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RUN CONTROL SECTION

RUN CONTROL INFORMATION

THIS COPY OF ASPEN PLUS LICENSED TO UNIVERSITY OF OTAGO

TYPE OF RUN: NEW

INPUT FILE NAME: _5030psz.inm

OUTPUT PROBLEM DATA FILE NAME: _5658wnp
LOCATED IN:

PDF SIZE USED FOR INPUT TRANSLATION:

NUMBER OF FILE RECORDS (PSIZE)	=	0
NUMBER OF IN-CORE RECORDS	=	256
PSIZE NEEDED FOR SIMULATION	=	1

CALLING PROGRAM NAME: apmain
LOCATED IN: C:\Program Files (x86)\AspenTech\Aspen Plus
V10.0\Engine\XeEq

SIMULATION REQUESTED FOR ENTIRE FLOWSHEET

FLOWSHEET SECTION

FLOWSHEET CONNECTIVITY BY STREAMS

STREAM	SOURCE	DEST	STREAM	SOURCE	DEST
METHANOL	----	MIXER-1	TAG	----	MIXER-1
5-1	H-1	V-1	1	MIXER-1	P-1
1-P	P-1	ST-1	6	V-1	VAP
2	ST-1	ST-2	3	ST-2	ST-3
4	ST-3	ST-4	5	ST-4	H-1
7	VAP	H-2	8	VAP	DISTL-1
9	DISTL-1	DISTL-2	12	DISTL-1	H-5
10	DISTL-2	H-3	11	DISTL-2	H-4
METH-RCV	H-2	----	ME-RCV-2	H-3	----
GLYCEROL	H-4	----	BIODIESL	H-5	----

FLOWSHEET CONNECTIVITY BY BLOCKS

BLOCK	INLETS	OUTLETS
H-1	5	5-1
MIXER-1	TAG METHANOL	1
P-1	1	1-P
V-1	5-1	6
ST-1	1-P	2
ST-2	2	3
ST-3	3	4
ST-4	4	5
VAP	6	7 8
DISTL-1	8	9 12
DISTL-2	9	10 11
H-2	7	METH-RCV
H-3	10	ME-RCV-2
H-4	11	GLYCEROL
H-5	12	BIODIESL

COMPUTATIONAL SEQUENCE

SEQUENCE USED WAS:

MIXER-1 P-1 ST-1 ST-2 ST-3 ST-4 H-1 V-1 VAP H-2 DISTL-1 DISTL-2 H-3
H-4
H-5

OVERALL FLOWSHEET BALANCE

	***	MASS AND ENERGY BALANCE	***	
	IN	OUT	GENERATION	RELATIVE
DIFF.				
CONVENTIONAL COMPONENTS				
(KMOL/HR)				
OLEIC-01	0.00000	0.00000	0.00000	
0.00000				
METHNOL	41.3892	38.4496	-2.93959	
0.621973E-12				

TRIOLEIN	0.985545	0.568099E-02	-0.979864	-
0.615381E-13				
WATER	0.00000	0.00000	0.00000	
0.00000				
METHY-01	0.00000	2.93959	2.93959	-
0.105188E-10				
GLYCEROL	0.00000	0.979864	0.979864	
0.533434E-11				

FLOWSHEET SECTION

OVERALL FLOWSHEET BALANCE (CONTINUED)

TOTAL BALANCE			
MOLE (KMOL/HR)	42.3748	42.3748	-0.878204E-14 -
0.335361E-15			
MASS (KG/HR)	2198.85	2198.85	-
0.359955E-11			
ENTHALPY (CAL/SEC)	-786841.	-794496.	
0.963457E-02			

*** CO2 EQUIVALENT SUMMARY ***

FEED STREAMS CO2E	0.00000	KG/HR
PRODUCT STREAMS CO2E	0.00000	KG/HR
NET STREAMS CO2E PRODUCTION	0.00000	KG/HR
UTILITIES CO2E PRODUCTION	0.00000	KG/HR
TOTAL CO2E PRODUCTION	0.00000	KG/HR

PHYSICAL PROPERTIES SECTION

COMPONENTS

ID	TYPE	ALIAS	NAME
OLEIC-01	C	C18H34O2	OLEIC-ACID
METHNOL	C	CH4O	METHANOL
TRIOLEIN	C	C57H104O6	TRIOLEIN
WATER	C	H2O	WATER
METHY-01	C	C19H36O2	METHYL-OLEATE
GLYCEROL	C	C3H8O3	GLYCEROL

REACTION SECTION

REACTION: R-2 TYPE: POWERLAW

Unit operations referencing this reaction model:

Reactor Name	Block Type	Reactor Name	Block Type
ST-1	RCSTR	ST-2	RCSTR
ST-3	RCSTR	ST-4	RCSTR

U-O-S BLOCK SECTION

BLOCK: DISTL-1 MODEL: RADFRAC

INLETS - 8 STAGE 2
OUTLETS - 9 STAGE 1
12 STAGE 10

PROPERTY OPTION SET: NRTL-RK RENON (NRTL) / REDLICH-KWONG

	*** MASS AND ENERGY BALANCE ***		
	IN	OUT	RELATIVE
DIFF.			
TOTAL BALANCE			
MOLE (KMOL/HR)	6.35946	6.35946	0.00000
MASS (KG/HR)	1044.65	1044.65	-
0.729405E-11			
ENTHALPY (CAL/SEC)	-215043.	-178542.	-0.169737

*** CO2 EQUIVALENT SUMMARY ***		
FEED STREAMS CO2E	0.00000	KG/HR
PRODUCT STREAMS CO2E	0.00000	KG/HR
NET STREAMS CO2E PRODUCTION	0.00000	KG/HR
UTILITIES CO2E PRODUCTION	0.00000	KG/HR
TOTAL CO2E PRODUCTION	0.00000	KG/HR

**** INPUT DATA ****

**** INPUT PARAMETERS ****

NUMBER OF STAGES	10
ALGORITHM OPTION	STANDARD
ABSORBER OPTION	NO
INITIALIZATION OPTION	STANDARD
HYDRAULIC PARAMETER CALCULATIONS	NO
INSIDE LOOP CONVERGENCE METHOD	BROYDEN
DESIGN SPECIFICATION METHOD	NESTED
MAXIMUM NO. OF OUTSIDE LOOP ITERATIONS	25
MAXIMUM NO. OF INSIDE LOOP ITERATIONS	10
MAXIMUM NUMBER OF FLASH ITERATIONS	30
FLASH TOLERANCE	0.000100000
OUTSIDE LOOP CONVERGENCE TOLERANCE	0.000100000

U-O-S BLOCK SECTION

BLOCK: DISTL-1 MODEL: RADFRAC (CONTINUED)

**** COL-SPECS ****

MOLAR VAPOR DIST / TOTAL DIST	0.0
MOLAR REFLUX RATIO	1.50000
MOLAR DISTILLATE RATE	KMOL/HR 3.50000

**** PROFILES ****

P-SPEC	STAGE 1	PRES, BAR	1.01325
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**** RESULTS ****

*** COMPONENT SPLIT FRACTIONS ***

	OUTLET STREAMS	
	9	12
COMPONENT:		
METHNOL	1.0000	0.0000
TRIOLEIN	.81802E-02	.99182
METHY-01	.31069E-01	.96893
GLYCEROL	.99401	.59892E-02

*** SUMMARY OF KEY RESULTS ***

TOP STAGE TEMPERATURE	C	71.8221
BOTTOM STAGE TEMPERATURE	C	344.114
TOP STAGE LIQUID FLOW	KMOL/HR	5.25000
BOTTOM STAGE LIQUID FLOW	KMOL/HR	2.85946
TOP STAGE VAPOR FLOW	KMOL/HR	0.0
BOILUP VAPOR FLOW	KMOL/HR	17.8051
MOLAR REFLUX RATIO		1.50000
MOLAR BOILUP RATIO		6.22673
CONDENSER DUTY (W/O SUBCOOL)	CAL/SEC	-39,317.6
REBOILER DUTY	CAL/SEC	75,819.1

**** MAXIMUM FINAL RELATIVE ERRORS ****

DEW POINT	0.22968E-04	STAGE= 4
BUBBLE POINT	0.21038E-04	STAGE= 4
COMPONENT MASS BALANCE	0.37203E-05	STAGE= 2 COMP=TRIOLEIN
ENERGY BALANCE	0.24997E-04	STAGE= 10

U-O-S BLOCK SECTION

BLOCK: DISTL-1 MODEL: RADFRAC (CONTINUED)

**** PROFILES ****

NOTE REPORTED VALUES FOR STAGE LIQUID AND VAPOR RATES ARE THE FLOWS FROM THE STAGE INCLUDING ANY SIDE PRODUCT.

STAGE	TEMPERATURE C	PRESSURE BAR	ENTHALPY CAL/MOL		HEAT DUTY CAL/SEC
			LIQUID	VAPOR	
1	71.822	1.0132	-86877.	-47508.	-.39318+05
2	254.34	1.0132	-0.14284E+06	-70701.	
3	298.00	1.0132	-0.13880E+06	-0.12539E+06	
8	342.07	1.0132	-0.11894E+06	-0.10467E+06	
9	343.54	1.0132	-0.11836E+06	-0.10344E+06	
10	344.11	1.0132	-0.11844E+06	-0.10301E+06	.75819+05

STAGE RATE	FLOW RATE		FEED RATE			PRODUCT
	KMOL/HR		KMOL/HR			KMOL/HR
	LIQUID	VAPOR	LIQUID	VAPOR	MIXED	LIQUID
VAPOR						
1	8.750	0.000				3.5000
2	14.50	8.750			6.3594	
3	17.98	11.64				
8	20.38	16.82				
9	20.66	17.52				
10	2.859	17.81				2.8594

**** MASS FLOW PROFILES ****

STAGE RATE	FLOW RATE		FEED RATE			PRODUCT
	KG/HR		KG/HR			KG/HR
	LIQUID	VAPOR	LIQUID	VAPOR	MIXED	LIQUID
VAPOR						
1	487.0	0.000				194.7808
2	2168.	487.0			1044.6526	
3	2836.	1318.				
8	5967.	4769.				
9	6105.	5117.				
10	849.9	5255.				849.8718

**** MOLE-X-PROFILE ****

STAGE	METHNOL	TRIOLEIN	METHY-01	GLYCEROL
1	0.69583	0.13041E-04	0.26092E-01	0.27806
2	0.11426E-01	0.39557E-03	0.28277	0.70541
3	0.18715E-03	0.32392E-03	0.32003	0.67946
8	0.20548E-12	0.30382E-03	0.98066	0.19041E-01
9	0.32669E-14	0.41845E-03	0.99320	0.63849E-02
10	0.51700E-16	0.19354E-02	0.99601	0.20507E-02

U-O-S BLOCK SECTION

BLOCK: DISTL-1 MODEL: RADFRAC (CONTINUED)

**** MOLE-Y-PROFILE ****				
STAGE	METHNOL	TRIOLEIN	METHY-01	GLYCEROL
1	0.99999	0.23424E-07	0.50817E-07	0.99981E-05
2	0.69583	0.13041E-04	0.26092E-01	0.27806
3	0.14233E-01	0.17297E-04	0.10756	0.87819
8	0.15029E-10	0.26773E-04	0.93666	0.63312E-01
9	0.23900E-12	0.37541E-04	0.97815	0.21813E-01
10	0.37833E-14	0.17483E-03	0.99274	0.70809E-02

**** K-VALUES ****				
STAGE	METHNOL	TRIOLEIN	METHY-01	GLYCEROL
1	1.4371	0.17961E-02	0.19476E-05	0.35957E-04
2	60.899	0.32969E-01	0.92273E-01	0.39418
3	76.051	0.53397E-01	0.33611	1.2925
8	73.143	0.88119E-01	0.95514	3.3251
9	73.157	0.89713E-01	0.98485	3.4164
10	73.177	0.90329E-01	0.99672	3.4529

**** MASS-X-PROFILE ****				
STAGE	METHNOL	TRIOLEIN	METHY-01	GLYCEROL
1	0.40064	0.20750E-03	0.13901	0.46015
2	0.24486E-02	0.23425E-02	0.56073	0.43448
3	0.38013E-04	0.18181E-02	0.60148	0.39666
8	0.22487E-13	0.91884E-03	0.99309	0.59893E-02
9	0.35432E-15	0.12541E-02	0.99676	0.19903E-02
10	0.55737E-17	0.57660E-02	0.99360	0.63543E-03

**** MASS-Y-PROFILE ****				
STAGE	METHNOL	TRIOLEIN	METHY-01	GLYCEROL
1	0.99997	0.64728E-06	0.47021E-06	0.28736E-04
2	0.40064	0.20750E-03	0.13901	0.46015
3	0.40274E-02	0.13525E-03	0.28163	0.71421
8	0.16983E-11	0.83598E-04	0.97935	0.20562E-01
9	0.26221E-13	0.11381E-03	0.99301	0.68785E-02
10	0.41072E-15	0.52448E-03	0.99727	0.22094E-02

BLOCK: DISTL-2 MODEL: RADFRAC

INLETS - 9 STAGE 2
OUTLETS - 10 STAGE 1
11 STAGE 6

PROPERTY OPTION SET: NRTL-RK RENON (NRTL) / REDLICH-KWONG

*** MASS AND ENERGY BALANCE ***
IN OUT

RELATIVE

DIFF.

U-O-S BLOCK SECTION

BLOCK: DISTL-2 MODEL: RADFRAC (CONTINUED)

TOTAL BALANCE			
MOLE (KMOL/HR)	3.50000	3.50000	0.00000
MASS (KG/HR)	194.781	194.781	-
0.151695E-11			
ENTHALPY (CAL/SEC)	-84464.0	-84384.4	-
0.942497E-03			

*** CO2 EQUIVALENT SUMMARY ***

FEED STREAMS CO2E	0.00000	KG/HR
PRODUCT STREAMS CO2E	0.00000	KG/HR
NET STREAMS CO2E PRODUCTION	0.00000	KG/HR
UTILITIES CO2E PRODUCTION	0.00000	KG/HR
TOTAL CO2E PRODUCTION	0.00000	KG/HR

**** INPUT DATA ****

**** INPUT PARAMETERS ****

NUMBER OF STAGES	6
ALGORITHM OPTION	STANDARD
ABSORBER OPTION	NO
INITIALIZATION OPTION	STANDARD
HYDRAULIC PARAMETER CALCULATIONS	NO
INSIDE LOOP CONVERGENCE METHOD	BROYDEN
DESIGN SPECIFICATION METHOD	NESTED
MAXIMUM NO. OF OUTSIDE LOOP ITERATIONS	25
MAXIMUM NO. OF INSIDE LOOP ITERATIONS	10
MAXIMUM NUMBER OF FLASH ITERATIONS	30
FLASH TOLERANCE	0.000100000
OUTSIDE LOOP CONVERGENCE TOLERANCE	0.000100000

**** COL-SPECS ****

MOLAR VAPOR DIST / TOTAL DIST	0.0
MOLAR REFLUX RATIO	1.00000
MOLAR DISTILLATE RATE	1.40000
	KMOL/HR

**** PROFILES ****

P-SPEC	STAGE	1	PRES, BAR	1.01325
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U-O-S BLOCK SECTION

BLOCK: DISTL-2 MODEL: RADFRAC (CONTINUED)

**** RESULTS ****

*** COMPONENT SPLIT FRACTIONS ***

	OUTLET STREAMS	
	10	11
COMPONENT:		
METHNOL	.57485	.42515
TRIOLEIN	.49742E-03	.99950
METHY-01	.45498E-06	1.0000
GLYCEROL	.94786E-05	.99999

*** SUMMARY OF KEY RESULTS ***

TOP STAGE TEMPERATURE	C	64.5349
BOTTOM STAGE TEMPERATURE	C	79.0043
TOP STAGE LIQUID FLOW	KMOL/HR	1.40000
BOTTOM STAGE LIQUID FLOW	KMOL/HR	2.10000
TOP STAGE VAPOR FLOW	KMOL/HR	0.0
BOILUP VAPOR FLOW	KMOL/HR	2.76197
MOLAR REFLUX RATIO		1.00000
MOLAR BOILUP RATIO		1.31523
CONDENSER DUTY (W/O SUBCOOL)	CAL/SEC	-6,574.96
REBOILER DUTY	CAL/SEC	6,656.10

**** MAXIMUM FINAL RELATIVE ERRORS ****

DEW POINT	0.15923E-03	STAGE=	4
BUBBLE POINT	0.88102E-04	STAGE=	4
COMPONENT MASS BALANCE	0.37203E-04	STAGE=	3 COMP=METHY-01
ENERGY BALANCE	0.26364E-03	STAGE=	5

U-O-S BLOCK SECTION

BLOCK: DISTL-2 MODEL: RADFRAC (CONTINUED)

**** PROFILES ****

NOTE REPORTED VALUES FOR STAGE LIQUID AND VAPOR RATES ARE THE FLOWS FROM THE STAGE INCLUDING ANY SIDE PRODUCT.

STAGE	TEMPERATURE C	PRESSURE BAR	ENTHALPY CAL/MOL		HEAT DUTY CAL/SEC
			LIQUID	VAPOR	
1	64.535	1.0132	-55987.	-47590.	-6574.9641
2	69.616	1.0132	-78066.	-47533.	
3	69.616	1.0132	-78062.	-47533.	
4	69.616	1.0132	-78063.	-47533.	
5	69.655	1.0132	-78231.	-47533.	
6	79.004	1.0132	-0.10733E+06	-47427.	6656.0952

STAGE RATE	FLOW RATE		FEED RATE			PRODUCT
	KMOL/HR		KMOL/HR			KMOL/HR
	LIQUID	VAPOR	LIQUID	VAPOR	MIXED	LIQUID
VAPOR						
1	2.800	0.000				1.4000
2	4.898	2.800			3.5000	
3	4.899	2.798				
4	4.899	2.799				
5	4.862	2.799				
6	2.100	2.762				2.1000

**** MASS FLOW PROFILES ****

STAGE RATE	FLOW RATE		FEED RATE			PRODUCT
	KG/HR		KG/HR			KG/HR
	LIQUID	VAPOR	LIQUID	VAPOR	MIXED	LIQUID
VAPOR						
1	89.72	0.000				44.8596
2	239.6	89.72			194.7808	
3	239.6	89.65				
4	239.6	89.68				
5	238.4	89.68				
6	149.9	88.50				149.9212

**** MOLE-X-PROFILE ****

STAGE	METHNOL	TRIOLEIN	METHY-01	GLYCEROL
1	0.99999	0.16218E-07	0.29678E-07	0.65891E-05
2	0.78265	0.93238E-05	0.18645E-01	0.19870
3	0.78268	0.93224E-05	0.18642E-01	0.19867
4	0.78268	0.93225E-05	0.18642E-01	0.19867
5	0.78102	0.94103E-05	0.18783E-01	0.20018
6	0.49306	0.21725E-04	0.43487E-01	0.46343

U-O-S BLOCK SECTION

BLOCK: DISTL-2 MODEL: RADFRAC (CONTINUED)

**** MOLE-Y-PROFILE ****				
STAGE	METHNOL	TRIOLEIN	METHY-01	GLYCEROL
1	1.0000	0.30872E-10	0.34653E-13	0.23088E-09
2	0.99999	0.16218E-07	0.29678E-07	0.65891E-05
3	0.99999	0.16217E-07	0.29664E-07	0.65875E-05
4	0.99999	0.16217E-07	0.29664E-07	0.65871E-05
5	0.99999	0.16378E-07	0.29991E-07	0.66429E-05
6	0.99997	0.47080E-07	0.17384E-06	0.26316E-04

**** K-VALUES ****				
STAGE	METHNOL	TRIOLEIN	METHY-01	GLYCEROL
1	1.0000	0.19036E-02	0.11676E-05	0.35040E-04
2	1.2778	0.17391E-02	0.15923E-05	0.33166E-04
3	1.2778	0.17392E-02	0.15924E-05	0.33168E-04
4	1.2778	0.17392E-02	0.15924E-05	0.33169E-04
5	1.2804	0.17397E-02	0.15976E-05	0.33198E-04
6	2.0280	0.21669E-02	0.39979E-05	0.56791E-04

**** MASS-X-PROFILE ****				
STAGE	METHNOL	TRIOLEIN	METHY-01	GLYCEROL
1	0.99998	0.44815E-06	0.27462E-06	0.18938E-04
2	0.51270	0.16878E-03	0.11302	0.37412
3	0.51275	0.16877E-03	0.11301	0.37408
4	0.51275	0.16877E-03	0.11301	0.37408
5	0.51032	0.16991E-03	0.11357	0.37594
6	0.22130	0.26945E-03	0.18061	0.59783

**** MASS-Y-PROFILE ****				
STAGE	METHNOL	TRIOLEIN	METHY-01	GLYCEROL
1	1.0000	0.85310E-09	0.32065E-12	0.66359E-09
2	0.99998	0.44815E-06	0.27462E-06	0.18938E-04
3	0.99998	0.44814E-06	0.27449E-06	0.18933E-04
4	0.99998	0.44813E-06	0.27449E-06	0.18932E-04
5	0.99998	0.45259E-06	0.27751E-06	0.19093E-04
6	0.99992	0.13009E-05	0.16085E-05	0.75634E-04

BLOCK: H-1 MODEL: HEATER

INLET STREAM: 5
OUTLET STREAM: 5-1
PROPERTY OPTION SET: NRTL-RK RENON (NRTL) / REDLICH-KWONG

*** MASS AND ENERGY BALANCE ***
IN OUT RELATIVE
DIFF.

U-O-S BLOCK SECTION

BLOCK: H-1 MODEL: HEATER (CONTINUED)

TOTAL BALANCE

MOLE (KMOL/HR)	42.3748	42.3748	0.00000
MASS (KG/HR)	2198.85	2198.85	0.00000
ENTHALPY (CAL/SEC)	-653010.	-793588.	0.177142

*** CO2 EQUIVALENT SUMMARY ***

FEED STREAMS CO2E	0.00000	KG/HR
PRODUCT STREAMS CO2E	0.00000	KG/HR
NET STREAMS CO2E PRODUCTION	0.00000	KG/HR
UTILITIES CO2E PRODUCTION	0.00000	KG/HR
TOTAL CO2E PRODUCTION	0.00000	KG/HR

*** INPUT DATA ***

TWO PHASE TP FLASH

SPECIFIED TEMPERATURE	C	25.0000
SPECIFIED PRESSURE	BAR	70.0000
MAXIMUM NO. ITERATIONS		30
CONVERGENCE TOLERANCE		0.000100000

*** RESULTS ***

OUTLET TEMPERATURE	C	25.000
OUTLET PRESSURE	BAR	70.000
HEAT DUTY	CAL/SEC	-0.14058E+06
OUTLET VAPOR FRACTION		0.0000

V-L PHASE EQUILIBRIUM :

COMP	F(I)	X(I)	Y(I)	K(I)
METHNOL	0.90737	0.90737	0.91923	
0.15415E-02				
TRIOLEIN	0.13407E-03	0.13407E-03	0.80771E-01	
0.75658				
METHY-01	0.69371E-01	0.69371E-01	0.53165E-07	
0.11116E-08				
GLYCEROL	0.23124E-01	0.23124E-01	0.12834E-06	
0.83619E-08				

BLOCK: H-2 MODEL: HEATER

INLET STREAM:	7
OUTLET STREAM:	METH-RCV
PROPERTY OPTION SET:	NRTL-RK RENON (NRTL) / REDLICH-KWONG

U-O-S BLOCK SECTION

BLOCK: H-2 MODEL: HEATER (CONTINUED)

	*** MASS AND ENERGY BALANCE ***		
	IN	OUT	RELATIVE
DIFF.			
TOTAL BALANCE			
MOLE (KMOL/HR)	36.0153	36.0153	0.00000
MASS (KG/HR)	1154.20	1154.20	0.00000
ENTHALPY (CAL/SEC)	-473205.	-570175.	0.170071

*** CO2 EQUIVALENT SUMMARY ***		
FEED STREAMS CO2E	0.00000	KG/HR
PRODUCT STREAMS CO2E	0.00000	KG/HR
NET STREAMS CO2E PRODUCTION	0.00000	KG/HR
UTILITIES CO2E PRODUCTION	0.00000	KG/HR
TOTAL CO2E PRODUCTION	0.00000	KG/HR

*** INPUT DATA ***		
TWO PHASE TP FLASH		
SPECIFIED TEMPERATURE	C	25.0000
SPECIFIED PRESSURE	BAR	1.01325
MAXIMUM NO. ITERATIONS		30
CONVERGENCE TOLERANCE		0.000100000

*** RESULTS ***		
OUTLET TEMPERATURE	C	25.000
OUTLET PRESSURE	BAR	1.0132
HEAT DUTY	CAL/SEC	-96970.
OUTLET VAPOR FRACTION		0.0000

V-L PHASE EQUILIBRIUM :

COMP	F(I)	X(I)	Y(I)	K(I)
METHNOL	0.99997	0.99997	1.0000	
0.16895				
TRIOLEIN	0.28058E-05	0.28058E-05	0.10907E-07	
0.65675E-03				
METHY-01	0.58334E-05	0.58334E-05	0.33154E-12	
0.96022E-08				
GLYCEROL	0.21860E-04	0.21860E-04	0.78226E-10	
0.60458E-06				

U-O-S BLOCK SECTION

BLOCK: H-3 MODEL: HEATER

INLET STREAM: 10
OUTLET STREAM: ME-RCV-2
PROPERTY OPTION SET: NRTL-RK RENON (NRTL) / REDLICH-KWONG

*** MASS AND ENERGY BALANCE ***
IN OUT

RELATIVE

DIFF.

TOTAL BALANCE

MOLE (KMOL/HR)	1.40000	1.40000	0.00000
MASS (KG/HR)	44.8596	44.8596	0.00000
ENTHALPY (CAL/SEC)	-21772.6	-22162.7	

0.176040E-01

*** CO2 EQUIVALENT SUMMARY ***

FEED STREAMS CO2E	0.00000	KG/HR
PRODUCT STREAMS CO2E	0.00000	KG/HR
NET STREAMS CO2E PRODUCTION	0.00000	KG/HR
UTILITIES CO2E PRODUCTION	0.00000	KG/HR
TOTAL CO2E PRODUCTION	0.00000	KG/HR

*** INPUT DATA ***

TWO PHASE TP FLASH

SPECIFIED TEMPERATURE	C	25.0000
SPECIFIED PRESSURE	BAR	1.01325
MAXIMUM NO. ITERATIONS		30
CONVERGENCE TOLERANCE		

0.000100000

*** RESULTS ***

OUTLET TEMPERATURE	C	25.000
OUTLET PRESSURE	BAR	1.0132
HEAT DUTY	CAL/SEC	-390.15
OUTLET VAPOR FRACTION		0.0000

V-L PHASE EQUILIBRIUM :

COMP	F(I)	X(I)	Y(I)	K(I)
METHNOL	0.99999	0.99999	1.0000	
0.16895				
TRIOLEIN	0.16218E-07	0.16218E-07	0.63043E-10	
0.65677E-03				
METHY-01	0.29678E-07	0.29678E-07	0.16868E-14	
0.96025E-08				
GLYCEROL	0.65891E-05	0.65891E-05	0.23580E-10	
0.60463E-06				

U-O-S BLOCK SECTION

BLOCK: H-4 MODEL: HEATER

INLET STREAM: 11
OUTLET STREAM: GLYCEROL
PROPERTY OPTION SET: NRTL-RK RENON (NRTL) / REDLICH-KWONG

*** MASS AND ENERGY BALANCE ***
IN OUT

RELATIVE

DIFF.

TOTAL BALANCE

MOLE (KMOL/HR)	2.10000	2.10000	0.00000
MASS (KG/HR)	149.921	149.921	0.00000
ENTHALPY (CAL/SEC)	-62611.8	-63915.6	

0.203983E-01

*** CO2 EQUIVALENT SUMMARY ***

FEED STREAMS CO2E	0.00000	KG/HR
PRODUCT STREAMS CO2E	0.00000	KG/HR
NET STREAMS CO2E PRODUCTION	0.00000	KG/HR
UTILITIES CO2E PRODUCTION	0.00000	KG/HR
TOTAL CO2E PRODUCTION	0.00000	KG/HR

*** INPUT DATA ***

TWO PHASE TP FLASH

SPECIFIED TEMPERATURE	C	25.0000
SPECIFIED PRESSURE	BAR	1.01325
MAXIMUM NO. ITERATIONS		30
CONVERGENCE TOLERANCE		

0.000100000

*** RESULTS ***

OUTLET TEMPERATURE	C	25.000
OUTLET PRESSURE	BAR	1.0132
HEAT DUTY	CAL/SEC	-1303.8
OUTLET VAPOR FRACTION		0.0000

V-L PHASE EQUILIBRIUM :

COMP	F(I)	X(I)	Y(I)	K(I)
METHNOL	0.49306	0.49306	1.0000	
0.20426				
TRIOLEIN	0.21725E-04	0.21725E-04	0.11331E-06	
0.52529E-03				
METHY-01	0.43487E-01	0.43487E-01	0.33163E-08	
0.76800E-08				
GLYCEROL	0.46343	0.46343	0.11637E-05	
0.25288E-06				

U-O-S BLOCK SECTION

BLOCK: H-5 MODEL: HEATER

INLET STREAM: 12
OUTLET STREAM: BIODIESL
PROPERTY OPTION SET: NRTL-RK RENON (NRTL) / REDLICH-KWONG

*** MASS AND ENERGY BALANCE ***

	IN	OUT	RELATIVE
DIFF.			
TOTAL BALANCE			
MOLE (KMOL/HR)	2.85946	2.85946	0.00000
MASS (KG/HR)	849.872	849.872	-
0.133769E-15			
ENTHALPY (CAL/SEC)	-94078.5	-138242.	0.319467

*** CO2 EQUIVALENT SUMMARY ***

FEED STREAMS CO2E	0.00000	KG/HR
PRODUCT STREAMS CO2E	0.00000	KG/HR
NET STREAMS CO2E PRODUCTION	0.00000	KG/HR
UTILITIES CO2E PRODUCTION	0.00000	KG/HR
TOTAL CO2E PRODUCTION	0.00000	KG/HR

*** INPUT DATA ***

TWO PHASE TP FLASH		
SPECIFIED TEMPERATURE	C	25.0000
SPECIFIED PRESSURE	BAR	1.01325
MAXIMUM NO. ITERATIONS		30
CONVERGENCE TOLERANCE		
0.000100000		

*** RESULTS ***

OUTLET TEMPERATURE	C	25.000
OUTLET PRESSURE	BAR	1.0132
HEAT DUTY	CAL/SEC	-44164.
OUTLET VAPOR FRACTION		0.0000

V-L PHASE EQUILIBRIUM :

COMP	F(I)	X(I)	Y(I)	K(I)
TRIOLEIN	0.19354E-02	0.19354E-02	0.99550	
0.44743E-03				
METHY-01	0.99601	0.99601	0.43023E-02	
0.37575E-08				
GLYCEROL	0.20507E-02	0.20507E-02	0.19724E-03	
0.83668E-07				

U-O-S BLOCK SECTION

BLOCK: MIXER-1 MODEL: MIXER

INLET STREAMS: TAG METHANOL
OUTLET STREAM: 1
PROPERTY OPTION SET: NRTL-RK RENON (NRTL) / REDLICH-KWONG

	***	MASS AND ENERGY BALANCE	***	
		IN	OUT	RELATIVE
DIFF.				
TOTAL BALANCE				
MOLE (KMOL/HR)		42.3748	42.3748	0.00000
MASS (KG/HR)		2198.85	2198.85	0.00000
ENTHALPY (CAL/SEC)		-786841.	-786841.	-
0.147953E-15				

*** CO2 EQUIVALENT SUMMARY ***		
FEED STREAMS CO2E	0.00000	KG/HR
PRODUCT STREAMS CO2E	0.00000	KG/HR
NET STREAMS CO2E PRODUCTION	0.00000	KG/HR
UTILITIES CO2E PRODUCTION	0.00000	KG/HR
TOTAL CO2E PRODUCTION	0.00000	KG/HR

*** INPUT DATA ***		
ONE PHASE FLASH	SPECIFIED PHASE IS	LIQUID
MAXIMUM NO. ITERATIONS		30
CONVERGENCE TOLERANCE		0.000100000
OUTLET PRESSURE BAR		1.01325

BLOCK: P-1 MODEL: PUMP

INLET STREAM: 1
OUTLET STREAM: 1-P
PROPERTY OPTION SET: NRTL-RK RENON (NRTL) / REDLICH-KWONG

	***	MASS AND ENERGY BALANCE	***	
		IN	OUT	RELATIVE
DIFF.				
TOTAL BALANCE				
MOLE (KMOL/HR)		42.3748	42.3748	0.00000
MASS (KG/HR)		2198.85	2198.85	0.00000
ENTHALPY (CAL/SEC)		-786841.	-765501.	-
0.271209E-01				

U-O-S BLOCK SECTION

BLOCK: P-1 MODEL: PUMP (CONTINUED)

*** CO2 EQUIVALENT SUMMARY ***

FEED STREAMS CO2E	0.00000	KG/HR
PRODUCT STREAMS CO2E	0.00000	KG/HR
NET STREAMS CO2E PRODUCTION	0.00000	KG/HR
UTILITIES CO2E PRODUCTION	0.00000	KG/HR
TOTAL CO2E PRODUCTION	0.00000	KG/HR

*** INPUT DATA ***

OUTLET PRESSURE BAR	280.000
DRIVER EFFICIENCY	1.00000

FLASH SPECIFICATIONS:

LIQUID PHASE CALCULATION

NO FLASH PERFORMED

MAXIMUM NUMBER OF ITERATIONS	30
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TOLERANCE	0.000100000
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*** RESULTS ***

VOLUMETRIC FLOW RATE L/MIN	56.8107
PRESSURE CHANGE BAR	278.987
NPSH AVAILABLE M-KGF/KG	13.4192
FLUID POWER KW	26.4157
BRAKE POWER KW	89.3457
ELECTRICITY KW	89.3457
PUMP EFFICIENCY USED	0.29566
NET WORK REQUIRED KW	89.3457
HEAD DEVELOPED M-KGF/KG	4,410.11

BLOCK: ST-1 MODEL: RCSTR

INLET STREAM:	1-P
OUTLET STREAM:	2
PROPERTY OPTION SET:	NRTL-RK RENON (NRTL) / REDLICH-KWONG

*** MASS AND ENERGY BALANCE ***

	IN	OUT	GENERATION	RELATIVE
DIFF.				
TOTAL BALANCE				
MOLE (KMOL/HR)	42.3748	42.3748	-0.526922E-14	
0.167681E-15				
MASS (KG/HR)	2198.85	2198.85		
0.00000				
ENTHALPY (CAL/SEC)	-765501.	-650025.		-
0.150851				

*** CO2 EQUIVALENT SUMMARY ***

FEED STREAMS CO2E	0.00000	KG/HR
PRODUCT STREAMS CO2E	0.00000	KG/HR
NET STREAMS CO2E PRODUCTION	0.00000	KG/HR
UTILITIES CO2E PRODUCTION	0.00000	KG/HR
TOTAL CO2E PRODUCTION	0.00000	KG/HR

U-O-S BLOCK SECTION

BLOCK: ST-1 MODEL: RCSTR (CONTINUED)

*** INPUT DATA ***

REACTOR TYPE: TEMP SPEC LIQUID PHASE REACTOR

RESIDENCE TIME	HR	1.0000
REACTOR TEMPERATURE	C	280.00
REACTOR PRESSURE	BAR	280.00

REACTION PARAGRAPH	ID: R-2	TYPE: POWERLAW
GLOBAL BASES:		
KBASIS		MOLE-GAMMA
CBASIS		MOLARITY
SBASIS		GLOBAL

STOICHIOMETRY:

REACTION NUMBER:	1			
SUBSTREAM:	MIXED			
METHNOL	-3.0000	TRIOLEIN	-1.0000	METHY-01
3.0000	GLYCEROL	1.0000		

REAC-DATA ENTRIES:

REACTION NO	TYPE	PHASE	DELT C	BASIS
1	KINETIC	L	0.0000	MOLARITY

RATE PARAMETERS:

REACTION NO	PREEXP. FACTOR	ACT. ENERGY	TEMP. EXPONENT	REF.
TEMP		CAL/MOL		C
1	141.80	13375.	0.0000	

POWERLAW EXPONENTS:

REACTION NUMBER:	1
SUBSTREAM:	MIXED
TRIOLEIN	1.0000

*** RESULTS ***

REACTOR HEAT DUTY	CAL/SEC
0.11548E+06	
REACTOR VOLUME	L
	4691.7

BLOCK: ST-2 MODEL: RCSTR

INLET STREAM: 2

OUTLET STREAM: 3
PROPERTY OPTION SET: NRTL-RK RENON (NRTL) / REDLICH-KWONG

U-O-S BLOCK SECTION

BLOCK: ST-2 MODEL: RCSTR (CONTINUED)

	***	MASS AND ENERGY BALANCE	***	
		IN	OUT	GENERATION RELATIVE
DIFF.				
TOTAL BALANCE				
MOLE (KMOL/HR)	42.3748	42.3748	0.00000	-
0.167681E-15				
MASS (KG/HR)	2198.85	2198.85		
0.206811E-15				
ENTHALPY (CAL/SEC)	-650025.	-652233.		
0.338665E-02				

*** CO2 EQUIVALENT SUMMARY ***		
FEED STREAMS CO2E	0.00000	KG/HR
PRODUCT STREAMS CO2E	0.00000	KG/HR
NET STREAMS CO2E PRODUCTION	0.00000	KG/HR
UTILITIES CO2E PRODUCTION	0.00000	KG/HR
TOTAL CO2E PRODUCTION	0.00000	KG/HR

*** INPUT DATA ***

REACTOR TYPE: TEMP SPEC LIQUID PHASE REACTOR

RESIDENCE TIME	HR	1.0000
REACTOR TEMPERATURE	C	280.00
REACTOR PRESSURE	BAR	280.00

REACTION PARAGRAPH	ID: R-2	TYPE: POWERLAW
GLOBAL BASES:		
KBASIS		MOLE-GAMMA
CBASIS		MOLARITY
SBASIS		GLOBAL

STOICHIOMETRY:

REACTION NUMBER:	1			
SUBSTREAM:	MIXED			
METHNOL	-3.0000	TRIOLEIN	-1.0000	METHY-01
3.0000	GLYCEROL	1.0000		

REAC-DATA ENTRIES:

REACTION NO	TYPE	PHASE	DELT C	BASIS
1	KINETIC	L	0.0000	MOLARITY

RATE PARAMETERS:

REACTION NO	PREEXP. FACTOR	ACT. ENERGY	TEMP. EXPONENT	REF.
TEMP		CAL/MOL		C

1	141.80	13375.	0.0000
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U-O-S BLOCK SECTION

BLOCK: ST-2 MODEL: RCSTR (CONTINUED)

POWERLAW EXPONENTS:

REACTION NUMBER: 1
SUBSTREAM: MIXED
TRIOLEIN 1.0000

*** RESULTS ***

REACTOR HEAT DUTY	CAL/SEC	-2208.9
REACTOR VOLUME	L	5027.9

BLOCK: ST-3 MODEL: RCSTR

INLET STREAM: 3
OUTLET STREAM: 4
PROPERTY OPTION SET: NRTL-RK RENON (NRTL) / REDLICH-KWONG

*** MASS AND ENERGY BALANCE ***

	IN	OUT	GENERATION	RELATIVE
DIFF.				
TOTAL BALANCE				
MOLE (KMOL/HR)	42.3748	42.3748	-0.483012E-14	
0.167681E-15				
MASS (KG/HR)	2198.85	2198.85		
0.00000				
ENTHALPY (CAL/SEC)	-652233.	-652842.		
0.932720E-03				

*** CO2 EQUIVALENT SUMMARY ***

FEED STREAMS CO2E	0.00000	KG/HR
PRODUCT STREAMS CO2E	0.00000	KG/HR
NET STREAMS CO2E PRODUCTION	0.00000	KG/HR
UTILITIES CO2E PRODUCTION	0.00000	KG/HR
TOTAL CO2E PRODUCTION	0.00000	KG/HR

*** INPUT DATA ***

REACTOR TYPE: TEMP SPEC LIQUID PHASE REACTOR

RESIDENCE TIME	HR	1.0000
REACTOR TEMPERATURE	C	280.00
REACTOR PRESSURE	BAR	280.00

REACTION PARAGRAPH	ID: R-2	TYPE: POWERLAW
GLOBAL BASES:		
KBASIS		MOLE-GAMMA
CBASIS		MOLARITY
SBASIS		GLOBAL

U-O-S BLOCK SECTION

BLOCK: ST-3 MODEL: RCSTR (CONTINUED)
STOICHIOMETRY:

REACTION NUMBER: 1
SUBSTREAM: MIXED
METHNOL -3.0000 TRIOLEIN -1.0000 METHY-01
3.0000 GLYCEROL 1.0000

REAC-DATA ENTRIES:

REACTION NO	TYPE	PHASE	DELT C	BASIS
1	KINETIC	L	0.0000	MOLARITY

RATE PARAMETERS:

REACTION NO	PREEXP. FACTOR	ACT. ENERGY CAL/MOL	TEMP. EXPONENT	REF. C
1	141.80	13375.	0.0000	

POWERLAW EXPONENTS:

REACTION NUMBER: 1
SUBSTREAM: MIXED
TRIOLEIN 1.0000

*** RESULTS ***

REACTOR HEAT DUTY	CAL/SEC	-608.92
REACTOR VOLUME	L	5229.5

BLOCK: ST-4 MODEL: RCSTR

INLET STREAM: 4
OUTLET STREAM: 5
PROPERTY OPTION SET: NRTL-RK RENON (NRTL) / REDLICH-KWONG

	*** IN	MASS AND ENERGY BALANCE OUT	*** GENERATION	RELATIVE
DIFF.				
TOTAL BALANCE				
MOLE (KMOL/HR)	42.3748	42.3748	0.167103E-14	-
0.335361E-15				
MASS (KG/HR)	2198.85	2198.85		
0.00000				
ENTHALPY (CAL/SEC)	-652842.	-653010.		
0.256970E-03				

U-O-S BLOCK SECTION

BLOCK: ST-4 MODEL: RCSTR (CONTINUED)

*** CO2 EQUIVALENT SUMMARY ***

FEED STREAMS CO2E	0.00000	KG/HR
PRODUCT STREAMS CO2E	0.00000	KG/HR
NET STREAMS CO2E PRODUCTION	0.00000	KG/HR
UTILITIES CO2E PRODUCTION	0.00000	KG/HR
TOTAL CO2E PRODUCTION	0.00000	KG/HR

*** INPUT DATA ***

REACTOR TYPE: TEMP SPEC LIQUID PHASE REACTOR

RESIDENCE TIME	HR	1.0000
REACTOR TEMPERATURE	C	280.00
REACTOR PRESSURE	BAR	280.00

REACTION PARAGRAPH	ID: R-2	TYPE: POWERLAW
GLOBAL BASES:		
KBASIS		MOLE-GAMMA
CBASIS		MOLARITY
SBASIS		GLOBAL

STOICHIOMETRY:

REACTION NUMBER:	1			
SUBSTREAM:	MIXED			
METHNOL	-3.0000	TRIOLEIN	-1.0000	METHY-01
3.0000	GLYCEROL	1.0000		

REAC-DATA ENTRIES:

REACTION NO	TYPE	PHASE	DELT C	BASIS
1	KINETIC	L	0.0000	MOLARITY

RATE PARAMETERS:

REACTION NO	PREEXP. FACTOR	ACT. ENERGY CAL/MOL	TEMP. EXPONENT	REF. C
1	141.80	13375.	0.0000	

POWERLAW EXPONENTS:

REACTION NUMBER:	1
SUBSTREAM:	MIXED
TRIOLEIN	1.0000

*** RESULTS ***

REACTOR HEAT DUTY	CAL/SEC	-167.80
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REACTOR VOLUME

L

5305.4

U-O-S BLOCK SECTION

BLOCK: V-1 MODEL: VALVE

INLET STREAM: 5-1
OUTLET STREAM: 6
PROPERTY OPTION SET: NRTL-RK RENON (NRTL) / REDLICH-KWONG

*** MASS AND ENERGY BALANCE ***
IN OUT

RELATIVE

DIFF.

TOTAL BALANCE

MOLE (KMOL/HR)	42.3748	42.3748	0.00000
MASS (KG/HR)	2198.85	2198.85	0.00000
ENTHALPY (CAL/SEC)	-793588.	-793588.	0.00000

*** CO2 EQUIVALENT SUMMARY ***

FEED STREAMS CO2E	0.00000	KG/HR
PRODUCT STREAMS CO2E	0.00000	KG/HR
NET STREAMS CO2E PRODUCTION	0.00000	KG/HR
UTILITIES CO2E PRODUCTION	0.00000	KG/HR
TOTAL CO2E PRODUCTION	0.00000	KG/HR

*** INPUT DATA ***

VALVE OUTLET PRESSURE	BAR	1.01325
VALVE FLOW COEF CALC.		NO

FLASH SPECIFICATIONS:

NPHASE	2
MAX NUMBER OF ITERATIONS	30
CONVERGENCE TOLERANCE	0.000100000

*** RESULTS ***

VALVE PRESSURE DROP	BAR	68.9867
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BLOCK: VAP MODEL: FLASH2

INLET STREAM: 6
OUTLET VAPOR STREAM: 7
OUTLET LIQUID STREAM: 8
PROPERTY OPTION SET: NRTL-RK RENON (NRTL) / REDLICH-KWONG

U-O-S BLOCK SECTION

BLOCK: VAP MODEL: FLASH2 (CONTINUED)

	*** MASS AND ENERGY BALANCE ***		
	IN	OUT	RELATIVE
DIFF.			
TOTAL BALANCE			
MOLE (KMOL/HR)	42.3748	42.3748	-
0.167681E-15			
MASS (KG/HR)	2198.85	2198.85	0.00000
ENTHALPY (CAL/SEC)	-793588.	-688248.	-0.132739

*** CO2 EQUIVALENT SUMMARY ***		
FEED STREAMS CO2E	0.00000	KG/HR
PRODUCT STREAMS CO2E	0.00000	KG/HR
NET STREAMS CO2E PRODUCTION	0.00000	KG/HR
UTILITIES CO2E PRODUCTION	0.00000	KG/HR
TOTAL CO2E PRODUCTION	0.00000	KG/HR

*** INPUT DATA ***		
TWO PHASE TP FLASH		
SPECIFIED TEMPERATURE C		90.0000
SPECIFIED PRESSURE BAR		1.01325
MAXIMUM NO. ITERATIONS		30
CONVERGENCE TOLERANCE		0.000100000

*** RESULTS ***		
OUTLET TEMPERATURE C		90.000
OUTLET PRESSURE BAR		1.0132
HEAT DUTY CAL/SEC		0.10534E+06
VAPOR FRACTION		0.84992

V-L PHASE EQUILIBRIUM :

COMP	F(I)	X(I)	Y(I)	K(I)
METHNOL	0.90737	0.38296	0.99997	
2.6112				
TRIOLEIN	0.13407E-03	0.87742E-03	0.28058E-05	
0.31978E-02				
METHY-01	0.69371E-01	0.46221	0.58334E-05	
0.12621E-04				
GLYCEROL	0.23124E-01	0.15396	0.21860E-04	
0.14199E-03				

STREAM SECTION

1 1-P 10 11 12

STREAM ID	1	1-P	10	11	12
FROM :	MIXER-1	P-1	DISTL-2	DISTL-2	
DISTL-1					
TO :	P-1	ST-1	H-3	H-4	H-5
SUBSTREAM: MIXED					
PHASE:	LIQUID	LIQUID	LIQUID	LIQUID	
LIQUID					
COMPONENTS: KMOL/HR					
OLEIC-01	0.0	0.0	0.0	0.0	0.0
METHNOL	41.3892	41.3892	1.4000	1.0354	
1.4783-16					
TRIOLEIN	0.9855	0.9855	2.2705-08	4.5622-05	
5.5343-03					
WATER	0.0	0.0	0.0	0.0	0.0
METHY-01	0.0	0.0	4.1550-08	9.1323-02	
2.8481					
GLYCEROL	0.0	0.0	9.2247-06	0.9732	
5.8639-03					
TOTAL FLOW:					
KMOL/HR	42.3748	42.3748	1.4000	2.1000	
2.8595					
KG/HR	2198.8500	2198.8500	44.8596	149.9213	
849.8718					
L/MIN	56.8107	59.0592	1.0049	2.4729	
23.1068					
STATE VARIABLES:					
TEMP C	25.0000	69.4340	64.5349	79.0043	
344.1138					
PRES BAR	1.0133	280.0000	1.0133	1.0133	
1.0133					
VFRAC	0.0	0.0	0.0	0.0	0.0
LFRAC	1.0000	1.0000	1.0000	1.0000	
1.0000					
SFRAC	0.0	0.0	0.0	0.0	0.0
ENTHALPY:					
CAL/MOL	-6.6847+04	-6.5034+04	-5.5987+04	-1.0733+05	-
1.1844+05					
CAL/GM	-1288.2314	-1253.2934	-1747.2561	-1503.4731	-
398.5101					
CAL/SEC	-7.8684+05	-7.6550+05	-2.1773+04	-6.2612+04	-
9.4078+04					
ENTROPY:					
CAL/MOL-K	-87.5871	-83.0342	-54.4995	-107.6248	-
329.6934					
CAL/GM-K	-1.6879	-1.6002	-1.7008	-1.5075	-
1.1093					
DENSITY:					
MOL/CC	1.2432-02	1.1958-02	2.3220-02	1.4154-02	
2.0625-03					

GM/CC	0.6451	0.6205	0.7440	1.0104
0.6130				
AVG MW	51.8906	51.8906	32.0426	71.3911
297.2144				

STREAM SECTION

2 3 4 5 5-1

STREAM ID	2	3	4	5	5-1
FROM :	ST-1	ST-2	ST-3	ST-4	H-1
TO :	ST-2	ST-3	ST-4	H-1	V-1
SUBSTREAM: MIXED					
PHASE:	LIQUID	LIQUID	LIQUID	LIQUID	
LIQUID					
COMPONENTS: KMOL/HR					
OLEIC-01	0.0	0.0	0.0	0.0	0.0
METHNOL	39.2473	38.6571	38.4944	38.4496	
38.4496					
TRIOLEIN	0.2716	7.4827-02	2.0618-02	5.6810-03	
5.6810-03					
WATER	0.0	0.0	0.0	0.0	0.0
METHY-01	2.1419	2.7322	2.8948	2.9396	
2.9396					
GLYCEROL	0.7140	0.9107	0.9649	0.9799	
0.9799					
TOTAL FLOW:					
KMOL/HR	42.3748	42.3748	42.3748	42.3748	
42.3748					
KG/HR	2198.8500	2198.8500	2198.8500	2198.8500	
2198.8500					
L/MIN	78.1999	83.7981	87.1591	88.4226	
44.3555					
STATE VARIABLES:					
TEMP C	280.0000	280.0000	280.0000	280.0000	
25.0000					
PRES BAR	280.0000	280.0000	280.0000	280.0000	
70.0000					
VFRAC	0.0	0.0	0.0	0.0	0.0
LFRAC	1.0000	1.0000	1.0000	1.0000	
1.0000					
SFRAC	0.0	0.0	0.0	0.0	0.0
ENTHALPY:					
CAL/MOL	-5.5224+04	-5.5411+04	-5.5463+04	-5.5477+04	-
6.7420+04					
CAL/GM	-1064.2328	-1067.8492	-1068.8462	-1069.1209	-
1299.2774					
CAL/SEC	-6.5002+05	-6.5223+05	-6.5284+05	-6.5301+05	-
7.9359+05					
ENTROPY:					
CAL/MOL-K	-60.4107	-60.5819	-60.6339	-60.6492	-
86.4785					
CAL/GM-K	-1.1642	-1.1675	-1.1685	-1.1688	-
1.6666					
DENSITY:					
MOL/CC	9.0313-03	8.4279-03	8.1030-03	7.9872-03	
1.5922-02					
GM/CC	0.4686	0.4373	0.4205	0.4145	
0.8262					

AVG MW	51.8906	51.8906	51.8906	51.8906
51.8906				

STREAM SECTION

6 7 8 9 BIODIESL

STREAM ID	6	7	8	9	
BIODIESL					
FROM :	V-1	VAP	VAP	DISTL-1	H-5
TO :	VAP	H-2	DISTL-1	DISTL-2	----
SUBSTREAM: MIXED					
PHASE:	LIQUID	VAPOR	LIQUID	LIQUID	
LIQUID					
COMPONENTS: KMOL/HR					
OLEIC-01	0.0	0.0	0.0	0.0	0.0
METHNOL	38.4496	36.0142	2.4354	2.4354	
1.4783-16					
TRIOLEIN	5.6810-03	1.0105-04	5.5799-03	4.5645-05	
5.5343-03					
WATER	0.0	0.0	0.0	0.0	0.0
METHY-01	2.9396	2.1009-04	2.9394	9.1323-02	
2.8481					
GLYCEROL	0.9799	7.8731-04	0.9791	0.9732	
5.8639-03					
TOTAL FLOW:					
KMOL/HR	42.3748	36.0153	6.3595	3.5000	
2.8595					
KG/HR	2198.8500	1154.1973	1044.6527	194.7809	
849.8718					
L/MIN	44.4780	1.7686+04	21.0479	3.4124	
16.3446					
STATE VARIABLES:					
TEMP C	27.2055	90.0000	90.0000	71.8221	
25.0000					
PRES BAR	1.0133	1.0133	1.0133	1.0133	
1.0133					
VFRAC	0.0	1.0000	0.0	0.0	0.0
LFRAC	1.0000	0.0	1.0000	1.0000	
1.0000					
SFRAC	0.0	0.0	0.0	0.0	0.0
ENTHALPY:					
CAL/MOL	-6.7420+04	-4.7300+04	-1.2173+05	-8.6877+04	-
1.7404+05					
CAL/GM	-1299.2774	-1475.9501	-741.0649	-1561.0897	-
585.5855					
CAL/SEC	-7.9359+05	-4.7320+05	-2.1504+05	-8.4464+04	-
1.3824+05					
ENTROPY:					
CAL/MOL-K	-86.1423	-28.8052	-236.6938	-86.3114	-
452.2650					
CAL/GM-K	-1.6601	-0.8988	-1.4409	-1.5509	-
1.5217					
DENSITY:					
MOL/CC	1.5879-02	3.3940-05	5.0357-03	1.7094-02	
2.9158-03					

GM/CC	0.8239	1.0877-03	0.8272	0.9513
0.8666				
AVG MW	51.8906	32.0474	164.2676	55.6517
297.2144				

STREAM SECTION

GLYCEROL ME-RCV-2 METH-RCV METHANOL TAG

```

-----
STREAM ID          GLYCEROL    ME-RCV-2    METH-RCV    METHANOL    TAG
FROM :            H-4          H-3          H-2          ----        ----
TO   :            ----          ----          ----          MIXER-1
MIXER-1

SUBSTREAM: MIXED
PHASE:            LIQUID      LIQUID      LIQUID      LIQUID
LIQUID
COMPONENTS: KMOL/HR
  OLEIC-01         0.0          0.0          0.0          0.0          0.0
  METHNOL          1.0354       1.4000       36.0142      41.3892      0.0
  TRIOLEIN        4.5622-05    2.2705-08    1.0105-04     0.0
0.9855
  WATER           0.0          0.0          0.0          0.0          0.0
  METHY-01        9.1323-02    4.1550-08    2.1009-04     0.0          0.0
  GLYCEROL        0.9732       9.2247-06    7.8731-04     0.0          0.0

TOTAL FLOW:
  KMOL/HR          2.1000       1.4000       36.0153      41.3892
0.9855
  KG/HR            149.9213     44.8596     1154.1973    1326.2000
872.6500
  L/MIN            2.3583       0.9429       24.2613      27.8758
16.0234
STATE VARIABLES:
  TEMP   C         25.0000      25.0000      25.0000      25.0000
25.0000
  PRES   BAR        1.0133       1.0133       1.0133       1.0133
1.0133
  VFRAC          0.0          0.0          0.0          0.0          0.0
  LFRAC          1.0000      1.0000       1.0000       1.0000
1.0000
  SFRAC          0.0          0.0          0.0          0.0          0.0
ENTHALPY:
  CAL/MOL        -1.0957+05   -5.6990+04   -5.6993+04   -5.6989+04   -
4.8084+05
  CAL/GM         -1534.7800   -1778.5661   -1778.4045   -1778.5680   -
543.0479
  CAL/SEC        -6.3916+04   -2.2163+04   -5.7017+05   -6.5520+05   -
1.3164+05
ENTROPY:
  CAL/MOL-K       -114.4126    -57.5407     -57.5474     -57.5402    -
1358.8747
  CAL/GM-K        -1.6026     -1.7958      -1.7957      -1.7958     -
1.5347
DENSITY:
  MOL/CC          1.4841-02    2.4746-02    2.4741-02    2.4746-02
1.0251-03
  GM/CC           1.0595       0.7929       0.7929       0.7929
0.9077
  AVG MW          71.3911      32.0426      32.0474      32.0422
885.4492

```

PROBLEM STATUS SECTION

BLOCK STATUS

```
*****
***
*
*
* Calculations were completed normally
*
*
* All Unit Operation blocks were completed normally
*
*
* All streams were flashed normally
*
*
*
*****
***
```


OCTOBER 26, 2017
THURSDAY
9:22:56 A.M.

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RUN CONTROL SECTION

RUN CONTROL INFORMATION

THIS COPY OF ASPEN PLUS LICENSED TO UNIVERSITY OF OTAGO

TYPE OF RUN: NEW

INPUT FILE NAME: _2212wcm.inm

OUTPUT PROBLEM DATA FILE NAME: _2212wcm
LOCATED IN:

PDF SIZE USED FOR INPUT TRANSLATION:

NUMBER OF FILE RECORDS (PSIZE) = 0
NUMBER OF IN-CORE RECORDS = 256
PSIZE NEEDED FOR SIMULATION = 256

CALLING PROGRAM NAME: apmain
LOCATED IN: C:\Program Files (x86)\AspenTech\Aspen Plus
V10.0\Engine\XeEq

SIMULATION REQUESTED FOR ENTIRE FLOWSHEET

FLOWSHEET SECTION

FLOWSHEET CONNECTIVITY BY STREAMS

STREAM	SOURCE	DEST	STREAM	SOURCE	DEST
METH-F	----	MIXER-2	WATER	----	MIXER-1
TAG	----	MIXER-1	5-1	H-1	V-1
8	P-3	EST-1	9	EST-1	EST-2
12	H-2	V-2	7	MIXER-2	P-3
1	MIXER-1	P-1	1-P	P-1	HDR-1
6	V-1	DECANT	AQ-PHSE	DECANT	----
FA	DECANT	MIXER-2	2	HDR-1	HDR-2
3	HDR-2	HDR-3	10	EST-2	EST-3
13	V-2	VAP	16	DISTL	H-5
17	DISTL	H-4	14	VAP	DISTL
15	VAP	H-3	11	EST-3	H-2
4	HDR-3	HDR-4	METH-RCV	H-5	----
WATER-RC	H-4	----	BIODIESL	H-3	----
5	HDR-4	H-1			

FLOWSHEET CONNECTIVITY BY BLOCKS

BLOCK	INLETS	OUTLETS
H-1	5	5-1
P-3	7	8
EST-1	8	9
H-2	11	12
MIXER-2	FA METH-F	7
MIXER-1	TAG WATER	1
P-1	1	1-P
V-1	5-1	6
DECANT	6	AQ-PHSE FA
HDR-1	1-P	2
HDR-2	2	3
EST-2	9	10
V-2	12	13
DISTL	14	16 17
VAP	13	14 15
EST-3	10	11
HDR-3	3	4
H-5	16	METH-RCV
H-4	17	WATER-RC
H-3	15	BIODIESL
HDR-4	4	5

COMPUTATIONAL SEQUENCE

SEQUENCE USED WAS:

MIXER-1 P-1 HDR-1 HDR-2 HDR-3 HDR-4 H-1 V-1 DECANT MIXER-2 P-3 EST-1
EST-2 EST-3 H-2 V-2 VAP DISTL H-5 H-4 H-3

OVERALL FLOWSHEET BALANCE

FLOWSHEET SECTION

OVERALL FLOWSHEET BALANCE (CONTINUED)

	***	MASS AND ENERGY BALANCE	***	
	IN	OUT	GENERATION	RELATIVE
DIFF.				
CONVENTIONAL COMPONENTS				
(KMOL/HR)				
OLEIC-01	0.00000	0.407557E-01	0.407557E-01	-
0.422234E-13				
METHNOL	57.0142	54.2086	-2.80556	
0.339231E-12				
TRIOLEIN	0.953454	0.468275E-02	-0.948771	-
0.175146E-13				
WATER	51.3164	51.2756	-0.407557E-01	-
0.364158E-12				
METHY-01	0.00000	2.80556	2.80556	-
0.233002E-12				
GLYCEROL	0.00000	0.948771	0.948771	
0.00000				
TOTAL BALANCE				
MOLE (KMOL/HR)	109.284	109.284	-0.370797E-14	
0.00000				
MASS (KG/HR)	3595.57	3595.57		
0.204888E-13				
ENTHALPY (CAL/SEC)	-0.200253E+07	-0.200962E+07		
0.353231E-02				

*** CO2 EQUIVALENT SUMMARY ***		
FEED STREAMS CO2E	0.00000	KG/HR
PRODUCT STREAMS CO2E	0.00000	KG/HR
NET STREAMS CO2E PRODUCTION	0.00000	KG/HR
UTILITIES CO2E PRODUCTION	0.00000	KG/HR
TOTAL CO2E PRODUCTION	0.00000	KG/HR

PHYSICAL PROPERTIES SECTION

COMPONENTS

ID	TYPE	ALIAS	NAME
OLEIC-01	C	C18H34O2	OLEIC-ACID
METHNOL	C	CH4O	METHANOL
TRIOLEIN	C	C57H104O6	TRIOLEIN
WATER	C	H2O	WATER
METHY-01	C	C19H36O2	METHYL-OLEATE
GLYCEROL	C	C3H8O3	GLYCEROL

REACTION SECTION

REACTION: R-2 TYPE: POWERLAW

Unit operations referencing this reaction model:

Reactor Name	Block Type	Reactor Name	Block Type
EST-1	RCSTR	EST-2	RCSTR
EST-3	RCSTR		

REACTION: R-3 TYPE: POWERLAW

Unit operations referencing this reaction model:

Reactor Name	Block Type	Reactor Name	Block Type
HDR-1	RCSTR	HDR-2	RCSTR
HDR-3	RCSTR	HDR-4	RCSTR

U-O-S BLOCK SECTION

BLOCK: DECANT MODEL: SEP

INLET STREAM: 6
OUTLET STREAMS: AQ-PHSE FA
PROPERTY OPTION SET: NRTL-RK RENON (NRTL) / REDLICH-KWONG

	***	MASS AND ENERGY BALANCE	***	
		IN	OUT	RELATIVE
DIFF.				
TOTAL BALANCE				
MOLE (KMOL/HR)		52.2699	52.2699	
0.135937E-15				
MASS (KG/HR)		1768.71	1768.71	0.00000
ENTHALPY (CAL/SEC)		-0.111544E+07	-0.111543E+07	-
0.907593E-05				

*** CO2 EQUIVALENT SUMMARY ***		
FEED STREAMS CO2E	0.00000	KG/HR
PRODUCT STREAMS CO2E	0.00000	KG/HR
NET STREAMS CO2E PRODUCTION	0.00000	KG/HR
UTILITIES CO2E PRODUCTION	0.00000	KG/HR
TOTAL CO2E PRODUCTION	0.00000	KG/HR

*** INPUT DATA ***

FLASH SPECS FOR STREAM AQ-PHSE

TWO PHASE TP FLASH	
PRESSURE DROP BAR	0.0
MAXIMUM NO. ITERATIONS	30
CONVERGENCE TOLERANCE	0.000100000

FLASH SPECS FOR STREAM FA

TWO PHASE TP FLASH	
PRESSURE DROP BAR	0.0
MAXIMUM NO. ITERATIONS	30
CONVERGENCE TOLERANCE	0.000100000

FRACTION OF FEED

SUBSTREAM= MIXED	
STREAM= AQ-PHSE CPT= OLEIC-01 FRACTION=	0.000100000
	0.000100000
	1.00000
	1.00000

U-O-S BLOCK SECTION

BLOCK: DECANT MODEL: SEP (CONTINUED)

*** RESULTS ***

HEAT DUTY CAL/SEC 10.124

COMPONENT = OLEIC-01

STREAM	SUBSTREAM	SPLIT FRACTION
AQ-PHSE	MIXED	0.000100000
FA	MIXED	0.99990

COMPONENT = TRIOLEIN

STREAM	SUBSTREAM	SPLIT FRACTION
AQ-PHSE	MIXED	0.000100000
FA	MIXED	0.99990

COMPONENT = WATER

STREAM	SUBSTREAM	SPLIT FRACTION
AQ-PHSE	MIXED	1.00000

COMPONENT = GLYCEROL

STREAM	SUBSTREAM	SPLIT FRACTION
AQ-PHSE	MIXED	1.00000

BLOCK: DISTL MODEL: RADFRAC

INLETS	STAGE
- 14	2
OUTLETS - 16	STAGE 1
17	STAGE 10

PROPERTY OPTION SET: NRTL-RK RENON (NRTL) / REDLICH-KWONG

*** MASS AND ENERGY BALANCE ***

	IN	OUT	RELATIVE
DIFF.			
TOTAL BALANCE			
MOLE (KMOL/HR)	56.6888	56.6888	0.00000
MASS (KG/HR)	1784.98	1784.98	
0.275144E-13			
ENTHALPY (CAL/SEC)	-743648.	-890874.	0.165261

*** CO2 EQUIVALENT SUMMARY ***

FEED STREAMS CO2E	0.00000	KG/HR
PRODUCT STREAMS CO2E	0.00000	KG/HR
NET STREAMS CO2E PRODUCTION	0.00000	KG/HR
UTILITIES CO2E PRODUCTION	0.00000	KG/HR
TOTAL CO2E PRODUCTION	0.00000	KG/HR

U-O-S BLOCK SECTION

BLOCK: DISTL MODEL: RADFRAC (CONTINUED)

**** INPUT DATA ****

**** INPUT PARAMETERS ****

NUMBER OF STAGES	10
ALGORITHM OPTION	STANDARD
ABSORBER OPTION	NO
INITIALIZATION OPTION	STANDARD
HYDRAULIC PARAMETER CALCULATIONS	NO
INSIDE LOOP CONVERGENCE METHOD	BROYDEN
DESIGN SPECIFICATION METHOD	NESTED
MAXIMUM NO. OF OUTSIDE LOOP ITERATIONS	25
MAXIMUM NO. OF INSIDE LOOP ITERATIONS	10
MAXIMUM NUMBER OF FLASH ITERATIONS	30
FLASH TOLERANCE	0.000100000
OUTSIDE LOOP CONVERGENCE TOLERANCE	0.000100000

**** COL-SPECS ****

MOLAR VAPOR DIST / TOTAL DIST	0.0
MOLAR REFLUX RATIO	10.0000
MOLAR DISTILLATE RATE KMOL/HR	56.0000

**** PROFILES ****

P-SPEC	STAGE	1	PRES, BAR	1.01325
--------	-------	---	-----------	---------

**** RESULTS ****

*** COMPONENT SPLIT FRACTIONS ***

		OUTLET STREAMS

	16	17
COMPONENT:		
OLEIC-01	.21153E-07	1.0000
METHNOL	1.0000	.88067E-07
TRIOLEIN	.19182E-03	.99981
WATER	.76018	.23982

U-O-S BLOCK SECTION

BLOCK: DISTL MODEL: RADFRAC (CONTINUED)

*** COMPONENT SPLIT FRACTIONS ***

	OUTLET STREAMS	
	16	17
COMPONENT:		
METHY-01	.13234E-06	1.0000

*** SUMMARY OF KEY RESULTS ***

TOP STAGE TEMPERATURE	C	65.1152
BOTTOM STAGE TEMPERATURE	C	101.120
TOP STAGE LIQUID FLOW	KMOL/HR	560.000
BOTTOM STAGE LIQUID FLOW	KMOL/HR	0.68881
TOP STAGE VAPOR FLOW	KMOL/HR	0.0
BOILUP VAPOR FLOW	KMOL/HR	479.537
MOLAR REFLUX RATIO		10.0000
MOLAR BOILUP RATIO		696.179
CONDENSER DUTY (W/O SUBCOOL)	CAL/SEC	-1,446,900.
REBOILER DUTY	CAL/SEC	1,299,670.

**** MAXIMUM FINAL RELATIVE ERRORS ****

DEW POINT	0.13304E-04	STAGE= 6
BUBBLE POINT	0.17685E-03	STAGE= 5
COMPONENT MASS BALANCE	0.45387E-05	STAGE= 10 COMP=METHY-01
ENERGY BALANCE	0.42096E-03	STAGE= 6

**** PROFILES ****

NOTE REPORTED VALUES FOR STAGE LIQUID AND VAPOR RATES ARE THE FLOWS FROM THE STAGE INCLUDING ANY SIDE PRODUCT.

STAGE	TEMPERATURE C	PRESSURE BAR	ENTHALPY CAL/MOL		HEAT DUTY CAL/SEC
			LIQUID	VAPOR	
1	65.115	1.0132	-56400.	-47733.	-.14469+07
2	65.990	1.0132	-57019.	-47944.	
3	68.185	1.0132	-58510.	-48455.	
9	100.01	1.0132	-66919.	-57161.	
10	101.12	1.0132	-70805.	-57157.	.12997+07

U-O-S BLOCK SECTION

BLOCK: DISTL MODEL: RADFRAC (CONTINUED)

STAGE RATE	FLOW RATE		FEED RATE			PRODUCT
	LIQUID	VAPOR	LIQUID	VAPOR	MIXED	LIQUID
	KMOL/HR			KMOL/HR		KMOL/HR
VAPOR						
1	616.0	0.000				56.0000
2	548.1	616.0			56.6888	
3	533.5	547.4				
9	480.2	480.0				
10	0.6888	479.5				0.6888

**** MASS FLOW PROFILES ****

STAGE RATE	FLOW RATE		FEED RATE			PRODUCT
	LIQUID	VAPOR	LIQUID	VAPOR	MIXED	LIQUID
	KG/HR			KG/HR		KG/HR
VAPOR						
1	0.1941E+05	0.000				1764.9045
2	0.1686E+05	0.1941E+05			1784.9791	
3	0.1541E+05	0.1684E+05				
9	8661.	8649.				
10	20.07	8641.				20.0746

		**** MOLE-X-PROFILE ****			
STAGE	OLEIC-01	METHNOL	TRIOLEIN	WATER	
METHY-01					
1	0.39637E-13	0.96250	0.19984E-08	0.37500E-01	
0.60520E-10					
2	0.19144E-06	0.90708	0.10662E-05	0.92876E-01	
0.46721E-04					
3	0.19670E-06	0.77375	0.10956E-05	0.22620	
0.48006E-04					
9	0.21957E-06	0.50993E-04	0.44458E-05	0.99989	
0.54538E-04					
10	0.15234E-03	0.68913E-05	0.84681E-03	0.96181	
0.37179E-01					

		**** MOLE-Y-PROFILE ****			
STAGE	OLEIC-01	METHNOL	TRIOLEIN	WATER	
METHY-01					
1	0.76464E-20	0.98485	0.37782E-11	0.15149E-01	
0.73610E-16					
2	0.39637E-13	0.96250	0.19984E-08	0.37500E-01	
0.60520E-10					
3	0.48970E-13	0.90822	0.20283E-08	0.91783E-01	
0.73332E-10					
9	0.13877E-11	0.38394E-03	0.16623E-07	0.99962	
0.16259E-08					
10	0.10621E-08	0.51056E-04	0.32358E-05	0.99994	
0.12122E-05					

**** K-VALUES ****

STAGE	OLEIC-01	METHNOL	TRIOLEIN	WATER
METHY-01				
1	0.19292E-06	1.0232	0.18906E-02	0.40397
0.12164E-05				
2	0.20705E-06	1.0611	0.18744E-02	0.40377
0.12954E-05				
3	0.24895E-06	1.1738	0.18513E-02	0.40575
0.15275E-05				
9	0.63203E-05	7.5293	0.37391E-02	0.99973
0.29812E-04				
10	0.69720E-05	7.4088	0.38212E-02	1.0396
0.32605E-04				

STAGE	OLEIC-01	**** MASS-X-PROFILE ****		
		METHNOL	TRIOLEIN	WATER
METHY-01				
1	0.35525E-12	0.97856	0.56145E-07	0.21436E-01
0.56935E-09				
2	0.17584E-05	0.94511	0.30697E-04	0.54408E-01
0.45045E-03				
3	0.19237E-05	0.85838	0.33588E-04	0.14109
0.49280E-03				
9	0.34389E-05	0.90597E-04	0.21827E-03	0.99879
0.89660E-03				
10	0.14765E-02	0.75766E-05	0.25728E-01	0.59455
0.37824				

U-O-S BLOCK SECTION

BLOCK: DISTL MODEL: RADFRAC (CONTINUED)

STAGE	OLEIC-01	METHNOL	TRIOLEIN	WATER
METHY-01				
1	0.67856E-19	0.99143	0.10510E-09	0.85741E-02
2	0.35525E-12	0.97856	0.56145E-07	0.21436E-01
3	0.44977E-12	0.94624	0.58397E-07	0.53764E-01
9	0.21752E-10	0.68268E-03	0.81677E-06	0.99932
10	0.16650E-07	0.90789E-04	0.15900E-03	0.99973

BLOCK: EST-1 MODEL: RCSTR

INLET STREAM: 8
OUTLET STREAM: 9
PROPERTY OPTION SET: NRTL-RK RENON (NRTL) / REDLICH-KWONG

	IN	OUT	GENERATION	RELATIVE
DIFF.				
TOTAL BALANCE				
MOLE (KMOL/HR)	59.8649	59.8649	0.312250E-14	-
MASS (KG/HR)	2634.91	2634.91		-
ENTHALPY (CAL/SEC)	-0.105212E+07	-880499.		-

	CO2 EQUIVALENT	SUMMARY
FEED STREAMS CO2E	0.00000	KG/HR
PRODUCT STREAMS CO2E	0.00000	KG/HR
NET STREAMS CO2E PRODUCTION	0.00000	KG/HR
UTILITIES CO2E PRODUCTION	0.00000	KG/HR
TOTAL CO2E PRODUCTION	0.00000	KG/HR

*** INPUT DATA ***

REACTOR TYPE: TEMP SPEC TWO PHASE REACTOR

RESIDENCE TIME	HR	1.0000
REACTOR TEMPERATURE	C	250.00
REACTOR PRESSURE	BAR	81.000

REACTION PARAGRAPH	ID: R-2	TYPE: POWERLAW
GLOBAL BASES:		
KBASIS		MOLE-GAMMA
CBASIS		MOLARITY
SBASIS		GLOBAL

STOICHIOMETRY:

REACTION NUMBER:		1			
SUBSTREAM: MIXED					
	OLEIC-01	-1.0000	METHNOL	-1.0000	WATER
1.0000	METHY-01	1.0000			

U-O-S BLOCK SECTION

BLOCK: EST-1 MODEL: RCSTR (CONTINUED)

REAC-DATA ENTRIES:

REACTION NO	TYPE	PHASE	DELT C	BASIS
1	KINETIC	L	0.0000	MOLARITY

RATE PARAMETERS:

REACTION NO	PREEXP. FACTOR	ACT. ENERGY CAL/MOL	TEMP. EXPONENT	REF.
1	0.13600	5249.8	0.0000	C

POWERLAW EXPONENTS:

REACTION NUMBER: 1
SUBSTREAM: MIXED
OLEIC-01 1.0000

*** RESULTS ***

REACTOR HEAT DUTY	CAL/SEC	
0.17162E+06		
REACTOR VOLUME	L	6027.4
VAPOR PHASE VOLUME FRACTION		
0.32522E-02		
VAPOR PHASE VOLUME	L	19.603
LIQUID PHASE VOLUME	L	6007.8

BLOCK: EST-2 MODEL: RCSTR

INLET STREAM: 9
OUTLET STREAM: 10
PROPERTY OPTION SET: NRTL-RK RENON (NRTL) / REDLICH-KWONG

*** MASS AND ENERGY BALANCE ***

	IN	OUT	GENERATION	RELATIVE
DIFF.				
TOTAL BALANCE				
MOLE (KMOL/HR)	59.8649	59.8649	-0.390313E-15	
0.00000				
MASS (KG/HR)	2634.91	2634.91		
0.00000				
ENTHALPY (CAL/SEC)	-880499.	-879156.		-
0.152572E-02				

U-O-S BLOCK SECTION

BLOCK: EST-2 MODEL: RCSTR (CONTINUED)

*** CO2 EQUIVALENT SUMMARY ***

FEED STREAMS CO2E	0.00000	KG/HR
PRODUCT STREAMS CO2E	0.00000	KG/HR
NET STREAMS CO2E PRODUCTION	0.00000	KG/HR
UTILITIES CO2E PRODUCTION	0.00000	KG/HR
TOTAL CO2E PRODUCTION	0.00000	KG/HR

*** INPUT DATA ***

REACTOR TYPE: TEMP SPEC TWO PHASE REACTOR

RESIDENCE TIME	HR	1.0000
REACTOR TEMPERATURE	C	250.00
REACTOR PRESSURE	BAR	81.000

REACTION PARAGRAPH	ID: R-2	TYPE: POWERLAW
GLOBAL BASES:		
KBASIS		MOLE-GAMMA
CBASIS		MOLARITY
SBASIS		GLOBAL

STOICHIOMETRY:

REACTION NUMBER:	1			
SUBSTREAM: MIXED				
1.0000 OLEIC-01	-1.0000	METHNOL	-1.0000	WATER
METHY-01	1.0000			

REAC-DATA ENTRIES:

REACTION NO	TYPE	PHASE	DELT C	BASIS
1	KINETIC	L	0.0000	MOLARITY

RATE PARAMETERS:

REACTION NO	PREEXP. FACTOR	ACT. ENERGY CAL/MOL	TEMP. EXPONENT	REF. C
1	0.13600	5249.8	0.0000	

POWERLAW EXPONENTS:

REACTION NUMBER:	1
SUBSTREAM: MIXED	
OLEIC-01	1.0000

*** RESULTS ***

REACTOR HEAT DUTY	CAL/SEC	1343.4
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REACTOR VOLUME	L	6049.8
VAPOR PHASE VOLUME FRACTION		
0.27867E-02		
VAPOR PHASE VOLUME	L	16.859
LIQUID PHASE VOLUME	L	6033.0

U-O-S BLOCK SECTION

BLOCK: EST-2 MODEL: RCSTR (CONTINUED)

BLOCK: EST-3 MODEL: RCSTR

INLET STREAM: 10
OUTLET STREAM: 11
PROPERTY OPTION SET: NRTL-RK RENON (NRTL) / REDLICH-KWONG

	***	MASS AND ENERGY BALANCE	***	
		IN	OUT	GENERATION RELATIVE
DIFF.				
TOTAL BALANCE				
MOLE (KMOL/HR)	59.8649	59.8649	-0.536680E-15	
0.00000				
MASS (KG/HR)	2634.91	2634.91		
0.172585E-15				
ENTHALPY (CAL/SEC)	-879156.	-878831.		-
0.369759E-03				

*** CO2 EQUIVALENT SUMMARY ***		
FEED STREAMS CO2E	0.00000	KG/HR
PRODUCT STREAMS CO2E	0.00000	KG/HR
NET STREAMS CO2E PRODUCTION	0.00000	KG/HR
UTILITIES CO2E PRODUCTION	0.00000	KG/HR
TOTAL CO2E PRODUCTION	0.00000	KG/HR

*** INPUT DATA ***

REACTOR TYPE: TEMP SPEC TWO PHASE REACTOR

RESIDENCE TIME	HR	1.0000
REACTOR TEMPERATURE	C	250.00
REACTOR PRESSURE	BAR	81.000

REACTION PARAGRAPH	ID: R-2	TYPE: POWERLAW
GLOBAL BASES:		
KBASIS		MOLE-GAMMA
CBASIS		MOLARITY
SBASIS		GLOBAL

STOICHIOMETRY:

REACTION NUMBER:	1			
SUBSTREAM: MIXED				
OLEIC-01	-1.0000	METHNOL	-1.0000	WATER
1.0000	METHY-01	1.0000		

REAC-DATA ENTRIES:

REACTION NO	TYPE	PHASE	DELT C	BASIS
1	KINETIC	L	0.0000	MOLARITY

U-O-S BLOCK SECTION

BLOCK: EST-3 MODEL: RCSTR (CONTINUED)

RATE PARAMETERS:

REACTION NO	PREEXP. FACTOR	ACT. ENERGY	TEMP. EXPONENT	REF.
1	0.13600	5249.8	0.0000	C

POWERLAW EXPONENTS:

REACTION NUMBER: 1
SUBSTREAM: MIXED
OLEIC-01 1.0000

*** RESULTS ***

REACTOR HEAT DUTY	CAL/SEC	325.08
REACTOR VOLUME	L	6055.3
VAPOR PHASE VOLUME FRACTION		
0.26852E-02		
VAPOR PHASE VOLUME	L	16.260
LIQUID PHASE VOLUME	L	6039.0

BLOCK: H-1 MODEL: HEATER

INLET STREAM: 5
OUTLET STREAM: 5-1
PROPERTY OPTION SET: NRTL-RK RENON (NRTL) / REDLICH-KWONG

*** MASS AND ENERGY BALANCE ***

	IN	OUT	RELATIVE
DIFF.			
TOTAL BALANCE			
MOLE (KMOL/HR)	52.2699	52.2699	0.00000
MASS (KG/HR)	1768.71	1768.71	0.00000
ENTHALPY (CAL/SEC)	-0.101263E+07	-0.111544E+07	
0.921648E-01			

*** CO2 EQUIVALENT SUMMARY ***

FEED STREAMS CO2E	0.00000	KG/HR
PRODUCT STREAMS CO2E	0.00000	KG/HR
NET STREAMS CO2E PRODUCTION	0.00000	KG/HR
UTILITIES CO2E PRODUCTION	0.00000	KG/HR
TOTAL CO2E PRODUCTION	0.00000	KG/HR

U-O-S BLOCK SECTION

BLOCK: H-1 MODEL: HEATER (CONTINUED)

*** INPUT DATA ***

TWO PHASE TP FLASH
SPECIFIED TEMPERATURE C 25.0000
SPECIFIED PRESSURE BAR 70.0000
MAXIMUM NO. ITERATIONS 30
CONVERGENCE TOLERANCE
0.000100000

*** RESULTS ***

OUTLET TEMPERATURE C 25.000
OUTLET PRESSURE BAR 70.000
HEAT DUTY CAL/SEC -0.10280E+06
OUTLET VAPOR FRACTION 0.0000

V-L PHASE EQUILIBRIUM :

COMP	F(I)	X(I)	Y(I)	K(I)
OLEIC-01	0.54454E-01	0.54454E-01	0.21496E-07	
0.11420E-09				
TRIOLEIN	0.89588E-04	0.89588E-04	0.11356	
0.75824				
WATER	0.92730	0.92730	0.88644	
0.24238E-03				
GLYCEROL	0.18151E-01	0.18151E-01	0.17389E-06	
0.25212E-08				

BLOCK: H-2 MODEL: HEATER

INLET STREAM: 11
OUTLET STREAM: 12
PROPERTY OPTION SET: NRTL-RK RENON (NRTL) / REDLICH-KWONG

*** MASS AND ENERGY BALANCE ***

	IN	OUT	RELATIVE
DIFF.			
TOTAL BALANCE			
MOLE (KMOL/HR)	59.8649	59.8649	0.00000
MASS (KG/HR)	2634.91	2634.91	0.00000
ENTHALPY (CAL/SEC)	-878831.	-0.104853E+07	0.161846

U-O-S BLOCK SECTION

BLOCK: H-2 MODEL: HEATER (CONTINUED)

*** CO2 EQUIVALENT SUMMARY ***

FEED STREAMS CO2E	0.00000	KG/HR
PRODUCT STREAMS CO2E	0.00000	KG/HR
NET STREAMS CO2E PRODUCTION	0.00000	KG/HR
UTILITIES CO2E PRODUCTION	0.00000	KG/HR
TOTAL CO2E PRODUCTION	0.00000	KG/HR

*** INPUT DATA ***

TWO PHASE TP FLASH
SPECIFIED TEMPERATURE C 25.0000
SPECIFIED PRESSURE BAR 81.0000
MAXIMUM NO. ITERATIONS 30
CONVERGENCE TOLERANCE
0.000100000

*** RESULTS ***

OUTLET TEMPERATURE	C	25.000
OUTLET PRESSURE	BAR	81.000
HEAT DUTY	CAL/SEC	-0.16970E+06
OUTLET VAPOR FRACTION		0.0000

V-L PHASE EQUILIBRIUM :

COMP	F(I)	X(I)	Y(I)	K(I)
OLEIC-01	0.67604E-03	0.67604E-03	0.59863E-10	
0.11477E-09				
METHNOL	0.90552	0.90552	0.90928	
0.13609E-02				
TRIOLEIN	0.78214E-04	0.78214E-04	0.79599E-01	
1.1499				
WATER	0.46865E-01	0.46865E-01	0.11119E-01	
0.32258E-03				
METHY-01	0.46865E-01	0.46865E-01	0.42322E-07	
0.11706E-08				

BLOCK: H-3 MODEL: HEATER

INLET STREAM: 15
OUTLET STREAM: BIODIESL
PROPERTY OPTION SET: NRTL-RK RENON (NRTL) / REDLICH-KWONG

*** MASS AND ENERGY BALANCE ***

	IN	OUT	RELATIVE
DIFF.			

U-O-S BLOCK SECTION

BLOCK: H-3 MODEL: HEATER (CONTINUED)

TOTAL BALANCE

MOLE (KMOL/HR)	3.17610	3.17610	0.00000
MASS (KG/HR)	849.933	849.933	0.00000
ENTHALPY (CAL/SEC)	-129093.	-142409.	

0.935078E-01

*** CO2 EQUIVALENT SUMMARY ***

FEED STREAMS CO2E	0.00000	KG/HR
PRODUCT STREAMS CO2E	0.00000	KG/HR
NET STREAMS CO2E PRODUCTION	0.00000	KG/HR
UTILITIES CO2E PRODUCTION	0.00000	KG/HR
TOTAL CO2E PRODUCTION	0.00000	KG/HR

*** INPUT DATA ***

TWO PHASE TP FLASH

SPECIFIED TEMPERATURE	C	25.0000
SPECIFIED PRESSURE	BAR	1.01325
MAXIMUM NO. ITERATIONS		30
CONVERGENCE TOLERANCE		

0.000100000

*** RESULTS ***

OUTLET TEMPERATURE	C	25.000
OUTLET PRESSURE	BAR	1.0132
HEAT DUTY	CAL/SEC	-13316.
OUTLET VAPOR FRACTION		0.0000

V-L PHASE EQUILIBRIUM :

COMP	F(I)	X(I)	Y(I)	K(I)
OLEIC-01	0.12709E-01	0.12709E-01	0.77323E-09	
METHNOL	0.97177E-01	0.97177E-01	0.97347	
TRIOLEIN	0.12905E-02	0.12905E-02	0.49781E-04	
WATER	0.13551E-01	0.13551E-01	0.26484E-01	
METHY-01	0.87527	0.87527	0.49486E-06	

BLOCK: H-4 MODEL: HEATER

INLET STREAM:	17
OUTLET STREAM:	WATER-RC
PROPERTY OPTION SET:	NRTL-RK RENON (NRTL) / REDLICH-KWONG

U-O-S BLOCK SECTION

BLOCK: H-4 MODEL: HEATER (CONTINUED)

	***	MASS AND ENERGY BALANCE	***	
		IN	OUT	RELATIVE
DIFF.				
TOTAL BALANCE				
MOLE (KMOL/HR)		0.688813	0.688813	0.00000
MASS (KG/HR)		20.0747	20.0747	-
0.353950E-15				
ENTHALPY (CAL/SEC)		-13547.5	-13874.6	
0.235759E-01				

*** CO2 EQUIVALENT SUMMARY ***		
FEED STREAMS CO2E	0.00000	KG/HR
PRODUCT STREAMS CO2E	0.00000	KG/HR
NET STREAMS CO2E PRODUCTION	0.00000	KG/HR
UTILITIES CO2E PRODUCTION	0.00000	KG/HR
TOTAL CO2E PRODUCTION	0.00000	KG/HR

*** INPUT DATA ***		
TWO PHASE TP FLASH		
SPECIFIED TEMPERATURE	C	25.0000
SPECIFIED PRESSURE	BAR	1.01325
MAXIMUM NO. ITERATIONS		30
CONVERGENCE TOLERANCE		
0.000100000		

*** RESULTS ***		
OUTLET TEMPERATURE	C	25.000
OUTLET PRESSURE	BAR	1.0132
HEAT DUTY	CAL/SEC	-327.11
OUTLET VAPOR FRACTION		0.0000

V-L PHASE EQUILIBRIUM :

COMP	F(I)	X(I)	Y(I)	K(I)
OLEIC-01	0.15234E-03	0.15234E-03	0.50297E-11	
0.10068E-08				
METHNOL	0.68913E-05	0.68913E-05	0.62234E-04	
0.27540				
TRIOLEIN	0.84681E-03	0.84681E-03	0.15898E-04	
0.57254E-03				
WATER	0.96181	0.96181	0.99992	
0.31704E-01				
METHY-01	0.37179E-01	0.37179E-01	0.11402E-07	
0.93525E-08				

U-O-S BLOCK SECTION

BLOCK: H-5 MODEL: HEATER

INLET STREAM: 16
OUTLET STREAM: METH-RCV
PROPERTY OPTION SET: NRTL-RK RENON (NRTL) / REDLICH-KWONG

*** MASS AND ENERGY BALANCE ***

	IN	OUT	RELATIVE
DIFF.			
TOTAL BALANCE			
MOLE (KMOL/HR)	56.0000	56.0000	0.00000
MASS (KG/HR)	1764.90	1764.90	
0.128831E-15			
ENTHALPY (CAL/SEC)	-877327.	-893329.	
0.179135E-01			

*** CO2 EQUIVALENT SUMMARY ***

FEED STREAMS CO2E	0.00000	KG/HR
PRODUCT STREAMS CO2E	0.00000	KG/HR
NET STREAMS CO2E PRODUCTION	0.00000	KG/HR
UTILITIES CO2E PRODUCTION	0.00000	KG/HR
TOTAL CO2E PRODUCTION	0.00000	KG/HR

*** INPUT DATA ***

TWO PHASE TP FLASH		
SPECIFIED TEMPERATURE	C	25.0000
SPECIFIED PRESSURE	BAR	1.01325
MAXIMUM NO. ITERATIONS		30
CONVERGENCE TOLERANCE		
0.000100000		

*** RESULTS ***

OUTLET TEMPERATURE	C	25.000
OUTLET PRESSURE	BAR	1.0132
HEAT DUTY	CAL/SEC	-16003.
OUTLET VAPOR FRACTION		0.0000

V-L PHASE EQUILIBRIUM :

	COMP	F(I)	X(I)	Y(I)	K(I)
0.10150E-08	OLEIC-01	0.39637E-13	0.39637E-13	0.24444E-21	
0.16906	METHNOL	0.96250	0.96250	0.98872	
0.64430E-03	TRIOLEIN	0.19984E-08	0.19984E-08	0.78234E-11	
0.49485E-01	WATER	0.37500E-01	0.37500E-01	0.11275E-01	
0.94321E-08	METHY-01	0.60520E-10	0.60520E-10	0.34684E-17	

U-O-S BLOCK SECTION

BLOCK: HDR-1 MODEL: RCSTR

INLET STREAM: 1-P
OUTLET STREAM: 2
PROPERTY OPTION SET: NRTL-RK RENON (NRTL) / REDLICH-KWONG

	***	MASS AND ENERGY BALANCE	***	
		IN	OUT	GENERATION RELATIVE
DIFF.				
TOTAL BALANCE				
MOLE (KMOL/HR)		52.2699	52.2699	-0.195156E-14
0.00000				
MASS (KG/HR)		1768.71	1768.71	
0.00000				
ENTHALPY (CAL/SEC)		-0.109568E+07	-0.100818E+07	-
0.798629E-01				

*** CO2 EQUIVALENT SUMMARY ***		
FEED STREAMS CO2E	0.00000	KG/HR
PRODUCT STREAMS CO2E	0.00000	KG/HR
NET STREAMS CO2E PRODUCTION	0.00000	KG/HR
UTILITIES CO2E PRODUCTION	0.00000	KG/HR
TOTAL CO2E PRODUCTION	0.00000	KG/HR

*** INPUT DATA ***

REACTOR TYPE: TEMP SPEC LIQUID PHASE REACTOR

RESIDENCE TIME	HR	1.0000
REACTOR TEMPERATURE	C	270.00
REACTOR PRESSURE	BAR	70.000

REACTION PARAGRAPH	ID: R-3	TYPE: POWERLAW
GLOBAL BASES:		
KBASIS		MOLE-GAMMA
CBASIS		MOLARITY
SBASIS		GLOBAL

STOICHIOMETRY:

REACTION NUMBER:	1				
SUBSTREAM: MIXED					
OLEIC-01	3.0000	TRIOLEIN	-1.0000	WATER	-
3.0000 GLYCEROL	1.0000				

REAC-DATA ENTRIES:

REACTION NO	TYPE	PHASE	DELT C	BASIS
1	KINETIC	L	0.0000	MOLARITY

U-O-S BLOCK SECTION

BLOCK: HDR-1 MODEL: RCSTR (CONTINUED)

RATE PARAMETERS:

REACTION NO	PREEXP. FACTOR	ACT. ENERGY	TEMP. EXPONENT	REF.
		CAL/MOL		C
1	327.70	13978.	0.0000	

POWERLAW EXPONENTS:

REACTION NUMBER: 1
SUBSTREAM: MIXED
TRIOLEIN 1.0000

*** RESULTS ***

REACTOR HEAT DUTY	CAL/SEC	87505.
REACTOR VOLUME	L	3002.3

BLOCK: HDR-2 MODEL: RCSTR

INLET STREAM: 2
OUTLET STREAM: 3
PROPERTY OPTION SET: NRTL-RK RENON (NRTL) / REDLICH-KWONG

*** MASS AND ENERGY BALANCE ***

	IN	OUT	GENERATION	RELATIVE
DIFF.				
TOTAL BALANCE				
MOLE (KMOL/HR)	52.2699	52.2699	-0.419586E-14	
0.00000				
MASS (KG/HR)	1768.71	1768.71	-	
0.128553E-15				
ENTHALPY (CAL/SEC)	-0.100818E+07	-0.101152E+07		
0.329757E-02				

*** CO2 EQUIVALENT SUMMARY ***

FEED STREAMS CO2E	0.00000	KG/HR
PRODUCT STREAMS CO2E	0.00000	KG/HR
NET STREAMS CO2E PRODUCTION	0.00000	KG/HR
UTILITIES CO2E PRODUCTION	0.00000	KG/HR
TOTAL CO2E PRODUCTION	0.00000	KG/HR

*** INPUT DATA ***

REACTOR TYPE: TEMP SPEC LIQUID PHASE REACTOR

RESIDENCE TIME	HR	1.0000
REACTOR TEMPERATURE	C	270.00
REACTOR PRESSURE	BAR	70.000

U-O-S BLOCK SECTION

BLOCK: HDR-2 MODEL: RCSTR (CONTINUED)

REACTION PARAGRAPH ID: R-3 TYPE: POWERLAW
GLOBAL BASES:
KBASIS MOLE-GAMMA
CBASIS MOLARITY
SBASIS GLOBAL

STOICHIOMETRY:

REACTION NUMBER: 1
SUBSTREAM: MIXED
OLEIC-01 3.0000 TRIOLEIN -1.0000 WATER -
3.0000 GLYCEROL 1.0000

REAC-DATA ENTRIES:

REACTION NO	TYPE	PHASE	DELT C	BASIS
1	KINETIC	L	0.0000	MOLARITY

RATE PARAMETERS:

REACTION NO	PREEXP. FACTOR	ACT. ENERGY CAL/MOL	TEMP. EXPONENT	REF. C
1	327.70	13978.	0.0000	

POWERLAW EXPONENTS:

REACTION NUMBER: 1
SUBSTREAM: MIXED
TRIOLEIN 1.0000

*** RESULTS ***

REACTOR HEAT DUTY	CAL/SEC	-3335.5
REACTOR VOLUME	L	2920.5

BLOCK: HDR-3 MODEL: RCSTR

INLET STREAM: 3
OUTLET STREAM: 4
PROPERTY OPTION SET: NRTL-RK RENON (NRTL) / REDLICH-KWONG

*** MASS AND ENERGY BALANCE ***
IN OUT GENERATION RELATIVE

DIFF.

U-O-S BLOCK SECTION

BLOCK: HDR-3 MODEL: RCSTR (CONTINUED)

TOTAL BALANCE
MOLE (KMOL/HR) 52.2699 52.2699 0.207354E-14
0.00000
MASS (KG/HR) 1768.71 1768.71
0.00000
ENTHALPY (CAL/SEC) -0.101152E+07 -0.101240E+07
0.872340E-03

*** CO2 EQUIVALENT SUMMARY ***

FEED STREAMS CO2E 0.00000 KG/HR
PRODUCT STREAMS CO2E 0.00000 KG/HR
NET STREAMS CO2E PRODUCTION 0.00000 KG/HR
UTILITIES CO2E PRODUCTION 0.00000 KG/HR
TOTAL CO2E PRODUCTION 0.00000 KG/HR

*** INPUT DATA ***

REACTOR TYPE: TEMP SPEC LIQUID PHASE REACTOR

RESIDENCE TIME HR 1.0000
REACTOR TEMPERATURE C 270.00
REACTOR PRESSURE BAR 70.000

REACTION PARAGRAPH ID: R-3 TYPE: POWERLAW
GLOBAL BASES:
KBASIS MOLE-GAMMA
CBASIS MOLARITY
SBASIS GLOBAL

STOICHIOMETRY:

REACTION NUMBER: 1
SUBSTREAM: MIXED
OLEIC-01 3.0000 TRIOLEIN -1.0000 WATER -
3.0000 GLYCEROL 1.0000

REAC-DATA ENTRIES:

REACTION NO	TYPE	PHASE	DELT C	BASIS
1	KINETIC	L	0.0000	MOLARITY

RATE PARAMETERS:

REACTION NO	PREEXP. FACTOR	ACT. ENERGY CAL/MOL	TEMP. EXPONENT	REF. C
1	327.70	13978.	0.0000	

POWERLAW EXPONENTS:

REACTION NUMBER: 1
SUBSTREAM: MIXED
TRIOLEIN 1.0000

U-O-S BLOCK SECTION

BLOCK: HDR-3 MODEL: RCSTR (CONTINUED)

*** RESULTS ***

REACTOR HEAT DUTY	CAL/SEC	-883.16
REACTOR VOLUME	L	2900.3

BLOCK: HDR-4 MODEL: RCSTR

INLET STREAM: 4
OUTLET STREAM: 5
PROPERTY OPTION SET: NRTL-RK RENON (NRTL) / REDLICH-KWONG

*** MASS AND ENERGY BALANCE ***

	IN	OUT	GENERATION	RELATIVE
DIFF.				
TOTAL BALANCE				
MOLE (KMOL/HR)	52.2699	52.2699	-0.235712E-14	
0.00000				
MASS (KG/HR)	1768.71	1768.71		
0.00000				
ENTHALPY (CAL/SEC)	-0.101240E+07	-0.101263E+07		
0.230891E-03				

*** CO2 EQUIVALENT SUMMARY ***

FEED STREAMS CO2E	0.00000	KG/HR
PRODUCT STREAMS CO2E	0.00000	KG/HR
NET STREAMS CO2E PRODUCTION	0.00000	KG/HR
UTILITIES CO2E PRODUCTION	0.00000	KG/HR
TOTAL CO2E PRODUCTION	0.00000	KG/HR

*** INPUT DATA ***

REACTOR TYPE: TEMP SPEC LIQUID PHASE REACTOR

RESIDENCE TIME	HR	1.0000
REACTOR TEMPERATURE	C	270.00
REACTOR PRESSURE	BAR	70.000

REACTION PARAGRAPH	ID: R-3	TYPE: POWERLAW
GLOBAL BASES:		
KBASIS		MOLE-GAMMA
CBASIS		MOLARITY
SBASIS		GLOBAL

STOICHIOMETRY:

REACTION NUMBER:	1				
SUBSTREAM: MIXED					
OLEIC-01	3.0000	TRIOLEIN	-1.0000	WATER	-
3.0000 GLYCEROL	1.0000				

U-O-S BLOCK SECTION

BLOCK: HDR-4 MODEL: RCSTR (CONTINUED)

REAC-DATA ENTRIES:

REACTION NO	TYPE	PHASE	DELT C	BASIS
1	KINETIC	L	0.0000	MOLARITY

RATE PARAMETERS:

REACTION NO	PREEXP. FACTOR	ACT. ENERGY CAL/MOL	TEMP. EXPONENT	REF. C
1	327.70	13978.	0.0000	

POWERLAW EXPONENTS:

REACTION NUMBER: 1
SUBSTREAM: MIXED
TRIOLEIN 1.0000

*** RESULTS ***

REACTOR HEAT DUTY	CAL/SEC	-233.81
REACTOR VOLUME	L	2895.1

BLOCK: MIXER-1 MODEL: MIXER

INLET STREAMS: TAG WATER
OUTLET STREAM: 1
PROPERTY OPTION SET: NRTL-RK RENON (NRTL) / REDLICH-KWONG

*** MASS AND ENERGY BALANCE ***

	IN	OUT	RELATIVE
DIFF. TOTAL BALANCE			
MOLE (KMOL/HR)	52.2699	52.2699	0.00000
MASS (KG/HR)	1768.71	1768.71	0.00000
ENTHALPY (CAL/SEC)	-0.109997E+07	-0.109997E+07	-

0.211669E-15

*** CO2 EQUIVALENT SUMMARY ***

FEED STREAMS CO2E	0.00000	KG/HR
PRODUCT STREAMS CO2E	0.00000	KG/HR
NET STREAMS CO2E PRODUCTION	0.00000	KG/HR
UTILITIES CO2E PRODUCTION	0.00000	KG/HR
TOTAL CO2E PRODUCTION	0.00000	KG/HR

U-O-S BLOCK SECTION

BLOCK: MIXER-1 MODEL: MIXER (CONTINUED)

*** INPUT DATA ***

ONE PHASE FLASH SPECIFIED PHASE IS LIQUID
MAXIMUM NO. ITERATIONS 30
CONVERGENCE TOLERANCE 0.000100000
OUTLET PRESSURE BAR 1.01325

BLOCK: MIXER-2 MODEL: MIXER

INLET STREAMS: FA METH-F
OUTLET STREAM: 7
PROPERTY OPTION SET: NRTL-RK RENON (NRTL) / REDLICH-KWONG

*** MASS AND ENERGY BALANCE ***

	IN	OUT	RELATIVE
DIFF.			
TOTAL BALANCE			
MOLE (KMOL/HR)	59.8649	59.8649	0.00000
MASS (KG/HR)	2634.91	2634.91	0.00000
ENTHALPY (CAL/SEC)	-0.105797E+07	-0.105797E+07	-

0.220073E-15

*** CO2 EQUIVALENT SUMMARY ***

FEED STREAMS CO2E	0.00000	KG/HR
PRODUCT STREAMS CO2E	0.00000	KG/HR
NET STREAMS CO2E PRODUCTION	0.00000	KG/HR
UTILITIES CO2E PRODUCTION	0.00000	KG/HR
TOTAL CO2E PRODUCTION	0.00000	KG/HR

*** INPUT DATA ***

TWO PHASE FLASH
MAXIMUM NO. ITERATIONS 30
CONVERGENCE TOLERANCE 0.000100000
OUTLET PRESSURE BAR 1.01325

BLOCK: P-1 MODEL: PUMP

INLET STREAM: 1
OUTLET STREAM: 1-P
PROPERTY OPTION SET: NRTL-RK RENON (NRTL) / REDLICH-KWONG

U-O-S BLOCK SECTION

BLOCK: P-1 MODEL: PUMP (CONTINUED)

```

*** MASS AND ENERGY BALANCE ***
                                IN          OUT          RELATIVE
DIFF.
TOTAL BALANCE
  MOLE (KMOL/HR )           52.2699          52.2699          0.00000
  MASS (KG/HR   )           1768.71          1768.71          0.00000
  ENTHALPY (CAL/SEC )       -0.109997E+07    -0.109568E+07    -
0.389857E-02

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```

*** CO2 EQUIVALENT SUMMARY ***
FEED STREAMS CO2E           0.00000          KG/HR
PRODUCT STREAMS CO2E        0.00000          KG/HR
NET STREAMS CO2E PRODUCTION 0.00000          KG/HR
UTILITIES CO2E PRODUCTION    0.00000          KG/HR
TOTAL CO2E PRODUCTION        0.00000          KG/HR

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```

*** INPUT DATA ***
OUTLET PRESSURE BAR          70.0000
DRIVER EFFICIENCY            1.00000

FLASH SPECIFICATIONS:
LIQUID PHASE CALCULATION
NO FLASH PERFORMED
MAXIMUM NUMBER OF ITERATIONS 30
TOLERANCE                    0.000100000

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```

*** RESULTS ***
VOLUMETRIC FLOW RATE L/MIN    46.1683
PRESSURE CHANGE BAR           68.9867
NPSH AVAILABLE M-KGF/KG      15.6849
FLUID POWER KW                5.30834
BRAKE POWER KW                17.9543
ELECTRICITY KW                17.9543
PUMP EFFICIENCY USED          0.29566
NET WORK REQUIRED KW           17.9543
HEAD DEVELOPED M-KGF/KG      1,101.75

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BLOCK: P-3 MODEL: PUMP

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INLET STREAM:                7
OUTLET STREAM:               8
PROPERTY OPTION SET:  NRTL-RK  RENON (NRTL) / REDLICH-KWONG

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*** MASS AND ENERGY BALANCE ***
                                IN          OUT          RELATIVE
DIFF.

```

U-O-S BLOCK SECTION

BLOCK: P-3 MODEL: PUMP (CONTINUED)

TOTAL BALANCE

MOLE (KMOL/HR)	59.8649	59.8649	0.00000
MASS (KG/HR)	2634.91	2634.91	0.00000
ENTHALPY (CAL/SEC)	-0.105797E+07	-0.105212E+07	-

0.553087E-02

*** CO2 EQUIVALENT SUMMARY ***

FEED STREAMS CO2E	0.00000	KG/HR
PRODUCT STREAMS CO2E	0.00000	KG/HR
NET STREAMS CO2E PRODUCTION	0.00000	KG/HR
UTILITIES CO2E PRODUCTION	0.00000	KG/HR
TOTAL CO2E PRODUCTION	0.00000	KG/HR

*** INPUT DATA ***

OUTLET PRESSURE BAR	81.0000
DRIVER EFFICIENCY	1.00000

FLASH SPECIFICATIONS:

LIQUID PHASE CALCULATION

NO FLASH PERFORMED

MAXIMUM NUMBER OF ITERATIONS	30
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TOLERANCE	0.000100000
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*** RESULTS ***

VOLUMETRIC FLOW RATE L/MIN	54.3339
PRESSURE CHANGE BAR	79.9868
NPSH AVAILABLE M-KGF/KG	10.7160
FLUID POWER KW	7.24331
BRAKE POWER KW	24.4990
ELECTRICITY KW	24.4990
PUMP EFFICIENCY USED	0.29566
NET WORK REQUIRED KW	24.4990
HEAD DEVELOPED M-KGF/KG	1,009.14

BLOCK: V-1 MODEL: VALVE

INLET STREAM:	5-1
OUTLET STREAM:	6
PROPERTY OPTION SET:	NRTL-RK RENON (NRTL) / REDLICH-KWONG

*** MASS AND ENERGY BALANCE ***

	IN	OUT	RELATIVE
DIFF.			
TOTAL BALANCE			
MOLE (KMOL/HR)	52.2699	52.2699	0.00000
MASS (KG/HR)	1768.71	1768.71	0.00000
ENTHALPY (CAL/SEC)	-0.111544E+07	-0.111544E+07	0.00000

U-O-S BLOCK SECTION

BLOCK: V-1 MODEL: VALVE (CONTINUED)

*** CO2 EQUIVALENT SUMMARY ***

FEED STREAMS CO2E	0.00000	KG/HR
PRODUCT STREAMS CO2E	0.00000	KG/HR
NET STREAMS CO2E PRODUCTION	0.00000	KG/HR
UTILITIES CO2E PRODUCTION	0.00000	KG/HR
TOTAL CO2E PRODUCTION	0.00000	KG/HR

*** INPUT DATA ***

VALVE OUTLET PRESSURE	BAR	1.01325
VALVE FLOW COEF CALC.		NO

FLASH SPECIFICATIONS:

NPHASE	2
MAX NUMBER OF ITERATIONS	30
CONVERGENCE TOLERANCE	0.000100000

*** RESULTS ***

VALVE PRESSURE DROP	BAR	68.9867
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BLOCK: V-2 MODEL: VALVE

INLET STREAM:	12
OUTLET STREAM:	13
PROPERTY OPTION SET:	NRTL-RK RENON (NRTL) / REDLICH-KWONG

*** MASS AND ENERGY BALANCE ***

	IN	OUT	RELATIVE
DIFF.			
TOTAL BALANCE			
MOLE (KMOL/HR)	59.8649	59.8649	0.00000
MASS (KG/HR)	2634.91	2634.91	0.00000
ENTHALPY (CAL/SEC)	-0.104853E+07	-0.104853E+07	0.00000

*** CO2 EQUIVALENT SUMMARY ***

FEED STREAMS CO2E	0.00000	KG/HR
PRODUCT STREAMS CO2E	0.00000	KG/HR
NET STREAMS CO2E PRODUCTION	0.00000	KG/HR
UTILITIES CO2E PRODUCTION	0.00000	KG/HR
TOTAL CO2E PRODUCTION	0.00000	KG/HR

*** INPUT DATA ***

VALVE OUTLET PRESSURE	BAR	1.01325
VALVE FLOW COEF CALC.		NO

U-O-S BLOCK SECTION

BLOCK: V-2 MODEL: VALVE (CONTINUED)

FLASH SPECIFICATIONS:

NPHASE	2
MAX NUMBER OF ITERATIONS	30
CONVERGENCE TOLERANCE	0.000100000

*** RESULTS ***

VALVE PRESSURE DROP	BAR	79.9868
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BLOCK: VAP MODEL: FLASH2

INLET STREAM:	13
OUTLET VAPOR STREAM:	14
OUTLET LIQUID STREAM:	15
PROPERTY OPTION SET:	NRTL-RK RENON (NRTL) / REDLICH-KWONG

*** MASS AND ENERGY BALANCE ***

	IN	OUT	RELATIVE
DIFF.			
TOTAL BALANCE			
MOLE (KMOL/HR)	59.8649	59.8649	0.00000
MASS (KG/HR)	2634.91	2634.91	
0.949220E-14			
ENTHALPY (CAL/SEC)	-0.104853E+07	-872741.	-0.167654

*** CO2 EQUIVALENT SUMMARY ***

FEED STREAMS CO2E	0.00000	KG/HR
PRODUCT STREAMS CO2E	0.00000	KG/HR
NET STREAMS CO2E PRODUCTION	0.00000	KG/HR
UTILITIES CO2E PRODUCTION	0.00000	KG/HR
TOTAL CO2E PRODUCTION	0.00000	KG/HR

*** INPUT DATA ***

TWO PHASE TP FLASH	
SPECIFIED TEMPERATURE C	140.000
SPECIFIED PRESSURE BAR	1.01325
MAXIMUM NO. ITERATIONS	30
CONVERGENCE TOLERANCE	0.000100000

*** RESULTS ***

OUTLET TEMPERATURE	C	140.00
OUTLET PRESSURE	BAR	1.0132
HEAT DUTY	CAL/SEC	0.17579E+06
VAPOR FRACTION		0.94695

U-O-S BLOCK SECTION

BLOCK: VAP MODEL: FLASH2 (CONTINUED)

V-L PHASE EQUILIBRIUM :

COMP	F(I)	X(I)	Y(I)	K(I)
OLEIC-01	0.67604E-03	0.12709E-01	0.18510E-05	
0.14564E-03				
METHNOL	0.90552	0.97177E-01	0.95080	
9.7842				
TRIOLEIN	0.78214E-04	0.12905E-02	0.10291E-04	
0.79744E-02				
WATER	0.46865E-01	0.13551E-01	0.48731E-01	
3.5960				
METHY-01	0.46865E-01	0.87527	0.45176E-03	
0.51613E-03				

STREAM SECTION

1 1-P 10 11 12

STREAM ID	1	1-P	10	11	12
FROM :	MIXER-1	P-1	EST-2	EST-3	H-2
TO :	P-1	HDR-1	EST-3	H-2	V-2
SUBSTREAM: MIXED					
PHASE:	LIQUID	LIQUID	MIXED	MIXED	
LIQUID					
COMPONENTS: KMOL/HR					
OLEIC-01	0.0	0.0	0.1670	4.0471-02	
4.0471-02					
METHNOL	0.0	0.0	54.3352	54.2086	
54.2086					
TRIOLEIN	0.9535	0.9535	4.6823-03	4.6823-03	
4.6823-03					
WATER	51.3164	51.3164	2.6790	2.8056	
2.8056					
METHY-01	0.0	0.0	2.6790	2.8056	
2.8056					
GLYCEROL	0.0	0.0	0.0	0.0	0.0
TOTAL FLOW:					
KMOL/HR	52.2699	52.2699	59.8649	59.8649	
59.8649					
KG/HR	1768.7142	1768.7142	2634.9124	2634.9124	
2634.9124					
L/MIN	46.1683	46.4771	100.8302	100.9214	
54.5548					
STATE VARIABLES:					
TEMP C	25.0000	35.2579	250.0000	250.0000	
25.0000					
PRES BAR	1.0133	70.0000	81.0000	81.0000	
81.0000					
VFRAC	0.0	0.0	9.2947-04	8.9027-04	0.0
LFRAC	1.0000	1.0000	0.9991	0.9991	
1.0000					
SFRAC	0.0	0.0	0.0	0.0	0.0
ENTHALPY:					
CAL/MOL	-7.5759+04	-7.5463+04	-5.2868+04	-5.2849+04	-
6.3054+04					
CAL/GM	-2238.8592	-2230.1309	-1201.1640	-1200.7198	-
1432.5759					
CAL/SEC	-1.1000+06	-1.0957+06	-8.7916+05	-8.7883+05	-
1.0485+06					
ENTROPY:					
CAL/MOL-K	-62.7491	-61.9039	-51.5089	-51.5175	-
74.9318					
CAL/GM-K	-1.8544	-1.8294	-1.1703	-1.1705	-
1.7024					
DENSITY:					
MOL/CC	1.8869-02	1.8744-02	9.8953-03	9.8864-03	
1.8289-02					

GM/CC	0.6385	0.6343	0.4355	0.4351
0.8050				
AVG MW	33.8381	33.8381	44.0143	44.0143
44.0143				

STREAM SECTION

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13 14 15 16 17
-----

STREAM ID          13          14          15          16          17
FROM :            V-2          VAP          VAP          DISTL
DISTL
TO :              VAP          DISTL          H-3          H-5          H-4

SUBSTREAM: MIXED
PHASE:             LIQUID          VAPOR          LIQUID          LIQUID
LIQUID
COMPONENTS: KMOL/HR
  OLEIC-01          4.0471-02  1.0493-04  4.0366-02  2.2197-12
1.0493-04
  METHNOL           54.2086    53.9000    0.3086    53.9000
4.7468-06
  TRIOLEIN          4.6823-03  5.8340-04  4.0989-03  1.1191-07
5.8329-04
  WATER             2.8056     2.7625    4.3041-02  2.1000
0.6625
  METHY-01           2.8056    2.5610-02  2.7799    3.3891-09
2.5610-02
  GLYCEROL           0.0         0.0         0.0         0.0         0.0

TOTAL FLOW:
  KMOL/HR           59.8649    56.6888    3.1761    56.0000
0.6888
  KG/HR             2634.9124  1784.9792  849.9333  1764.9045
20.0747
  L/MIN             54.7289    3.1782+04  18.0077    39.4178
0.4233
STATE VARIABLES:
  TEMP C            27.3441    140.0000    140.0000    65.1152
101.1204
  PRES BAR           1.0133     1.0133     1.0133     1.0133
1.0133
  VFRAC             0.0         1.0000     0.0         0.0         0.0
  LFRAC             1.0000     0.0         1.0000     1.0000
1.0000
  SFRAC             0.0         0.0         0.0         0.0         0.0
ENTHALPY:
  CAL/MOL           -6.3054+04 -4.7225+04 -1.4632+05 -5.6400+04 -
7.0805+04
  CAL/GM            -1432.5759 -1499.8108 -546.7902 -1789.5447 -
2429.4886
  CAL/SEC           -1.0485+06 -7.4365+05 -1.2909+05 -8.7733+05 -
1.3548+04
ENTROPY:
  CAL/MOL-K          -74.5946    -26.0584    -365.2409    -53.4940    -
49.9471
  CAL/GM-K           -1.6948     -0.8276     -1.3649     -1.6974     -
1.7138
DENSITY:
  MOL/CC             1.8231-02  2.9728-05  2.9396-03  2.3678-02
2.7122-02

```

GM/CC	0.8024	9.3606-04	0.7866	0.7462
0.7904				
AVG MW	44.0143	31.4873	267.6030	31.5162
29.1438				

STREAM SECTION

2 3 4 5 5-1

STREAM ID	2	3	4	5	5-1
FROM :	HDR-1	HDR-2	HDR-3	HDR-4	H-1
TO :	HDR-2	HDR-3	HDR-4	H-1	V-1
SUBSTREAM: MIXED					
PHASE:	LIQUID	LIQUID	LIQUID	LIQUID	
LIQUID					
COMPONENTS: KMOL/HR					
OLEIC-01	2.1032	2.6599	2.8073	2.8463	
2.8463					
METHNOL	0.0	0.0	0.0	0.0	0.0
TRIOLEIN	0.2524	6.6818-02	1.7689-02	4.6827-03	
4.6827-03					
WATER	49.2132	48.6565	48.5091	48.4701	
48.4701					
METHY-01	0.0	0.0	0.0	0.0	0.0
GLYCEROL	0.7011	0.8866	0.9358	0.9488	
0.9488					
TOTAL FLOW:					
KMOL/HR	52.2699	52.2699	52.2699	52.2699	
52.2699					
KG/HR	1768.7142	1768.7142	1768.7142	1768.7142	
1768.7142					
L/MIN	50.0365	48.6757	48.3387	48.2515	
32.7510					
STATE VARIABLES:					
TEMP C	270.0000	270.0000	270.0000	270.0000	
25.0000					
PRES BAR	70.0000	70.0000	70.0000	70.0000	
70.0000					
VFRAC	0.0	0.0	0.0	0.0	0.0
LFRAC	1.0000	1.0000	1.0000	1.0000	
1.0000					
SFRAC	0.0	0.0	0.0	0.0	0.0
ENTHALPY:					
CAL/MOL	-6.9437+04	-6.9666+04	-6.9727+04	-6.9743+04	-
7.6824+04					
CAL/GM	-2052.0263	-2058.8153	-2060.6129	-2061.0888	-
2270.3337					
CAL/SEC	-1.0082+06	-1.0115+06	-1.0124+06	-1.0126+06	-
1.1154+06					
ENTROPY:					
CAL/MOL-K	-44.9670	-45.0253	-45.0443	-45.0500	-
61.7934					
CAL/GM-K	-1.3289	-1.3306	-1.3312	-1.3313	-
1.8261					
DENSITY:					
MOL/CC	1.7411-02	1.7897-02	1.8022-02	1.8055-02	
2.6600-02					
GM/CC	0.5891	0.6056	0.6098	0.6109	
0.9001					

AVG MW	33.8381	33.8381	33.8381	33.8381
33.8381				

STREAM SECTION

6 7 8 9 AQ-PHSE

STREAM ID	6	7	8	9	AQ-
PHSE					
FROM :	V-1	MIXER-2	P-3	EST-1	
DECANT					
TO :	DECANT	P-3	EST-1	EST-2	----
SUBSTREAM: MIXED					
PHASE:	LIQUID	LIQUID	LIQUID	MIXED	
LIQUID					
COMPONENTS: KMOL/HR					
OLEIC-01	2.8463	2.8460	2.8460	0.6895	
2.8463-04					
METHNOL	0.0	57.0142	57.0142	54.8577	0.0
TRIOLEIN	4.6827-03	4.6823-03	4.6823-03	4.6823-03	
4.6827-07					
WATER	48.4701	0.0	0.0	2.1565	
48.4701					
METHY-01	0.0	0.0	0.0	2.1565	0.0
GLYCEROL	0.9488	0.0	0.0	0.0	
0.9488					
TOTAL FLOW:					
KMOL/HR	52.2699	59.8649	59.8649	59.8649	
49.4191					
KG/HR	1768.7142	2634.9124	2634.9124	2634.9124	
960.6599					
L/MIN	32.8241	54.3339	55.0560	100.4574	
15.7766					
STATE VARIABLES:					
TEMP C	27.1546	25.4322	35.0947	250.0000	
27.1546					
PRES BAR	1.0133	1.0133	81.0000	81.0000	
1.0133					
VFRAC	0.0	0.0	0.0	1.1123-03	0.0
LFRAC	1.0000	1.0000	1.0000	0.9989	
1.0000					
SFRAC	0.0	0.0	0.0	0.0	0.0
ENTHALPY:					
CAL/MOL	-7.6824+04	-6.3621+04	-6.3269+04	-5.2949+04	-
6.9933+04					
CAL/GM	-2270.3337	-1445.4695	-1437.4748	-1202.9994	-
3597.5695					
CAL/SEC	-1.1154+06	-1.0580+06	-1.0521+06	-8.8050+05	-
9.6001+05					
ENTROPY:					
CAL/MOL-K	-61.5988	-75.1050	-74.3135	-51.5024	-
40.5365					
CAL/GM-K	-1.8204	-1.7064	-1.6884	-1.1701	-
2.0853					
DENSITY:					
MOL/CC	2.6540-02	1.8363-02	1.8122-02	9.9321-03	
5.2207-02					

GM/CC	0.8981	0.8082	0.7976	0.4372
1.0149				
AVG MW	33.8381	44.0143	44.0143	44.0143
19.4390				

STREAM SECTION

BIODIESL FA METH-F METH-RCV TAG

STREAM ID	BIODIESL	FA	METH-F	METH-RCV	TAG
FROM :	H-3	DECANT	----	H-5	----
TO :	----	MIXER-2	MIXER-2	----	
MIXER-1					
SUBSTREAM: MIXED					
PHASE:	LIQUID	LIQUID	LIQUID	LIQUID	
LIQUID					
COMPONENTS: KMOL/HR					
OLEIC-01	4.0366-02	2.8460	0.0	2.2197-12	0.0
METHNOL	0.3086	0.0	57.0142	53.9000	0.0
TRIOLEIN	4.0989-03	4.6823-03	0.0	1.1191-07	
0.9535					
WATER	4.3041-02	0.0	0.0	2.1000	0.0
METHY-01	2.7799	0.0	0.0	3.3891-09	0.0
GLYCEROL	0.0	0.0	0.0	0.0	0.0
TOTAL FLOW:					
KMOL/HR	3.1761	2.8507	57.0142	56.0000	
0.9535					
KG/HR	849.9333	808.0543	1826.8581	1764.9045	
844.2348					
L/MIN	16.3322	15.3143	38.3993	36.9699	
15.5017					
STATE VARIABLES:					
TEMP C	25.0000	27.1546	25.0000	25.0000	
25.0000					
PRES BAR	1.0133	1.0133	1.0133	1.0133	
1.0133					
VFRAC	0.0	0.0	0.0	0.0	0.0
LFRAC	1.0000	1.0000	1.0000	1.0000	
1.0000					
SFRAC	0.0	0.0	0.0	0.0	0.0
ENTHALPY:					
CAL/MOL	-1.6142+05	-1.9626+05	-5.6989+04	-5.7428+04	-
4.8084+05					
CAL/GM	-603.1935	-692.3968	-1778.5680	-1822.1863	-
543.0479					
CAL/SEC	-1.4241+05	-1.5542+05	-9.0255+05	-8.9333+05	-
1.2735+05					
ENTROPY:					
CAL/MOL-K	-407.3782	-434.3742	-57.5402	-56.6150	-
1358.8747					
CAL/GM-K	-1.5223	-1.5324	-1.7958	-1.7964	-
1.5347					
DENSITY:					
MOL/CC	3.2411-03	3.1024-03	2.4746-02	2.5246-02	
1.0251-03					
GM/CC	0.8673	0.8794	0.7929	0.7957	
0.9077					
AVG MW	267.6030	283.4572	32.0422	31.5162	
885.4492					

STREAM SECTION

WATER WATER-RC

STREAM ID	WATER	WATER-RC
FROM :	----	H-4
TO :	MIXER-1	----

SUBSTREAM: MIXED

PHASE:	LIQUID	LIQUID
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COMPONENTS: KMOL/HR

OLEIC-01	0.0	1.0493-04
METHNOL	0.0	4.7468-06
TRIOLEIN	0.0	5.8329-04
WATER	51.3164	0.6625
METHY-01	0.0	2.5610-02
GLYCEROL	0.0	0.0

TOTAL FLOW:

KMOL/HR	51.3164	0.6888
KG/HR	924.4794	20.0747
L/MIN	15.5017	0.3864

STATE VARIABLES:

TEMP C	25.0000	25.0000
PRES BAR	1.0133	1.0133
VFRAC	0.0	0.0
LFRAC	1.0000	1.0000
SFRAC	0.0	0.0

ENTHALPY:

CAL/MOL	-6.8232+04	-7.2514+04
CAL/GM	-3787.4745	-2488.1489
CAL/SEC	-9.7262+05	-1.3875+04

ENTROPY:

CAL/MOL-K	-38.8515	-55.0279
CAL/GM-K	-2.1566	-1.8882

DENSITY:

MOL/CC	5.5173-02	2.9712-02
GM/CC	0.9940	0.8659
AVG MW	18.0153	29.1438

PROBLEM STATUS SECTION

BLOCK STATUS

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*****
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*
*
* Calculations were completed normally
*
*
* All Unit Operation blocks were completed normally
*
*
* All streams were flashed normally
*
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