31727.3537	1.0000	525495.1494	1.0000	1707.7821	1.0000

**K VALUE**

COMPONENTS	MIXED	LIGHT	HEAVY
Methane	---	---	---
Ethane	---	---	---
CO2	---	---	---
Nitrogen	---	---	---
Oxygen	---	---	---
H2O	---	---	---

**UNIT OPERATIONS**

FEED TO	PRODUCT FROM	LOGICAL CONNECTION
Conversion Reactor: CRV-100	Valve: VLV-100	

**UTILITIES**

( No utilities reference this stream )

**DYNAMICS**

Pressure Specification (Inactive)	2300 kPa *
Flow Specification (Inactive)	Molar: 1.173e+004 kgmole/h    Mass: 5.255e+005 kg/h    Liquid Volume: 1708 m3/h

**User Variables**

**Material Stream: HRSG-In**


Fluid Package: Basis-1  
 Property Package: SRK

**CONDITIONS**

	Overall	Vapour Phase
Vapour / Phase Fraction	1.0000	1.0000
Temperature: (C)	1003	1003
Pressure: (kPa)	102.0 *	102.0
Molar Flow (kgmole/h)	1.012e+005	1.012e+005
Mass Flow (kg/h)	2.529e+006	2.529e+006
Liquid Volume Flow (m3/h)	3876	3876
Molar Enthalpy (kJ/kgmole)	-4.066e+004	-4.066e+004
Molar Entropy (kJ/kgmole-C)	228.3	228.3
Heat Flow (kJ/h)	-4.114e+009	-4.114e+009
Std Liq Volume Flow (m3/h)	---	---

**PROPERTIES**

	Overall	Vapour Phase
Vapour / Phase Fraction	1.0000	1.0000
Temperature: (C)	1003	1003
Pressure: (kPa)	102.0 *	102.0
Actual Volume Flow (m3/h)	1.053e+007	1.053e+007
Mass Enthalpy (kJ/kg)	-1626	-1626
Mass Entropy (kJ/kg-C)	9.134	9.134

1		<b>TEAM EAT</b> Calgary, Alberta CANADA	Case Name:	C:\Documents and Settings\Cherna\Escritorio\Proyecto\HYSYS\24-11-20
2			Unit Set:	SI
3			Date/Time:	Mon Nov 25 11:24:34 2002
4				
5				

**Material Stream: HRSG-In (continued)**

Fluid Package: Basis-1  
 Property Package: SRK

**PROPERTIES**

	Overall	Vapour Phase		
12	Molecular Weight	25.00	25.00	
13	Molar Density (kgmole/m3)	9.608e-003	9.608e-003	
14	Mass Density (kg/m3)	0.2402	0.2402	
15	Std Liquid Mass Density (kg/m3)	---	---	
16	Molar Heat Capacity (kJ/kgmole-C)	48.32	48.32	
17	Mass Heat Capacity (kJ/kg-C)	1.933	1.933	
18	Thermal Conductivity (W/m-K)	0.1118	0.1118	
19	Viscosity (cP)	4.495e-002	4.495e-002	
20	Surface Tension (dyne/cm)	---	---	
21	Z Factor	1.000	1.000	
22	Molar Vapour Fraction	1.0000	1.0000	
23	Mass Vapour Fraction	1.0000	1.0000	
24	Volume Vapour Fraction	1.0000	1.0000	
25	Molar Volume (m3/kgmole)	104.1	104.1	
26	Actual Gas Flow (ACT_m3/h)	1.053e+007	1.053e+007	
27	Actual Liquid Flow (m3/s)	---	---	
28	Std. Gas Flow (STD_m3/h)	2.393e+006	2.393e+006	
29	Std. Liquid Volume Flow (m3/h)	---	---	
30	Watson K	8.933	8.933	
31	Kinematic Viscosity (cSt)	187.1	187.1	
32	Cp/Cv	1.208	1.208	
33	Lower Heating Value (kJ/kgmole)	1.927e+005	1.927e+005	
34	Mass Lower Heating Value (kJ/kg)	7709	7709	
35	Liquid Fraction	0.0000	0.0000	
36	Partial Pressure (kPa)	7.352	7.352	

**COMPOSITION**

**Overall Phase**

Vapour Fraction 1.0000

COMPONENTS	MOLAR FLOW (kgmole/h)	MOLE FRACTION	MASS FLOW (kg/h)	MASS FRACTION	LIQUID VOLUME FLOW (m3/h)	LIQUID VOLUME FRACTION	
43	Methane	23164.7404	0.2289	371629.6165	0.1469	1241.2727	0.3203
44	Ethane	634.5471	0.0063	19080.7674	0.0075	53.6454	0.0138
45	CO2	7293.5191	0.0721	320985.5927	0.1269	388.9155	0.1004
46	Nitrogen	55509.5960	0.5486	1.554990340e+06	0.6147	1928.3736	0.4976
47	Oxygen	0.0001	0.0000	0.0047	0.0000	0.0000	0.0000
48	H2O	14587.0382	0.1442	262786.9585	0.1039	263.3173	0.0679
49	Total	101189.4409	1.0000	2.529473280e+06	1.0000	3875.5245	1.0000


**Vapour Phase**

Phase Fraction 1.000

COMPONENTS	MOLAR FLOW (kgmole/h)	MOLE FRACTION	MASS FLOW (kg/h)	MASS FRACTION	LIQUID VOLUME FLOW (m3/h)	LIQUID VOLUME FRACTION	
54	Methane	23164.7404	0.2289	371629.6165	0.1469	1241.2727	0.3203
55	Ethane	634.5471	0.0063	19080.7674	0.0075	53.6454	0.0138
56	CO2	7293.5191	0.0721	320985.5927	0.1269	388.9155	0.1004
57	Nitrogen	55509.5960	0.5486	1.554990340e+06	0.6147	1928.3736	0.4976
58	Oxygen	0.0001	0.0000	0.0047	0.0000	0.0000	0.0000
59	H2O	14587.0382	0.1442	262786.9585	0.1039	263.3173	0.0679
60	Total	101189.4409	1.0000	2.529473280e+06	1.0000	3875.5245	1.0000

**K VALUE**

COMPONENTS	MIXED	LIGHT	HEAVY
64	Methane	---	---
65	Ethane	---	---
66	CO2	---	---
67	Nitrogen	---	---
68	Oxygen	---	---

1	 <b>TEAM EAT</b> Calgary, Alberta CANADA	Case Name:	C:\Documents and Settings\Cherna\Escritorio\Proyecto\HYSYS\24-11-20
2		Unit Set:	SI
3		Date/Time:	Mon Nov 25 11:24:34 2002
4			

5	<b>Material Stream: HRSG-In (continued)</b>		Fluid Package:	Basis-1
6			Property Package:	SRK

7	<b>K VALUE</b>			
8	COMPONENTS	MIXED	LIGHT	HEAVY
9	H2O	---	---	---

10	<b>UNIT OPERATIONS</b>			
11	FEED TO	PRODUCT FROM	LOGICAL CONNECTION	
12	Heat Exchanger: HRSG	Expander: K-101		

13	<b>UTILITIES</b>			
14	( No utilities reference this stream )			

15	<b>DYNAMICS</b>			
16	Pressure Specification (Inactive)	102.0 kPa *		
17	Flow Specification (Inactive)	Molar: .012e+005 kgmole/h	Mass: 2.529e+006 kg/h	Liquid Volume: 3876 m3/h


18	<b>User Variables</b>			
----	-----------------------	--	--	--

19	<b>Material Stream: HRSG-Liquid</b>		Fluid Package:	Basis-1
20			Property Package:	SRK

21	<b>CONDITIONS</b>			
22		Overall	Aqueous Phase	
23	Vapour / Phase Fraction	0.0000	1.0000	
24	Temperature: (C)	10.74 *	10.74	
25	Pressure: (kPa)	1.601e+004 *	1.601e+004	
26	Molar Flow (kgmole/h)	1.489e+004 *	1.489e+004	
27	Mass Flow (kg/h)	2.682e+005	2.682e+005	
28	Liquid Volume Flow (m3/h)	268.7	268.7	
29	Molar Enthalpy (kJ/kgmole)	-2.864e+005	-2.864e+005	
30	Molar Entropy (kJ/kgmole-C)	49.13	49.13	
31	Heat Flow (kJ/h)	-4.264e+009	-4.264e+009	
32	Std Liq Volume Flow (m3/h)	264.3	264.3	

33	<b>PROPERTIES</b>			
34		Overall	Aqueous Phase	
35	Vapour / Phase Fraction	0.0000	1.0000	
36	Temperature: (C)	10.74 *	10.74	
37	Pressure: (kPa)	1.601e+004 *	1.601e+004	
38	Actual Volume Flow (m3/h)	262.3	262.3	
39	Mass Enthalpy (kJ/kg)	-1.590e+004	-1.590e+004	
40	Mass Entropy (kJ/kg-C)	2.727	2.727	
41	Molecular Weight	18.02	18.02	
42	Molar Density (kgmole/m3)	56.76	56.76	
43	Mass Density (kg/m3)	1022	1022	
44	Std Liquid Mass Density (kg/m3)	1015	1015	
45	Molar Heat Capacity (kJ/kgmole-C)	79.79	79.79	
46	Mass Heat Capacity (kJ/kg-C)	4.429	4.429	
47	Thermal Conductivity (W/m-K)	0.5882	0.5882	
48	Viscosity (cP)	1.273	1.273	
49	Surface Tension (dyne/cm)	74.55	74.55	
50	Z Factor	0.1195	0.1195	
51	Molar Vapour Fraction	0.0000	1.0000	
52	Mass Vapour Fraction	0.0000	1.0000	
53	Volume Vapour Fraction	0.0000	1.0000	
54	Molar Volume (m3/kgmole)	1.762e-002	1.762e-002	
55	Actual Gas Flow (ACT_m3/h)	---	---	
56	Actual Liquid Flow (m3/s)	7.286e-002	7.286e-002	
57	Std. Gas Flow (STD_m3/h)	3.520e+005	3.520e+005	
58	Std. Liquid Volume Flow (m3/h)	264.3	264.3	



1	 TEAM EAT Calgary, Alberta CANADA	Case Name:	C:\Documents and Settings\Cherna\Escritorio\Proyecto\HYSYS\24-11-20
2		Unit Set:	SI
3		Date/Time:	Mon Nov 25 11:24:34 2002
4			
5			

**Material Stream: HRSG-Liquid (continued)**

Fluid Package: Basis-1  
 Property Package: SRK

**PROPERTIES**

	Overall	Aqueous Phase		
12	Watson K	---	---	
13	Kinematic Viscosity (cSt)	1.245	1.245	
14	Cp/Cv	1.133	1.133	
15	Lower Heating Value (kJ/kgmole)	0.0000	0.0000	
16	Mass Lower Heating Value (kJ/kg)	0.0000	0.0000	
17	Liquid Fraction	1.000	1.000	
18	Partial Pressure (kPa)	0.0000	0.0000	

**COMPOSITION**

**Overall Phase**

Vapour Fraction 0.0000

23	COMPONENTS	MOLAR FLOW (kgmole/h)	MOLE FRACTION	MASS FLOW (kg/h)	MASS FRACTION	LIQUID VOLUME FLOW (m3/h)	LIQUID VOLUME FRACTION
25	Methane	0.0000 *	0.0000 *	0.0000 *	0.0000 *	0.0000 *	0.0000 *
26	Ethane	0.0000 *	0.0000 *	0.0000 *	0.0000 *	0.0000 *	0.0000 *
27	CO2	0.0000 *	0.0000 *	0.0000 *	0.0000 *	0.0000 *	0.0000 *
28	Nitrogen	0.0000 *	0.0000 *	0.0000 *	0.0000 *	0.0000 *	0.0000 *
29	Oxygen	0.0000 *	0.0000 *	0.0000 *	0.0000 *	0.0000 *	0.0000 *
30	H2O	14887.7882 *	1.0000 *	268205.0000 *	1.0000 *	268.7462 *	1.0000 *
31	Total	14887.7882	1.0000	268205.0000	1.0000	268.7462	1.0000

**Aqueous Phase**

Phase Fraction 1.000

34	COMPONENTS	MOLAR FLOW (kgmole/h)	MOLE FRACTION	MASS FLOW (kg/h)	MASS FRACTION	LIQUID VOLUME FLOW (m3/h)	LIQUID VOLUME FRACTION
36	Methane	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
37	Ethane	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
38	CO2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
39	Nitrogen	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
40	Oxygen	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
41	H2O	14887.7882	1.0000	268205.0000	1.0000	268.7462	1.0000
42	Total	14887.7882	1.0000	268205.0000	1.0000	268.7462	1.0000

**K VALUE**

45	COMPONENTS	MIXED	LIGHT	HEAVY
46	Methane	---	---	---
47	Ethane	---	---	---
48	CO2	---	---	---
49	Nitrogen	---	---	---
50	Oxygen	---	---	---
51	H2O	0.0000	---	0.0000

**UNIT OPERATIONS**

54	FEED TO	PRODUCT FROM	LOGICAL CONNECTION
55	Heat Exchanger: HRSG	Recycle: RCY-1	


**UTILITIES**

( No utilities reference this stream )

**DYNAMICS**

61	Pressure Specification	(Inactive) 0.01e+004 kPa *		
62	Flow Specification	(Inactive) Molar: .489e+004 kgmole/h *	Mass: 2.682e+005 kg/h	Liquid Volume: 268.7 m3/h

**User Variables**

1	 <b>TEAM EAT</b> Calgary, Alberta CANADA	Case Name:	C:\Documents and Settings\Cherna\Escritorio\Proyecto\HYSYS\24-11-20	
2		Unit Set:	SI	
3		Date/Time:	Mon Nov 25 11:24:34 2002	
4				
5				

6	<b>Material Stream: Liquid</b>	Fluid Package:	Basis-1
7		Property Package:	SRK
8			

**CONDITIONS**

	Overall	Vapour Phase	Liquid Phase
12 Vapour / Phase Fraction	0.0000	0.0000	1.0000
13 Temperature: (C)	1521	1521	1521
14 Pressure: (kPa)	2300	2300	2300
15 Molar Flow (kgmole/h)	0.0000	0.0000	0.0000
16 Mass Flow (kg/h)	0.0000	0.0000	0.0000
17 Liquid Volume Flow (m3/h)	0.0000	0.0000	0.0000
18 Molar Enthalpy (kJ/kgmole)	-1.296e+004	-1.296e+004	-1.296e+004
19 Molar Entropy (kJ/kgmole-C)	220.5	220.5	220.5
20 Heat Flow (kJ/h)	0.0000	0.0000	0.0000
21 Std Liq Volume Flow (m3/h)	---	0.0000	0.0000


**PROPERTIES**

	Overall	Vapour Phase	Liquid Phase
25 Vapour / Phase Fraction	0.0000	0.0000	1.0000
26 Temperature: (C)	1521	1521	1521
27 Pressure: (kPa)	2300	2300	2300
28 Actual Volume Flow (m3/h)	0.0000	0.0000	0.0000
29 Mass Enthalpy (kJ/kg)	-518.6	-518.6	-518.6
30 Mass Entropy (kJ/kg-C)	8.820	8.820	8.820
31 Molecular Weight	25.00	25.00	25.00
32 Molar Density (kgmole/m3)	0.1537	0.1537	0.1537
33 Mass Density (kg/m3)	3.842	3.842	3.842
34 Std Liquid Mass Density (kg/m3)	---	---	---
35 Molar Heat Capacity (kJ/kgmole-C)	62.09	62.09	62.09
36 Mass Heat Capacity (kJ/kg-C)	2.484	2.484	2.484
37 Thermal Conductivity (W/m-K)	7.307e-002	0.1406	7.307e-002
38 Viscosity (cP)	4.184e-003	6.083e-002	4.184e-003
39 Surface Tension (dyne/cm)	0.0000	---	0.0000
40 Z Factor	1.003	1.003	1.003
41 Molar Vapour Fraction	0.0000	0.0000	1.0000
42 Mass Vapour Fraction	0.0000	0.0000	1.0000
43 Volume Vapour Fraction	0.0000	0.0000	1.0000
44 Molar Volume (m3/kgmole)	6.507	6.507	6.507
45 Actual Gas Flow (ACT_m3/h)	---	0.0000	---
46 Actual Liquid Flow (m3/s)	0.0000	---	0.0000
47 Std. Gas Flow (STD_m3/h)	0.0000	0.0000	0.0000
48 Std. Liquid Volume Flow (m3/h)	---	0.0000	0.0000
49 Watson K	8.933	8.933	8.933
50 Kinematic Viscosity (cSt)	1.089	15.83	1.089
51 Cp/Cv	1.154	1.154	1.154
52 Lower Heating Value (kJ/kgmole)	1.927e+005	1.927e+005	1.927e+005
53 Mass Lower Heating Value (kJ/kg)	7709	7709	7709
54 Liquid Fraction	1.000	0.0000	1.000
55 Partial Pressure (kPa)	0.0000	0.0000	0.0000

**COMPOSITION**

58	<b>Overall Phase</b>		Vapour Fraction	0.0000
----	----------------------	--	-----------------	--------

	COMPONENTS	MOLAR FLOW (kgmole/h)	MOLE FRACTION	MASS FLOW (kg/h)	MASS FRACTION	LIQUID VOLUME FLOW (m3/h)	LIQUID VOLUME FRACTION
62	Methane	0.0000	0.2289	0.0000	0.1469	0.0000	0.3203
63	Ethane	0.0000	0.0063	0.0000	0.0075	0.0000	0.0138
64	CO2	0.0000	0.0721	0.0000	0.1269	0.0000	0.1004
65	Nitrogen	0.0000	0.5486	0.0000	0.6147	0.0000	0.4976
66	Oxygen	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
67	H2O	0.0000	0.1442	0.0000	0.1039	0.0000	0.0679
68	Total	0.0000	1.0000	0.0000	1.0000	0.0000	1.0000

1	 TEAM EAT Calgary, Alberta CANADA	Case Name:	C:\Documents and Settings\Cherna\Escritorio\Proyecto\HYSYS\24-11-20
2		Unit Set:	SI
3		Date/Time:	Mon Nov 25 11:24:34 2002
4			
5			

6	<b>Material Stream: Liquid (continued)</b>	Fluid Package:	Basis-1
7		Property Package:	SRK
8			

**COMPOSITION**

9	<b>Vapour Phase</b>						Phase Fraction	0.0000
10								
11								
12								
13	COMPONENTS	MOLAR FLOW (kgmole/h)	MOLE FRACTION	MASS FLOW (kg/h)	MASS FRACTION	LIQUID VOLUME FLOW (m3/h)	LIQUID VOLUME FRACTION	
14								
15	Methane	0.0000	0.2289	0.0000	0.1469	0.0000	0.3203	
16	Ethane	0.0000	0.0063	0.0000	0.0075	0.0000	0.0138	
17	CO2	0.0000	0.0721	0.0000	0.1269	0.0000	0.1004	
18	Nitrogen	0.0000	0.5486	0.0000	0.6147	0.0000	0.4976	
19	Oxygen	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
20	H2O	0.0000	0.1442	0.0000	0.1039	0.0000	0.0679	
21	Total	0.0000	1.0000	0.0000	1.0000	0.0000	1.0000	

**Liquid Phase**

22	<b>Liquid Phase</b>						Phase Fraction	1.000
23								
24	COMPONENTS	MOLAR FLOW (kgmole/h)	MOLE FRACTION	MASS FLOW (kg/h)	MASS FRACTION	LIQUID VOLUME FLOW (m3/h)	LIQUID VOLUME FRACTION	
25								
26	Methane	0.0000	0.2289	0.0000	0.1469	0.0000	0.3203	
27	Ethane	0.0000	0.0063	0.0000	0.0075	0.0000	0.0138	
28	CO2	0.0000	0.0721	0.0000	0.1269	0.0000	0.1004	
29	Nitrogen	0.0000	0.5486	0.0000	0.6147	0.0000	0.4976	
30	Oxygen	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
31	H2O	0.0000	0.1442	0.0000	0.1039	0.0000	0.0679	
32	Total	0.0000	1.0000	0.0000	1.0000	0.0000	1.0000	

**K VALUE**

33	<b>K VALUE</b>			
34				
35	COMPONENTS	MIXED	LIGHT	HEAVY
36	Methane	1.000	1.000	---
37	Ethane	1.000	1.000	---
38	CO2	1.000	1.000	---
39	Nitrogen	1.000	1.000	---
40	Oxygen	1.000	1.000	---
41	H2O	1.000	1.000	---

**UNIT OPERATIONS**

42	<b>UNIT OPERATIONS</b>		
43			
44	FEED TO	PRODUCT FROM	LOGICAL CONNECTION
45	Valve: VLV-Liquid	Conversion Reactor: CRV-100	

**UTILITIES**


( No utilities reference this stream )

**DYNAMICS**

46	<b>DYNAMICS</b>			
47				
48	Pressure Specification (Inactive)	2300 kPa		
49	Flow Specification (Inactive)	Molar: 0.0000 kgmole/h	Mass: 0.0000 kg/h	Liquid Volume: 0.0000 m3/h

**User Variables**

50	<b>User Variables</b>			
51				
52				
53				
54				
55	<b>Material Stream: Liquid Tank</b>			
56				
57				
58				
59	<b>CONDITIONS</b>			
60				
61	Vapour / Phase Fraction	Overall: 0.0000	Aqueous Phase: 1.0000	Vapour Phase: 0.0000
62	Temperature: (C)	10.00 *	10.00	10.00
63	Pressure: (kPa)	95.00	95.00	95.00
64	Molar Flow (kgmole/h)	1.489e+004	1.489e+004	0.0000
65	Mass Flow (kg/h)	2.682e+005	2.682e+005	0.0000
66	Liquid Volume Flow (m3/h)	268.7	268.7	0.0000
67	Molar Enthalpy (kJ/kgmole)	-2.867e+005	-2.867e+005	-2.416e+005
68	Molar Entropy (kJ/kgmole-C)	49.17	49.17	172.3
69	Hyprotech Ltd. <span style="float: right;">HYSYS v2.4.1 (Build 3870)</span> <span style="float: right;">Page 19 of 32</span>			

1		<b>TEAM EAT</b> Calgary, Alberta CANADA	Case Name:	C:\Documents and Settings\Cherna\Escritorio\Proyecto\HYSYS\24-11-20
2			Unit Set:	SI
3			Date/Time:	Mon Nov 25 11:24:34 2002
4				
5				

**Material Stream: Liquid Tank (continued)**

Fluid Package: Basis-1  
 Property Package: SRK

**CONDITIONS**

		Overall	Aqueous Phase	Vapour Phase	
12	Heat Flow (kJ/h)	-4.269e+009	-4.269e+009	0.0000	
13	Std Liq Volume Flow (m3/h)	264.3	264.3	0.0000	

**PROPERTIES**

		Overall	Aqueous Phase	Vapour Phase	
17	Vapour / Phase Fraction	0.0000	1.0000	0.0000	
18	Temperature: (C)	10.00 *	10.00	10.00	
19	Pressure: (kPa)	95.00	95.00	95.00	
20	Actual Volume Flow (m3/h)	263.3	263.3	0.0000	
21	Mass Enthalpy (kJ/kg)	-1.592e+004	-1.592e+004	-1.341e+004	
22	Mass Entropy (kJ/kg-C)	2.729	2.729	9.563	
23	Molecular Weight	18.02	18.02	18.02	
24	Molar Density (kgmole/m3)	56.54	56.54	4.102e-002	
25	Mass Density (kg/m3)	1019	1019	0.7389	
26	Std Liquid Mass Density (kg/m3)	1015	1015	1015	
27	Molar Heat Capacity (kJ/kgmole-C)	80.11	80.11	33.97	
28	Mass Heat Capacity (kJ/kg-C)	4.447	4.447	1.886	
29	Thermal Conductivity (W/m-K)	0.5869	0.5869	1.820e-002	
30	Viscosity (cP)	1.300	1.300	8.447e-003	
31	Surface Tension (dyne/cm)	74.68	74.68	---	
32	Z Factor	7.138e-004	7.138e-004	0.9838	
33	Molar Vapour Fraction	0.0000	1.0000	0.0000	
34	Mass Vapour Fraction	0.0000	1.0000	0.0000	
35	Volume Vapour Fraction	0.0000	1.0000	0.0000	
36	Molar Volume (m3/kgmole)	1.769e-002	1.769e-002	24.38	
37	Actual Gas Flow (ACT_m3/h)	---	---	0.0000	
38	Actual Liquid Flow (m3/s)	7.315e-002	7.315e-002	---	
39	Std. Gas Flow (STD_m3/h)	3.520e+005	3.520e+005	0.0000	
40	Std. Liquid Volume Flow (m3/h)	264.3	264.3	0.0000	
41	Watson K	---	---	---	
42	Kinematic Viscosity (cSt)	1.276	1.276	11.43	
43	Cp/Cv	1.132	1.132	1.346	
44	Lower Heating Value (kJ/kgmole)	0.0000	0.0000	0.0000	
45	Mass Lower Heating Value (kJ/kg)	0.0000	0.0000	0.0000	
46	Liquid Fraction	1.000	1.000	0.0000	
47	Partial Pressure (kPa)	0.0000	0.0000	0.0000	

**COMPOSITION**

**Overall Phase**

Vapour Fraction 0.0000


COMPONENTS	MOLAR FLOW (kgmole/h)	MOLE FRACTION	MASS FLOW (kg/h)	MASS FRACTION	LIQUID VOLUME FLOW (m3/h)	LIQUID VOLUME FRACTION
54	Methane	0.0000	0.0000	0.0000	0.0000	0.0000
55	Ethane	0.0000	0.0000	0.0000	0.0000	0.0000
56	CO2	0.0000	0.0000	0.0000	0.0000	0.0000
57	Nitrogen	0.0000	0.0000	0.0000	0.0000	0.0000
58	Oxygen	0.0000	0.0000	0.0000	0.0000	0.0000
59	H2O	14887.7882	1.0000	268205.0000	1.0000	268.7462
60	Total	14887.7882	1.0000	268205.0000	1.0000	268.7462

**Aqueous Phase**

Phase Fraction 1.000

COMPONENTS	MOLAR FLOW (kgmole/h)	MOLE FRACTION	MASS FLOW (kg/h)	MASS FRACTION	LIQUID VOLUME FLOW (m3/h)	LIQUID VOLUME FRACTION
65	Methane	0.0000	0.0000	0.0000	0.0000	0.0000
66	Ethane	0.0000	0.0000	0.0000	0.0000	0.0000
67	CO2	0.0000	0.0000	0.0000	0.0000	0.0000
68	Nitrogen	0.0000	0.0000	0.0000	0.0000	0.0000



1	 <b>TEAM EAT</b> Calgary, Alberta CANADA	Case Name:	C:\Documents and Settings\Cherna\Escritorio\Proyecto\HYSYS\24-11-20	
2		Unit Set:	SI	
3		Date/Time:	Mon Nov 25 11:24:34 2002	
4				
5				

**Material Stream: Liquid-1 (continued)**

Fluid Package: Basis-1  
 Property Package: SRK

**PROPERTIES**

	Overall	Vapour Phase		
12	Vapour / Phase Fraction	1.0000	1.0000	
13	Temperature: (C)	1521	1521	
14	Pressure: (kPa)	2265	2265	
15	Actual Volume Flow (m3/h)	0.0000	0.0000	
16	Mass Enthalpy (kJ/kg)	-518.6	-518.6	
17	Mass Entropy (kJ/kg-C)	8.825	8.825	
18	Molecular Weight	25.00	25.00	
19	Molar Density (kgmole/m3)	0.1513	0.1513	
20	Mass Density (kg/m3)	3.783	3.783	
21	Std Liquid Mass Density (kg/m3)	---	---	
22	Molar Heat Capacity (kJ/kgmole-C)	62.09	62.09	
23	Mass Heat Capacity (kJ/kg-C)	2.484	2.484	
24	Thermal Conductivity (W/m-K)	0.1406	0.1406	
25	Viscosity (cP)	6.083e-002	6.083e-002	
26	Surface Tension (dyne/cm)	---	---	
27	Z Factor	1.003	1.003	
28	Molar Vapour Fraction	1.0000	1.0000	
29	Mass Vapour Fraction	1.0000	1.0000	
30	Volume Vapour Fraction	1.0000	1.0000	
31	Molar Volume (m3/kgmole)	6.608	6.608	
32	Actual Gas Flow (ACT_m3/h)	0.0000	0.0000	
33	Actual Liquid Flow (m3/s)	---	---	
34	Std. Gas Flow (STD_m3/h)	0.0000	0.0000	
35	Std. Liquid Volume Flow (m3/h)	---	0.0000	
36	Watson K	8.933	8.933	
37	Kinematic Viscosity (cSt)	16.08	16.08	
38	Cp/Cv	1.154	1.154	
39	Lower Heating Value (kJ/kgmole)	1.927e+005	1.927e+005	
40	Mass Lower Heating Value (kJ/kg)	7709	7709	
41	Liquid Fraction	0.0000	0.0000	
42	Partial Pressure (kPa)	163.2	163.2	

**COMPOSITION**

**Overall Phase**


Vapour Fraction 1.0000

COMPONENTS	MOLAR FLOW (kgmole/h)	MOLE FRACTION	MASS FLOW (kg/h)	MASS FRACTION	LIQUID VOLUME FLOW (m3/h)	LIQUID VOLUME FRACTION	
49	Methane	0.0000	0.2289	0.0000	0.1469	0.0000	0.3203
50	Ethane	0.0000	0.0063	0.0000	0.0075	0.0000	0.0138
51	CO2	0.0000	0.0721	0.0000	0.1269	0.0000	0.1004
52	Nitrogen	0.0000	0.5486	0.0000	0.6147	0.0000	0.4976
53	Oxygen	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
54	H2O	0.0000	0.1442	0.0000	0.1039	0.0000	0.0679
55	Total	0.0000	1.0000	0.0000	1.0000	0.0000	1.0000

**Vapour Phase**

Phase Fraction 1.000

COMPONENTS	MOLAR FLOW (kgmole/h)	MOLE FRACTION	MASS FLOW (kg/h)	MASS FRACTION	LIQUID VOLUME FLOW (m3/h)	LIQUID VOLUME FRACTION	
60	Methane	0.0000	0.2289	0.0000	0.1469	0.0000	0.3203
61	Ethane	0.0000	0.0063	0.0000	0.0075	0.0000	0.0138
62	CO2	0.0000	0.0721	0.0000	0.1269	0.0000	0.1004
63	Nitrogen	0.0000	0.5486	0.0000	0.6147	0.0000	0.4976
64	Oxygen	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
65	H2O	0.0000	0.1442	0.0000	0.1039	0.0000	0.0679
66	Total	0.0000	1.0000	0.0000	1.0000	0.0000	1.0000

1	 TEAM EAT Calgary, Alberta CANADA	Case Name:	C:\Documents and Settings\Cherna\Escritorio\Proyecto\HYSYS\24-11-20
2		Unit Set:	SI
3		Date/Time:	Mon Nov 25 11:24:34 2002
4			

5	<b>Material Stream: Liquid-1 (continued)</b>		Fluid Package:	Basis-1
6			Property Package:	SRK

7	<b>K VALUE</b>			
8	COMPONENTS	MIXED	LIGHT	HEAVY
9	Methane	---	---	---
10	Ethane	---	---	---
11	CO2	---	---	---
12	Nitrogen	---	---	---
13	Oxygen	---	---	---
14	H2O	---	---	---

15	<b>UNIT OPERATIONS</b>			
16	FEED TO	PRODUCT FROM	LOGICAL CONNECTION	
17		Valve:	VLV-Liquid	

18	<b>UTILITIES</b>			
19	( No utilities reference this stream )			

20	<b>DYNAMICS</b>			
21	Pressure Specification (Active):	2265 kPa		
22	Flow Specification (Inactive) Molar:	0.0000 kgmole/h	Mass:	0.0000 kg/h
23			Liquid Volume:	0.0000 m3/h

24	<b>User Variables</b>			
----	-----------------------	--	--	--


25	<b>Material Stream: ST1-In</b>		Fluid Package:	Basis-1
26			Property Package:	SRK

27	<b>CONDITIONS</b>			
28		Overall	Vapour Phase	
29	Vapour / Phase Fraction	1.0000	1.0000	
30	Temperature: (C)	780.6	780.6	
31	Pressure: (kPa)	1.600e+004 *	1.600e+004	
32	Molar Flow (kgmole/h)	1.489e+004	1.489e+004	
33	Mass Flow (kg/h)	2.682e+005	2.682e+005	
34	Liquid Volume Flow (m3/h)	268.7	268.7	
35	Molar Enthalpy (kJ/kgmole)	-2.144e+005	-2.144e+005	
36	Molar Entropy (kJ/kgmole-C)	176.4	176.4	
37	Heat Flow (kJ/h)	-3.192e+009	-3.192e+009	
38	Std Liq Volume Flow (m3/h)	264.3	264.3	

39	<b>PROPERTIES</b>			
40		Overall	Vapour Phase	
41	Vapour / Phase Fraction	1.0000	1.0000	
42	Temperature: (C)	780.6	780.6	
43	Pressure: (kPa)	1.600e+004 *	1.600e+004	
44	Actual Volume Flow (m3/h)	7930	7930	
45	Mass Enthalpy (kJ/kg)	-1.190e+004	-1.190e+004	
46	Mass Entropy (kJ/kg-C)	9.791	9.791	
47	Molecular Weight	18.02	18.02	
48	Molar Density (kgmole/m3)	1.877	1.877	
49	Mass Density (kg/m3)	33.82	33.82	
50	Std Liquid Mass Density (kg/m3)	1015	1015	
51	Molar Heat Capacity (kJ/kgmole-C)	46.03	46.03	
52	Mass Heat Capacity (kJ/kg-C)	2.555	2.555	
53	Thermal Conductivity (W/m-K)	9.901e-002	9.901e-002	
54	Viscosity (cP)	---	---	
55	Surface Tension (dyne/cm)	---	---	
56	Z Factor	0.9728	0.9728	
57	Molar Vapour Fraction	1.0000	1.0000	
58	Mass Vapour Fraction	1.0000	1.0000	
59	Volume Vapour Fraction	1.0000	1.0000	





1	 <b>TEAM EAT</b> Calgary, Alberta CANADA	Case Name:	C:\Documents and Settings\Cherna\Escritorio\Proyecto\HYSYS\24-11-20	
2		Unit Set:	SI	
3		Date/Time:	Mon Nov 25 11:24:34 2002	
4				
5				

6	<b>Material Stream: ST1-In (continued)</b>	Fluid Package:	Basis-1
7		Property Package:	SRK
8			

**User Variables**

9	<b>Material Stream: ST1-Out</b>	Fluid Package:	Basis-1
10		Property Package:	SRK
11			

**CONDITIONS**


	Overall	Vapour Phase		
16				
17	Vapour / Phase Fraction	1.0000	1.0000	
18	Temperature: (C)	159.9	159.9	
19	Pressure: (kPa)	100.0 *	100.0	
20	Molar Flow (kgmole/h)	1.489e+004	1.489e+004	
21	Mass Flow (kg/h)	2.682e+005	2.682e+005	
22	Liquid Volume Flow (m3/h)	268.7	268.7	
23	Molar Enthalpy (kJ/kgmole)	-2.365e+005	-2.365e+005	
24	Molar Entropy (kJ/kgmole-C)	186.4	186.4	
25	Heat Flow (kJ/h)	-3.520e+009	-3.520e+009	
26	Std Liq Volume Flow (m3/h)	264.3	264.3	

**PROPERTIES**

	Overall	Vapour Phase		
29				
30	Vapour / Phase Fraction	1.0000	1.0000	
31	Temperature: (C)	159.9	159.9	
32	Pressure: (kPa)	100.0 *	100.0	
33	Actual Volume Flow (m3/h)	5.331e+005	5.331e+005	
34	Mass Enthalpy (kJ/kg)	-1.313e+004	-1.313e+004	
35	Mass Entropy (kJ/kg-C)	10.35	10.35	
36	Molecular Weight	18.02	18.02	
37	Molar Density (kgmole/m3)	2.793e-002	2.793e-002	
38	Mass Density (kg/m3)	0.5031	0.5031	
39	Std Liquid Mass Density (kg/m3)	1015	1015	
40	Molar Heat Capacity (kJ/kgmole-C)	34.82	34.82	
41	Mass Heat Capacity (kJ/kg-C)	1.933	1.933	
42	Thermal Conductivity (W/m-K)	2.946e-002	2.946e-002	
43	Viscosity (cP)	1.455e-002	1.455e-002	
44	Surface Tension (dyne/cm)	---	---	
45	Z Factor	0.9945	0.9945	
46	Molar Vapour Fraction	1.0000	1.0000	
47	Mass Vapour Fraction	1.0000	1.0000	
48	Volume Vapour Fraction	1.0000	1.0000	
49	Molar Volume (m3/kgmole)	35.81	35.81	
50	Actual Gas Flow (ACT_m3/h)	5.331e+005	5.331e+005	
51	Actual Liquid Flow (m3/s)	---	---	
52	Std. Gas Flow (STD_m3/h)	3.520e+005	3.520e+005	
53	Std. Liquid Volume Flow (m3/h)	264.3	264.3	
54	Watson K	---	---	
55	Kinematic Viscosity (cSt)	28.92	28.92	
56	Cp/Cv	1.322	1.322	
57	Lower Heating Value (kJ/kgmole)	0.0000	0.0000	
58	Mass Lower Heating Value (kJ/kg)	0.0000	0.0000	
59	Liquid Fraction	0.0000	0.0000	
60	Partial Pressure (kPa)	0.0000	0.0000	

**COMPOSITION**

Overall Phase						Vapour Fraction	1.0000
COMPONENTS	MOLAR FLOW (kgmole/h)	MOLE FRACTION	MASS FLOW (kg/h)	MASS FRACTION	LIQUID VOLUME FLOW (m3/h)	LIQUID VOLUME FRACTION	
65	Methane	0.0000	0.0000	0.0000	0.0000	0.0000	
66	Ethane	0.0000	0.0000	0.0000	0.0000	0.0000	

1	 TEAM EAT Calgary, Alberta CANADA	Case Name:	C:\Documents and Settings\Cherna\Escritorio\Proyecto\HYSYS\24-11-20
2		Unit Set:	SI
3		Date/Time:	Mon Nov 25 11:24:34 2002
4			
5			

6	<b>Material Stream: ST1-Out (continued)</b>	Fluid Package:	Basis-1
7		Property Package:	SRK
8			

**COMPOSITION**

9	<b>Overall Phase (continued)</b>						Vapour Fraction	1.0000
10								
11								
12								
13	<b>COMPONENTS</b>	<b>MOLAR FLOW (kgmole/h)</b>	<b>MOLE FRACTION</b>	<b>MASS FLOW (kg/h)</b>	<b>MASS FRACTION</b>	<b>LIQUID VOLUME FLOW (m3/h)</b>	<b>LIQUID VOLUME FRACTION</b>	
14								
15	CO2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
16	Nitrogen	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
17	Oxygen	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
18	H2O	14887.7882	1.0000	268205.0000	1.0000	268.7462	1.0000	
19	Total	14887.7882	1.0000	268205.0000	1.0000	268.7462	1.0000	

**Vapour Phase**

20	<b>Vapour Phase</b>						Phase Fraction	1.000
21								
22	<b>COMPONENTS</b>	<b>MOLAR FLOW (kgmole/h)</b>	<b>MOLE FRACTION</b>	<b>MASS FLOW (kg/h)</b>	<b>MASS FRACTION</b>	<b>LIQUID VOLUME FLOW (m3/h)</b>	<b>LIQUID VOLUME FRACTION</b>	
23								
24	Methane	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
25	Ethane	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
26	CO2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
27	Nitrogen	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
28	Oxygen	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
29	H2O	14887.7882	1.0000	268205.0000	1.0000	268.7462	1.0000	
30	Total	14887.7882	1.0000	268205.0000	1.0000	268.7462	1.0000	

**K VALUE**

31							
32							
33	<b>COMPONENTS</b>	<b>MIXED</b>	<b>LIGHT</b>	<b>HEAVY</b>			
34	Methane	---	---	---			
35	Ethane	---	---	---			
36	CO2	---	---	---			
37	Nitrogen	---	---	---			
38	Oxygen	---	---	---			
39	H2O	---	---	---			

**UNIT OPERATIONS**

40							
41							
42	<b>FEED TO</b>	<b>PRODUCT FROM</b>	<b>LOGICAL CONNECTION</b>				
43	Heater: E-104	Expander: K-100-2	PID Controller: FIC-101				

**UTILITIES**

( No utilities reference this stream )

**DYNAMICS**


44							
45							
46	Pressure Specification (Inactive)	100.0 kPa *					
47	Flow Specification (Inactive)	Molar: .489e+004 kgmole/h	Mass: 2.682e+005 kg/h	Liquid Volume: 268.7 m3/h			

**User Variables**

48							
49							
50							
51							
52							
53	<b>Material Stream: Steam HP</b>	Fluid Package:	Basis-1				
54		Property Package:	SRK				
55							

**CONDITIONS**

56							
57							
58		<b>Overall</b>	<b>Aqueous Phase</b>				
59	Vapour / Phase Fraction	0.0000	1.0000				
60	Temperature: (C)	10.74	10.74				
61	Pressure: (kPa)	1.601e+004 *	1.601e+004				
62	Molar Flow (kgmole/h)	1.489e+004	1.489e+004				
63	Mass Flow (kg/h)	2.682e+005	2.682e+005				
64	Liquid Volume Flow (m3/h)	268.7	268.7				
65	Molar Enthalpy (kJ/kgmole)	-2.864e+005	-2.864e+005				
66	Molar Entropy (kJ/kgmole-C)	49.13	49.13				
67	Heat Flow (kJ/h)	-4.264e+009	-4.264e+009				
68	Std Liq Volume Flow (m3/h)	264.3	264.3				

1		TEAM EAT Calgary, Alberta CANADA	Case Name:	C:\Documents and Settings\Cherna\Escritorio\Proyecto\HYSYS\24-11-20
2			Unit Set:	SI
3			Date/Time:	Mon Nov 25 11:24:34 2002
4				
5				

## Material Stream: Steam HP (continued)

Fluid Package: Basis-1

Property Package: SRK

### PROPERTIES

	Overall	Aqueous Phase		
12	Vapour / Phase Fraction	0.0000	1.0000	
13	Temperature: (C)	10.74	10.74	
14	Pressure: (kPa)	1.601e+004 *	1.601e+004	
15	Actual Volume Flow (m3/h)	262.3	262.3	
16	Mass Enthalpy (kJ/kg)	-1.590e+004	-1.590e+004	
17	Mass Entropy (kJ/kg-C)	2.727	2.727	
18	Molecular Weight	18.02	18.02	
19	Molar Density (kgmole/m3)	56.76	56.76	
20	Mass Density (kg/m3)	1022	1022	
21	Std Liquid Mass Density (kg/m3)	1015	1015	
22	Molar Heat Capacity (kJ/kgmole-C)	79.79	79.79	
23	Mass Heat Capacity (kJ/kg-C)	4.429	4.429	
24	Thermal Conductivity (W/m-K)	0.5882	0.5882	
25	Viscosity (cP)	1.273	1.273	
26	Surface Tension (dyne/cm)	74.55	74.55	
27	Z Factor	0.1195	0.1195	
28	Molar Vapour Fraction	0.0000	1.0000	
29	Mass Vapour Fraction	0.0000	1.0000	
30	Volume Vapour Fraction	0.0000	1.0000	
31	Molar Volume (m3/kgmole)	1.762e-002	1.762e-002	
32	Actual Gas Flow (ACT_m3/h)	---	---	
33	Actual Liquid Flow (m3/s)	7.286e-002	7.286e-002	
34	Std. Gas Flow (STD_m3/h)	3.520e+005	3.520e+005	
35	Std. Liquid Volume Flow (m3/h)	264.3	264.3	
36	Watson K	---	---	
37	Kinematic Viscosity (cSt)	1.245	1.245	
38	Cp/Cv	1.133	1.133	
39	Lower Heating Value (kJ/kgmole)	0.0000	0.0000	
40	Mass Lower Heating Value (kJ/kg)	0.0000	0.0000	
41	Liquid Fraction	1.000	1.000	
42	Partial Pressure (kPa)	0.0000	0.0000	

### COMPOSITION

#### Overall Phase


Vapour Fraction 0.0000

COMPONENTS	MOLAR FLOW (kgmole/h)	MOLE FRACTION	MASS FLOW (kg/h)	MASS FRACTION	LIQUID VOLUME FLOW (m3/h)	LIQUID VOLUME FRACTION
49	Methane	0.0000	0.0000	0.0000	0.0000	0.0000
50	Ethane	0.0000	0.0000	0.0000	0.0000	0.0000
51	CO2	0.0000	0.0000	0.0000	0.0000	0.0000
52	Nitrogen	0.0000	0.0000	0.0000	0.0000	0.0000
53	Oxygen	0.0000	0.0000	0.0000	0.0000	0.0000
54	H2O	14887.7882	1.0000	268205.0000	268.7462	1.0000
55	Total	14887.7882	1.0000	268205.0000	268.7462	1.0000

#### Aqueous Phase

Phase Fraction 1.000

COMPONENTS	MOLAR FLOW (kgmole/h)	MOLE FRACTION	MASS FLOW (kg/h)	MASS FRACTION	LIQUID VOLUME FLOW (m3/h)	LIQUID VOLUME FRACTION
60	Methane	0.0000	0.0000	0.0000	0.0000	0.0000
61	Ethane	0.0000	0.0000	0.0000	0.0000	0.0000
62	CO2	0.0000	0.0000	0.0000	0.0000	0.0000
63	Nitrogen	0.0000	0.0000	0.0000	0.0000	0.0000
64	Oxygen	0.0000	0.0000	0.0000	0.0000	0.0000
65	H2O	14887.7882	1.0000	268205.0000	268.7462	1.0000
66	Total	14887.7882	1.0000	268205.0000	268.7462	1.0000

1	 <b>TEAM EAT</b> Calgary, Alberta CANADA	Case Name:	C:\Documents and Settings\Cherna\Escritorio\Proyecto\HYSYS\24-11-20
2		Unit Set:	SI
3		Date/Time:	Mon Nov 25 11:24:34 2002
4			
5			

6	<b>Material Stream: Steam HP (continued)</b>	Fluid Package:	Basis-1
7		Property Package:	SRK
8			

9	<b>K VALUE</b>			
10				
11	COMPONENTS	MIXED	LIGHT	HEAVY
12	Methane	---	---	---
13	Ethane	---	---	---
14	CO2	---	---	---
15	Nitrogen	---	---	---
16	Oxygen	---	---	---
17	H2O	0.0000	---	0.0000

18	<b>UNIT OPERATIONS</b>			
19				
20	FEED TO	PRODUCT FROM	LOGICAL CONNECTION	
21	Recycle: RCY-1	Pump: P-101	PID Controller:	PIC-100-2

22	<b>UTILITIES</b>			
23	( No utilities reference this stream )			


24	<b>DYNAMICS</b>			
25				
26				
27	Pressure Specification	(Inactive) 01e+004 kPa *		
28	Flow Specification	(Inactive) Molar: .489e+004 kgmole/h	Mass: 2.682e+005 kg/h	Liquid Volume: 268.7 m3/h

29	<b>User Variables</b>			
30				

31	<b>Material Stream: Vapour Tank</b>	Fluid Package:	Basis-1
32		Property Package:	SRK
33			

34	<b>CONDITIONS</b>				
35					
36		Overall	Aqueous Phase	Vapour Phase	
37	Vapour / Phase Fraction	1.0000	0.0000	1.0000	
38	Temperature: (C)	10.00	10.00	10.00	
39	Pressure: (kPa)	95.00	95.00	95.00	
40	Molar Flow (kgmole/h)	0.0000	0.0000	0.0000	
41	Mass Flow (kg/h)	0.0000	0.0000	0.0000	
42	Liquid Volume Flow (m3/h)	0.0000	0.0000	0.0000	
43	Molar Enthalpy (kJ/kgmole)	-2.416e+005	-2.867e+005	-2.416e+005	
44	Molar Entropy (kJ/kgmole-C)	172.3	49.17	172.3	
45	Heat Flow (kJ/h)	0.0000	0.0000	0.0000	
46	Std Liq Volume Flow (m3/h)	0.0000	0.0000	0.0000	

47	<b>PROPERTIES</b>				
48					
49		Overall	Aqueous Phase	Vapour Phase	
50	Vapour / Phase Fraction	1.0000	0.0000	1.0000	
51	Temperature: (C)	10.00	10.00	10.00	
52	Pressure: (kPa)	95.00	95.00	95.00	
53	Actual Volume Flow (m3/h)	0.0000	0.0000	0.0000	
54	Mass Enthalpy (kJ/kg)	-1.341e+004	-1.592e+004	-1.341e+004	
55	Mass Entropy (kJ/kg-C)	9.563	2.729	9.563	
56	Molecular Weight	18.02	18.02	18.02	
57	Molar Density (kgmole/m3)	4.102e-002	56.54	4.102e-002	
58	Mass Density (kg/m3)	0.7389	1019	0.7389	
59	Std Liquid Mass Density (kg/m3)	1015	1015	1015	
60	Molar Heat Capacity (kJ/kgmole-C)	33.97	80.11	33.97	
61	Mass Heat Capacity (kJ/kg-C)	1.886	4.447	1.886	
62	Thermal Conductivity (W/m-K)	1.820e-002	0.5869	1.820e-002	
63	Viscosity (cP)	8.447e-003	1.300	8.447e-003	
64	Surface Tension (dyne/cm)	---	74.68	---	
65	Z Factor	0.9838	7.138e-004	0.9838	
66	Molar Vapour Fraction	1.0000	0.0000	1.0000	
67	Mass Vapour Fraction	1.0000	0.0000	1.0000	
68	Volume Vapour Fraction	1.0000	0.0000	1.0000	

1	 <b>TEAM EAT</b> Calgary, Alberta CANADA	Case Name:	C:\Documents and Settings\Cherna\Escritorio\Proyecto\HYSYS\24-11-20
2		Unit Set:	SI
3		Date/Time:	Mon Nov 25 11:24:34 2002
4			
5			

**Material Stream: Vapour Tank (continued)**

Fluid Package: Basis-1  
 Property Package: SRK

**PROPERTIES**

		Overall	Aqueous Phase	Vapour Phase	
12	Molar Volume (m3/kgmole)	24.38	1.769e-002	24.38	
13	Actual Gas Flow (ACT_m3/h)	0.0000	---	0.0000	
14	Actual Liquid Flow (m3/s)	---	0.0000	---	
15	Std. Gas Flow (STD_m3/h)	0.0000	0.0000	0.0000	
16	Std. Liquid Volume Flow (m3/h)	0.0000	0.0000	0.0000	
17	Watson K	---	---	---	
18	Kinematic Viscosity (cSt)	11.43	1.276	11.43	
19	Cp/Cv	1.346	1.132	1.346	
20	Lower Heating Value (kJ/kgmole)	0.0000	0.0000	0.0000	
21	Mass Lower Heating Value (kJ/kg)	0.0000	0.0000	0.0000	
22	Liquid Fraction	0.0000	1.000	0.0000	
23	Partial Pressure (kPa)	0.0000	0.0000	0.0000	

**COMPOSITION**

**Overall Phase**

Vapour Fraction 1.0000

COMPONENTS	MOLAR FLOW (kgmole/h)	MOLE FRACTION	MASS FLOW (kg/h)	MASS FRACTION	LIQUID VOLUME FLOW (m3/h)	LIQUID VOLUME FRACTION
30	Methane	0.0000	0.0000	0.0000	0.0000	0.0000
31	Ethane	0.0000	0.0000	0.0000	0.0000	0.0000
32	CO2	0.0000	0.0000	0.0000	0.0000	0.0000
33	Nitrogen	0.0000	0.0000	0.0000	0.0000	0.0000
34	Oxygen	0.0000	0.0000	0.0000	0.0000	0.0000
35	H2O	0.0000	1.0000	0.0000	0.0000	1.0000
36	Total	0.0000	1.0000	0.0000	0.0000	1.0000

**Aqueous Phase**

Phase Fraction 0.0000

COMPONENTS	MOLAR FLOW (kgmole/h)	MOLE FRACTION	MASS FLOW (kg/h)	MASS FRACTION	LIQUID VOLUME FLOW (m3/h)	LIQUID VOLUME FRACTION
41	Methane	0.0000	0.0000	0.0000	0.0000	0.0000
42	Ethane	0.0000	0.0000	0.0000	0.0000	0.0000
43	CO2	0.0000	0.0000	0.0000	0.0000	0.0000
44	Nitrogen	0.0000	0.0000	0.0000	0.0000	0.0000
45	Oxygen	0.0000	0.0000	0.0000	0.0000	0.0000
46	H2O	0.0000	1.0000	0.0000	0.0000	1.0000
47	Total	0.0000	1.0000	0.0000	0.0000	1.0000


**Vapour Phase**

Phase Fraction 1.000

COMPONENTS	MOLAR FLOW (kgmole/h)	MOLE FRACTION	MASS FLOW (kg/h)	MASS FRACTION	LIQUID VOLUME FLOW (m3/h)	LIQUID VOLUME FRACTION
52	Methane	0.0000	0.0000	0.0000	0.0000	0.0000
53	Ethane	0.0000	0.0000	0.0000	0.0000	0.0000
54	CO2	0.0000	0.0000	0.0000	0.0000	0.0000
55	Nitrogen	0.0000	0.0000	0.0000	0.0000	0.0000
56	Oxygen	0.0000	0.0000	0.0000	0.0000	0.0000
57	H2O	0.0000	1.0000	0.0000	0.0000	1.0000
58	Total	0.0000	1.0000	0.0000	0.0000	1.0000

**K VALUE**

COMPONENTS	MIXED	LIGHT	HEAVY
62	Methane	---	---
63	Ethane	---	---
64	CO2	---	---
65	Nitrogen	---	---
66	Oxygen	---	---
67	H2O	1.000	1.000

1	 TEAM EAT Calgary, Alberta CANADA	Case Name:	C:\Documents and Settings\Cherna\Escritorio\Proyecto\HYSYS\24-11-20
2		Unit Set:	SI
3		Date/Time:	Mon Nov 25 11:24:34 2002
4			
5			

## Material Stream: Vapour Tank (continued)

Fluid Package: Basis-1  
Property Package: SRK

### UNIT OPERATIONS

FEED TO	PRODUCT FROM	LOGICAL CONNECTION
Valve: VLV-Vapour Tank	Tank: V-100	

### UTILITIES

( No utilities reference this stream )

### DYNAMICS

18	Pressure Specification (Inactive)	95.00 kPa			
19	Flow Specification (Inactive)	Molar: 0.0000 kgmole/h	Mass: 0.0000 kg/h	Liquid Volume: 0.0000 m3/h	

### User Variables

## Material Stream: Vapour Tank-1


Fluid Package: Basis-1  
Property Package: SRK

### CONDITIONS

	Overall	Vapour Phase	Aqueous Phase	
28	Vapour / Phase Fraction	0.9371	0.9371	0.0629
29	Temperature: (C)	86.20	86.20	86.20
30	Pressure: (kPa)	60.53	60.53	60.53
31	Molar Flow (kgmole/h)	0.0000	0.0000	0.0000
32	Mass Flow (kg/h)	0.0000	0.0000	0.0000
33	Liquid Volume Flow (m3/h)	0.0000	0.0000	0.0000
34	Molar Enthalpy (kJ/kgmole)	-2.416e+005	-2.390e+005	-2.806e+005
35	Molar Entropy (kJ/kgmole-C)	176.9	184.2	68.25
36	Heat Flow (kJ/h)	0.0000	0.0000	0.0000
37	Std Liq Volume Flow (m3/h)	0.0000	0.0000	0.0000

### PROPERTIES

	Overall	Vapour Phase	Aqueous Phase	
41	Vapour / Phase Fraction	0.9371	0.9371	0.0629
42	Temperature: (C)	86.20	86.20	86.20
43	Pressure: (kPa)	60.53	60.53	60.53
44	Actual Volume Flow (m3/h)	0.0000	0.0000	0.0000
45	Mass Enthalpy (kJ/kg)	-1.341e+004	-1.327e+004	-1.558e+004
46	Mass Entropy (kJ/kg-C)	9.819	10.22	3.788
47	Molecular Weight	18.02	18.02	18.02
48	Molar Density (kgmole/m3)	2.174e-002	2.037e-002	53.25
49	Mass Density (kg/m3)	0.3916	0.3670	959.3
50	Std Liquid Mass Density (kg/m3)	1015	1015	1015
51	Molar Heat Capacity (kJ/kgmole-C)	37.08	34.16	80.56
52	Mass Heat Capacity (kJ/kg-C)	2.058	1.896	4.472
53	Thermal Conductivity (W/m-K)	---	2.340e-002	0.6737
54	Viscosity (cP)	---	1.155e-002	0.3254
55	Surface Tension (dyne/cm)	---	---	61.19
56	Z Factor	---	0.9945	3.804e-004
57	Molar Vapour Fraction	0.9371	0.9371	0.0629
58	Mass Vapour Fraction	0.9371	0.9371	0.0629
59	Volume Vapour Fraction	0.9371	0.9371	0.0629
60	Molar Volume (m3/kgmole)	46.00	49.09	1.878e-002
61	Actual Gas Flow (ACT_m3/h)	---	0.0000	---
62	Actual Liquid Flow (m3/s)	0.0000	---	0.0000
63	Std. Gas Flow (STD_m3/h)	0.0000	0.0000	0.0000
64	Std. Liquid Volume Flow (m3/h)	0.0000	0.0000	0.0000
65	Watson K	---	---	---
66	Kinematic Viscosity (cSt)	---	31.47	0.3392
67	Cp/Cv	1.272	1.330	1.168
68	Lower Heating Value (kJ/kgmole)	0.0000	0.0000	0.0000

1	 TEAM EAT Calgary, Alberta CANADA	Case Name:	C:\Documents and Settings\Chema\Escritorio\Proyecto\HYSYS\24-11-20
2		Unit Set:	SI
3		Date/Time:	Mon Nov 25 11:24:34 2002
4			
5			

**Material Stream: Vapour Tank-1 (continued)**

Fluid Package: Basis-1  
 Property Package: SRK

**PROPERTIES**

	Overall	Vapour Phase	Aqueous Phase
12 Mass Lower Heating Value (kJ/kg)	0.0000	0.0000	0.0000
13 Liquid Fraction	6.293e-002	0.0000	1.000
14 Partial Pressure (kPa)	0.0000	0.0000	0.0000

**COMPOSITION**

**Overall Phase**

Vapour Fraction 0.9371

COMPONENTS	MOLAR FLOW (kgmole/h)	MOLE FRACTION	MASS FLOW (kg/h)	MASS FRACTION	LIQUID VOLUME FLOW (m3/h)	LIQUID VOLUME FRACTION
21 Methane	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
22 Ethane	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
23 CO2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
24 Nitrogen	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
25 Oxygen	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
26 H2O	0.0000	1.0000	0.0000	1.0000	0.0000	1.0000
27 Total	0.0000	1.0000	0.0000	1.0000	0.0000	1.0000

**Vapour Phase**

Phase Fraction 0.9371

COMPONENTS	MOLAR FLOW (kgmole/h)	MOLE FRACTION	MASS FLOW (kg/h)	MASS FRACTION	LIQUID VOLUME FLOW (m3/h)	LIQUID VOLUME FRACTION
32 Methane	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
33 Ethane	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
34 CO2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
35 Nitrogen	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
36 Oxygen	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
37 H2O	0.0000	1.0000	0.0000	1.0000	0.0000	1.0000
38 Total	0.0000	1.0000	0.0000	1.0000	0.0000	1.0000

**Aqueous Phase**

Phase Fraction 6.293e-002

COMPONENTS	MOLAR FLOW (kgmole/h)	MOLE FRACTION	MASS FLOW (kg/h)	MASS FRACTION	LIQUID VOLUME FLOW (m3/h)	LIQUID VOLUME FRACTION
43 Methane	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
44 Ethane	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
45 CO2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
46 Nitrogen	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
47 Oxygen	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
48 H2O	0.0000	1.0000	0.0000	1.0000	0.0000	1.0000
49 Total	0.0000	1.0000	0.0000	1.0000	0.0000	1.0000

**K VALUE**

COMPONENTS	MIXED	LIGHT	HEAVY
53 Methane	---	---	---
54 Ethane	---	---	---
55 CO2	---	---	---
56 Nitrogen	---	---	---
57 Oxygen	---	---	---
58 H2O	1.000	---	1.000

**UNIT OPERATIONS**


FEED TO	PRODUCT FROM	LOGICAL CONNECTION
	Valve: VLV-Vapour Tank	

**UTILITIES**

( No utilities reference this stream )

**DYNAMICS**

68 Pressure Specification (Active):	60.53 kPa
69 Hyprotech Ltd.	HYSYS v2.4.1 (Build 3870) <span style="float: right;">Page 31 of 32</span>

1	 TEAM EAT Calgary, Alberta CANADA	Case Name:	C:\Documents and Settings\Cherna\Escritorio\Proyecto\HYSYS\24-11-20
2		Unit Set:	SI
3		Date/Time:	Mon Nov 25 11:24:34 2002
4			

5	<b>Material Stream: Vapour Tank-1 (continued)</b>	Fluid Package:	Basis-1
6		Property Package:	SRK

**DYNAMICS**

7	Flow Specification	(Inactive)	Molar:	0.0000 kgmole/h	Mass:	0.0000 kg/h	Liquid Volume:	0.0000 m3/h
---	--------------------	------------	--------	-----------------	-------	-------------	----------------	-------------

**User Variables**

14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60
61
62
63
64
65
66
67
68