```
         ---   Simulation  Input  File   ---
   *-STMT-*
             *XPSIM>  ...generated by XpsimWin v.1.06 ...
             *EXE-OPT> PAGELEN=66
             *
       100   RUN ID='CASE02 ' CUSTOMER=STAFF PROJECT='WINTER NGL GATHERING'
       200   DESC   WINTER 03  NGL - DESIGN CASE
       300   DIMENSION INPUT SI PRES=BAR
             *
             *
       400   System Data
             *
             *
       500   CHEMCOMP H2O / N2 / CO2 / C1 / C2 / C3 / IC4 / NC4 / IC5 / NC5 / NC6 +
              / NC7 / NC8 / NC9 / NC10 / NC11 / NC12
       600   THERMSET UID=M1
       700   METHODS K=SRK HS=LK CP=LK D=LK TRAN=IDEAL SURT=IDEAL
             *
             *
       800   Flowsheet Data
             *
             *
             *
       900   STREAM=S1 TEMP=50 PRES=90 RATE(W)=400000 XBASIS=M
      1000   COMP 1.421 / 0.345 / 3.204 / 77.348 / 8.428 / 3.411 / 0.651 / 1.380 / +
              0.601 / 0.601 / 0.739 / 0.641 / 0.562 / 0.335 / 0.158 / 0.079 / +
              0.099
             *
      1100   STREAM=N18F TEMP=67.5 PRES=90 RATE(W)=37000 XBASIS=M REFSTR=S1
             *
      1200   STREAM=N19F TEMP=67. PRES=90 RATE(W)=45000 XBASIS=M REFSTR=S1
             *
      1300   STREAM=N20F TEMP=68.2 PRES=90 RATE(W)=33000 XBASIS=M REFSTR=S1
             *
      1400   STREAM=N21F TEMP=67.4 PRES=90 RATE(W)=30000 XBASIS=M REFSTR=S1
             *
      1500   PIPELINE IN N18F OUT N18P UID=N18
      1600   PARA STEP(MT)=100
      1700   CORRELAT SET=MECH2F
      1800   POINT DIST(MT)=0 ELEV(MT)=0 DIAM(M)=0.193675 ROUGH(MM)=0.04572 TEXT=9 +
              K=50.,0.3,1.5,, THICK(MM)=12.7,3,1500,, HOLIM=1.5
      1900   POINT DIST=250 ELEV=3
      2000   POINT DIST=500 ELEV=-3
      2100   POINT DIST=750 ELEV=-3
      2200   POINT DIST=1000 ELEV=-3
      2300   POINT DIST=1250 ELEV=3
      2400   POINT DIST=1500 ELEV=3
      2500   POINT DIST=1750 ELEV=-3
      2600   POINT DIST=2000 ELEV=-3
      2700   POINT DIST=2250 ELEV=3
      2800   POINT DIST=2500 ELEV=3
      2900   POINT DIST=2750 ELEV=-3
      3000   POINT DIST=3000 ELEV=-3
      3100   POINT DIST=3250 ELEV=3
      3200   POINT DIST=3500 ELEV=3
      3300   POINT DIST=3750 ELEV=-3
      3400   POINT DIST=4000 ELEV=-3
      3500   POINT DIST=4250 ELEV=3
      3600   POINT DIST=4500 ELEV=3
      3700   POINT DIST=4750 ELEV=-3
      3800   POINT DIST=5000 ELEV=-3
      3900   POINT DIST=5250 ELEV=3
```

```
        - Simulation input - Continuation -
   *-STMT-*
      4000     POINT DIST=5444 ELEV=0
               *
      4100     PIPELINE IN N19F OUT N19P UID=N19
      4200     PARA STEP(MT)=100
      4300     CORRELAT SET=MECH2F
      4400     AMBIENT SOIL TEMP=9 K=1.5 UID=SOIL1
      4500     POINT DIST(MT)=0 ELEV(MT)=0 DIAM(M)=0.193675 ROUGH(MM)=0.04572 TEXT=9 +
                K=50.,0.3,1.5,, THICK(MM)=12.7,3,1500,, HOLIM=1.5
      4600     POINT DIST=250 ELEV=3
      4700     POINT DIST=500 ELEV=-3
      4800     POINT DIST=750 ELEV=-3
      4900     POINT DIST=1000 ELEV=3
      5000     POINT DIST=1250 ELEV=3
      5100     POINT DIST=1500 ELEV=-3
      5200     POINT DIST=1750 ELEV=-3
      5300     POINT DIST=2000 ELEV=3
      5400     POINT DIST=2250 ELEV=3
      5500     POINT DIST=2500 ELEV=-3
      5600     POINT DIST=2750 ELEV=-3
      5700     POINT DIST=3000 ELEV=3
      5800     POINT DIST=3250 ELEV=3
      5900     POINT DIST=3500 ELEV=-3
      6000     POINT DIST=3550 ELEV=0
               *
      6100     PIPELINE IN N20F OUT N20P UID=N20
      6200     PARA STEP(MT)=100
      6300     CORRELAT SET=MECH2F
      6400     AMBIENT SOIL TEMP=9 K=1.5 UID=SOIL1
      6500     POINT DIST(MT)=0 ELEV(MT)=0 DIAM(M)=0.193675 ROUGH(MM)=0.04572 TEXT=9 +
                K=50.,0.3,1.5,, THICK(MM)=12.7,3,1500,, HOLIM=1.5
      6600     POINT DIST=50 ELEV=0
               *
      6700     PIPELINE IN N21F OUT N21P UID=N21
      6800     PARA STEP(MT)=100
      6900     AMBIENT SOIL TEMP=9 K=1.5 UID=SOIL1
      7000     POINT DIST(MT)=0 ELEV(MT)=0 DIAM(M)=0.193675 ROUGH(MM)=0.04572 TEXT=9 +
                K=50.,0.3,1.5,, THICK(MM)=12.7,3,1500,, HOLIM=1.5
      7100     POINT DIST=250 ELEV=3
      7200     POINT DIST=500 ELEV=-3
      7300     POINT DIST=750 ELEV=-3
      7400     POINT DIST=1000 ELEV=3
      7500     POINT DIST=1250 ELEV=3
      7600     POINT DIST=1500 ELEV=-3
      7700     POINT DIST=1750 ELEV=-3
      7800     POINT DIST=2000 ELEV=3
      7900     POINT DIST=2250 ELEV=3
      8000     POINT DIST=2500 ELEV=-3
      8100     POINT DIST=2701 ELEV=0
               *
      8200     MIXER IN N18P N19P N20P N21P OUT TRKF UID=MX1
               *
      8300     PIPELINE IN TRKF OUT PROD UID=CP
      8400     PARA STEP(MT)=100
      8500     CORRELAT SET=MECH2F
      8600     AMBIENT SOIL TEMP=9 K=1.5 UID=SOIL1
      8700     POINT DIST(MT)=0 ELEV(MT)=0 DIAM(M)=0.381 ROUGH(MM)=0.04572 TEXT=9 +
                K=50.,0.3,1.5,, THICK(MM)=12.7,3,1500,, HOLIM=1.5
      8800     POINT DIST=250 ELEV=3
      8900     POINT DIST=500 ELEV=-3
      9000     POINT DIST=750 ELEV=-3
```

- Simulation input - Continuation -

```
 *-STMT-*
    9100     POINT DIST=1000 ELEV=3
    9200     POINT DIST=1250 ELEV=3
    9300     POINT DIST=1500 ELEV=-3
    9400     POINT DIST=1750 ELEV=-3
    9500     POINT DIST=2000 ELEV=3
    9600     POINT DIST=2250 ELEV=3
    9700     POINT DIST=2500 ELEV=-3
    9800     POINT DIST=2750 ELEV=-3
    9900     POINT DIST=3000 ELEV=3
   10000     POINT DIST=3250 ELEV=3
   10100     POINT DIST=3500 ELEV=-3
   10200     POINT DIST=3750 ELEV=-3
   10300     POINT DIST=4000 ELEV=3
   10400     POINT DIST=4250 ELEV=3
   10500     POINT DIST=4500 ELEV=-3
   10600     POINT DIST=4865 ELEV=0
             *
             *
   10700     Network Data
             *
             *
   10800     GATHERING NITER=10
   10900     SPEC PRES=75 STR=PROD
   11000     VARY STR=N18F PRES TFIX
   11100     VARY STR=N19F PRES TFIX
   11200     VARY STR=N20F PRES TFIX
   11300     VARY STR=N21F PRES TFIX
             *
             *
   11400     Output Data
             *
             *
   11500     PRINT FORMAT=2
             *
             *
   11600     END
         ---   End of Simulation Input File   ---
```

I) * PROBLEM GENERAL DATA *

1) * PROBLEM/PROJECT *
' WINTER 03 NGL - DESIGN CASE '

2) * UNITS OF MEASURE *
- Input system SI - Output system SI

- INPUT AND OUTPUT UNITS -

Time	- HR	Weight	- KG
Temperature	- CENT	Pressure	- BAR
Energy/Duty	- M-KJ	Work	- KW
Liq volums	- CUMT	Vap Volume	- CUMT
Viscosity	- CP	Thermal cond	- W/MC
Surface tens	- DYCM	Std Vap Vol	- N-CUMT

Standard Vapor Volume is 23.64469 M3/KMOL
Reference Status - Temperature 15°C - Pressure 1 atm

Enthalpy is 0.0 for ideal gas at 298.15 K
Std entropy is for ideal gas at 298.15 K and 1 Atm

II) * DEFINED COMPONENTS *

* No of Chemical Components 17
No of Hypothetical/Petroleum Components 0

No	1	2	3	4	5
CAS Registry no.	7732-18-5	7727-37-9	124-38-9	74-82-8	74-84-0
Name	WATER	NITROGEN	CARBON DIOXIDE	METHANE	ETHANE
Component Key	H2O	N2	CO2	C1	C2
Type	LIBRARY	LIBRARY	LIBRARY	LIBRARY	LIBRARY
Class	INOR	INOR	INOR	SHYD	SHYD
Formula	H2O	N2	CO2	CH4	C2H6
Molecular weight	18.020	28.010	44.010	16.040	30.070
Boiling point,CENT	100.00	-195.80	-78.55	-161.52	-88.60
Std spec. gravity	1.00100	0.64315	0.81906	0.40749	0.35522
Critical temp,CENT	374.15	-146.95	31.06	-82.62	32.27
Critical pres,BAR	221.200	34.000	73.825	45.950	48.790
Critical vol,CUMT	0.056313	0.089489	0.094039	0.099013	0.148129
Critical Z	0.231459	0.289987	0.274489	0.287211	0.284617
Acentric factor	0.344000	0.037000	0.223000	0.011000	0.099000
Lat. heat, KJ/KMOL	40714.413	5552.287	15245.787	8176.826	14535.497
H form, KJ/KMOL	-241828.891	0.000	-393494.298	-74586.151	-84015.754
G form, KJ/KMOL	-298119.724	-57066.025	-447817.337	-130101.793	-152322.057
Std entr, KJ/KML-C	188.80073	191.40074	182.20071	186.20072	229.10089

No	6	7	8	9	10
CAS Registry no.	74-98-6	75-28-5	106-97-8	78-78-4	109-66-0
Name	PROPANE	ISOBUTANE	BUTANE	ISOPENTANE	PENTANE
Component Key	C3	IC4	NC4	IC5	NC5
Type	LIBRARY	LIBRARY	LIBRARY	LIBRARY	LIBRARY
Class	SHYD	SHYD	SHYD	SHYD	SHYD
Formula	C3H8	C4H10	C4H10	C5H12	C5H12
Molecular weight	44.100	58.120	58.120	72.150	72.150
Boiling point,CENT	-42.10	-11.73	-0.50	27.88	36.06
Std spec. gravity	0.50430	0.55891	0.58434	0.62469	0.63094
Critical temp,CENT	96.67	134.99	152.03	187.28	196.59
Critical pres,BAR	42.490	36.480	37.980	33.830	33.700
Critical vol,CUMT	0.203227	0.262988	0.254914	0.305722	0.304432
Critical Z	0.280844	0.282728	0.273882	0.270180	0.262694
Acentric factor	0.153000	0.183000	0.200000	0.227000	0.251000
Lat. heat, KJ/KMOL	18848.524	21127.358	21978.088	24309.374	25651.643
H form, KJ/KMOL	-103855.711	-134606.193	-125771.935	-154473.463	-146464.797
G form, KJ/KMOL	-184416.002	-222679.880	-218138.991	-256918.009	-250638.616
Std entr, KJ/KML-C	270.20105	295.40115	309.80120	343.60134	349.40136

No	11	12	13	14	15
CAS Registry no.	110-54-3	142-82-5	111-65-9	111-84-2	124-18-5
Name	HEXANE	HEPTANE	OCTANE	NONANE	DECANE
Component Key	NC6	NC7	NC8	NC9	NC10
Type	LIBRARY	LIBRARY	LIBRARY	LIBRARY	LIBRARY
Class	SHYD	SHYD	SHYD	SHYD	SHYD
Formula	C6H14	C7H16	C8H18	C9H20	C10H22
Molecular weight	86.180	100.210	114.230	128.260	142.290
Boiling point,CENT	68.73	98.43	125.67	150.82	174.19
Std spec. gravity	0.65877	0.68637	0.70390	0.72446	0.73518
Critical temp,CENT	234.75	266.95	295.66	321.42	346.00
Critical pres,BAR	30.320	27.360	24.880	22.900	21.598
Critical vol,CUMT	0.369874	0.431942	0.492374	0.548123	0.602928
Critical Z	0.265578	0.263181	0.259039	0.253920	0.252971
Acentric factor	0.294000	0.349000	0.397000	0.445000	0.485000
Lat. heat, KJ/KMOL	28788.103	31677.227	33940.343	36590.750	39262.509
H form, KJ/KMOL	-166930.999	-187693.711	-208812.874	-228816.304	-249577.166
G form, KJ/KMOL	-282851.951	-315272.352	-348108.833	-379799.767	-412218.318
Std entr, KJ/KML-C	388.80151	427.90166	467.20182	506.40197	545.50212

No	16	17
CAS Registry no.	1120-21-4	112-40-3
Name	UNDECANE	DODECANE
Component Key	NC11	NC12
Type	LIBRARY	LIBRARY
Class	SHYD	SHYD
Formula	C11H24	C12H26
Molecular weight	156.310	170.340
Boiling point,CENT	196.16	216.55
Std spec. gravity	0.74601	0.75272
Critical temp,CENT	367.00	386.00
Critical pres,BAR	19.950	19.000
Critical vol,CUMT	0.659540	0.712724
Critical Z	0.247223	0.247103
Acentric factor	0.532000	0.587000
Lat. heat, KJ/KMOL	41491.351	43949.790
H form, KJ/KMOL	-270260.518	-290771.020
G form, KJ/KMOL	-444648.804	-476906.439
Std entr, KJ/KML-C	584.90228	624.30243

III) * PVT/THERMO/TRANSPORT PROPERTIES CALCULATION METHODS *

* CALCULATION SET 1 - M1 *

VLE K-values	SRK	- REDLICH-KWONG-SOAVE
ENTHALPY - Vapor	LK	- LEE-KESLER
ENTHALPY - Liquid	LK	- LEE-KESLER
ENTROPY - Vapor	LK	- LEE-KESLER
ENTROPY - Liquid	LK	- LEE-KESLER
DENSITY - Vapor	LK	- LEE-KESLER
DENSITY - Liquid	LK	- LEE-KESLER
VISCOSITY - Vapor	IDEAL	- IDEAL/LIBRARY
VISCOSITY - Liquid	IDEAL	- IDEAL/LIBRARY
HEAT CAPACITY - Vapor	LK	- LEE-KESLER
HEAT CAPACITY - Liquid	LK	- LEE-KESLER
CONDUCTIVITY - Vapor	IDEAL	- IDEAL/LIBRARY
CONDUCTIVITY - Liquid	IDEAL	- IDEAL/LIBRARY
SURFACE TENSION	IDEAL	- IDEAL/LIBRARY

- LIMITS AND OPTIONS -
Temperature - Min -223.15 CENT - Max 1200.05 CENT
Pressure - Min 0.100000E-04 BAR - Max 3000.00 BAR

Lowest significant composition 0.10000000E-19

Water K-values are calculated based on
'Vapor Pressure curve '
Water thermo-props are calculated based on
'Saturated conditions '
Water solubility in hydr phases calculated based on
'API solubility in HC mixtures '

*** DEFAULT DATA FOR PIPELINE UNITS ***

1) * GENERAL DATA & OPTIONS *

Flow phase is MIXED
Distances are given as 'CURVILINEAR ' coordinates
Integration step size 999.988 MT
Maximum ABSOLUTE pressure drop per step 3.447 BAR
Maximum temperature change per step 10.000 CENT

Automatic feed/product naming NOT specified

2) * TOLERANCES *
Minimum liquid holdup fraction 0.001000
Maximum liquid holdup fraction 0.999000
Segments with inclination lower than 1.000 degrees
are assumed HORIZONTAL
Segments inclined over 20.000 degrees
are assumed VERTICAL

Convergence tolerance on pressure 0.001 RELATIVE
Convergence tolerance on temperature 0.002 RELATIVE

3) * SELECTED CORRELATIONS *

- Set 1 -
Flow-pattern 'Mandhane '
Holdup 'Eaton '
Two-phase friction factor 'Dukler corrected'
Single phase friction factor COLEBROOK
Laminar flow - Reynolds No limit 1000.00
Turbulent flow - Reynolds No limit 2000.00
Up-hill flow model 'Gravitational Term not corrected'
Down-hill flow model 'Gravitational energy recovered '

*** STREAM 'S1 ' ***
- Temperature 50.000 CENT - Pressure 90.0000 BAR

* No *	Component *	GLOBAL STREAM Mols	-Mol fr-	Weight	-Wt fr-
1	WATER	245.812	0.014210	4429.525	0.011074
2	NITROGEN	59.680	0.003450	1671.631	0.004179
3	CARBON DIOXIDE	554.244	0.032039	24392.261	0.060981
4	METHANE	13380.037	0.773457	214615.701	0.536539
5	ETHANE	1457.917	0.084277	43839.570	0.109599
6	PROPANE	590.052	0.034109	26021.276	0.065053
7	ISOBUTANE	112.613	0.006510	6545.077	0.016363
8	BUTANE	238.719	0.013800	13874.358	0.034686
9	ISOPENTANE	103.964	0.006010	7500.997	0.018752
10	PENTANE	103.964	0.006010	7500.997	0.018752
11	HEXANE	127.836	0.007390	11016.893	0.027542
12	HEPTANE	110.883	0.006410	11111.620	0.027779
13	OCTANE	97.218	0.005620	11105.157	0.027763
14	NONANE	57.950	0.003350	7432.660	0.018582
15	DECANE	27.332	0.001580	3889.015	0.009723
16	UNDECANE	13.666	0.000790	2136.102	0.005340
17	DODECANE	17.126	0.000990	2917.159	0.007293
	* TOTAL *	17299.010	1.000000	400000.000	1.000000
		KMOL		KG	

*** STREAM 'N18F ' ***
- Temperature 67.500 CENT - Pressure 90.0000 BAR

* No *	Component *	GLOBAL STREAM Mols	-Mol fr-	Weight	-Wt fr-
1	WATER	22.738	0.014210	409.731	0.011074
2	NITROGEN	5.520	0.003450	154.626	0.004179
3	CARBON DIOXIDE	51.268	0.032039	2256.284	0.060981
4	METHANE	1237.653	0.773457	19851.952	0.536539
5	ETHANE	134.857	0.084277	4055.160	0.109599
6	PROPANE	54.580	0.034109	2406.968	0.065053
7	ISOBUTANE	10.417	0.006510	605.420	0.016363
8	BUTANE	22.082	0.013800	1283.378	0.034686
9	ISOPENTANE	9.617	0.006010	693.842	0.018752
10	PENTANE	9.617	0.006010	693.842	0.018752
11	HEXANE	11.825	0.007390	1019.063	0.027542
12	HEPTANE	10.257	0.006410	1027.825	0.027779
13	OCTANE	8.993	0.005620	1027.227	0.027763
14	NONANE	5.360	0.003350	687.521	0.018582
15	DECANE	2.528	0.001580	359.734	0.009723
16	UNDECANE	1.264	0.000790	197.589	0.005340
17	DODECANE	1.584	0.000990	269.837	0.007293
	* TOTAL *	1600.158	1.000000	37000.000	1.000000
		KMOL		KG	

*** STREAM 'N19F ' ***
- Temperature 67.000 CENT - Pressure 90.0000 BAR

* No *	Component *	GLOBAL STREAM Mols	Mol fr	Weight	Wt fr
1	WATER	27.654	0.014210	498.322	0.011074
2	NITROGEN	6.714	0.003450	188.058	0.004179
3	CARBON DIOXIDE	62.352	0.032039	2744.129	0.060981
4	METHANE	1505.254	0.773457	24144.266	0.536539
5	ETHANE	164.016	0.084277	4931.952	0.109599
6	PROPANE	66.381	0.034109	2927.394	0.065053
7	ISOBUTANE	12.669	0.006510	736.321	0.016363
8	BUTANE	26.856	0.013800	1560.865	0.034686
9	ISOPENTANE	11.696	0.006010	843.862	0.018752
10	PENTANE	11.696	0.006010	843.862	0.018752
11	HEXANE	14.382	0.007390	1239.400	0.027542
12	HEPTANE	12.474	0.006410	1250.057	0.027779
13	OCTANE	10.937	0.005620	1249.330	0.027763
14	NONANE	6.519	0.003350	836.174	0.018582
15	DECANE	3.075	0.001580	437.514	0.009723
16	UNDECANE	1.537	0.000790	240.312	0.005340
17	DODECANE	1.927	0.000990	328.180	0.007293
	* TOTAL *	1946.139	1.000000	45000.000	1.000000
		KMOL		KG	

*** STREAM 'N20F ' ***
- Temperature 68.200 CENT - Pressure 90.0000 BAR

* No *	Component *	GLOBAL STREAM Mols	Mol fr	Weight	Wt fr
1	WATER	20.279	0.014210	365.436	0.011074
2	NITROGEN	4.924	0.003450	137.910	0.004179
3	CARBON DIOXIDE	45.725	0.032039	2012.362	0.060981
4	METHANE	1103.853	0.773457	17705.795	0.536539
5	ETHANE	120.278	0.084277	3616.765	0.109599
6	PROPANE	48.679	0.034109	2146.755	0.065053
7	ISOBUTANE	9.291	0.006510	539.969	0.016363
8	BUTANE	19.694	0.013800	1144.635	0.034686
9	ISOPENTANE	8.577	0.006010	618.832	0.018752
10	PENTANE	8.577	0.006010	618.832	0.018752
11	HEXANE	10.546	0.007390	908.894	0.027542
12	HEPTANE	9.148	0.006410	916.709	0.027779
13	OCTANE	8.020	0.005620	916.175	0.027763
14	NONANE	4.781	0.003350	613.194	0.018582
15	DECANE	2.255	0.001580	320.844	0.009723
16	UNDECANE	1.127	0.000790	176.228	0.005340
17	DODECANE	1.413	0.000990	240.666	0.007293
	* TOTAL *	1427.168	1.000000	33000.000	1.000000
		KMOL		KG	

*** STREAM 'N21F ' ***
- Temperature 67.400 CENT - Pressure 90.0000 BAR

* No *	Component *	GLOBAL STREAM - Mols -	-Mol fr-	- Weight -	-Wt fr-
1	WATER	18.436	0.014210	332.214	0.011074
2	NITROGEN	4.476	0.003450	125.372	0.004179
3	CARBON DIOXIDE	41.568	0.032039	1829.420	0.060981
4	METHANE	1003.503	0.773457	16096.178	0.536539
5	ETHANE	109.344	0.084277	3287.968	0.109599
6	PROPANE	44.254	0.034109	1951.596	0.065053
7	ISOBUTANE	8.446	0.006510	490.881	0.016363
8	BUTANE	17.904	0.013800	1040.577	0.034686
9	ISOPENTANE	7.797	0.006010	562.575	0.018752
10	PENTANE	7.797	0.006010	562.575	0.018752
11	HEXANE	9.588	0.007390	826.267	0.027542
12	HEPTANE	8.316	0.006410	833.371	0.027779
13	OCTANE	7.291	0.005620	832.887	0.027763
14	NONANE	4.346	0.003350	557.449	0.018582
15	DECANE	2.050	0.001580	291.676	0.009723
16	UNDECANE	1.025	0.000790	160.208	0.005340
17	DODECANE	1.284	0.000990	218.787	0.007293
	* TOTAL *	1297.426 KMOL	1.000000	30000.000 KG	1.000000

*** UNIT 1 - 'N18 ' - ' PIPELINE ' ***
--- Feed Streams --- - Product Streams -
'N18F ' 'N18P ' to unit 5 - MX1
- 3 Phase VLE (LHLW separation) equilibrium applied

1) * GENERAL DATA & OPTIONS *

Flow phase MIXED
Temperature profile CALCULATED
Distances given as CURVILINEAR coordinates
Calculation performed from UPSTREAM to DOWNSTREAM
PVT/THERMO/TRANSPORT properties are calculated at each pressure/temperature

Integration step 100.000 MT
Maximum ABSOLUTE pressure drop per step 3.447 BAR
Maximum temperature change per step 10.000 CENT

2) * TOLERANCES *
Minimum liquid holdup 0.001000
Maximum liquid holdup 0.999000
Segments with inclination lower than 1.000 deg are assumed HORIZONTAL
Segments with inclination greater than 20.000 deg are assumed VERTICAL

Convergence on pressure 0.001 RELATIVE
Convergence on temperature 0.002 RELATIVE

3) * CALCULATION METHOD & OPTIONS *
Solution algorithm 0
Flow efficiency 100.0000
Internal liminar coef. is NOT calculated
Outside liminar coef. is NOT calculated

4) * SELECTED CORRELATIONS *

- Set 1 -
Flow-pattern 'Mech 2-Fluid '
Holdup 'Mech 2-Fluid '
Two-phase friction factor 'Mech 2-Fluid '
Single phase friction factor COLEBROOK
Laminar flow - Reynolds No limit 1000.00
Turbulent flow - Reynolds No limit 2000.00
Up-hill flow model 'Mech 2-Fluid '
Down-hill flow model 'Mech 2-Fluid '

5) * PIPELINE PROFILE *

No.	Distance MT	Elevation MT	Incl	Diameter M	EXT. TEMP CENT	Roughness MM
1	0.000	0.000	INCL UP	0.194	9.000	0.046

- HEAT TRANSFER DATA/GEOMETRY & PARAMETERS -

Coat Thickness, MM	12.7002	3.0000	1500.0190	
Coat Conductivity,W/MC	50.0000	0.3000	1.5000	
Boundary layer resistance		1.5000	W/M2C	
Global Heat Transfer Coefficient		4.5261	W/M2C	
- Active Correlation Set 1 - '		'		

No.	Distance MT	Elevation MT	Incl	Diameter M	EXT. TEMP CENT
2	250.000	3.000	INCL UP	0.194	9.000
3	500.000	-3.000	INCL DN	0.194	9.000
4	750.000	-3.000	HORIZ	0.194	9.000
5	1000.000	-3.000	HORIZ	0.194	9.000
6	1250.000	3.000	INCL UP	0.194	9.000
7	1500.000	3.000	HORIZ	0.194	9.000
8	1750.000	-3.000	INCL DN	0.194	9.000
9	2000.000	-3.000	HORIZ	0.194	9.000
10	2250.000	3.000	INCL UP	0.194	9.000
11	2500.000	3.000	HORIZ	0.194	9.000
12	2750.000	-3.000	INCL DN	0.194	9.000
13	3000.000	-3.000	HORIZ	0.194	9.000
14	3250.000	3.000	INCL UP	0.194	9.000
15	3500.000	3.000	HORIZ	0.194	9.000
16	3750.000	-3.000	INCL DN	0.194	9.000
17	4000.000	-3.000	HORIZ	0.194	9.000
18	4250.000	3.000	INCL UP	0.194	9.000
19	4500.000	3.000	HORIZ	0.194	9.000
20	4750.000	-3.000	INCL DN	0.194	9.000
21	5000.000	-3.000	HORIZ	0.194	9.000
22	5250.000	3.000	INCL UP	0.194	9.000
23	5444.000	0.000	INCL DN	0.194	9.000

*** UNIT 2 - 'N19 ' - ' PIPELINE ' ***
--- Feed Streams --- - Product Streams -
'N19F ' 'N19P ' to unit 5 - MX1
- 3 Phase VLE (LHLW separation) equilibrium applied

1) * GENERAL DATA & OPTIONS *

Flow phase MIXED
Temperature profile CALCULATED
Distances given as CURVILINEAR coordinates
Calculation performed from UPSTREAM to DOWNSTREAM
PVT/THERMO/TRANSPORT properties are calculated at each pressure/temperature

Integration step 100.000 MT
Maximum ABSOLUTE pressure drop per step 3.447 BAR
Maximum temperature change per step 10.000 CENT

2) * TOLERANCES *
Minimum liquid holdup 0.001000
Maximum liquid holdup 0.999000
Segments with inclination lower than 1.000 deg are assumed HORIZONTAL
Segments with inclination greater than 20.000 deg are assumed VERTICAL

Convergence on pressure 0.001 RELATIVE
Convergence on temperature 0.002 RELATIVE

3) * CALCULATION METHOD & OPTIONS *
Solution algorithm 0
Flow efficiency 100.0000
Internal liminar coef. is NOT calculated
Outside liminar coef. is NOT calculated

4) * SELECTED CORRELATIONS *

- Set 1 -
Flow-pattern 'Mech 2-Fluid '
Holdup 'Mech 2-Fluid '
Two-phase friction factor 'Mech 2-Fluid '
Single phase friction factor COLEBROOK
Laminar flow - Reynolds No limit 1000.00
Turbulent flow - Reynolds No limit 2000.00
Up-hill flow model 'Mech 2-Fluid '
Down-hill flow model 'Mech 2-Fluid '

5) * AMBIENT DATA *

- Ambient 1 - 'SOIL1 ' - SOIL
Temperature, CENT 9.000
Thermal conductivity, W/MC 1.500

6) * PIPELINE PROFILE *

No.	Distance MT	Elevation MT	Incl	Diameter M	EXT. TEMP CENT	Roughness MM
1	0.000	0.000	INCL UP	0.194	9.000	0.046

- HEAT TRANSFER DATA/GEOMETRY & PARAMETERS -

Coat Thickness, MM	12.7002	3.0000	1500.0190	
Coat Conductivity,W/MC	50.0000	0.3000	1.5000	
Boundary layer resistance		1.5000	W/M2C	
Global Heat Transfer Coefficient		4.5261	W/M2C	
- Active Correlation Set 1 - '		'		

No.	Distance MT	Elevation MT	Incl	Diameter M	EXT. TEMP CENT
2	250.000	3.000	INCL UP	0.194	9.000
3	500.000	-3.000	INCL DN	0.194	9.000
4	750.000	-3.000	HORIZ	0.194	9.000
5	1000.000	3.000	INCL UP	0.194	9.000
6	1250.000	3.000	HORIZ	0.194	9.000
7	1500.000	-3.000	INCL DN	0.194	9.000
8	1750.000	-3.000	HORIZ	0.194	9.000
9	2000.000	3.000	INCL UP	0.194	9.000
10	2250.000	3.000	HORIZ	0.194	9.000
11	2500.000	-3.000	INCL DN	0.194	9.000
12	2750.000	-3.000	HORIZ	0.194	9.000
13	3000.000	3.000	INCL UP	0.194	9.000
14	3250.000	3.000	HORIZ	0.194	9.000
15	3500.000	-3.000	INCL DN	0.194	9.000
16	3550.000	0.000	INCL UP	0.194	9.000

*** UNIT 3 - 'N20 ' - ' PIPELINE ' ***
--- Feed Streams --- - Product Streams -
'N20F ' 'N20P ' to unit 5 - MX1
- 3 Phase VLE (LHLW separation) equilibrium applied

1) * GENERAL DATA & OPTIONS *

Flow phase MIXED
Temperature profile CALCULATED
Distances given as CURVILINEAR coordinates
Calculation performed from UPSTREAM to DOWNSTREAM
PVT/THERMO/TRANSPORT properties are calculated at each pressure/temperature

Integration step 100.000 MT
Maximum ABSOLUTE pressure drop per step 3.447 BAR
Maximum temperature change per step 10.000 CENT

2) * TOLERANCES *
Minimum liquid holdup 0.001000
Maximum liquid holdup 0.999000
Segments with inclination lower than 1.000 deg are assumed HORIZONTAL
Segments with inclination greater than 20.000 deg are assumed VERTICAL

Convergence on pressure 0.001 RELATIVE
Convergence on temperature 0.002 RELATIVE

3) * CALCULATION METHOD & OPTIONS *
Solution algorithm 0
Flow efficiency 100.0000
Internal liminar coef. is NOT calculated
Outside liminar coef. is NOT calculated

4) * SELECTED CORRELATIONS *

- Set 1 -
Flow-pattern 'Mech 2-Fluid '
Holdup 'Mech 2-Fluid '
Two-phase friction factor 'Mech 2-Fluid '
Single phase friction factor COLEBROOK
Laminar flow - Reynolds No limit 1000.00
Turbulent flow - Reynolds No limit 2000.00
Up-hill flow model 'Mech 2-Fluid '
Down-hill flow model 'Mech 2-Fluid '

5) * AMBIENT DATA *

- Ambient 1 - 'SOIL1 ' - SOIL
Temperature, CENT 9.000
Thermal conductivity, W/MC 1.500

6) * PIPELINE PROFILE *

No.	Distance MT	Elevation MT	Incl	Diameter M	EXT. TEMP CENT	Roughness MM
1	0.000	0.000	HORIZ	0.194	9.000	0.046

- HEAT TRANSFER DATA/GEOMETRY & PARAMETERS -

Coat Thickness, MM	12.7002	3.0000	1500.0190
Coat Conductivity,W/MC	50.0000	0.3000	1.5000
Boundary layer resistance		1.5000	W/M2C
Global Heat Transfer Coefficient		4.5261	W/M2C

- Active Correlation Set 1 - ' '

No.	Distance MT	Elevation MT	Incl	Diameter M	EXT. TEMP CENT
2	50.000	0.000	HORIZ	0.194	9.000

*** UNIT 4 - 'N21 ' - ' PIPELINE ' ***
--- Feed Streams --- - Product Streams -
'N21F ' 'N21P ' to unit 5 - MX1
- 3 Phase VLE (LHLW separation) equilibrium applied

1) * GENERAL DATA & OPTIONS *

Flow phase MIXED
Temperature profile CALCULATED
Distances given as CURVILINEAR coordinates
Calculation performed from UPSTREAM to DOWNSTREAM
PVT/THERMO/TRANSPORT properties are calculated at each pressure/temperature

Integration step 100.000 MT
Maximum ABSOLUTE pressure drop per step 3.447 BAR
Maximum temperature change per step 10.000 CENT

2) * TOLERANCES *
Minimum liquid holdup 0.001000
Maximum liquid holdup 0.999000
Segments with inclination lower than 1.000 deg are assumed HORIZONTAL
Segments with inclination greater than 20.000 deg are assumed VERTICAL

Convergence on pressure 0.001 RELATIVE
Convergence on temperature 0.002 RELATIVE

3) * CALCULATION METHOD & OPTIONS *
Solution algorithm 0
Flow efficiency 100.0000
Internal liminar coef. is NOT calculated
Outside liminar coef. is NOT calculated

4) * SELECTED CORRELATIONS *

- Set 1 -
Flow-pattern 'Mandhane '
Holdup 'Eaton '
Two-phase friction factor 'Dukler corrected'
Single phase friction factor COLEBROOK
Laminar flow - Reynolds No limit 1000.00
Turbulent flow - Reynolds No limit 2000.00
Up-hill flow model 'Gravitational Term not corrected'
Down-hill flow model 'Gravitational energy recovered '

5) * AMBIENT DATA *

- Ambient 1 - 'SOIL1 ' - SOIL
Temperature, CENT 9.000
Thermal conductivity, W/MC 1.500

6) * PIPELINE PROFILE *

No.	Distance MT	Elevation MT	Incl	Diameter M	EXT. TEMP CENT	Roughness MM
1	0.000	0.000	INCL UP	0.194	9.000	0.046

- HEAT TRANSFER DATA/GEOMETRY & PARAMETERS -

Coat Thickness, MM	12.7002	3.0000	1500.0190	
Coat Conductivity,W/MC	50.0000	0.3000	1.5000	
Boundary layer resistance		1.5000	W/M2C	
Global Heat Transfer Coefficient		4.5261	W/M2C	
- Active Correlation Set 1 - '		'		

No.	Distance MT	Elevation MT	Incl	Diameter M	EXT. TEMP CENT
2	250.000	3.000	INCL UP	0.194	9.000
3	500.000	-3.000	INCL DN	0.194	9.000
4	750.000	-3.000	HORIZ	0.194	9.000
5	1000.000	3.000	INCL UP	0.194	9.000
6	1250.000	3.000	HORIZ	0.194	9.000
7	1500.000	-3.000	INCL DN	0.194	9.000
8	1750.000	-3.000	HORIZ	0.194	9.000
9	2000.000	3.000	INCL UP	0.194	9.000
10	2250.000	3.000	HORIZ	0.194	9.000
11	2500.000	-3.000	INCL DN	0.194	9.000
12	2701.000	0.000	INCL UP	0.194	9.000

        ***   UNIT   5 - 'MX1   ' - ' STREAM MIXER   '   ***
                           --- Feed Streams ---   - Product Streams -
    from unit   1 - N18   'N18P   '   'TRKF   '   to unit   6 - CP
    from unit   2 - N19   'N19P   '
    from unit   3 - N20   'N20P   '
    from unit   4 - N21   'N21P   '
      - 3 Phase VLE (LHLW separation) equilibrium applied

    1) * SPECIFICATIONS *
      Outlet pressure set at lowest feed pressure

*** UNIT 6 - 'CP ' - ' PIPELINE ' ***
--- Feed Streams --- - Product Streams -
from unit 5 - MX1 'TRKF ' 'PROD '
- 3 Phase VLE (LHLW separation) equilibrium applied

1) * GENERAL DATA & OPTIONS *

Flow phase MIXED
Temperature profile CALCULATED
Distances given as CURVILINEAR coordinates
Calculation performed from UPSTREAM to DOWNSTREAM
PVT/THERMO/TRANSPORT properties are calculated at each pressure/temperature

Integration step 100.000 MT
Maximum ABSOLUTE pressure drop per step 3.447 BAR
Maximum temperature change per step 10.000 CENT

2) * TOLERANCES *
Minimum liquid holdup 0.001000
Maximum liquid holdup 0.999000
Segments with inclination lower than 1.000 deg are assumed HORIZONTAL
Segments with inclination greater than 20.000 deg are assumed VERTICAL

Convergence on pressure 0.001 RELATIVE
Convergence on temperature 0.002 RELATIVE

3) * CALCULATION METHOD & OPTIONS *
Solution algorithm 0
Flow efficiency 100.0000
Internal liminar coef. is NOT calculated
Outside liminar coef. is NOT calculated

4) * SELECTED CORRELATIONS *

- Set 1 -
Flow-pattern 'Mech 2-Fluid '
Holdup 'Mech 2-Fluid '
Two-phase friction factor 'Mech 2-Fluid '
Single phase friction factor COLEBROOK
Laminar flow - Reynolds No limit 1000.00
Turbulent flow - Reynolds No limit 2000.00
Up-hill flow model 'Mech 2-Fluid '
Down-hill flow model 'Mech 2-Fluid '

5) * AMBIENT DATA *

- Ambient 1 - 'SOIL1 ' - SOIL
Temperature, CENT 9.000
Thermal conductivity, W/MC 1.500

6) * PIPELINE PROFILE *

No.	Distance MT	Elevation MT	Incl	Diameter M	EXT. TEMP CENT	Roughness MM
1	0.000	0.000	INCL UP	0.381	9.000	0.046

- HEAT TRANSFER DATA/GEOMETRY & PARAMETERS -

Coat Thickness, MM	12.7002	3.0000	1500.0190	
Coat Conductivity,W/MC	50.0000	0.3000	1.5000	
Boundary layer resistance		1.5000	W/M2C	
Global Heat Transfer Coefficient		2.8371	W/M2C	

- Active Correlation Set 1 - ' '

No.	Distance MT	Elevation MT	Incl	Diameter M	EXT. TEMP CENT
2	250.000	3.000	INCL UP	0.381	9.000
3	500.000	-3.000	INCL DN	0.381	9.000
4	750.000	-3.000	HORIZ	0.381	9.000
5	1000.000	3.000	INCL UP	0.381	9.000
6	1250.000	3.000	HORIZ	0.381	9.000
7	1500.000	-3.000	INCL DN	0.381	9.000
8	1750.000	-3.000	HORIZ	0.381	9.000
9	2000.000	3.000	INCL UP	0.381	9.000
10	2250.000	3.000	HORIZ	0.381	9.000
11	2500.000	-3.000	INCL DN	0.381	9.000
12	2750.000	-3.000	HORIZ	0.381	9.000
13	3000.000	3.000	INCL UP	0.381	9.000
14	3250.000	3.000	HORIZ	0.381	9.000
15	3500.000	-3.000	INCL DN	0.381	9.000
16	3750.000	-3.000	HORIZ	0.381	9.000
17	4000.000	3.000	INCL UP	0.381	9.000
18	4250.000	3.000	HORIZ	0.381	9.000
19	4500.000	-3.000	INCL DN	0.381	9.000
20	4865.000	0.000	INCL UP	0.381	9.000

V) **** STREAM / UNITS DICTIONARY ****

1) STREAMS-UNITS CROSS-REFERENCE TABLE

No	Stream Id	Description/Service	Product of Unit	Feed of Unit(s)
1	S1	.....		
2	N18F	.....		1 N18
3	N19F	.....		2 N19
4	N20F	.....		3 N20
5	N21F	.....		4 N21
6	N18P	.....	1 N18	5 MX1
7	N19P	.....	2 N19	5 MX1
8	N20P	.....	3 N20	5 MX1
9	N21P	.....	4 N21	5 MX1
10	TRKF	.....	5 MX1	6 CP
11	PROD	.....	6 CP	

2) UNITS-STREAMS CROSS-REFERENCE TABLE

No	Unit	Unit Description	Feed Streams		Product Streams	
1	N18	.....	2	N18F	6	N18P
2	N19	.....	3	N19F	7	N19P
3	N20	.....	4	N20F	8	N20P
4	N21	.....	5	N21F	9	N21P
5	MX1	.....	6	N18P	10	TRKF
			7	N19P		
			8	N20P		
			9	N21P		
6	CP	.....	10	TRKF	11	PROD

VI) **** RUN STATISTICS ****

* No of streams 11
process operations 6
topping structures 0
control operations 0
set operations 0

* The calculation is a NETWORK SIMULATION

1) * GENERAL DATA *

Solution method GATHERING applied

Sink/product stream PROD
Specified delivery pressure 75.0000 BAR
Pressure tolerance (RELATIVE) 0.00200

Maximum no of iterations 10
Max RELATIVE pressure change per trial 0.5000
Calculation sequence defined by input sequence

Start operation - unit 1 - 'N18 '
End operation - unit 6 - 'CP '

Pressure of mixer/pipeline feed are made equal
Tolerance (RELATIVE) 0.002000

2) * VARIABLE PARAMETERS *

Node 1 at unit 5 - 'MX1 '
Inlet streams N18P N19P N20P N21P

3) * WELLS/SOURCES TABLE *

1 - Stream 'N18F ', feed of unit 1 - 'N18 '

2 - Stream 'N19F ', feed of unit 2 - 'N19 '

3 - Stream 'N20F ', feed of unit 3 - 'N20 '

4 - Stream 'N21F ', feed of unit 4 - 'N21 '

4) * VARIABLE TEMP/ENTH SPEC *

Feed stream 'N18F ' with VARIABLE pressure
Temperature kept constant

Feed stream 'N19F ' with VARIABLE pressure
Temperature kept constant

Feed stream 'N20F ' with VARIABLE pressure
Temperature kept constant

Feed stream 'N21F ' with VARIABLE pressure
Temperature kept constant

```
    *** SIMULATION TRACE FOLLOWS ***

 ... New/output binary file 'CASE02  ' initialized ...


 . Stream 'S1      ' flashed .
 . Stream 'N18F    ' flashed .
 . Stream 'N19F    ' flashed .
 . Stream 'N20F    ' flashed .
 . Stream 'N21F    ' flashed .
 . Feed/Recycle streams processed .
   Unit op   1 - 'N18     ' calculated
   Unit op   2 - 'N19     ' calculated
   Unit op   3 - 'N20     ' calculated
   Unit op   4 - 'N21     ' calculated
   Unit op   5 - 'MX1     ' calculated
   Unit op   6 - 'CP      ' calculated

*** CONVERGENCE OF SINK/PRODUCT PROD     CHECKING ***
 Pressure - Calc    85.984 BAR , Spec    75.000 BAR , Diff    10.984 BAR
                       ***PRECISION EXCEEDED***

*** CONVERGENCE AT NODE  1 CHECKING ***
 Pressure - Max    89.978 BAR , Min    87.084 BAR , Diff     2.894 BAR
                       ***PRECISION EXCEEDED***

    * NETWORK/GATHERING ITERATION   1 COMPLETED - SOLUTION NOT REACHED *
    . Pressure of sink/prod stream PROD     reset at    75.0000 BAR
 . Backward solution of unit   6 - CP       beginning .
   Unit op   6 - 'CP      ' calculated
    . Pressure of stream N18P     reset .
    . Pressure of stream N19P     reset .
    . Pressure of stream N20P     reset .
    . Pressure of stream N21P     reset .
 . Unit op   5 - MX1      resolved backwards .
 . Backward solution of unit   4 - N21      beginning .
   Unit op   4 - 'N21     ' calculated
 . Backward solution of unit   3 - N20      beginning .
   Unit op   3 - 'N20     ' calculated
 . Backward solution of unit   2 - N19      beginning .
   Unit op   2 - 'N19     ' calculated
 . Backward solution of unit   1 - N18      beginning .
   Unit op   1 - 'N18     ' calculated

    * NETWORK/GATHERING BACK SOLUTION COMPLETED *
    . Stream S1       flashed at fixed P/H .
      Pres      90.0000 BAR  - Temp     50.000 CENT
    . Stream N18F     flashed at fixed T/P .
      Pres      79.7574 BAR  - Temp     67.500 CENT
    . Stream N19F     flashed at fixed T/P .
      Pres      79.6851 BAR  - Temp     67.000 CENT
    . Stream N20F     flashed at fixed T/P .
      Pres      76.3699 BAR  - Temp     68.200 CENT
    . Stream N21F     flashed at fixed T/P .
      Pres      78.7776 BAR  - Temp     67.400 CENT
   Unit op   1 - 'N18     ' calculated
   Unit op   2 - 'N19     ' calculated
   Unit op   3 - 'N20     ' calculated
   Unit op   4 - 'N21     ' calculated
   Unit op   5 - 'MX1     ' calculated
   Unit op   6 - 'CP      ' calculated

*** CONVERGENCE OF SINK/PRODUCT PROD     CHECKING ***
 Pressure - Calc    75.001 BAR , Spec    75.000 BAR , Diff     0.001 BAR
                       -  PRECISION  REACHED  -

*** CONVERGENCE AT NODE  1 CHECKING ***
 Pressure - Max    76.350 BAR , Min    76.343 BAR , Diff     0.007 BAR
                       -  PRECISION  REACHED  -

    * NETWORK/GATHERING RESOLVED AFTER   2 ITERATIONS *
```

*** SOLUTION OBTAINED ***

... Base case results loaded on binary file 'CASE02 ' ...

*** NETWORK/GATHERING SOLUTION SUMMARY ***

1) * SINK STREAM & NODES DATA *

Sink/product stream 'PROD '
Delivery flowrate - molar 6270.89 KMOL - weight 145000. KG
Temperature 48.68 CENT
Pressure 75.0010 BAR

Node 1 at unit 5 - 'MX1 '

- Inlet streams data

Stream 'N18P '
Flowrate - molar 1600.16 KMOL - weight 37000.0 KG
Temperature 45.29 CENT
Pressure 76.3501 BAR

Stream 'N19P '
Flowrate - molar 1946.14 KMOL - weight 45000.0 KG
Temperature 53.62 CENT
Pressure 76.3471 BAR

Stream 'N20P '
Flowrate - molar 1427.17 KMOL - weight 33000.0 KG
Temperature 67.92 CENT
Pressure 76.3432 BAR

Stream 'N21P '
Flowrate - molar 1297.43 KMOL - weight 30000.0 KG
Temperature 52.63 CENT
Pressure 76.3457 BAR

2) * WELLS/SOURCES TABLE *

1 - Stream 'N18F ', feed of unit 1 - 'N18 '
Flowrate - molar 1600.1585 KMOL - weight 37000.0000 KG
Temperature - initial 67.50 CENT - final 67.50 CENT
Pressure - initial 90.0000 BAR - final 79.7574 BAR

2 - Stream 'N19F ', feed of unit 2 - 'N19 '
Flowrate - molar 1946.1387 KMOL - weight 45000.0000 KG
Temperature - initial 67.00 CENT - final 67.00 CENT
Pressure - initial 90.0000 BAR - final 79.6851 BAR

3 - Stream 'N20F ', feed of unit 3 - 'N20 '
Flowrate - molar 1427.1684 KMOL - weight 33000.0000 KG
Temperature - initial 68.20 CENT - final 68.20 CENT
Pressure - initial 90.0000 BAR - final 76.3699 BAR

4 - Stream 'N21F ', feed of unit 4 - 'N21 '
Flowrate - molar 1297.4258 KMOL - weight 30000.0000 KG
Temperature - initial 67.40 CENT - final 67.40 CENT
Pressure - initial 90.0000 BAR - final 78.7776 BAR

3) * PRESSURE DROPS IN PIPELINES *

1 - Unit 1 - 'N18 '
Feed(s) N18F
Product N18P
Flowrate - molar 1600.16 KMOL - weight 37000.0 KG
Pressure - inlet 79.7574 BAR - outlet 76.3501 BAR
Pressure - drop -3.407 BAR

2 - Unit 2 - 'N19 '
Feed(s) N19F
Product N19P
Flowrate - molar 1946.14 KMOL - weight 45000.0 KG
Pressure - inlet 79.6851 BAR - outlet 76.3471 BAR
Pressure - drop -3.338 BAR

3 - Unit 3 - 'N20 '
Feed(s) N20F
Product N20P
Flowrate - molar 1427.17 KMOL - weight 33000.0 KG
Pressure - inlet 76.3699 BAR - outlet 76.3432 BAR
Pressure - drop -0.2672E-01 BAR

4 - Unit 4 - 'N21 '
Feed(s) N21F
Product N21P
Flowrate - molar 1297.43 KMOL - weight 30000.0 KG
Pressure - inlet 78.7776 BAR - outlet 76.3457 BAR
Pressure - drop -2.432 BAR

5 - Unit 6 - 'CP '
Feed(s) TRKF
Product PROD
Flowrate - molar 6270.89 KMOL - weight 145000. KG
Pressure - inlet 76.3432 BAR - outlet 75.0010 BAR
Pressure - drop -1.342 BAR

*** UNIT 1 - 'N18 ' - ' PIPELINE ' ***
--- Feed Streams --- - Product Streams -
'N18F ' 'N18P ' to unit 5 - MX1

1) * OUTLET CONDITIONS *

Temperature 45.29 °C
Pressure 76.3501 bar

2) * CALCULATION RESULTS *

Node	CURVILIN Distance m	Elevation m	Incl	Diameter m	Calculated Pressure bar	CALCULATED Temperature °C	Liquid Holdup	Liquid Mass Rate kg/s	Gas Mass Rate kg/s	Flow Pattern
1	0.000	0.000	INCL UP	0.194	79.757	67.500	0.035590	1.226944	9.050834	STRATIF
2	250.000	3.000	INCL UP	0.194	79.613	66.264	0.036509	1.253929	9.023888	STRATIF
2*	250.000	3.000	INCL DN	0.194	79.613	66.264	0.035333	1.254055	9.023722	STRATIF
3	500.000	-3.000	INCL DN	0.194	79.500	65.085	0.036179	1.279764	8.997969	STRATIF
3*	500.000	-3.000	HORIZ	0.194	79.500	65.085	0.036999	1.279881	8.997897	STRATIF
4	750.000	-3.000	HORIZ	0.194	79.341	63.897	0.037859	1.305724	8.972081	STRATIF
5	1000.000	-3.000	HORIZ	0.194	79.183	62.729	0.038695	1.331215	8.946598	STRATIF
5*	1000.000	-3.000	INCL UP	0.194	79.183	62.729	0.039588	1.331358	8.946419	STRATIF
6	1250.000	3.000	INCL UP	0.194	78.977	61.550	0.040466	1.356841	8.921041	STRATIF
6*	1250.000	3.000	HORIZ	0.194	78.977	61.550	0.039502	1.357014	8.920763	STRATIF
7	1500.000	3.000	HORIZ	0.194	78.819	60.425	0.040324	1.381376	8.896446	STRATIF
7*	1500.000	3.000	INCL DN	0.194	78.819	60.425	0.039324	1.381519	8.896259	STRATIF
8	1750.000	-3.000	INCL DN	0.194	78.710	59.353	0.040098	1.404789	8.872974	STRATIF
8*	1750.000	-3.000	HORIZ	0.194	78.710	59.353	0.041132	1.404900	8.872877	STRATIF
9	2000.000	-3.000	HORIZ	0.194	78.553	58.269	0.041947	1.428346	8.849484	STRATIF
9*	2000.000	-3.000	INCL UP	0.194	78.553	58.269	0.043010	1.428488	8.849290	STRATIF
10	2250.000	3.000	INCL UP	0.194	78.348	57.173	0.043848	1.452102	8.825793	STRATIF
10*	2250.000	3.000	HORIZ	0.194	78.348	57.173	0.042683	1.452276	8.825502	STRATIF
11	2500.000	3.000	HORIZ	0.194	78.192	56.130	0.043473	1.474809	8.803025	STRATIF
11*	2500.000	3.000	INCL DN	0.194	78.192	56.130	0.042306	1.474951	8.802827	STRATIF
12	2750.000	-3.000	INCL DN	0.194	78.084	55.140	0.043030	1.496432	8.781342	STRATIF
12*	2750.000	-3.000	HORIZ	0.194	78.084	55.140	0.044234	1.496541	8.781236	STRATIF
13	3000.000	-3.000	HORIZ	0.194	77.929	54.137	0.044972	1.518229	8.759608	STRATIF
13*	3000.000	-3.000	INCL UP	0.194	77.929	54.137	0.046244	1.518370	8.759407	STRATIF
14	3250.000	3.000	INCL UP	0.194	77.725	53.120	0.047033	1.540258	8.737641	STRATIF
14*	3250.000	3.000	HORIZ	0.194	77.725	53.120	0.045701	1.540433	8.737345	STRATIF
15	3500.000	3.000	HORIZ	0.194	77.570	52.156	0.046423	1.561276	8.716562	STRATIF
15*	3500.000	3.000	INCL DN	0.194	77.570	52.156	0.045071	1.561418	8.716359	STRATIF
16	3750.000	-3.000	INCL DN	0.194	77.465	51.244	0.045765	1.581245	8.696532	STRATIF
16*	3750.000	-3.000	HORIZ	0.194	77.465	51.244	0.047135	1.581354	8.696423	STRATIF
17	4000.000	-3.000	HORIZ	0.194	77.311	50.317	0.047854	1.601417	8.676420	STRATIF
17*	4000.000	-3.000	INCL UP	0.194	77.311	50.317	0.049306	1.601559	8.676218	STRATIF
18	4250.000	3.000	INCL UP	0.194	77.107	49.375	0.050026	1.621852	8.656045	STRATIF
18*	4250.000	3.000	HORIZ	0.194	77.107	49.375	0.048479	1.622029	8.655748	STRATIF
19	4500.000	3.000	HORIZ	0.194	76.954	48.486	0.049193	1.641310	8.636526	STRATIF
19*	4500.000	3.000	INCL DN	0.194	76.954	48.486	0.047669	1.641453	8.636324	STRATIF
20	4750.000	-3.000	INCL DN	0.194	76.850	47.648	0.048293	1.659749	8.618025	STRATIF
20*	4750.000	-3.000	HORIZ	0.194	76.850	47.648	0.049835	1.659859	8.617918	STRATIF
21	5000.000	-3.000	HORIZ	0.194	76.698	46.794	0.050505	1.678418	8.599414	STRATIF
21*	5000.000	-3.000	INCL UP	0.194	76.698	46.794	0.052154	1.678563	8.599214	STRATIF
22	5250.000	3.000	INCL UP	0.194	76.495	45.923	0.052846	1.697379	8.580511	STRATIF
22*	5250.000	3.000	INCL DN	0.194	76.495	45.923	0.050036	1.697560	8.580218	STRATIF

Node	CURVILIN Distance	Elevation	Incl	Diameter	Calculated Pressure	CALCULATED Temperature	Liquid Holdup	Liquid Mass Rate	Gas Mass Rate	Flow Pattern
	m	m		m	bar	°C		kg/s	kg/s	
23	5444.000	0.000	INCL DN	0.194	76.350	45.286	0.050508	1.711088	8.566703	STRATIF

3) * FLUID VELOCITY AND FLOW RATES *

Node	Distance	GAS Volume Flow Rate	GAS Velocity	GAS Surface Velocity	LIQUID Volume Flow Rate	LIQUID Velocity	LIQUID Surface Velocity	Mixture Velocity
	m	m3/s	m/s	m/s	m3/s	m/s	m/s	m/s
1	0.000	0.1296050	4.5616	4.3993	2.0280102E-03	1.9342	0.0688	4.4681
2	250.000	0.1289671	4.5435	4.3776	2.0727411E-03	1.9271	0.0704	4.4480
2*	250.000	0.1290151	4.5397	4.3793	2.0729696E-03	1.9914	0.0704	4.4496
3	500.000	0.1283620	4.5206	4.3571	2.1159192E-03	1.9852	0.0718	4.4289
3*	500.000	0.1284024	4.5259	4.3585	2.1159261E-03	1.9412	0.0718	4.4303
4	750.000	0.1278140	4.5092	4.3385	2.1588472E-03	1.9356	0.0733	4.4118
5	1000.000	0.1272907	4.4946	4.3207	2.2011817E-03	1.9309	0.0747	4.3954
5*	1000.000	0.1273431	4.5007	4.3225	2.2014115E-03	1.8876	0.0747	4.3972
6	1250.000	0.1268328	4.4867	4.3052	2.2434951E-03	1.8819	0.0762	4.3813
6*	1250.000	0.1268980	4.4846	4.3074	2.2439270E-03	1.9282	0.0762	4.3836
7	1500.000	0.1263464	4.4689	4.2887	2.2844577E-03	1.9230	0.0775	4.3662
7*	1500.000	0.1263978	4.4660	4.2904	2.2847093E-03	1.9721	0.0776	4.3680
8	1750.000	0.1258047	4.4487	4.2703	2.3237423E-03	1.9671	0.0789	4.3492
8*	1750.000	0.1258423	4.4548	4.2716	2.3238136E-03	1.9177	0.0789	4.3504
9	2000.000	0.1253140	4.4399	4.2536	2.3628777E-03	1.9120	0.0802	4.3338
9*	2000.000	0.1253645	4.4466	4.2553	2.3631433E-03	1.8650	0.0802	4.3356
10	2250.000	0.1249025	4.4341	4.2397	2.4022196E-03	1.8596	0.0815	4.3212
10*	2250.000	0.1249662	4.4310	4.2418	2.4026767E-03	1.9107	0.0816	4.3234
11	2500.000	0.1244618	4.4167	4.2247	2.4402742E-03	1.9054	0.0828	4.3075
11*	2500.000	0.1245117	4.4131	4.2264	2.4405484E-03	1.9581	0.0828	4.3092
12	2750.000	0.1239649	4.3970	4.2078	2.4767212E-03	1.9537	0.0841	4.2919
12*	2750.000	0.1240010	4.4039	4.2091	2.4768133E-03	1.9006	0.0841	4.2931
13	3000.000	0.1235192	4.3901	4.1927	2.5130608E-03	1.8968	0.0853	4.2780
13*	3000.000	0.1235684	4.3977	4.1944	2.5133384E-03	1.8448	0.0853	4.2797
14	3250.000	0.1231532	4.3866	4.1803	2.5496406E-03	1.8401	0.0865	4.2668
14*	3250.000	0.1232159	4.3827	4.1824	2.5501016E-03	1.8940	0.0866	4.2690
15	3500.000	0.1227574	4.3697	4.1669	2.5849925E-03	1.8901	0.0877	4.2546
15*	3500.000	0.1228062	4.3653	4.1685	2.5852697E-03	1.9470	0.0878	4.2563
16	3750.000	0.1223043	4.3506	4.1515	2.6188015E-03	1.9424	0.0889	4.2404
16*	3750.000	0.1223393	4.3581	4.1527	2.6188960E-03	1.8860	0.0889	4.2416
17	4000.000	0.1219026	4.3458	4.1378	2.6525415E-03	1.8815	0.0900	4.2279
17*	4000.000	0.1219509	4.3542	4.1395	2.6528149E-03	1.8263	0.0900	4.2295
18	4250.000	0.1215809	4.3442	4.1269	2.6865526E-03	1.8229	0.0912	4.2181
18*	4250.000	0.1216430	4.3394	4.1290	2.6870031E-03	1.8814	0.0912	4.2202
19	4500.000	0.1212287	4.3279	4.1150	2.7193893E-03	1.8764	0.0923	4.2073
19*	4500.000	0.1212768	4.3226	4.1166	2.7196562E-03	1.9366	0.0923	4.2089
20	4750.000	0.1208182	4.3091	4.1010	2.7507411E-03	1.9334	0.0934	4.1944
20*	4750.000	0.1208524	4.3173	4.1022	2.7508259E-03	1.8736	0.0934	4.1956
21	5000.000	0.1204588	4.3063	4.0888	2.7820585E-03	1.8698	0.0944	4.1833
21*	5000.000	0.1205066	4.3155	4.0905	2.7823170E-03	1.8108	0.0944	4.1849
22	5250.000	0.1201801	4.3070	4.0794	2.8136748E-03	1.8073	0.0955	4.1749
22*	5250.000	0.1202420	4.2964	4.0815	2.8141056E-03	1.9091	0.0955	4.1770
23	5444.000	0.1199261	4.2873	4.0707	2.8370646E-03	1.9066	0.0963	4.1670

4) * VELOCITY, FRICTION FACTOR, SONIC SPEED *

Node	Distance	Velocity	dP fric/L	Fric.Fact.	Reynolds No.	Sonic Vel	Mach No.
	m	m/s	bar			m/s	
1	0.000	4.4681	0.1770760E-03	0.126864E-01	0.423378E+07	0.0000	0.000000
2	250.000	4.4480	0.1763231E-03	0.126586E-01	0.422496E+07	0.0000	0.000000
2*	250.000	4.4496	0.2560782E-03	0.185062E-01	0.422564E+07	0.0000	0.000000
3	500.000	4.4289	0.2561968E-03	0.185633E-01	0.421683E+07	0.0000	0.000000
3*	500.000	4.4303	0.1940511E-03	0.139864E-01	0.421687E+07	0.0000	0.000000
4	750.000	4.4118	0.1934599E-03	0.139719E-01	0.420837E+07	0.0000	0.000000
5	1000.000	4.3954	0.1930096E-03	0.139614E-01	0.420034E+07	0.0000	0.000000
5*	1000.000	4.3972	0.1588875E-03	0.114274E-01	0.420028E+07	0.0000	0.000000
6	1250.000	4.3813	0.1582298E-03	0.113947E-01	0.419216E+07	0.0000	0.000000
6*	1250.000	4.3836	0.1926886E-03	0.139456E-01	0.419328E+07	0.0000	0.000000
7	1500.000	4.3662	0.1921761E-03	0.139362E-01	0.418494E+07	0.0000	0.000000
7*	1500.000	4.3680	0.2570428E-03	0.187398E-01	0.418608E+07	0.0000	0.000000
8	1750.000	4.3492	0.2572664E-03	0.188057E-01	0.417752E+07	0.0000	0.000000
8*	1750.000	4.3504	0.1916025E-03	0.139170E-01	0.417700E+07	0.0000	0.000000
9	2000.000	4.3338	0.1909894E-03	0.138982E-01	0.416876E+07	0.0000	0.000000
9*	2000.000	4.3356	0.1562350E-03	0.112946E-01	0.416824E+07	0.0000	0.000000
10	2250.000	4.3212	0.1555682E-03	0.112594E-01	0.416037E+07	0.0000	0.000000
10*	2250.000	4.3234	0.1908326E-03	0.138949E-01	0.416197E+07	0.0000	0.000000
11	2500.000	4.3075	0.1902153E-03	0.138751E-01	0.415389E+07	0.0000	0.000000
11*	2500.000	4.3092	0.2578512E-03	0.189249E-01	0.415548E+07	0.0000	0.000000
12	2750.000	4.2919	0.2581685E-03	0.189972E-01	0.414721E+07	0.0000	0.000000
12*	2750.000	4.2931	0.1896755E-03	0.138572E-01	0.414620E+07	0.0000	0.000000
13	3000.000	4.2780	0.1892169E-03	0.138505E-01	0.413830E+07	0.0000	0.000000
13*	3000.000	4.2797	0.1537565E-03	0.111694E-01	0.413725E+07	0.0000	0.000000
14	3250.000	4.2668	0.1531760E-03	0.111389E-01	0.412969E+07	0.0000	0.000000
14*	3250.000	4.2690	0.1888805E-03	0.138289E-01	0.413179E+07	0.0000	0.000000
15	3500.000	4.2546	0.1884392E-03	0.138218E-01	0.412406E+07	0.0000	0.000000
15*	3500.000	4.2563	0.2589642E-03	0.191293E-01	0.412618E+07	0.0000	0.000000
16	3750.000	4.2404	0.2591987E-03	0.191923E-01	0.411824E+07	0.0000	0.000000
16*	3750.000	4.2416	0.1879259E-03	0.138044E-01	0.411671E+07	0.0000	0.000000
17	4000.000	4.2279	0.1873965E-03	0.137884E-01	0.410913E+07	0.0000	0.000000
17*	4000.000	4.2295	0.1514193E-03	0.110473E-01	0.410754E+07	0.0000	0.000000
18	4250.000	4.2181	0.1509850E-03	0.110269E-01	0.410039E+07	0.0000	0.000000
18*	4250.000	4.2202	0.1873495E-03	0.137901E-01	0.410308E+07	0.0000	0.000000
19	4500.000	4.2073	0.1867129E-03	0.137636E-01	0.409568E+07	0.0000	0.000000
19*	4500.000	4.2089	0.2600325E-03	0.193197E-01	0.409834E+07	0.0000	0.000000
20	4750.000	4.1944	0.2604816E-03	0.193994E-01	0.409082E+07	0.0000	0.000000
20*	4750.000	4.1956	0.1863947E-03	0.137604E-01	0.408873E+07	0.0000	0.000000
21	5000.000	4.1833	0.1858987E-03	0.137448E-01	0.408156E+07	0.0000	0.000000
21*	5000.000	4.1849	0.1494432E-03	0.109461E-01	0.407939E+07	0.0000	0.000000
22	5250.000	4.1749	0.1489599E-03	0.109191E-01	0.407262E+07	0.0000	0.000000
22*	5250.000	4.1770	0.2274001E-03	0.169123E-01	0.407762E+07	0.0000	0.000000
23	5444.000	4.1670	0.2272877E-03	0.169300E-01	0.407211E+07	0.0000	0.000000

5) * LIQUID HOLDUP *

Node	Distance	Elevation	Volume Fraction	Volume Holdup per Unit Length	Weight Holdup per Unit Length	Volume Holdup per Segment	Weight Holdup per Segment
	m	m		m3	kg	m3	kg
1	0.000	0.000	0.035590	1.0484991E-03	0.6343409	0.000000	0.000000
2	250.000	3.000	0.036509	1.0755657E-03	0.6506436	0.2656413	160.6935
2*	250.000	3.000	0.035333	1.0409393E-03	0.6297223	0.000000	0.000000
3	500.000	-3.000	0.036179	1.0658419E-03	0.6446850	0.2634655	159.3621
3*	500.000	-3.000	0.036999	1.0900019E-03	0.6593199	0.000000	0.000000
4	750.000	-3.000	0.037859	1.1153465E-03	0.6745660	0.2757859	166.7949
5	1000.000	-3.000	0.038695	1.1399749E-03	0.6893971	0.2820069	170.5421

Node	Distance	Elevation	Volume Fraction	Volume Holdup per Unit Length	Weight Holdup per Unit Length	Volume Holdup per Segment	Weight Holdup per Segment
	m	m		m3	kg	m3	kg
5*	1000.000	-3.000	0.039588	1.1662763E-03	0.7053346	0.000000	0.000000
6	1250.000	3.000	0.040466	1.1921331E-03	0.7209005	0.2946370	178.1835
6*	1250.000	3.000	0.039502	1.1637616E-03	0.7037845	0.000000	0.000000
7	1500.000	3.000	0.040324	1.1879567E-03	0.7183015	0.2940585	177.8035
7*	1500.000	3.000	0.039324	1.1584948E-03	0.7005190	0.000000	0.000000
8	1750.000	-3.000	0.040098	1.1812957E-03	0.7141488	0.2925906	176.8909
8*	1750.000	-3.000	0.041132	1.2117614E-03	0.7325906	0.000000	0.000000
9	2000.000	-3.000	0.041947	1.2357876E-03	0.7469827	0.3060115	184.9726
9*	2000.000	-3.000	0.043010	1.2671067E-03	0.7659485	0.000000	0.000000
10	2250.000	3.000	0.043848	1.2917954E-03	0.7807681	0.3196144	193.1925
10*	2250.000	3.000	0.042683	1.2574706E-03	0.7600665	0.000000	0.000000
11	2500.000	3.000	0.043473	1.2807386E-03	0.7739819	0.3174411	191.8396
11*	2500.000	3.000	0.042306	1.2463627E-03	0.7532419	0.000000	0.000000
12	2750.000	-3.000	0.043030	1.2676888E-03	0.7659386	0.3143273	189.9252
12*	2750.000	-3.000	0.044234	1.3031500E-03	0.7873898	0.000000	0.000000
13	3000.000	-3.000	0.044972	1.3248872E-03	0.8003608	0.3286613	198.5463
13*	3000.000	-3.000	0.046244	1.3623654E-03	0.8230388	0.000000	0.000000
14	3250.000	3.000	0.047033	1.3856254E-03	0.8369615	0.3432838	207.3732
14*	3250.000	3.000	0.045701	1.3463866E-03	0.8133081	0.000000	0.000000
15	3500.000	3.000	0.046423	1.3676408E-03	0.8259723	0.3393416	204.9452
15*	3500.000	3.000	0.045071	1.3278066E-03	0.8019516	0.000000	0.000000
16	3750.000	-3.000	0.045765	1.3482614E-03	0.8140871	0.3345809	202.0317
16*	3750.000	-3.000	0.047135	1.3886324E-03	0.8384905	0.000000	0.000000
17	4000.000	-3.000	0.047854	1.4097983E-03	0.8510855	0.3498191	211.1873
17*	4000.000	-3.000	0.049306	1.4525763E-03	0.8769505	0.000000	0.000000
18	4250.000	3.000	0.050026	1.4737855E-03	0.8896083	0.3654862	220.6366
18*	4250.000	3.000	0.048479	1.4282123E-03	0.8621509	0.000000	0.000000
19	4500.000	3.000	0.049193	1.4492489E-03	0.8746564	0.3598089	217.1574
19*	4500.000	3.000	0.047669	1.4043389E-03	0.8475911	0.000000	0.000000
20	4750.000	-3.000	0.048293	1.4227434E-03	0.8584612	0.3534385	213.2705
20*	4750.000	-3.000	0.049835	1.4681729E-03	0.8859014	0.000000	0.000000
21	5000.000	-3.000	0.050505	1.4879088E-03	0.8976094	0.3697064	223.0369
21*	5000.000	-3.000	0.052154	1.5364867E-03	0.9269577	0.000000	0.000000
22	5250.000	3.000	0.052846	1.5568733E-03	0.9390998	0.3863573	233.0724
22*	5250.000	3.000	0.050036	1.4740830E-03	0.8892147	0.000000	0.000000
23	5444.000	0.000	0.050508	1.4879927E-03	0.8974261	0.2874065	173.3415

Pipeline Volume 160.383 m3
Total Volume Holdup 7.043470 m3 - Average Holdup 4.3916620E-02
Total Weight Holdup 4254.799 kg

6) * GAS HOLDUP *

Node	Distance	Elevation	Volume Fraction	Volume Holdup per Unit Length	Weight Holdup per Unit Length	Volume Holdup per Segment	Weight Holdup per Segment
	m	m		m3	kg	m3	kg
1	0.000	0.000	0.964410	2.8411971E-02	1.984122	0.000000	0.000000
2	250.000	3.000	0.963491	2.8384904E-02	1.986110	7.099476	496.6645
2*	250.000	3.000	0.964667	2.8419531E-02	1.987751	0.000000	0.000000
3	500.000	-3.000	0.963821	2.8394628E-02	1.990411	7.101652	497.6401
3*	500.000	-3.000	0.963001	2.8370468E-02	1.988082	0.000000	0.000000
4	750.000	-3.000	0.962141	2.8345123E-02	1.989729	7.089332	497.6163
5	1000.000	-3.000	0.961305	2.8320495E-02	1.990504	7.083111	497.8094
5*	1000.000	-3.000	0.960412	2.8294193E-02	1.987794	0.000000	0.000000
6	1250.000	3.000	0.959534	2.8268337E-02	1.988325	7.070480	496.9600
6*	1250.000	3.000	0.960498	2.8296708E-02	1.989221	0.000000	0.000000
7	1500.000	3.000	0.959676	2.8272513E-02	1.990762	7.071059	497.8793

Node	Distance	Elevation	Volume Fraction	Volume Holdup per Unit Length	Weight Holdup per Unit Length	Volume Holdup per Segment	Weight Holdup per Segment
	m	m		m3	kg	m3	kg
7*	1500.000	3.000	0.960676	2.8301975E-02	1.991978	0.000000	0.000000
8	1750.000	-3.000	0.959902	2.8279174E-02	1.994522	7.072527	498.6650
8*	1750.000	-3.000	0.958868	2.8248708E-02	1.991758	0.000000	0.000000
9	2000.000	-3.000	0.958053	2.8224682E-02	1.993191	7.059106	498.4953
9*	2000.000	-3.000	0.956990	2.8193363E-02	1.990127	0.000000	0.000000
10	2250.000	3.000	0.956152	2.8168674E-02	1.990456	7.045503	497.5057
10*	2250.000	3.000	0.957317	2.8202999E-02	1.991784	0.000000	0.000000
11	2500.000	3.000	0.956527	2.8179731E-02	1.993124	7.047676	498.4760
11*	2500.000	3.000	0.957694	2.8214107E-02	1.994704	0.000000	0.000000
12	2750.000	-3.000	0.956970	2.8192781E-02	1.997100	7.050790	499.3169
12*	2750.000	-3.000	0.955766	2.8157320E-02	1.993985	0.000000	0.000000
13	3000.000	-3.000	0.955028	2.8135583E-02	1.995299	7.036456	499.0169
13*	3000.000	-3.000	0.953756	2.8098104E-02	1.991794	0.000000	0.000000
14	3250.000	3.000	0.952967	2.8074844E-02	1.991909	7.021834	497.8749
14*	3250.000	3.000	0.954299	2.8114083E-02	1.993594	0.000000	0.000000
15	3500.000	3.000	0.953577	2.8092829E-02	1.994780	7.025776	498.9005
15*	3500.000	3.000	0.954929	2.8132663E-02	1.996760	0.000000	0.000000
16	3750.000	-3.000	0.954235	2.8112208E-02	1.998937	7.030537	499.7887
16*	3750.000	-3.000	0.952865	2.8071837E-02	1.995472	0.000000	0.000000
17	4000.000	-3.000	0.952146	2.8050671E-02	1.996516	7.015298	499.3507
17*	4000.000	-3.000	0.950694	2.8007894E-02	1.992627	0.000000	0.000000
18	4250.000	3.000	0.949974	2.7986684E-02	1.992550	6.999631	498.0470
18*	4250.000	3.000	0.951521	2.8032258E-02	1.994690	0.000000	0.000000
19	4500.000	3.000	0.950807	2.8011221E-02	1.995571	7.005309	499.1194
19*	4500.000	3.000	0.952331	2.8056131E-02	1.997924	0.000000	0.000000
20	4750.000	-3.000	0.951707	2.8037726E-02	1.999946	7.011679	500.0467
20*	4750.000	-3.000	0.950165	2.7992297E-02	1.996116	0.000000	0.000000
21	5000.000	-3.000	0.949495	2.7972561E-02	1.996936	6.995411	499.4564
21*	5000.000	-3.000	0.947846	2.7923983E-02	1.992624	0.000000	0.000000
22	5250.000	3.000	0.947154	2.7903596E-02	1.992251	6.978760	497.9907
22*	5250.000	3.000	0.949964	2.7986387E-02	1.997050	0.000000	0.000000
23	5444.000	0.000	0.949492	2.7972477E-02	1.998164	5.427925	387.7422

Pipeline Volume 160.383 m3
Total Volume Holdup 153.3393 m3 - Average Holdup 0.9560834
Total Weight Holdup 10854.36 kg

7) * PRESSURE LOSSES *

Sect	Total bar	Friction bar	Elevation bar	Kinetic bar
1	0.1447834	0.1448659	0.000000	-8.2505925E-05
2	0.1126603	0.2100628	-9.7334932E-02	-6.7641058E-05
3	0.1588104	0.1588895	0.000000	-7.9046326E-05
4	0.1584239	0.1584925	0.000000	-6.8555827E-05
5	0.2057339	0.1300840	7.5718621E-02	-6.8684407E-05
6	0.1577516	0.1578081	0.000000	-5.6437457E-05
7	0.1097287	0.2108969	-0.1011081	-6.0131711E-05
8	0.1568224	0.1568952	0.000000	-7.2849532E-05
9	0.2049715	0.1279428	7.7092116E-02	-6.3441124E-05
10	0.1561508	0.1561997	0.000000	-4.8922890E-05
11	0.1074723	0.2116321	-0.1041073	-5.2558428E-05
12	0.1552678	0.1553356	0.000000	-6.7827908E-05
13	0.2042170	0.1259151	7.8360647E-02	-5.8703569E-05
14	0.1546817	0.1547234	0.000000	-4.1713167E-05
15	0.1053852	0.2125070	-0.1070765	-4.5296998E-05
16	0.1538909	0.1539545	0.000000	-6.3538073E-05

Sect	Total bar	Friction bar	Elevation bar	Kinetic bar
17	0.2035651	0.1241016	7.9517315E-02	-5.3831497E-05
18	0.1533394	0.1533743	0.000000	-3.4923522E-05
19	0.1034538	0.2134948	-0.1100029	-3.8110612E-05
20	0.1525506	0.1526100	0.000000	-5.9403693E-05
21	0.2029652	0.1224496	8.0565301E-02	-4.9692258E-05
22	0.1446737	0.1446850	0.000000	-1.1290271E-05

Total Pressure Drop 3.407300 bar
Total Friction DP 3.536920 bar
Total Elevation DP -0.1283758 bar
Total Kinetic DP -1.2451063E-03 bar
Total Fitting DP 0.000000 bar (included in total friction dp)

8) * HEAT TRANSFER RESULTS *

Node	Temperature	Delta T	Text	T-Text	Log Mean DT	Heat Exchanged per Segment	Heat Exchanged per Unit Length(m)	Delta Enth.	Heat Transfer Coefficient
	°C	°C	°C	°C	°C	MJ/h	MJ/h	kJ/kg	W/m2.°C
1	67.500	0.000	9.000	58.500	0.000	0.000000	-0.5801128	0.0000	4.5261
2	66.264	-1.236	9.000	57.264	57.880	-142.9403	-0.5678559	-3.9887	4.5261
2*	66.264	0.000	9.000	57.264	57.264	0.000000	-0.5678559	0.0000	4.5261
3	65.085	-1.179	9.000	56.085	56.673	-139.9730	-0.5561689	-3.8157	4.5261
3*	65.085	0.000	9.000	56.085	56.085	0.000000	-0.5561689	0.0000	4.5261
4	63.897	-1.189	9.000	54.897	55.489	-137.0337	-0.5443789	-3.7952	4.5261
5	62.729	-1.168	9.000	53.729	54.311	-134.1220	-0.5327996	-3.7147	4.5261
5*	62.729	0.000	9.000	53.729	53.729	0.000000	-0.5327996	0.0000	4.5261
6	61.550	-1.178	9.000	52.550	53.137	-131.2090	-0.5211131	-3.6950	4.5261
6*	61.550	0.000	9.000	52.550	52.550	0.000000	-0.5211131	0.0000	4.5261
7	60.425	-1.125	9.000	51.425	51.986	-128.3775	-0.5099566	-3.5558	4.5261
7*	60.425	0.000	9.000	51.425	51.425	0.000000	-0.5099566	0.0000	4.5261
8	59.353	-1.072	9.000	50.353	50.887	-125.6778	-0.4993254	-3.4203	4.5261
8*	59.353	0.000	9.000	50.353	50.353	0.000000	-0.4993254	0.0000	4.5261
9	58.269	-1.084	9.000	49.269	49.809	-122.9998	-0.4885755	-3.4070	4.5261
9*	58.269	0.000	9.000	49.269	49.269	0.000000	-0.4885755	0.0000	4.5261
10	57.173	-1.096	9.000	48.173	48.719	-120.2917	-0.4777049	-3.3929	4.5261
10*	57.173	0.000	9.000	48.173	48.173	0.000000	-0.4777049	0.0000	4.5261
11	56.130	-1.043	9.000	47.130	47.650	-117.6643	-0.4673642	-3.2594	4.5261
11*	56.130	0.000	9.000	47.130	47.130	0.000000	-0.4673642	0.0000	4.5261
12	55.140	-0.990	9.000	46.140	46.633	-115.1683	-0.4575473	-3.1294	4.5261
12*	55.140	0.000	9.000	46.140	46.140	0.000000	-0.4575473	0.0000	4.5261
13	54.137	-1.003	9.000	45.137	45.637	-112.6913	-0.4475966	-3.1217	4.5261
13*	54.137	0.000	9.000	45.137	45.137	0.000000	-0.4475966	0.0000	4.5261
14	53.120	-1.017	9.000	44.120	44.626	-110.1805	-0.4375100	-3.1131	4.5261
14*	53.120	0.000	9.000	44.120	44.120	0.000000	-0.4375100	0.0000	4.5261
15	52.156	-0.964	9.000	43.156	43.636	-107.7486	-0.4279506	-2.9849	4.5261
15*	52.156	0.000	9.000	43.156	43.156	0.000000	-0.4279506	0.0000	4.5261
16	51.244	-0.912	9.000	42.244	42.698	-105.4472	-0.4189108	-2.8603	4.5261
16*	51.244	0.000	9.000	42.244	42.244	0.000000	-0.4189108	0.0000	4.5261
17	50.317	-0.927	9.000	41.317	41.779	-103.1617	-0.4097210	-2.8579	4.5261
17*	50.317	0.000	9.000	41.317	41.317	0.000000	-0.4097210	0.0000	4.5261
18	49.375	-0.942	9.000	40.375	40.844	-100.8384	-0.4003791	-2.8545	4.5261
18*	49.375	0.000	9.000	40.375	40.375	0.000000	-0.4003791	0.0000	4.5261
19	48.486	-0.889	9.000	39.486	39.929	-98.59186	-0.3915597	-2.7314	4.5261
19*	48.486	0.000	9.000	39.486	39.486	0.000000	-0.3915597	0.0000	4.5261
20	47.648	-0.838	9.000	38.648	39.066	-96.47459	-0.3832544	-2.6119	4.5261
20*	47.648	0.000	9.000	38.648	38.648	0.000000	-0.3832544	0.0000	4.5261
21	46.794	-0.854	9.000	37.794	38.220	-94.36990	-0.3747826	-2.6145	4.5261

Node	Temperature	Delta T	Text	T-Text	Log Mean DT	Heat Exchanged per Segment	Heat Exchanged per Unit Length(m)	Delta Enth.	Heat Transfer Coefficient
	°C	°C	°C	°C	°C	MJ/h	MJ/h	kJ/kg	W/m2.°C
21*	46.794	0.000	9.000	37.794	37.794	0.000000	-0.3747826	0.0000	4.5261
22	45.923	-0.871	9.000	36.923	37.357	-92.22311	-0.3661416	-2.6160	4.5261
22*	45.923	0.000	9.000	36.923	36.923	0.000000	-0.3661416	0.0000	4.5261
23	45.286	-0.636	9.000	36.286	36.603	-70.11161	-0.3598302	-1.9131	4.5261

Feed/Product heat balance -2517.747 MJ/h

9) * FEEDS *

Stream		N18F
Temperature,	°C	67.50
Pressure,	bar	79.757
Total rate,	kmol/h	1600.2
Vapor,	kmol/h	1523.7
Liquid 1/H,	kmol/h	59.295
Liquid 2/W,	kmol/h	17.2

10) * PRODUCTS *

Stream		N18P
Temperature,	°C	45.29
Pressure,	bar	76.350
Total rate,	kmol/h	1600.2
Vapor,	kmol/h	1487.7
Liquid 1/H,	kmol/h	91.773
Liquid 2/W,	kmol/h	20.7

*** UNIT 2 - 'N19 ' - ' PIPELINE ' ***
--- Feed Streams --- - Product Streams -
'N19F ' 'N19P ' to unit 5 - MX1

1) * OUTLET CONDITIONS *

Temperature 53.62 °C
Pressure 76.3471 bar

2) * CALCULATION RESULTS *

Node	CURVILIN Distance m	Elevation m	Incl	Diameter m	Calculated Pressure bar	CALCULATED Temperature °C	Liquid Holdup	Liquid Mass Rate kg/s	Gas Mass Rate kg/s	Flow Pattern
1	0.000	0.000	INCL UP	0.194	79.685	67.000	0.028277	1.505566	10.99443	STRATIF
2	250.000	3.000	INCL UP	0.194	79.458	65.957	0.028868	1.533056	10.96701	STRATIF
2*	250.000	3.000	INCL DN	0.194	79.458	65.957	0.028585	1.533300	10.96670	STRATIF
3	500.000	-3.000	INCL DN	0.194	79.267	64.966	0.029154	1.559388	10.94057	STRATIF
3*	500.000	-3.000	HORIZ	0.194	79.267	64.966	0.029330	1.559617	10.94038	STRATIF
4	750.000	-3.000	HORIZ	0.194	79.029	63.957	0.029899	1.586038	10.91400	STRATIF
4*	750.000	-3.000	INCL UP	0.194	79.029	63.957	0.030046	1.586302	10.91370	STRATIF
5	1000.000	3.000	INCL UP	0.194	78.745	62.932	0.030607	1.613040	10.88708	STRATIF
5*	1000.000	3.000	HORIZ	0.194	78.745	62.932	0.030408	1.613340	10.88666	STRATIF
6	1250.000	3.000	HORIZ	0.194	78.508	61.953	0.030959	1.638876	10.86117	STRATIF
6*	1250.000	3.000	INCL DN	0.194	78.508	61.953	0.030715	1.639142	10.86086	STRATIF
7	1500.000	-3.000	INCL DN	0.194	78.317	61.021	0.031254	1.663502	10.83647	STRATIF
7*	1500.000	-3.000	HORIZ	0.194	78.317	61.021	0.031464	1.663733	10.83627	STRATIF
8	1750.000	-3.000	HORIZ	0.194	78.080	60.070	0.032001	1.688442	10.81161	STRATIF
8*	1750.000	-3.000	INCL UP	0.194	78.080	60.070	0.032175	1.688709	10.81129	STRATIF
9	2000.000	3.000	INCL UP	0.194	77.796	59.101	0.032699	1.713750	10.78638	STRATIF
9*	2000.000	3.000	HORIZ	0.194	77.796	59.101	0.032472	1.714055	10.78594	STRATIF
10	2250.000	3.000	HORIZ	0.194	77.558	58.179	0.032988	1.737930	10.76213	STRATIF
10*	2250.000	3.000	INCL DN	0.194	77.558	58.179	0.032714	1.738199	10.76180	STRATIF
11	2500.000	-3.000	INCL DN	0.194	77.368	57.304	0.033230	1.760935	10.73905	STRATIF
11*	2500.000	-3.000	HORIZ	0.194	77.368	57.304	0.033463	1.761169	10.73883	STRATIF
12	2750.000	-3.000	HORIZ	0.194	77.131	56.409	0.033963	1.784267	10.71579	STRATIF
12*	2750.000	-3.000	INCL UP	0.194	77.131	56.409	0.034153	1.784539	10.71546	STRATIF
13	3000.000	3.000	INCL UP	0.194	76.846	55.496	0.034643	1.807985	10.69215	STRATIF
13*	3000.000	3.000	HORIZ	0.194	76.846	55.496	0.034402	1.808296	10.69170	STRATIF
14	3250.000	3.000	HORIZ	0.194	76.609	54.629	0.034884	1.830609	10.66945	STRATIF
14*	3250.000	3.000	INCL DN	0.194	76.609	54.629	0.034589	1.830884	10.66912	STRATIF
15	3500.000	-3.000	INCL DN	0.194	76.418	53.809	0.035065	1.852091	10.64789	STRATIF
15*	3500.000	-3.000	INCL UP	0.194	76.418	53.809	0.035865	1.852330	10.64767	STRATIF
16	3550.000	0.000	INCL UP	0.194	76.347	53.623	0.035984	1.856745	10.64349	STRATIF

3) * FLUID VELOCITY AND FLOW RATES *

Node	Distance m	GAS Volume Flow Rate m3/s	GAS Velocity m/s	GAS Surface Velocity m/s	LIQUID Volume Flow Rate m3/s	LIQUID Velocity m/s	LIQUID Surface Velocity m/s	Mixture Velocity m/s
1	0.000	0.1573693	5.4972	5.3417	2.4885581E-03	2.9873	0.0845	5.4262
2	250.000	0.1569125	5.4845	5.3262	2.5337578E-03	2.9792	0.0860	5.4122
2*	250.000	0.1570047	5.4862	5.3293	2.5341748E-03	3.0093	0.0860	5.4154
3	500.000	0.1565173	5.4723	5.3128	2.5774490E-03	3.0009	0.0875	5.4003

Node	Distance	GAS Volume Flow Rate	GAS Velocity	GAS Surface Velocity	LIQUID Volume Flow Rate	LIQUID Velocity	LIQUID Surface Velocity	Mixture Velocity
	m	m3/s	m/s	m/s	m3/s	m/s	m/s	m/s
3*	500.000	0.1565990	5.4762	5.3156	2.5775789E-03	2.9830	0.0875	5.4031
4	750.000	0.1561860	5.4649	5.3015	2.6210757E-03	2.9757	0.0890	5.3905
4*	750.000	0.1562834	5.4692	5.3048	2.6214474E-03	2.9615	0.0890	5.3938
5	1000.000	0.1559459	5.4605	5.2934	2.6651349E-03	2.9557	0.0905	5.3839
5*	1000.000	0.1560593	5.4634	5.2972	2.6657441E-03	2.9757	0.0905	5.3877
6	1250.000	0.1556688	5.4528	5.2840	2.7077808E-03	2.9688	0.0919	5.3759
6*	1250.000	0.1557660	5.4548	5.2873	2.7081660E-03	2.9928	0.0919	5.3792
7	1500.000	0.1553213	5.4423	5.2722	2.7486041E-03	2.9852	0.0933	5.3655
7*	1500.000	0.1554022	5.4463	5.2749	2.7487672E-03	2.9654	0.0933	5.3682
8	1750.000	0.1550328	5.4364	5.2624	2.7894493E-03	2.9588	0.0947	5.3571
8*	1750.000	0.1551297	5.4407	5.2657	2.7898425E-03	2.9432	0.0947	5.3604
9	2000.000	0.1548365	5.4334	5.2557	2.8307364E-03	2.9385	0.0961	5.3518
9*	2000.000	0.1549499	5.4361	5.2596	2.8313558E-03	2.9596	0.0961	5.3557
10	2250.000	0.1546029	5.4268	5.2478	2.8706661E-03	2.9539	0.0974	5.3453
10*	2250.000	0.1547000	5.4287	5.2511	2.8710625E-03	2.9790	0.0975	5.3486
11	2500.000	0.1542980	5.4175	5.2375	2.9088410E-03	2.9713	0.0987	5.3362
11*	2500.000	0.1543787	5.4216	5.2402	2.9090165E-03	2.9508	0.0987	5.3389
12	2750.000	0.1540527	5.4130	5.2291	2.9470584E-03	2.9454	0.1000	5.3292
12*	2750.000	0.1541496	5.4174	5.2324	2.9474542E-03	2.9294	0.1000	5.3325
13	3000.000	0.1539009	5.4114	5.2240	2.9857276E-03	2.9255	0.1013	5.3253
13*	3000.000	0.1540146	5.4141	5.2278	2.9863401E-03	2.9466	0.1014	5.3292
14	3250.000	0.1537111	5.4061	5.2175	3.0230925E-03	2.9416	0.1026	5.3202
14*	3250.000	0.1538084	5.4079	5.2208	3.0234839E-03	2.9671	0.1026	5.3235
15	3500.000	0.1534488	5.3979	5.2086	3.0587660E-03	2.9609	0.1038	5.3125
15*	3500.000	0.1535297	5.4052	5.2114	3.0589387E-03	2.8951	0.1038	5.3152
16	3550.000	0.1533943	5.4011	5.2068	3.0657882E-03	2.8919	0.1041	5.3108

4) * VELOCITY, FRICTION FACTOR, SONIC SPEED *

Node	Distance	Velocity	dP fric/L	Fric.Fact.	Reynolds No.	Sonic Vel	Mach No.
	m	m/s	bar			m/s	
1	0.000	5.4262	0.2775182E-03	0.140975E-01	0.514719E+07	0.0000	0.000000
2	250.000	5.4122	0.2771718E-03	0.140954E-01	0.514066E+07	0.0000	0.000000
2*	250.000	5.4154	0.3300396E-03	0.168024E-01	0.514147E+07	0.0000	0.000000
3	500.000	5.4003	0.3298943E-03	0.168191E-01	0.513476E+07	0.0000	0.000000
3*	500.000	5.4031	0.2895321E-03	0.147360E-01	0.513531E+07	0.0000	0.000000
4	750.000	5.3905	0.2892402E-03	0.147346E-01	0.512907E+07	0.0000	0.000000
4*	750.000	5.3938	0.2667845E-03	0.135683E-01	0.512974E+07	0.0000	0.000000
5	1000.000	5.3839	0.2665206E-03	0.135605E-01	0.512400E+07	0.0000	0.000000
5*	1000.000	5.3877	0.2895886E-03	0.147399E-01	0.512500E+07	0.0000	0.000000
6	1250.000	5.3759	0.2893151E-03	0.147384E-01	0.511888E+07	0.0000	0.000000
6*	1250.000	5.3792	0.3303323E-03	0.168410E-01	0.511982E+07	0.0000	0.000000
7	1500.000	5.3655	0.3301990E-03	0.168562E-01	0.511332E+07	0.0000	0.000000
7*	1500.000	5.3682	0.2893827E-03	0.147442E-01	0.511378E+07	0.0000	0.000000
8	1750.000	5.3571	0.2891174E-03	0.147420E-01	0.510778E+07	0.0000	0.000000
8*	1750.000	5.3604	0.2663504E-03	0.135565E-01	0.510837E+07	0.0000	0.000000
9	2000.000	5.3518	0.2662392E-03	0.135546E-01	0.510289E+07	0.0000	0.000000
9*	2000.000	5.3557	0.2895055E-03	0.147470E-01	0.510399E+07	0.0000	0.000000
10	2250.000	5.3453	0.2893415E-03	0.147492E-01	0.509814E+07	0.0000	0.000000
10*	2250.000	5.3486	0.3308121E-03	0.168790E-01	0.509919E+07	0.0000	0.000000
11	2500.000	5.3362	0.3305576E-03	0.168845E-01	0.509295E+07	0.0000	0.000000
11*	2500.000	5.3389	0.2893510E-03	0.147494E-01	0.509331E+07	0.0000	0.000000
12	2750.000	5.3292	0.2891956E-03	0.147509E-01	0.508760E+07	0.0000	0.000000
12*	2750.000	5.3325	0.2661932E-03	0.135517E-01	0.508812E+07	0.0000	0.000000
13	3000.000	5.3253	0.2661150E-03	0.135493E-01	0.508295E+07	0.0000	0.000000
13*	3000.000	5.3292	0.2895337E-03	0.147504E-01	0.508414E+07	0.0000	0.000000

Node	Distance m	Velocity m/s	dP fric/L bar	Fric.Fact.	Reynolds No.	Sonic Vel m/s	Mach No.
14	3250.000	5.3202	0.2893904E-03	0.147511E-01	0.507860E+07	0.0000	0.000000
14*	3250.000	5.3235	0.3312001E-03	0.168999E-01	0.507977E+07	0.0000	0.000000
15	3500.000	5.3125	0.3310725E-03	0.169102E-01	0.507385E+07	0.0000	0.000000
15*	3500.000	5.3152	0.2419333E-03	0.122896E-01	0.507332E+07	0.0000	0.000000
16	3550.000	5.3108	0.2416722E-03	0.122832E-01	0.507158E+07	0.0000	0.000000

5) * LIQUID HOLDUP *

Node	Distance m	Elevation m	Volume Fraction	Volume Holdup per Unit Length m3	Weight Holdup per Unit Length kg	Volume Holdup per Segment m3	Weight Holdup per Segment kg
1	0.000	0.000	0.028277	8.3304103E-04	0.5039858	0.000000	0.000000
2	250.000	3.000	0.028868	8.5047558E-04	0.5145467	0.2103024	127.2388
2*	250.000	3.000	0.028585	8.4212404E-04	0.5095262	0.000000	0.000000
3	500.000	-3.000	0.029154	8.5889579E-04	0.5196640	0.2127710	128.7274
3*	500.000	-3.000	0.029330	8.6408797E-04	0.5228342	0.000000	0.000000
4	750.000	-3.000	0.029899	8.8083244E-04	0.5329774	0.2179626	131.8898
4*	750.000	-3.000	0.030046	8.8516180E-04	0.5356330	0.000000	0.000000
5	1000.000	3.000	0.030607	9.0170116E-04	0.5456765	0.2231460	135.0435
5*	1000.000	3.000	0.030408	8.9582350E-04	0.5421630	0.000000	0.000000
6	1250.000	3.000	0.030959	9.1207483E-04	0.5520038	0.2258126	136.6708
6*	1250.000	3.000	0.030715	9.0488263E-04	0.5476882	0.000000	0.000000
7	1500.000	-3.000	0.031254	9.2074328E-04	0.5572626	0.2283542	138.2005
7*	1500.000	-3.000	0.031464	9.2695136E-04	0.5610514	0.000000	0.000000
8	1750.000	-3.000	0.032001	9.4275695E-04	0.5706174	0.2335418	141.3605
8*	1750.000	-3.000	0.032175	9.4789980E-04	0.5737696	0.000000	0.000000
9	2000.000	3.000	0.032699	9.6333292E-04	0.5831378	0.2386123	144.4453
9*	2000.000	3.000	0.032472	9.5665261E-04	0.5791413	0.000000	0.000000
10	2250.000	3.000	0.032988	9.7182943E-04	0.5883243	0.2408796	145.8298
10*	2250.000	3.000	0.032714	9.6376155E-04	0.5834807	0.000000	0.000000
11	2500.000	-3.000	0.033230	9.7897113E-04	0.5926521	0.2430049	147.1045
11*	2500.000	-3.000	0.033463	9.8584349E-04	0.5968466	0.000000	0.000000
12	2750.000	-3.000	0.033963	1.0005675E-03	0.6057520	0.2481126	150.2167
12*	2750.000	-3.000	0.034153	1.0061542E-03	0.6091769	0.000000	0.000000
13	3000.000	3.000	0.034643	1.0205869E-03	0.6179367	0.2530746	153.2361
13*	3000.000	3.000	0.034402	1.0134856E-03	0.6136882	0.000000	0.000000
14	3250.000	3.000	0.034884	1.0277048E-03	0.6222871	0.2549416	154.3778
14*	3250.000	3.000	0.034589	1.0190164E-03	0.6170697	0.000000	0.000000
15	3500.000	-3.000	0.035065	1.0330440E-03	0.6255197	0.2566538	155.4002
15*	3500.000	-3.000	0.035865	1.0565941E-03	0.6398168	0.000000	0.000000
16	3550.000	0.000	0.035984	1.0601116E-03	0.6419077	5.2917643E-02	32.04214

Pipeline Volume 104.585 m3
Total Volume Holdup 3.340088 m3 - Average Holdup 3.1936685E-02
Total Weight Holdup 2021.784 kg

6) * GAS HOLDUP *

Node	Distance m	Elevation m	Volume Fraction	Volume Holdup per Unit Length m3	Weight Holdup per Unit Length kg	Volume Holdup per Segment m3	Weight Holdup per Segment kg
1	0.000	0.000	0.971723	2.8627429E-02	2.000024	0.000000	0.000000
2	250.000	3.000	0.971132	2.8609994E-02	1.999632	7.154815	499.8230
2*	250.000	3.000	0.971415	2.8618346E-02	1.998977	0.000000	0.000000
3	500.000	-3.000	0.970846	2.8601574E-02	1.999248	7.152346	500.1346
3*	500.000	-3.000	0.970670	2.8596382E-02	1.997812	0.000000	0.000000
4	750.000	-3.000	0.970101	2.8579637E-02	1.997099	7.147155	499.2066

Node	Distance m	Elevation m	Volume Fraction	Volume Holdup per Unit Length m3	Weight Holdup per Unit Length kg	Volume Holdup per Segment m3	Weight Holdup per Segment kg
4*	750.000	-3.000	0.969954	2.8575308E-02	1.995493	0.000000	0.000000
5	1000.000	3.000	0.969393	2.8558769E-02	1.993793	7.141971	498.4174
5*	1000.000	3.000	0.969592	2.8564646E-02	1.992663	0.000000	0.000000
6	1250.000	3.000	0.969041	2.8548395E-02	1.991856	7.139305	497.9002
6*	1250.000	3.000	0.969285	2.8555587E-02	1.991051	0.000000	0.000000
7	1500.000	-3.000	0.968746	2.8539727E-02	1.991160	7.136763	498.1217
7*	1500.000	-3.000	0.968536	2.8533518E-02	1.989655	0.000000	0.000000
8	1750.000	-3.000	0.967999	2.8517713E-02	1.988763	7.131576	497.1295
8*	1750.000	-3.000	0.967825	2.8512570E-02	1.987097	0.000000	0.000000
9	2000.000	3.000	0.967301	2.8497137E-02	1.985211	7.126505	496.2823
9*	2000.000	3.000	0.967528	2.8503817E-02	1.984129	0.000000	0.000000
10	2250.000	3.000	0.967012	2.8488640E-02	1.983140	7.124238	495.7275
10*	2250.000	3.000	0.967286	2.8496708E-02	1.982391	0.000000	0.000000
11	2500.000	-3.000	0.966770	2.8481499E-02	1.982293	7.122113	495.9191
11*	2500.000	-3.000	0.966537	2.8474626E-02	1.980741	0.000000	0.000000
12	2750.000	-3.000	0.966037	2.8459902E-02	1.979656	7.117005	494.8611
12*	2750.000	-3.000	0.965847	2.8454316E-02	1.977955	0.000000	0.000000
13	3000.000	3.000	0.965357	2.8439883E-02	1.975854	7.112043	493.9496
13*	3000.000	3.000	0.965598	2.8446984E-02	1.974791	0.000000	0.000000
14	3250.000	3.000	0.965116	2.8432765E-02	1.973591	7.110176	493.3513
14*	3250.000	3.000	0.965411	2.8441453E-02	1.972877	0.000000	0.000000
15	3500.000	-3.000	0.964935	2.8427426E-02	1.972592	7.108464	493.5073
15*	3500.000	-3.000	0.964135	2.8403876E-02	1.969880	0.000000	0.000000
16	3550.000	0.000	0.964016	2.8400358E-02	1.970628	1.420106	98.53748

Pipeline Volume 104.585 m3
Total Volume Holdup 101.2446 m3 - Average Holdup 0.9680633
Total Weight Holdup 7052.869 kg

7) * PRESSURE LOSSES *

Sect	Total bar	Friction bar	Elevation bar	Kinetic bar
1	0.2274660	0.2275405	0.000000	-7.4488108E-05
2	0.1911022	0.2705684	-7.9409848E-02	-5.6371411E-05
3	0.2373618	0.2374250	0.000000	-6.3170915E-05
4	0.2839479	0.2188210	6.5176868E-02	-4.9958115E-05
5	0.2374581	0.2375013	0.000000	-4.3205670E-05
6	0.1906631	0.2708265	-8.0113047E-02	-5.0292855E-05
7	0.2372661	0.2373236	0.000000	-5.7505074E-05
8	0.2841651	0.2185338	6.5675106E-02	-4.3836404E-05
9	0.2374172	0.2374527	0.000000	-3.5519051E-05
10	0.1904415	0.2712032	-8.0718661E-02	-4.3030549E-05
11	0.2372800	0.2373314	0.000000	-5.1371179E-05
12	0.2845120	0.2184540	6.6095483E-02	-3.7500563E-05
13	0.2374887	0.2375171	0.000000	-2.8446556E-05
14	0.1902699	0.2715262	-8.1220797E-02	-3.5582175E-05
15	7.1147647E-02	3.9665807E-02	3.1517152E-02	-3.5311733E-05

Total Pressure Drop 3.337987 bar
Total Friction DP 3.431690 bar
Total Elevation DP -9.2997743E-02 bar
Total Kinetic DP -7.0559036E-04 bar
Total Fitting DP 0.000000 bar (included in total friction dp)

8) * HEAT TRANSFER RESULTS *

Node	Temperature	Delta T	Text	T-Text	Log Mean DT	Heat per Segment	Exchanged per Unit Length(m)	Delta Enth.	Heat Transfer Coefficient
	°C	°C	°C	°C	°C	MJ/h	MJ/h	kJ/kg	W/m2.°C
1	67.000	0.000	9.000	58.000	0.000	0.000000	-0.5751546	0.0000	4.5261
2	65.957	-1.043	9.000	56.957	57.477	-142.0271	-0.5648097	-2.6825	4.5261
2*	65.957	0.000	9.000	56.957	56.957	0.000000	-0.5648097	0.0000	4.5261
3	64.966	-0.991	9.000	55.966	56.460	-139.5287	-0.5549810	-2.5612	4.5261
3*	64.966	0.000	9.000	55.966	55.966	0.000000	-0.5549810	0.0000	4.5261
4	63.957	-1.008	9.000	54.957	55.460	-137.0427	-0.5449829	-2.5646	4.5261
4*	63.957	0.000	9.000	54.957	54.957	0.000000	-0.5449829	0.0000	4.5261
5	62.932	-1.025	9.000	53.932	54.443	-134.5144	-0.5348159	-2.5673	4.5261
5*	62.932	0.000	9.000	53.932	53.932	0.000000	-0.5348159	0.0000	4.5261
6	61.953	-0.979	9.000	52.953	53.441	-132.0509	-0.5251087	-2.4714	4.5261
6*	61.953	0.000	9.000	52.953	52.953	0.000000	-0.5251087	0.0000	4.5261
7	61.021	-0.933	9.000	52.021	52.486	-129.7020	-0.5158596	-2.3775	4.5261
7*	61.021	0.000	9.000	52.021	52.021	0.000000	-0.5158596	0.0000	4.5261
8	60.070	-0.951	9.000	51.070	51.544	-127.3595	-0.5064327	-2.3836	4.5261
8*	60.070	0.000	9.000	51.070	51.070	0.000000	-0.5064327	0.0000	4.5261
9	59.101	-0.968	9.000	50.101	50.584	-124.9726	-0.4968287	-2.3890	4.5261
9*	59.101	0.000	9.000	50.101	50.101	0.000000	-0.4968287	0.0000	4.5261
10	58.179	-0.922	9.000	49.179	49.639	-122.6501	-0.4876861	-2.2957	4.5261
10*	58.179	0.000	9.000	49.179	49.179	0.000000	-0.4876861	0.0000	4.5261
11	57.304	-0.876	9.000	48.304	48.740	-120.4426	-0.4790026	-2.2044	4.5261
11*	57.304	0.000	9.000	48.304	48.304	0.000000	-0.4790026	0.0000	4.5261
12	56.409	-0.895	9.000	47.409	47.855	-118.2399	-0.4701322	-2.2132	4.5261
12*	56.409	0.000	9.000	47.409	47.409	0.000000	-0.4701322	0.0000	4.5261
13	55.496	-0.913	9.000	46.496	46.951	-115.9906	-0.4610755	-2.2211	4.5261
13*	55.496	0.000	9.000	46.496	46.496	0.000000	-0.4610755	0.0000	4.5261
14	54.629	-0.867	9.000	45.629	46.061	-113.8050	-0.4524806	-2.1303	4.5261
14*	54.629	0.000	9.000	45.629	45.629	0.000000	-0.4524806	0.0000	4.5261
15	53.809	-0.820	9.000	44.809	45.218	-111.7344	-0.4443444	-2.0416	4.5261
15*	53.809	0.000	9.000	44.809	44.809	0.000000	-0.4443444	0.0000	4.5261
16	53.623	-0.186	9.000	44.623	44.716	-22.12521	-0.4425042	-0.4383	4.5261

Feed/Product heat balance -1798.551 MJ/h

9) * FEEDS *

Stream		N19F
Temperature,	°C	67.00
Pressure,	bar	79.685
Total rate,	kmol/h	1946.1
Vapor,	kmol/h	1852.2
Liquid 1/H,	kmol/h	72.916
Liquid 2/W,	kmol/h	21.0

10) * PRODUCTS *

Stream		N19P
Temperature,	°C	53.62
Pressure,	bar	76.347
Total rate,	kmol/h	1946.1
Vapor,	kmol/h	1827.3
Liquid 1/H,	kmol/h	94.935
Liquid 2/W,	kmol/h	23.9

*** UNIT 3 - 'N20 ' - ' PIPELINE ' ***
--- Feed Streams --- - Product Streams -
'N20F ' 'N20P ' to unit 5 - MX1

1) * OUTLET CONDITIONS *

Temperature	67.92 °C
Pressure	76.3432 bar

2) * CALCULATION RESULTS *

Node	CURVILIN Distance	Elevation	Incl	Diameter	Calculated Pressure	CALCULATED Temperature	Liquid Holdup	Liquid Mass Rate	Gas Mass Rate	Flow Pattern
	m	m		m	bar	°C		kg/s	kg/s	
1	0.000	0.000	HORIZ	0.194	76.370	68.200	0.036699	1.078286	8.088381	STRATIF
2	50.000	0.000	HORIZ	0.194	76.343	67.922	0.036905	1.083576	8.083053	STRATIF

3) * FLUID VELOCITY AND FLOW RATES *

Node	Distance	GAS Volume Flow Rate	GAS Velocity	GAS Surface Velocity	LIQUID Volume Flow Rate	LIQUID Velocity	LIQUID Surface Velocity	Mixture Velocity
	m	m3/s	m/s	m/s	m3/s	m/s	m/s	m/s
1	0.000	0.1220058	4.2991	4.1413	1.7734000E-03	1.6402	0.0602	4.2015
2	50.000	0.1218295	4.2938	4.1354	1.7822713E-03	1.6393	0.0605	4.1959

4) * VELOCITY, FRICTION FACTOR, SONIC SPEED *

Node	Distance	Velocity	dP fric/L	Fric.Fact.	Reynolds No.	Sonic Vel	Mach No.
	m	m/s	bar			m/s	
1	0.000	4.2015	0.1630269E-03	0.136235E-01	0.383067E+07	0.0000	0.000000
2	50.000	4.1959	0.1629287E-03	0.136268E-01	0.382858E+07	0.0000	0.000000

5) * LIQUID HOLDUP *

Node	Distance	Elevation	Volume Fraction	Volume Holdup per Unit Length	Weight Holdup per Unit Length	Volume Holdup per Segment	Weight Holdup per Segment
	m	m		m3	kg	m3	kg
1	0.000	0.000	0.036699	1.0811776E-03	0.6573917	0.000000	0.000000
2	50.000	0.000	0.036905	1.0872280E-03	0.6610429	5.4210141E-02	32.96018

Pipeline Volume 1.473 m3
Total Volume Holdup 5.4210141E-02 m3 - Average Holdup 3.6801953E-02
Total Weight Holdup 32.96018 kg

6) * GAS HOLDUP *

Node	Distance	Elevation	Volume Fraction	Volume Holdup per Unit Length	Weight Holdup per Unit Length	Volume Holdup per Segment	Weight Holdup per Segment
	m	m		m3	kg	m3	kg
1	0.000	0.000	0.963301	2.8379292E-02	1.881407	0.000000	0.000000
2	50.000	0.000	0.963095	2.8373242E-02	1.882481	1.418813	94.13411

Pipeline Volume 1.473 m3
Total Volume Holdup 1.418813 m3 - Average Holdup 0.9631980
Total Weight Holdup 94.13411 kg

7) * PRESSURE LOSSES *

Sect	Total bar	Friction bar	Elevation bar	Kinetic bar
1	2.6715496E-02	2.6735203E-02	0.000000	-1.9707134E-05

Total Pressure Drop 2.6715496E-02 bar
Total Friction DP 2.6735203E-02 bar
Total Elevation DP 0.000000 bar
Total Kinetic DP -1.9707134E-05 bar
Total Fitting DP 0.000000 bar (included in total friction dp)

8) * HEAT TRANSFER RESULTS *

Node	Temperature °C	Delta T °C	Text °C	T-Text °C	Log Mean DT °C	Heat per Segment MJ/h	Exchanged per Unit Length(m) MJ/h	Delta Enth. kJ/kg	Heat Transfer Coefficient W/m2.°C
1	68.200	0.000	9.000	59.200	0.000	0.000000	-0.5870543	0.0000	4.5261
2	67.922	-0.278	9.000	58.922	59.061	-29.21464	-0.5842928	-1.0155	4.5261

Feed/Product heat balance -29.28387 MJ/h

9) * FEEDS *

Stream		N20F
Temperature,	°C	68.20
Pressure,	bar	76.370
Total rate,	kmol/h	1427.2
Vapor,	kmol/h	1361.1
Liquid 1/H,	kmol/h	51.093
Liquid 2/W,	kmol/h	14.9

10) * PRODUCTS *

Stream		N20P
Temperature,	°C	67.92
Pressure,	bar	76.343
Total rate,	kmol/h	1427.2
Vapor,	kmol/h	1360.8
Liquid 1/H,	kmol/h	51.412
Liquid 2/W,	kmol/h	15.0

*** UNIT 4 - 'N21 ' - ' PIPELINE ' ***
--- Feed Streams --- - Product Streams -
'N21F ' 'N21P ' to unit 5 - MX1

1) * OUTLET CONDITIONS *

Temperature 52.63 °C
Pressure 76.3457 bar

2) * CALCULATION RESULTS *

Node	CURVILIN Distance	Elevation	Incl	Diameter	Calculated Pressure	CALCULATED Temperature	Liquid Holdup	Liquid Mass Rate	Gas Mass Rate	Flow Pattern
	m	m		m	bar	°C		kg/s	kg/s	
1	0.000	0.000	INCL UP	0.194	78.778	67.400	0.063784	0.9961389	7.337194	WAVE
2	250.000	3.000	INCL UP	0.194	78.541	65.866	0.065600	1.023133	7.310235	WAVE
2*	250.000	3.000	INCL DN	0.194	78.541	65.866	0.065555	1.023303	7.310030	WAVE
3	500.000	-3.000	INCL DN	0.194	78.368	64.409	0.067316	1.048929	7.284371	WAVE
3*	500.000	-3.000	HORIZ	0.194	78.368	64.409	0.067277	1.049069	7.284264	WAVE
4	750.000	-3.000	HORIZ	0.194	78.134	62.948	0.068938	1.074639	7.258723	WAVE
4*	750.000	-3.000	INCL UP	0.194	78.134	62.948	0.068892	1.074812	7.258521	WAVE
5	1000.000	3.000	INCL UP	0.194	77.839	61.483	0.070453	1.100317	7.233104	WAVE
5*	1000.000	3.000	HORIZ	0.194	77.839	61.483	0.070400	1.100526	7.232808	WAVE
6	1250.000	3.000	HORIZ	0.194	77.607	60.088	0.071928	1.124858	7.208516	WAVE
6*	1250.000	3.000	INCL DN	0.194	77.607	60.088	0.071884	1.125030	7.208303	WAVE
7	1500.000	-3.000	INCL DN	0.194	77.440	58.761	0.073387	1.148227	7.185101	WAVE
7*	1500.000	-3.000	HORIZ	0.194	77.440	58.761	0.073351	1.148360	7.184973	WAVE
8	1750.000	-3.000	HORIZ	0.194	77.210	57.428	0.074765	1.171551	7.161832	WAVE
8*	1750.000	-3.000	INCL UP	0.194	77.210	57.428	0.074721	1.171722	7.161611	WAVE
9	2000.000	3.000	INCL UP	0.194	76.917	56.089	0.076043	1.194898	7.138537	WAVE
9*	2000.000	3.000	HORIZ	0.194	76.917	56.089	0.075990	1.195108	7.138225	WAVE
10	2250.000	3.000	HORIZ	0.194	76.689	54.818	0.077297	1.217173	7.116214	WAVE
10*	2250.000	3.000	INCL DN	0.194	76.689	54.818	0.077253	1.217344	7.115990	WAVE
11	2500.000	-3.000	INCL DN	0.194	76.527	53.617	0.078549	1.238333	7.095006	WAVE
11*	2500.000	-3.000	INCL UP	0.194	76.527	53.617	0.078515	1.238463	7.094870	WAVE
12	2701.000	0.000	INCL UP	0.194	76.346	52.631	0.079418	1.255875	7.078025	WAVE

3) * FLUID VELOCITY AND FLOW RATES *

Node	Distance	GAS Volume Flow Rate	GAS Velocity	GAS Surface Velocity	LIQUID Volume Flow Rate	LIQUID Velocity	LIQUID Surface Velocity	Mixture Velocity
	m	m3/s	m/s	m/s	m3/s	m/s	m/s	m/s
1	0.000	0.1065463	3.8630	3.6166	1.6442172E-03	0.8750	0.0558	3.6724
2	250.000	0.1059736	3.8497	3.5971	1.6887734E-03	0.8738	0.0573	3.6545
2*	250.000	0.1060393	3.8519	3.5994	1.6890333E-03	0.8746	0.0573	3.6567
3	500.000	0.1054244	3.8368	3.5785	1.7316656E-03	0.8732	0.0588	3.6373
3*	500.000	0.1054749	3.8385	3.5802	1.7317241E-03	0.8737	0.0588	3.6390
4	750.000	0.1049354	3.8256	3.5619	1.7740326E-03	0.8735	0.0602	3.6221
4*	750.000	0.1050003	3.8278	3.5641	1.7742761E-03	0.8742	0.0602	3.6243
5	1000.000	0.1045374	3.8173	3.5484	1.8162383E-03	0.8750	0.0617	3.6100
5*	1000.000	0.1046171	3.8200	3.5511	1.8166608E-03	0.8759	0.0617	3.6128
6	1250.000	0.1041073	3.8077	3.5338	1.8569665E-03	0.8763	0.0630	3.5968
6*	1250.000	0.1041709	3.8098	3.5360	1.8572348E-03	0.8770	0.0630	3.5990
7	1500.000	0.1036124	3.7955	3.5170	1.8959549E-03	0.8769	0.0644	3.5814

Node	Distance	GAS Volume Flow Rate	GAS Velocity	GAS Surface Velocity	LIQUID Volume Flow Rate	LIQUID Velocity	LIQUID Surface Velocity	Mixture Velocity
	m	m3/s	m/s	m/s	m3/s	m/s	m/s	m/s
7*	1500.000	0.1036595	3.7971	3.5186	1.8960688E-03	0.8774	0.0644	3.5830
8	1750.000	0.1031780	3.7853	3.5023	1.9345410E-03	0.8783	0.0657	3.5679
8*	1750.000	0.1032403	3.7874	3.5044	1.9348230E-03	0.8789	0.0657	3.5700
9	2000.000	0.1028370	3.7780	3.4907	1.9730221E-03	0.8807	0.0670	3.5576
9*	2000.000	0.1029149	3.7806	3.4933	1.9734673E-03	0.8815	0.0670	3.5603
10	2250.000	0.1024624	3.7693	3.4780	2.0101243E-03	0.8827	0.0682	3.5462
10*	2250.000	0.1025239	3.7714	3.4800	2.0104119E-03	0.8833	0.0682	3.5483
11	2500.000	0.1020205	3.7582	3.4630	2.0455955E-03	0.8840	0.0694	3.5324
11*	2500.000	0.1020652	3.7597	3.4645	2.0457264E-03	0.8844	0.0694	3.5339
12	2701.000	0.1017904	3.7532	3.4552	2.0731772E-03	0.8861	0.0704	3.5255

4) * VELOCITY, FRICTION FACTOR, SONIC SPEED *

Node	Distance	Velocity	dP fric/L	Fric.Fact.	Reynolds No.	Sonic Vel	Mach No.
	m	m/s	bar			m/s	
1	0.000	3.6724	0.2886211E-03	0.263842E-01	0.344352E+07	0.0000	0.000000
2	250.000	3.6545	0.2871259E-03	0.262300E-01	0.343261E+07	0.0000	0.000000
2*	250.000	3.6567	0.2872819E-03	0.262281E-01	0.343319E+07	0.0000	0.000000
3	500.000	3.6373	0.2856696E-03	0.260879E-01	0.342195E+07	0.0000	0.000000
3*	500.000	3.6390	0.2857899E-03	0.260868E-01	0.342242E+07	0.0000	0.000000
4	750.000	3.6221	0.2843390E-03	0.259521E-01	0.341177E+07	0.0000	0.000000
4*	750.000	3.6243	0.2844928E-03	0.259500E-01	0.341235E+07	0.0000	0.000000
5	1000.000	3.6100	0.2832086E-03	0.258200E-01	0.340234E+07	0.0000	0.000000
5*	1000.000	3.6128	0.2833970E-03	0.258169E-01	0.340304E+07	0.0000	0.000000
6	1250.000	3.5968	0.2819927E-03	0.256978E-01	0.339268E+07	0.0000	0.000000
6*	1250.000	3.5990	0.2821431E-03	0.256955E-01	0.339326E+07	0.0000	0.000000
7	1500.000	3.5814	0.2806170E-03	0.255869E-01	0.338253E+07	0.0000	0.000000
7*	1500.000	3.5830	0.2807288E-03	0.255854E-01	0.338297E+07	0.0000	0.000000
8	1750.000	3.5679	0.2793764E-03	0.254795E-01	0.337292E+07	0.0000	0.000000
8*	1750.000	3.5700	0.2795234E-03	0.254769E-01	0.337349E+07	0.0000	0.000000
9	2000.000	3.5576	0.2783487E-03	0.253732E-01	0.336415E+07	0.0000	0.000000
9*	2000.000	3.5603	0.2785320E-03	0.253696E-01	0.336484E+07	0.0000	0.000000
10	2250.000	3.5462	0.2772395E-03	0.252750E-01	0.335517E+07	0.0000	0.000000
10*	2250.000	3.5483	0.2773843E-03	0.252722E-01	0.335573E+07	0.0000	0.000000
11	2500.000	3.5324	0.2759714E-03	0.251865E-01	0.334570E+07	0.0000	0.000000
11*	2500.000	3.5339	0.2760772E-03	0.251847E-01	0.334612E+07	0.0000	0.000000
12	2701.000	3.5255	0.2752515E-03	0.251158E-01	0.333940E+07	0.0000	0.000000

5) * LIQUID HOLDUP *

Node	Distance	Elevation	Volume Fraction	Volume Holdup per Unit Length	Weight Holdup per Unit Length	Volume Holdup per Segment	Weight Holdup per Segment
	m	m		m3	kg	m3	kg
1	0.000	0.000	0.063784	1.8790925E-03	1.138437	0.000000	0.000000
2	250.000	3.000	0.065600	1.9326173E-03	1.170801	0.4761806	288.4917
2*	250.000	3.000	0.065555	1.9312881E-03	1.170073	0.000000	0.000000
3	500.000	-3.000	0.067316	1.9831550E-03	1.201325	0.4896377	296.6026
3*	500.000	-3.000	0.067277	1.9820017E-03	1.200686	0.000000	0.000000
4	750.000	-3.000	0.068938	2.0309418E-03	1.230212	0.5013289	303.6938
4*	750.000	-3.000	0.068892	2.0295938E-03	1.229477	0.000000	0.000000
5	1000.000	3.000	0.070453	2.0755929E-03	1.257280	0.5127289	310.6038
5*	1000.000	3.000	0.070400	2.0740249E-03	1.256436	0.000000	0.000000
6	1250.000	3.000	0.071928	2.1190436E-03	1.283537	0.5238255	317.3155
6*	1250.000	3.000	0.071884	2.1177271E-03	1.282825	0.000000	0.000000
7	1500.000	-3.000	0.073387	2.1620067E-03	1.309362	0.5352623	324.1723

Node	Distance	Elevation	Volume Fraction	Volume Holdup per Unit Length	Weight Holdup per Unit Length	Volume Holdup per Segment	Weight Holdup per Segment
	m	m		m3	kg	m3	kg
7*	1500.000	-3.000	0.073351	2.1609563E-03	1.308790	0.000000	0.000000
8	1750.000	-3.000	0.074765	2.2025991E-03	1.333796	0.5451235	330.1336
8*	1750.000	-3.000	0.074721	2.2013037E-03	1.333101	0.000000	0.000000
9	2000.000	3.000	0.076043	2.2402716E-03	1.356565	0.5547468	335.9486
9*	2000.000	3.000	0.075990	2.2387102E-03	1.355736	0.000000	0.000000
10	2250.000	3.000	0.077297	2.2771917E-03	1.378791	0.5641561	341.6191
10*	2250.000	3.000	0.077253	2.2759026E-03	1.378103	0.000000	0.000000
11	2500.000	-3.000	0.078549	2.3140938E-03	1.400862	0.5740258	347.5031
11*	2500.000	-3.000	0.078515	2.3130909E-03	1.400323	0.000000	0.000000
12	2701.000	0.000	0.079418	2.3397041E-03	1.416309	0.4675421	283.0279

Pipeline Volume 79.573 m3
Total Volume Holdup 5.744558 m3 - Average Holdup 7.2192549E-02
Total Weight Holdup 3479.112 kg

6) * GAS HOLDUP *

Node	Distance	Elevation	Volume Fraction	Volume Holdup per Unit Length	Weight Holdup per Unit Length	Volume Holdup per Segment	Weight Holdup per Segment
	m	m		m3	kg	m3	kg
1	0.000	0.000	0.936216	2.7581377E-02	1.899361	0.000000	0.000000
2	250.000	3.000	0.934400	2.7527852E-02	1.898923	6.888937	474.7740
2*	250.000	3.000	0.934445	2.7529182E-02	1.897779	0.000000	0.000000
3	500.000	-3.000	0.932684	2.7477315E-02	1.898559	6.875480	474.9799
3*	500.000	-3.000	0.932723	2.7478468E-02	1.897707	0.000000	0.000000
4	750.000	-3.000	0.931062	2.7429528E-02	1.897395	6.863789	474.3678
4*	750.000	-3.000	0.931108	2.7430876E-02	1.896258	0.000000	0.000000
5	1000.000	3.000	0.929547	2.7384877E-02	1.894816	6.852389	473.7579
5*	1000.000	3.000	0.929600	2.7386445E-02	1.893389	0.000000	0.000000
6	1250.000	3.000	0.928072	2.7341426E-02	1.893159	6.841292	473.2886
6*	1250.000	3.000	0.928116	2.7342743E-02	1.892033	0.000000	0.000000
7	1500.000	-3.000	0.926613	2.7298463E-02	1.893037	6.829855	473.5497
7*	1500.000	-3.000	0.926649	2.7299513E-02	1.892217	0.000000	0.000000
8	1750.000	-3.000	0.925235	2.7257871E-02	1.892041	6.819994	472.9932
8*	1750.000	-3.000	0.925279	2.7259166E-02	1.890925	0.000000	0.000000
9	2000.000	3.000	0.923957	2.7220198E-02	1.889534	6.810371	472.4061
9*	2000.000	3.000	0.924010	2.7221760E-02	1.888115	0.000000	0.000000
10	2250.000	3.000	0.922703	2.7183278E-02	1.887940	6.800961	471.9566
10*	2250.000	3.000	0.922747	2.7184567E-02	1.886830	0.000000	0.000000
11	2500.000	-3.000	0.921451	2.7146376E-02	1.887894	6.791092	472.2336
11*	2500.000	-3.000	0.921485	2.7147379E-02	1.887099	0.000000	0.000000
12	2701.000	0.000	0.920582	2.7120766E-02	1.885940	5.454012	379.2178

Pipeline Volume 79.573 m3
Total Volume Holdup 73.82817 m3 - Average Holdup 0.9278075
Total Weight Holdup 5113.525 kg

7) * PRESSURE LOSSES *

Sect	Total bar	Friction bar	Elevation bar	Kinetic bar
1	0.2361195	0.2361802	0.000000	-6.0700678E-05
2	0.1732642	0.2349292	-6.1606701E-02	-5.8282633E-05
3	0.2338227	0.2338758	0.000000	-5.3089574E-05
4	0.2955207	0.2328996	6.2666599E-02	-4.5414522E-05
5	0.2318850	0.2319328	0.000000	-4.7720900E-05

Sect	Total bar	Friction bar	Elevation bar	Kinetic bar
6	0.1670016	0.2307521	-6.3697827E-02	-5.2667266E-05
7	0.2297183	0.2297658	0.000000	-4.7466531E-05
8	0.2934164	0.2288701	6.4585917E-02	-3.9628329E-05
9	0.2279469	0.2279889	0.000000	-4.2025829E-05
10	0.1613910	0.2268971	-6.5458984E-02	-4.7134834E-05
11	0.1817583	0.1817855	0.000000	-2.7186368E-05

Total Pressure Drop 2.431845 bar
Total Friction DP 2.495877 bar
Total Elevation DP -6.3510996E-02 bar
Total Kinetic DP -5.2131746E-04 bar
Total Fitting DP 0.000000 bar (included in total friction dp)

8) * HEAT TRANSFER RESULTS *

Node	Temperature °C	Delta T °C	Text °C	T-Text °C	Log Mean DT °C	Heat per Segment MJ/h	Exchanged per Unit Length(m) MJ/h	Delta Enth. kJ/kg	Heat Transfer Coefficient W/m2.°C
1	67.400	0.000	9.000	58.400	0.000	0.000000	-0.5791212	0.0000	4.5261
2	65.866	-1.534	9.000	56.866	57.629	-142.1870	-0.5639047	-6.0331	4.5261
2*	65.866	0.000	9.000	56.866	56.866	0.000000	-0.5639047	0.0000	4.5261
3	64.409	-1.457	9.000	55.409	56.134	-138.5137	-0.5494575	-5.7658	4.5261
3*	64.409	0.000	9.000	55.409	55.409	0.000000	-0.5494575	0.0000	4.5261
4	62.948	-1.461	9.000	53.948	54.675	-134.8955	-0.5349725	-5.6888	4.5261
4*	62.948	0.000	9.000	53.948	53.948	0.000000	-0.5349725	0.0000	4.5261
5	61.483	-1.465	9.000	52.483	53.212	-131.2675	-0.5204479	-5.6115	4.5261
5*	61.483	0.000	9.000	52.483	52.483	0.000000	-0.5204479	0.0000	4.5261
6	60.088	-1.396	9.000	51.088	51.782	-127.7530	-0.5066093	-5.3882	4.5261
6*	60.088	0.000	9.000	51.088	51.088	0.000000	-0.5066093	0.0000	4.5261
7	58.761	-1.327	9.000	49.761	50.421	-124.4097	-0.4934538	-5.1718	4.5261
7*	58.761	0.000	9.000	49.761	49.761	0.000000	-0.4934538	0.0000	4.5261
8	57.428	-1.333	9.000	48.428	49.092	-121.1102	-0.4802359	-5.1083	4.5261
8*	57.428	0.000	9.000	48.428	48.428	0.000000	-0.4802359	0.0000	4.5261
9	56.089	-1.339	9.000	47.089	47.755	-117.7947	-0.4669534	-5.0442	4.5261
9*	56.089	0.000	9.000	47.089	47.089	0.000000	-0.4669534	0.0000	4.5261
10	54.818	-1.270	9.000	45.818	46.451	-114.5907	-0.4543561	-4.8337	4.5261
10*	54.818	0.000	9.000	45.818	45.818	0.000000	-0.4543561	0.0000	4.5261
11	53.617	-1.202	9.000	44.617	45.215	-111.5571	-0.4424384	-4.6303	4.5261
11*	53.617	0.000	9.000	44.617	44.617	0.000000	-0.4424384	0.0000	4.5261
12	52.631	-0.985	9.000	43.631	44.122	-87.45492	-0.4326686	-3.7289	4.5261

Feed/Product heat balance -1358.529 MJ/h

9) * FEEDS *

Stream	N21F
Temperature, °C	67.40
Pressure, bar	78.778
Total rate, kmol/h	1297.4
Vapor, kmol/h	1235.6
Liquid 1/H, kmol/h	47.939
Liquid 2/W, kmol/h	13.9

10) * PRODUCTS *

Stream		N21P
Temperature,	°C	52.63
Pressure,	bar	76.346
Total rate,	kmol/h	1297.4
Vapor,	kmol/h	1216.8
Liquid 1/H,	kmol/h	64.547
Liquid 2/W,	kmol/h	16.0

*** UNIT 5 - 'MX1 ' - ' STREAM MIXER ' ***

--- Feed Streams --- - Product Streams -

from unit	1 - N18	'N18P '	'TRKF '	to unit 6 - CP
from unit	2 - N19	'N19P '		
from unit	3 - N20	'N20P '		
from unit	4 - N21	'N21P '		

1) * OPERATING CONDITIONS *

Outlet Temperature	54.59 °C
Outlet Pressure	76.3432 bar

2) * FEEDS *

Stream		N18P	N19P	N20P	N21P
Temperature,	°C	45.29	53.62	67.92	52.63
Pressure,	bar	76.350	76.347	76.343	76.346
Total rate,	kmol/h	1600.2	1946.1	1427.2	1297.4
Vapor,	kmol/h	1487.7	1827.3	1360.8	1216.8
Liquid 1/H,	kmol/h	91.773	94.935	51.412	64.547
Liquid 2/W,	kmol/h	20.7	23.9	15.0	16.0

3) * PRODUCTS *

Stream		TRKF
Temperature,	°C	54.59
Pressure,	bar	76.343
Total rate,	kmol/h	6270.9
Vapor,	kmol/h	5894.4
Liquid 1/H,	kmol/h	300.06
Liquid 2/W,	kmol/h	76.4

*** UNIT 6 - 'CP ' - ' PIPELINE ' ***
--- Feed Streams --- - Product Streams -
from unit 5 - MX1 'TRKF ' 'PROD '

1) * OUTLET CONDITIONS *

Temperature 48.68 °C
Pressure 75.0010 bar

2) * CALCULATION RESULTS *

Node	CURVILIN Distance m	Elevation m	Incl	Diameter m	Calculated Pressure bar	CALCULATED Temperature °C	Liquid Holdup	Liquid Mass Rate kg/s	Gas Mass Rate kg/s	Flow Pattern
1	0.000	0.000	INCL UP	0.381	76.343	54.587	0.040723	5.901309	34.37647	STRATIF
2	250.000	3.000	INCL UP	0.381	76.289	54.261	0.040956	5.928716	34.34923	STRATIF
2*	250.000	3.000	INCL DN	0.381	76.289	54.261	0.037709	5.928883	34.34889	STRATIF
3	500.000	-3.000	INCL DN	0.381	76.262	53.972	0.037878	5.953353	34.32431	STRATIF
3*	500.000	-3.000	HORIZ	0.381	76.262	53.972	0.039998	5.953489	34.32429	STRATIF
4	750.000	-3.000	HORIZ	0.381	76.189	53.654	0.040198	5.979937	34.29789	STRATIF
4*	750.000	-3.000	INCL UP	0.381	76.189	53.654	0.042717	5.980214	34.29756	STRATIF
5	1000.000	3.000	INCL UP	0.381	76.067	53.304	0.042933	6.008962	34.26910	STRATIF
5*	1000.000	3.000	HORIZ	0.381	76.067	53.304	0.040388	6.009365	34.26841	STRATIF
6	1250.000	3.000	HORIZ	0.381	75.994	52.990	0.040596	6.035559	34.24227	STRATIF
6*	1250.000	3.000	INCL DN	0.381	75.994	52.990	0.038405	6.035837	34.24194	STRATIF
7	1500.000	-3.000	INCL DN	0.381	75.968	52.709	0.038569	6.059636	34.21803	STRATIF
7*	1500.000	-3.000	HORIZ	0.381	75.968	52.709	0.040800	6.059773	34.21800	STRATIF
8	1750.000	-3.000	HORIZ	0.381	75.895	52.399	0.041005	6.085557	34.19227	STRATIF
8*	1750.000	-3.000	INCL UP	0.381	75.895	52.399	0.043575	6.085835	34.19194	STRATIF
9	2000.000	3.000	INCL UP	0.381	75.773	52.056	0.043785	6.113912	34.16415	STRATIF
9*	2000.000	3.000	HORIZ	0.381	75.773	52.056	0.041169	6.114317	34.16346	STRATIF
10	2250.000	3.000	HORIZ	0.381	75.700	51.749	0.041343	6.139851	34.13798	STRATIF
10*	2250.000	3.000	INCL DN	0.381	75.700	51.749	0.039080	6.140130	34.13765	STRATIF
11	2500.000	-3.000	INCL DN	0.381	75.674	51.476	0.039239	6.163278	34.11439	STRATIF
11*	2500.000	-3.000	HORIZ	0.381	75.674	51.476	0.041513	6.163416	34.11436	STRATIF
12	2750.000	-3.000	HORIZ	0.381	75.601	51.174	0.041713	6.188553	34.08927	STRATIF
12*	2750.000	-3.000	INCL UP	0.381	75.601	51.174	0.044431	6.188833	34.08894	STRATIF
13	3000.000	3.000	INCL UP	0.381	75.479	50.838	0.044636	6.216254	34.06180	STRATIF
13*	3000.000	3.000	HORIZ	0.381	75.479	50.838	0.041891	6.216662	34.06111	STRATIF
14	3250.000	3.000	HORIZ	0.381	75.406	50.539	0.042079	6.241552	34.03627	STRATIF
14*	3250.000	3.000	INCL DN	0.381	75.406	50.539	0.039734	6.241833	34.03594	STRATIF
15	3500.000	-3.000	INCL DN	0.381	75.380	50.274	0.039887	6.264344	34.01332	STRATIF
15*	3500.000	-3.000	HORIZ	0.381	75.380	50.274	0.042244	6.264483	34.01329	STRATIF
16	3750.000	-3.000	HORIZ	0.381	75.307	49.979	0.042439	6.288987	33.98884	STRATIF
16*	3750.000	-3.000	INCL UP	0.381	75.307	49.979	0.045267	6.289269	33.98851	STRATIF
17	4000.000	3.000	INCL UP	0.381	75.185	49.651	0.045467	6.316050	33.96200	STRATIF
17*	4000.000	3.000	HORIZ	0.381	75.185	49.651	0.042601	6.316461	33.96132	STRATIF
18	4250.000	3.000	HORIZ	0.381	75.113	49.359	0.042794	6.340722	33.93710	STRATIF
18*	4250.000	3.000	INCL DN	0.381	75.113	49.359	0.040366	6.341005	33.93677	STRATIF
19	4500.000	-3.000	INCL DN	0.381	75.087	49.101	0.040514	6.362895	33.91476	STRATIF
19*	4500.000	-3.000	INCL UP	0.381	75.087	49.101	0.043884	6.363036	33.91474	STRATIF
20	4865.000	0.000	INCL UP	0.381	75.001	48.678	0.044162	6.398486	33.87947	STRATIF

3) * FLUID VELOCITY AND FLOW RATES *

Node	Distance	GAS Volume Flow Rate	GAS Velocity	GAS Surface Velocity	LIQUID Volume Flow Rate	LIQUID Velocity	LIQUID Surface Velocity	Mixture Velocity
	m	m3/s	m/s	m/s	m3/s	m/s	m/s	m/s
1	0.000	0.4975266	4.5491	4.3639	9.7412328E-03	2.0981	0.0854	4.4493
2	250.000	0.4969423	4.5449	4.3588	9.7865401E-03	2.0959	0.0858	4.4446
2*	250.000	0.4970091	4.5302	4.3594	9.7871195E-03	2.2765	0.0858	4.4452
3	500.000	0.4963401	4.5249	4.3535	9.8285774E-03	2.2760	0.0862	4.4397
3*	500.000	0.4963810	4.5352	4.3538	9.8284288E-03	2.1553	0.0862	4.4400
4	750.000	0.4959333	4.5321	4.3499	9.8722343E-03	2.1541	0.0866	4.4365
4*	750.000	0.4960311	4.5449	4.3508	9.8726080E-03	2.0272	0.0866	4.4374
5	1000.000	0.4958064	4.5439	4.3488	9.9190745E-03	2.0264	0.0870	4.4358
5*	1000.000	0.4959597	4.5332	4.3501	9.9201411E-03	2.1544	0.0870	4.4372
6	1250.000	0.4955190	4.5302	4.3463	9.9635358E-03	2.1527	0.0874	4.4337
6*	1250.000	0.4956168	4.5208	4.3471	9.9639077E-03	2.2756	0.0874	4.4345
7	1500.000	0.4949655	4.5156	4.3414	1.0004296E-02	2.2751	0.0877	4.4292
7*	1500.000	0.4950062	4.5265	4.3418	1.0004141E-02	2.1507	0.0877	4.4295
8	1750.000	0.4945766	4.5235	4.3380	1.0046870E-02	2.1491	0.0881	4.4261
8*	1750.000	0.4946741	4.5365	4.3389	1.0047240E-02	2.0224	0.0881	4.4270
9	2000.000	0.4944693	4.5357	4.3371	1.0092607E-02	2.0218	0.0885	4.4256
9*	2000.000	0.4946228	4.5247	4.3384	1.0093665E-02	2.1505	0.0885	4.4270
10	2250.000	0.4942005	4.5217	4.3347	1.0135988E-02	2.1504	0.0889	4.4236
10*	2250.000	0.4942982	4.5119	4.3356	1.0136355E-02	2.2750	0.0889	4.4245
11	2500.000	0.4936647	4.5069	4.3300	1.0175699E-02	2.2746	0.0893	4.4193
11*	2500.000	0.4937052	4.5179	4.3304	1.0175539E-02	2.1500	0.0893	4.4196
12	2750.000	0.4932943	4.5151	4.3268	1.0217216E-02	2.1484	0.0896	4.4164
12*	2750.000	0.4933919	4.5288	4.3276	1.0217581E-02	2.0171	0.0896	4.4172
13	3000.000	0.4932066	4.5281	4.3260	1.0261875E-02	2.0165	0.0900	4.4160
13*	3000.000	0.4933603	4.5165	4.3273	1.0262922E-02	2.1489	0.0900	4.4174
14	3250.000	0.4929567	4.5137	4.3238	1.0304199E-02	2.1478	0.0904	4.4142
14*	3250.000	0.4930543	4.5036	4.3247	1.0304560E-02	2.2747	0.0904	4.4150
15	3500.000	0.4924382	4.4987	4.3193	1.0342884E-02	2.2744	0.0907	4.4100
15*	3500.000	0.4924785	4.5101	4.3196	1.0342719E-02	2.1475	0.0907	4.4103
16	3750.000	0.4920859	4.5075	4.3162	1.0383367E-02	2.1460	0.0911	4.4072
16*	3750.000	0.4921834	4.5217	4.3170	1.0383725E-02	2.0120	0.0911	4.4081
17	4000.000	0.4920177	4.5211	4.3156	1.0426971E-02	2.0115	0.0915	4.4070
17*	4000.000	0.4921717	4.5090	4.3169	1.0428005E-02	2.1471	0.0915	4.4084
18	4250.000	0.4917864	4.5064	4.3135	1.0468260E-02	2.1456	0.0918	4.4054
18*	4250.000	0.4918840	4.4959	4.3144	1.0468614E-02	2.2748	0.0918	4.4062
19	4500.000	0.4912852	4.4911	4.3091	1.0505941E-02	2.2745	0.0921	4.4013
19*	4500.000	0.4913253	4.5073	4.3095	1.0505770E-02	2.0998	0.0921	4.4016
20	4865.000	0.4906555	4.5025	4.3036	1.0564595E-02	2.0983	0.0927	4.3963

4) * VELOCITY, FRICTION FACTOR, SONIC SPEED *

Node	Distance	Velocity	dP fric/L	Fric.Fact.	Reynolds No.	Sonic Vel	Mach No.
	m	m/s	bar			m/s	
1	0.000	4.4493	0.6658899E-04	0.924891E-02	0.831501E+07	0.0000	0.000000
2	250.000	4.4446	0.6646791E-04	0.923659E-02	0.831028E+07	0.0000	0.000000
2*	250.000	4.4452	0.2733183E-03	0.387155E-01	0.831761E+07	0.0000	0.000000
3	500.000	4.4397	0.2734127E-03	0.387683E-01	0.831295E+07	0.0000	0.000000
3*	500.000	4.4400	0.8947844E-04	0.125270E-01	0.830837E+07	0.0000	0.000000
4	750.000	4.4365	0.8943689E-04	0.125251E-01	0.830436E+07	0.0000	0.000000
4*	750.000	4.4374	0.4960905E-04	0.684381E-02	0.829916E+07	0.0000	0.000000
5	1000.000	4.4358	0.4957949E-04	0.683772E-02	0.829582E+07	0.0000	0.000000
5*	1000.000	4.4372	0.8943278E-04	0.125149E-01	0.830216E+07	0.0000	0.000000
6	1250.000	4.4337	0.8935027E-04	0.125066E-01	0.829815E+07	0.0000	0.000000
6*	1250.000	4.4345	0.2734848E-03	0.387727E-01	0.830372E+07	0.0000	0.000000

Node	Distance	Velocity	dP fric/L	Fric.Fact.	Reynolds No.	Sonic Vel	Mach No.
	m	m/s	bar			m/s	
7	1500.000	4.4292	0.2735667E-03	0.388234E-01	0.829913E+07	0.0000	0.000000
7*	1500.000	4.4295	0.8925586E-04	0.124989E-01	0.829394E+07	0.0000	0.000000
8	1750.000	4.4261	0.8917504E-04	0.124907E-01	0.828997E+07	0.0000	0.000000
8*	1750.000	4.4270	0.4937533E-04	0.681121E-02	0.828426E+07	0.0000	0.000000
9	2000.000	4.4256	0.4935002E-04	0.680558E-02	0.828100E+07	0.0000	0.000000
9*	2000.000	4.4270	0.8922237E-04	0.124889E-01	0.828791E+07	0.0000	0.000000
10	2250.000	4.4236	0.8919745E-04	0.124905E-01	0.828404E+07	0.0000	0.000000
10*	2250.000	4.4245	0.2736343E-03	0.388250E-01	0.829014E+07	0.0000	0.000000
11	2500.000	4.4193	0.2737216E-03	0.388760E-01	0.828563E+07	0.0000	0.000000
11*	2500.000	4.4196	0.8919778E-04	0.124981E-01	0.827998E+07	0.0000	0.000000
12	2750.000	4.4164	0.8911961E-04	0.124899E-01	0.827609E+07	0.0000	0.000000
12*	2750.000	4.4172	0.4912755E-04	0.677543E-02	0.826963E+07	0.0000	0.000000
13	3000.000	4.4160	0.4910648E-04	0.677025E-02	0.826646E+07	0.0000	0.000000
13*	3000.000	4.4174	0.8912269E-04	0.124802E-01	0.827407E+07	0.0000	0.000000
14	3250.000	4.4142	0.8905329E-04	0.124740E-01	0.827024E+07	0.0000	0.000000
14*	3250.000	4.4150	0.2737929E-03	0.388759E-01	0.827690E+07	0.0000	0.000000
15	3500.000	4.4100	0.2738807E-03	0.389265E-01	0.827247E+07	0.0000	0.000000
15*	3500.000	4.4103	0.8905072E-04	0.124810E-01	0.826626E+07	0.0000	0.000000
16	3750.000	4.4072	0.8897537E-04	0.124730E-01	0.826245E+07	0.0000	0.000000
16*	3750.000	4.4081	0.4888709E-04	0.674016E-02	0.825531E+07	0.0000	0.000000
17	4000.000	4.4070	0.4887029E-04	0.673544E-02	0.825223E+07	0.0000	0.000000
17*	4000.000	4.4084	0.8899029E-04	0.124654E-01	0.826055E+07	0.0000	0.000000
18	4250.000	4.4054	0.8891621E-04	0.124575E-01	0.825677E+07	0.0000	0.000000
18*	4250.000	4.4062	0.2739481E-03	0.389236E-01	0.826401E+07	0.0000	0.000000
19	4500.000	4.4013	0.2740332E-03	0.389733E-01	0.825966E+07	0.0000	0.000000
19*	4500.000	4.4016	0.7181499E-04	0.100131E-01	0.825027E+07	0.0000	0.000000
20	4865.000	4.3963	0.7171180E-04	0.100048E-01	0.824423E+07	0.0000	0.000000

5) * LIQUID HOLDUP *

Node	Distance	Elevation	Volume Fraction	Volume Holdup per Unit Length	Weight Holdup per Unit Length	Volume Holdup per Segment	Weight Holdup per Segment
	m	m		m3	kg	m3	kg
1	0.000	0.000	0.040723	4.6427889E-03	2.812635	0.000000	0.000000
2	250.000	3.000	0.040956	4.6693444E-03	2.828572	1.164105	705.1853
2*	250.000	3.000	0.037709	4.2991783E-03	2.604375	0.000000	0.000000
3	500.000	-3.000	0.037878	4.3184184E-03	2.615823	1.077400	652.6300
3*	500.000	-3.000	0.039998	4.5601160E-03	2.762252	0.000000	0.000000
4	750.000	-3.000	0.040198	4.5830116E-03	2.776043	1.142993	692.3285
4*	750.000	-3.000	0.042717	4.8701829E-03	2.950055	0.000000	0.000000
5	1000.000	3.000	0.042933	4.8948297E-03	2.965056	1.220871	739.5109
5*	1000.000	3.000	0.040388	4.6045755E-03	2.789333	0.000000	0.000000
6	1250.000	3.000	0.040596	4.6283528E-03	2.803655	1.154300	699.2138
6*	1250.000	3.000	0.038405	4.3785817E-03	2.652414	0.000000	0.000000
7	1500.000	-3.000	0.038569	4.3972371E-03	2.663499	1.097014	664.4946
7*	1500.000	-3.000	0.040800	4.6515600E-03	2.817573	0.000000	0.000000
8	1750.000	-3.000	0.041005	4.6750093E-03	2.831694	1.166009	706.2511
8*	1750.000	-3.000	0.043575	4.9679404E-03	3.009191	0.000000	0.000000
9	2000.000	3.000	0.043785	4.9919499E-03	3.023806	1.245240	754.2516
9*	2000.000	3.000	0.041169	4.6936919E-03	2.843241	0.000000	0.000000
10	2250.000	3.000	0.041343	4.7135668E-03	2.855195	1.176180	712.4481
10*	2250.000	3.000	0.039080	4.4555346E-03	2.698955	0.000000	0.000000
11	2500.000	-3.000	0.039239	4.4736064E-03	2.709680	1.115953	675.9475
11*	2500.000	-3.000	0.041513	4.7328673E-03	2.866740	0.000000	0.000000
12	2750.000	-3.000	0.041713	4.7557368E-03	2.880506	1.186268	718.5010
12*	2750.000	-3.000	0.044431	5.0655807E-03	3.068244	0.000000	0.000000
13	3000.000	3.000	0.044636	5.0889646E-03	3.082479	1.269978	769.2127
13*	3000.000	3.000	0.041891	4.7759512E-03	2.892985	0.000000	0.000000

Node	Distance	Elevation	Volume Fraction	Volume Holdup per Unit Length	Weight Holdup per Unit Length	Volume Holdup per Segment	Weight Holdup per Segment
	m	m		m3	kg	m3	kg
14	3250.000	3.000	0.042079	4.7974730E-03	2.905933	1.196985	725.0288
14*	3250.000	3.000	0.039734	4.5300335E-03	2.744000	0.000000	0.000000
15	3500.000	-3.000	0.039887	4.5475258E-03	2.754368	1.134729	687.2988
15*	3500.000	-3.000	0.042244	4.8161823E-03	2.917114	0.000000	0.000000
16	3750.000	-3.000	0.042439	4.8384973E-03	2.930541	1.207033	731.0546
16*	3750.000	-3.000	0.045267	5.1609269E-03	3.125897	0.000000	0.000000
17	4000.000	3.000	0.045467	5.1836837E-03	3.139753	1.293350	783.3437
17*	4000.000	3.000	0.042601	4.8568817E-03	2.941915	0.000000	0.000000
18	4250.000	3.000	0.042794	4.8789803E-03	2.955209	1.217181	737.2382
18*	4250.000	3.000	0.040366	4.6020913E-03	2.787559	0.000000	0.000000
19	4500.000	-3.000	0.040514	4.6190070E-03	2.797572	1.152903	698.2842
19*	4500.000	-3.000	0.043884	5.0031526E-03	3.030262	0.000000	0.000000
20	4865.000	0.000	0.044162	5.0349535E-03	3.049304	1.832499	1109.820

Pipeline Volume 554.658 m3
Total Volume Holdup 23.05099 m3 - Average Holdup 4.1558922E-02
Total Weight Holdup 13962.04 kg

6) * GAS HOLDUP *

Node	Distance	Elevation	Volume Fraction	Volume Holdup per Unit Length	Weight Holdup per Unit Length	Volume Holdup per Segment	Weight Holdup per Segment
	m	m		m3	kg	m3	kg
1	0.000	0.000	0.959277	0.1093671	7.556689	0.000000	0.000000
2	250.000	3.000	0.959044	0.1093405	7.557768	27.33837	1889.745
2*	250.000	3.000	0.962291	0.1097107	7.582238	0.000000	0.000000
3	500.000	-3.000	0.962122	0.1096915	7.585680	27.42507	1896.378
3*	500.000	-3.000	0.960002	0.1094498	7.568350	0.000000	0.000000
4	750.000	-3.000	0.959802	0.1094269	7.567779	27.35948	1892.496
4*	750.000	-3.000	0.957283	0.1091397	7.546352	0.000000	0.000000
5	1000.000	3.000	0.957067	0.1091151	7.541841	27.28160	1886.587
5*	1000.000	3.000	0.959612	0.1094053	7.559377	0.000000	0.000000
6	1250.000	3.000	0.959404	0.1093815	7.558691	27.34817	1890.229
6*	1250.000	3.000	0.961595	0.1096313	7.574377	0.000000	0.000000
7	1500.000	-3.000	0.961431	0.1096126	7.577743	27.40546	1894.408
7*	1500.000	-3.000	0.959200	0.1093583	7.559548	0.000000	0.000000
8	1750.000	-3.000	0.958995	0.1093349	7.558811	27.33646	1890.262
8*	1750.000	-3.000	0.956425	0.1090419	7.536994	0.000000	0.000000
9	2000.000	3.000	0.956215	0.1090179	7.532365	27.25723	1884.227
9*	2000.000	3.000	0.958831	0.1093162	7.550439	0.000000	0.000000
10	2250.000	3.000	0.958657	0.1092963	7.549887	27.32629	1888.000
10*	2250.000	3.000	0.960920	0.1095543	7.566136	0.000000	0.000000
11	2500.000	-3.000	0.960761	0.1095363	7.569420	27.38652	1892.347
11*	2500.000	-3.000	0.958487	0.1092770	7.550894	0.000000	0.000000
12	2750.000	-3.000	0.958287	0.1092541	7.550052	27.31620	1888.079
12*	2750.000	-3.000	0.955569	0.1089443	7.527072	0.000000	0.000000
13	3000.000	3.000	0.955364	0.1089209	7.522326	27.23249	1881.698
13*	3000.000	3.000	0.958109	0.1092339	7.541403	0.000000	0.000000
14	3250.000	3.000	0.957921	0.1092124	7.540595	27.30548	1885.700
14*	3250.000	3.000	0.960266	0.1094798	7.557484	0.000000	0.000000
15	3500.000	-3.000	0.960113	0.1094624	7.560686	27.36774	1890.151
15*	3500.000	-3.000	0.957756	0.1091937	7.541522	0.000000	0.000000
16	3750.000	-3.000	0.957561	0.1091714	7.540577	27.29544	1885.717
16*	3750.000	-3.000	0.954733	0.1088490	7.516738	0.000000	0.000000
17	4000.000	3.000	0.954533	0.1088262	7.511871	27.20912	1879.121
17*	4000.000	3.000	0.957399	0.1091530	7.531882	0.000000	0.000000
18	4250.000	3.000	0.957206	0.1091309	7.530891	27.28529	1883.298

Node	Distance	Elevation	Volume Fraction	Volume Holdup per Unit Length	Weight Holdup per Unit Length	Volume Holdup per Segment	Weight Holdup per Segment
	m	m		m3	kg	m3	kg
18*	4250.000	3.000	0.959634	0.1094078	7.548420	0.000000	0.000000
19	4500.000	-3.000	0.959486	0.1093909	7.551537	27.34957	1887.852
19*	4500.000	-3.000	0.956116	0.1090067	7.524413	0.000000	0.000000
20	4865.000	0.000	0.955838	0.1089749	7.524677	39.78111	2747.014

Pipeline Volume 554.658 m3
Total Volume Holdup 531.6071 m3 - Average Holdup 0.9584411
Total Weight Holdup 36733.31 kg

7) * PRESSURE LOSSES *

Sect	Total bar	Friction bar	Elevation bar	Kinetic bar
1	5.4542646E-02	5.4562403E-02	0.000000	-1.9757086E-05
2	2.6558352E-02	0.2242157	-0.1976857	2.8320925E-05
3	7.3331649E-02	7.3379018E-02	0.000000	-4.7368818E-05
4	0.1215067	4.0665441E-02	8.0879064E-02	-3.7805867E-05
5	7.3334107E-02	7.3314359E-02	0.000000	1.9747103E-05
6	2.6307508E-02	0.2243596	-0.1980683	1.6162494E-05
7	7.3121398E-02	7.3169982E-02	0.000000	-4.8583995E-05
8	0.1215607	4.0475429E-02	8.1122923E-02	-3.7607840E-05
9	7.3191355E-02	7.3169859E-02	0.000000	2.1496118E-05
10	2.6091556E-02	0.2245032	-0.1984296	1.7945202E-05
11	7.3074648E-02	7.3123374E-02	0.000000	-4.8725966E-05
12	0.1215840	4.0263409E-02	8.1359313E-02	-3.8710007E-05
13	7.3086786E-02	7.3063458E-02	0.000000	2.3328017E-05
14	2.5864331E-02	0.2246168	-0.1987723	1.9870935E-05
15	7.2954425E-02	7.3003871E-02	0.000000	-4.9446769E-05
16	0.1216168	4.0078363E-02	8.1577723E-02	-3.9294408E-05
17	7.2979943E-02	7.2954778E-02	0.000000	2.5164845E-05
18	2.5646476E-02	0.2247189	-0.1990942	2.1810625E-05
19	8.5851374E-02	8.5923321E-02	0.000000	-7.1947207E-05

Total Pressure Drop 1.342205 bar
Total Friction DP 2.009561 bar
Total Elevation DP -0.6671111 bar
Total Kinetic DP -2.4540170E-04 bar
Total Fitting DP 0.000000 bar (included in total friction dp)

8) * HEAT TRANSFER RESULTS *

Node	Temperature	Delta T	Text	T-Text	Log Mean DT	Heat Exchanged per Segment	Heat Exchanged per Unit Length(m)	Delta Enth.	Heat Transfer Coefficient
	°C	°C	°C	°C	°C	MJ/h	MJ/h	kJ/kg	W/m2.°C
1	54.587	0.000	9.000	45.587	0.000	0.000000	-0.5574421	0.0000	2.8371
2	54.261	-0.326	9.000	45.261	45.424	-138.6824	-0.5534558	-0.2571	2.8371
2*	54.261	0.000	9.000	45.261	45.261	0.000000	-0.5534558	0.0000	2.8371
3	53.972	-0.289	9.000	44.972	45.116	-137.7615	-0.5499217	-0.2334	2.8371
3*	53.972	0.000	9.000	44.972	44.972	0.000000	-0.5499217	0.0000	2.8371
4	53.654	-0.318	9.000	44.654	44.813	-136.8209	-0.5460379	-0.2451	2.8371
4*	53.654	0.000	9.000	44.654	44.654	0.000000	-0.5460379	0.0000	2.8371
5	53.304	-0.350	9.000	44.304	44.479	-135.7813	-0.5417573	-0.2596	2.8371
5*	53.304	0.000	9.000	44.304	44.304	0.000000	-0.5417573	0.0000	2.8371
6	52.990	-0.315	9.000	43.990	44.147	-134.7846	-0.5379086	-0.2424	2.8371
6*	52.990	0.000	9.000	43.990	43.990	0.000000	-0.5379086	0.0000	2.8371

Node	Temperature	Delta T	Text	T-Text	Log Mean DT	Heat Exchanged per Segment	Heat Exchanged per Unit Length(m)	Delta Enth.	Heat Transfer Coefficient
	°C	°C	°C	°C	°C	MJ/h	MJ/h	kJ/kg	W/m2.°C
7	52.709	-0.281	9.000	43.709	43.849	-133.8915	-0.5344725	-0.2264	2.8371
7*	52.709	0.000	9.000	43.709	43.709	0.000000	-0.5344725	0.0000	2.8371
8	52.399	-0.310	9.000	43.399	43.553	-132.9746	-0.5306831	-0.2382	2.8371
8*	52.399	0.000	9.000	43.399	43.399	0.000000	-0.5306831	0.0000	2.8371
9	52.056	-0.343	9.000	43.056	43.227	-131.9582	-0.5264945	-0.2527	2.8371
9*	52.056	0.000	9.000	43.056	43.056	0.000000	-0.5264945	0.0000	2.8371
10	51.749	-0.307	9.000	42.749	42.902	-130.9849	-0.5227398	-0.2356	2.8371
10*	51.749	0.000	9.000	42.749	42.749	0.000000	-0.5227398	0.0000	2.8371
11	51.476	-0.273	9.000	42.476	42.612	-130.1157	-0.5193998	-0.2195	2.8371
11*	51.476	0.000	9.000	42.476	42.476	0.000000	-0.5193998	0.0000	2.8371
12	51.174	-0.302	9.000	42.174	42.325	-129.2220	-0.5157027	-0.2315	2.8371
12*	51.174	0.000	9.000	42.174	42.174	0.000000	-0.5157027	0.0000	2.8371
13	50.838	-0.335	9.000	41.838	42.006	-128.2285	-0.5116047	-0.2460	2.8371
13*	50.838	0.000	9.000	41.838	41.838	0.000000	-0.5116047	0.0000	2.8371
14	50.539	-0.300	9.000	41.539	41.689	-127.2781	-0.5079423	-0.2289	2.8371
14*	50.539	0.000	9.000	41.539	41.539	0.000000	-0.5079423	0.0000	2.8371
15	50.274	-0.265	9.000	41.274	41.406	-126.4324	-0.5046967	-0.2129	2.8371
15*	50.274	0.000	9.000	41.274	41.274	0.000000	-0.5046967	0.0000	2.8371
16	49.979	-0.295	9.000	40.979	41.126	-125.5617	-0.5010906	-0.2250	2.8371
16*	49.979	0.000	9.000	40.979	40.979	0.000000	-0.5010906	0.0000	2.8371
17	49.651	-0.328	9.000	40.651	40.815	-124.5907	-0.4970816	-0.2395	2.8371
17*	49.651	0.000	9.000	40.651	40.651	0.000000	-0.4970816	0.0000	2.8371
18	49.359	-0.292	9.000	40.359	40.505	-123.6628	-0.4935100	-0.2224	2.8371
18*	49.359	0.000	9.000	40.359	40.359	0.000000	-0.4935100	0.0000	2.8371
19	49.101	-0.258	9.000	40.101	40.230	-122.8401	-0.4903569	-0.2064	2.8371
19*	49.101	0.000	9.000	40.101	40.101	0.000000	-0.4903569	0.0000	2.8371
20	48.678	-0.423	9.000	39.678	39.889	-177.7954	-0.4851904	-0.3266	2.8371

Feed/Product heat balance -2532.836 MJ/h

9) * FEEDS *

Stream		TRKF
Temperature,	°C	54.59
Pressure,	bar	76.343
Total rate,	kmol/h	6270.9
Vapor,	kmol/h	5894.4
Liquid 1/H,	kmol/h	300.06
Liquid 2/W,	kmol/h	76.4

10) * PRODUCTS *

Stream		PROD
Temperature,	°C	48.68
Pressure,	bar	75.001
Total rate,	kmol/h	6270.9
Vapor,	kmol/h	5857.5
Liquid 1/H,	kmol/h	334.00
Liquid 2/W,	kmol/h	79.4

 *** STREAM DATA CALCULATION AND STORING ***

    Stream 'S1   ' pvt/thermo/trans props calculated
    Stream 'N18F   ' pvt/thermo/trans props calculated
    Stream 'N19F   ' pvt/thermo/trans props calculated
    Stream 'N20F   ' pvt/thermo/trans props calculated
    Stream 'N21F   ' pvt/thermo/trans props calculated
    Stream 'N18P   ' pvt/thermo/trans props calculated
    Stream 'N19P   ' pvt/thermo/trans props calculated
    Stream 'N20P   ' pvt/thermo/trans props calculated
    Stream 'N21P   ' pvt/thermo/trans props calculated
    Stream 'TRKF   ' pvt/thermo/trans props calculated
    Stream 'PROD   ' pvt/thermo/trans props calculated

*** STREAM COMPONENT MOLAR FLOW RATES - kmol/h ***

Stream Id	S1	N18F	N19F	N20F	N21F	N18P
Temperature, °C	50.000	67.500	67.000	68.200	67.400	45.286
Pressure, bar	90.0000	79.7574	79.6851	76.3699	78.7776	76.3501
Phase	MIXED	MIXED	MIXED	MIXED	MIXED	MIXED
1 WATER	245.811562	22.737570	27.653801	20.279454	18.435867	22.737570
2 NITROGEN	59.679795	5.520381	6.713977	4.923583	4.475985	5.520381
3 CARBON DIOXIDE	554.243663	51.267539	62.352412	45.725102	41.568275	51.267539
4 METHANE	13380.037098	1237.653432	1505.254174	1103.853061	1003.502782	1237.653432
5 ETHANE	1457.916852	134.857309	164.015646	120.278140	109.343764	134.857309
6 PROPANE	590.051540	54.579767	66.380798	48.679252	44.253866	54.579767
7 ISOBUTANE	112.613179	10.416719	12.668983	9.290587	8.445988	10.416719
8 BUTANE	238.719181	22.081524	26.855908	19.694332	17.903939	22.081524
9 ISOPENTANE	103.963933	9.616664	11.695942	8.577024	7.797295	9.616664
10 PENTANE	103.963933	9.616664	11.695942	8.577024	7.797295	9.616664
11 HEXANE	127.835851	11.824816	14.381533	10.546458	9.587689	11.824816
12 HEPTANE	110.883330	10.256708	12.474375	9.147875	8.316250	10.256708
13 OCTANE	97.217521	8.992621	10.936971	8.020446	7.291314	8.992621
14 NONANE	57.949946	5.360370	6.519369	4.780871	4.346246	5.360370
15 DECANE	27.331616	2.528175	3.074807	2.254858	2.049871	2.528175
16 UNDECANE	13.665808	1.264087	1.537403	1.127429	1.024936	1.264087
17 DODECANE	17.125506	1.584109	1.926619	1.412854	1.284413	1.584109
TOTALS, kmol/h	17299.010316	1600.158454	1946.138661	1427.168351	1297.425774	1600.158454
VAPOR fraction	0.930625	0.952220	0.951736	0.953736	0.952352	0.929723
LIQUID 1/H fraction	0.056561	0.037056	0.037467	0.035800	0.036949	0.057352
LIQUID 2/W fraction	0.012814	0.010725	0.010797	0.010464	0.010699	0.012924
Enthalpy MJ/h	-40948.528584	-1333.931904	-1692.981661	-1009.098501	-1063.951878	-3851.678390

Stream Id	N19P	N20P	N21P	TRKF	PROD
Temperature, °C	53.623	67.922	52.631	54.587	48.678
Pressure, bar	76.3471	76.3432	76.3457	76.3432	75.0010
Phase	MIXED	MIXED	MIXED	MIXED	MIXED
1 WATER	27.653801	20.279454	18.435867	89.106691	89.106691
2 NITROGEN	6.713977	4.923583	4.475985	21.633926	21.633926
3 CARBON DIOXIDE	62.352412	45.725102	41.568275	200.913328	200.913328
4 METHANE	1505.254174	1103.853061	1003.502782	4850.263448	4850.263448
5 ETHANE	164.015646	120.278140	109.343764	528.494859	528.494859
6 PROPANE	66.380798	48.679252	44.253866	213.893683	213.893683
7 ISOBUTANE	12.668983	9.290587	8.445988	40.822277	40.822277
8 BUTANE	26.855908	19.694332	17.903939	86.535703	86.535703
9 ISOPENTANE	11.695942	8.577024	7.797295	37.686926	37.686926
10 PENTANE	11.695942	8.577024	7.797295	37.686926	37.686926
11 HEXANE	14.381533	10.546458	9.587689	46.340496	46.340496
12 HEPTANE	12.474375	9.147875	8.316250	40.195207	40.195207
13 OCTANE	10.936971	8.020446	7.291314	35.241352	35.241352
14 NONANE	6.519369	4.780871	4.346246	21.006855	21.006855
15 DECANE	3.074807	2.254858	2.049871	9.907711	9.907711
16 UNDECANE	1.537403	1.127429	1.024936	4.953855	4.953855
17 DODECANE	1.926619	1.412854	1.284413	6.207996	6.207996
TOTALS, kmol/h	1946.138661	1427.168351	1297.425774	6270.891240	6270.891240
VAPOR fraction	0.938940	0.953469	0.937882	0.939961	0.934074
LIQUID 1/H fraction	0.048781	0.036024	0.049750	0.047850	0.053262
LIQUID 2/W fraction	0.012279	0.010508	0.012368	0.012189	0.012664
Enthalpy MJ/h	-3491.529057	-1038.381480	-2422.478644	-10804.067571	-13336.901842

STREAM SUMMARY

Stream Id		S1	N18F	N19F	N20F	N21F
Temperature, °C		50.000	67.500	67.000	68.200	67.400
Pressure, bar		90.0000	79.7574	79.6851	76.3699	78.7776
Phase		MIXED	MIXED	MIXED	MIXED	MIXED
Flow rate	kmol/h	17299.010	1600.158	1946.139	1427.168	1297.426
	kg/h	400000.000	37000.000	45000.000	33000.000	30000.000
Vapor fract.		0.930625	0.952220	0.951736	0.953736	0.952352
LIQUID 1/H FRACT		0.056561	0.037056	0.037467	0.035800	0.036949
LIQUID 2/W FRACT		0.012814	0.010725	0.010797	0.010464	0.010699
Mol. weight		23.1227	23.122710	23.122710	23.122710	23.122710
Act. Volume rate	m3/h	4046.927628	473.878745	575.488384	445.605113	389.485858
Enthalpy	MJ/h	-40948.528584	-1333.931904	-1692.981661	-1009.098501	-1063.951878
Spec. enthalpy	kJ/kmol	-2367.532	-833.776	-870.076	-707.192	-820.197
	kJ/kg	-102.390	-36.059	-37.629	-30.584	-35.472
*** VAPOUR ***						
Flow rate	kmol/h	16098.885	1523.702	1852.210	1361.142	1235.606
	kg/h	336965.669	32583.002	39579.963	29118.171	26413.900
Wt. fraction		0.842414	0.880622	0.879555	0.882369	0.880463
Mol. weight		20.9310	21.3841	21.3690	21.3925	21.3773
Std. Volume rate	N-m3/h	380655.624481	36027.703422	43795.212700	32183.982215	29215.709770
Act. Volume rate	m3/h	3940.2179	466.5779	566.5296	439.2209	383.5667
Enthalpy	MJ/h	-15224.898267	351.294153	380.096103	463.457107	304.216106
Spec. enthalpy	kJ/kmol	-945.883	230.595	205.249	340.553	246.253
	kJ/kg	-45.191	10.783	9.605	15.919	11.519
Spec. Heat cap.	kJ/kmol °C	58.972077	56.322790	56.299400	55.692828	56.131041
	kJ/kg °C	2.817452	2.633863	2.634624	2.603386	2.625733
Spec. Entropy	kJ/kmol °C	165.8026	172.0160	171.8892	172.6983	172.1281
	kJ/kg °C	7.9214	8.0441	8.0438	8.0729	8.0519
Compressibility		0.819719	0.862162	0.861671	0.868169	0.863544
Density	kg/m3	85.5196	69.8340	69.8639	66.2951	68.8639
Viscosity	cP	0.1451E-01	0.1425E-01	0.1424E-01	0.1413E-01	0.1421E-01
Thermal Conduct.	W/m°C	0.044128	0.044160	0.044104	0.043803	0.044027
Reference Gas Status - Temperature 15°C			- Pressure 1 atm			
*** LIQUID 1/H ***						
Flow rate	kmol/h	978.451	59.295	72.916	51.093	47.939
	kg/h	59039.761	4107.752	5041.389	3612.723	3335.972
Wt. fraction		0.147599	0.111020	0.112031	0.109476	0.111199
Mol. weight		60.3401	69.2768	69.1395	70.7089	69.5875
Std. Volume rate	m3/h	96.705848	6.479765	7.957322	5.671511	5.257186
Act. Volume rate	m3/h	102.6837	6.9862	8.5737	6.1103	5.6647
Enthalpy	MJ/h	-16413.003626	-986.657780	-1216.948434	-865.374179	-803.021127
Spec. enthalpy	kJ/kmol	-16777.530	-16642.896	-16692.726	-16940.337	-16753.863
	kJ/kg	-278.050	-240.238	-241.435	-239.579	-240.760
Spec. Heat cap.	kJ/kmol °C	149.928785	173.659497	173.225119	177.063322	174.333082
	kJ/kg °C	2.484731	2.506749	2.505442	2.504117	2.505234
Spec. Entropy	kJ/kmol °C	262.9454	295.5307	294.9135	299.8740	296.3559
	kJ/kg °C	4.3577	4.2659	4.2655	4.2410	4.2587
Density	kg/m3	574.9672	587.9814	588.0089	591.2526	588.9062
Sp. Grav. 60/60		0.6105	0.6339	0.6335	0.6370	0.6345
Viscosity	cP	0.9557E-01	0.1112	0.1112	0.1154	0.1123
Thermal Conduct.	W/m°C	0.190347	0.168002	0.168261	0.164767	0.167251
Surface Tension	dyn/cm	8.1623	8.8328	8.8376	9.0442	8.8936

Stream Id		S1	N18F	N19F	N20F	N21F
*** LIQUID 2/W	***					
Flow rate	kmol/h	221.674	17.161	21.013	14.934	13.881
	kg/h	3994.570	309.247	378.647	269.106	250.128
Wt. fraction		0.009986	0.008358	0.008414	0.008155	0.008338
Mol. weight		18.0200	18.0200	18.0200	18.0200	18.0200
Std. Volume rate	m3/h	3.990459	0.308929	0.378258	0.268829	0.249871
Act. Volume rate	m3/h	4.0260	0.3146	0.3851	0.2740	0.2545
Enthalpy	MJ/h	-9310.626690	-698.568277	-856.129329	-607.181429	-565.146857
Spec. enthalpy	kJ/kmol	-42009.027	-40713.387	-40751.004	-40665.786	-40722.316
	kJ/kg	-2331.244	-2259.344	-2261.431	-2256.702	-2259.839
Spec. Heat cap.	kJ/kmol °C	74.955793	75.148499	75.143601	75.168717	75.151190
	kJ/kg °C	4.159588	4.170282	4.170010	4.171404	4.170431
Spec. Entropy	kJ/kmol °C	47.8701	51.9696	51.8523	52.1188	51.9420
	kJ/kg °C	2.6565	2.8840	2.8775	2.8923	2.8825
Density	kg/m3	992.1827	982.8475	983.1226	982.3074	982.8605
Sp. Grav. 60/60		1.0010	1.0010	1.0010	1.0010	1.0010
Viscosity	cP	0.5429	0.4147	0.4176	0.4107	0.4153
Thermal Conduct.	W/m°C	0.633868	0.648456	0.648071	0.648992	0.648379
Surface Tension	dyn/cm	67.9610	64.9440	65.0324	64.8200	64.9616

STREAM SUMMARY

Stream Id		N18P	N19P	N20P	N21P	TRKF
Temperature, °C		45.286	53.623	67.922	52.631	54.587
Pressure, bar		76.3501	76.3471	76.3432	76.3457	76.3432
Phase		MIXED	MIXED	MIXED	MIXED	MIXED
Flow rate	kmol/h	1600.158	1946.139	1427.168	1297.426	6270.891
	kg/h	37000.000	45000.000	33000.000	30000.000	145000.000
Vapor fract.		0.929723	0.938940	0.953469	0.937882	0.939961
LIQUID 1/H FRACT		0.057352	0.048781	0.036024	0.049750	0.047850
LIQUID 2/W FRACT		0.012924	0.012279	0.010508	0.012368	0.012189
Mol. weight		23.1227	23.122710	23.122710	23.122710	23.122710
Act. Volume rate	m3/h	442.361398	563.761015	445.170005	373.823877	1826.164367
Enthalpy	MJ/h	-3851.678390	-3491.529057	-1038.381480	-2422.478644	-10804.067571
Spec. enthalpy	kJ/kmol	-2407.498	-1794.406	-727.714	-1867.482	-1723.205
	kJ/kg	-104.118	-77.604	-31.472	-80.764	-74.524
*** VAPOUR ***						
Flow rate	kmol/h	1487.704	1827.307	1360.760	1216.832	5894.395
	kg/h	30838.745	38314.380	29098.704	25479.429	123755.286
Wt. fraction		0.833480	0.851431	0.881779	0.849314	0.853485
Mol. weight		20.7291	20.9677	21.3842	20.9392	20.9954
Std. Volume rate	N-m3/h	35176.538555	43206.382996	32174.960991	28771.796890	139372.046399
Act. Volume rate	m3/h	432.1467	552.7208	438.7537	366.3559	1791.0959
Enthalpy	MJ/h	-1279.103811	-781.926824	443.837462	-583.478886	-2225.610762
Spec. enthalpy	kJ/kmol	-859.940	-427.990	326.228	-479.594	-377.649
	kJ/kg	-41.485	-20.412	15.256	-22.904	-17.987
Spec. Heat cap.	kJ/kmol °C	55.730373	55.542181	55.680072	55.552824	55.533424
	kJ/kg °C	2.688512	2.648943	2.603801	2.653060	2.645026
Spec. Entropy	kJ/kmol °C	166.4431	168.7256	172.6262	168.4550	168.9892
	kJ/kg °C	8.0295	8.0469	8.0726	8.0450	8.0489
Compressibility		0.837537	0.849851	0.867893	0.848463	0.851190
Density	kg/m3	71.3617	69.3196	66.3213	69.5483	69.0947
Viscosity	cP	0.1375E-01	0.1388E-01	0.1412E-01	0.1387E-01	0.1390E-01
Thermal Conduct.	W/m°C	0.041738	0.042450	0.043772	0.042363	0.042535
Reference Gas Status - Temperature 15°C			- Pressure 1 atm			
*** LIQUID 1/H ***						
Flow rate	kmol/h	91.773	94.935	51.412	64.547	300.062
	kg/h	5788.583	6254.998	3631.061	4231.405	19867.366
Wt. fraction		0.156448	0.139000	0.110032	0.141047	0.137016
Mol. weight		63.0750	65.8872	70.6270	65.5554	66.2109
Std. Volume rate	m3/h	9.400219	10.025440	5.702263	6.792268	31.796821
Act. Volume rate	m3/h	9.8396	10.6052	6.1412	7.1760	33.6764
Enthalpy	MJ/h	-1696.213767	-1711.884556	-872.176622	-1167.832343	-5392.774011
Spec. enthalpy	kJ/kmol	-18486.076	-18035.453	-16967.599	-18096.018	-17975.472
	kJ/kg	-293.081	-273.732	-240.242	-276.042	-271.488
Spec. Heat cap.	kJ/kmol °C	154.764674	162.759416	176.806943	161.802317	163.695346
	kJ/kg °C	2.453660	2.470275	2.503391	2.468178	2.472332
Spec. Entropy	kJ/kmol °C	268.3738	279.7584	299.5128	278.4012	281.0835
	kJ/kg °C	4.2548	4.2460	4.2408	4.2468	4.2453
Density	kg/m3	588.2943	589.8073	591.2602	589.6593	589.9494
Sp. Grav. 60/60		0.6158	0.6239	0.6368	0.6230	0.6248
Viscosity	cP	0.1096	0.1122	0.1154	0.1119	0.1125
Thermal Conduct.	W/m°C	0.181208	0.174600	0.164916	0.175343	0.173882
Surface Tension	dyn/cm	8.9988	9.0400	9.0463	9.0369	9.0429

Stream Id		N18P	N19P	N20P	N21P	TRKF
*** LIQUID 2/W	***					
Flow rate	kmol/h	20.681	23.897	14.996	16.047	76.434
	kg/h	372.673	430.622	270.235	289.166	1377.348
Wt. fraction		0.010072	0.009569	0.008189	0.009639	0.009499
Mol. weight		18.0200	18.0200	18.0200	18.0200	18.0200
Std. Volume rate	m3/h	0.372289	0.430179	0.269957	0.288868	1.375930
Act. Volume rate	m3/h	0.3750	0.4350	0.2751	0.2920	1.3920
Enthalpy	MJ/h	-876.360812	-997.717677	-610.042320	-671.167414	-3185.693746
Spec. enthalpy	kJ/kmol	-42382.759	-41758.559	-40686.724	-41832.842	-41686.378
	kJ/kg	-2351.984	-2317.345	-2257.864	-2321.467	-2313.339
Spec. Heat cap.	kJ/kmol °C	74.979685	75.037156	75.165895	75.029674	75.044618
	kJ/kg °C	4.160914	4.164103	4.171247	4.163688	4.164517
Spec. Entropy	kJ/kmol °C	46.6664	48.6745	52.0536	48.4372	48.9048
	kJ/kg °C	2.5897	2.7011	2.8887	2.6880	2.7139
Density	kg/m3	993.6718	989.9029	982.4624	990.3744	989.4388
Sp. Grav. 60/60		1.0010	1.0010	1.0010	1.0010	1.0010
Viscosity	cP	0.5894	0.5112	0.4123	0.5195	0.5033
Thermal Conduct.	W/m°C	0.629554	0.637075	0.648779	0.636207	0.637912
Surface Tension	dyn/cm	68.7462	67.3495	64.8693	67.5176	67.1857

STREAM SUMMARY

Stream Id		PROD
Temperature, °C		48.678
Pressure, bar		75.0010
Phase		MIXED
Flow rate	kmol/h	6270.891
	kg/h	145000.000
Vapor fract.		0.934074
LIQUID 1/H FRACT		0.053262
LIQUID 2/W FRACT		0.012664
Mol. weight		23.1227
Act. Volume rate	m3/h	1804.742500
Enthalpy	MJ/h	-13336.901842
Spec. enthalpy	kJ/kmol	-2127.182
	kJ/kg	-91.995
*** VAPOUR ***		
Flow rate	kmol/h	5857.478
	kg/h	121964.518
Wt. fraction		0.841135
Mol. weight		20.8220
Std. Volume rate	N-m3/h	138499.142228
Act. Volume rate	m3/h	1766.7076
Enthalpy	MJ/h	-3821.992346
Spec. enthalpy	kJ/kmol	-652.616
	kJ/kg	-31.343
Spec. Heat cap.	kJ/kmol °C	55.308226
	kJ/kg °C	2.656237
Spec. Entropy	kJ/kmol °C	167.5868
	kJ/kg °C	8.0485
Compressibility		0.845277
Density	kg/m3	69.0349
Viscosity	cP	0.1374E-01
Thermal Conduct.	W/m°C	0.041833
Reference Gas Status - Temperature 15°C - Pressure 1 atm		
*** LIQUID 1/H ***		
Flow rate	kmol/h	333.999
	kg/h	21604.433
Wt. fraction		0.148996
Mol. weight		64.6841
Std. Volume rate	m3/h	34.835186
Act. Volume rate	m3/h	36.5925
Enthalpy	MJ/h	-6169.714155
Spec. enthalpy	kJ/kmol	-18475.604
	kJ/kg	-285.628
Spec. Heat cap.	kJ/kmol °C	158.994810
	kJ/kg °C	2.458020
Spec. Entropy	kJ/kmol °C	274.2418
	kJ/kg °C	4.2397
Density	kg/m3	590.4061
Sp. Grav. 60/60		0.6202
Viscosity	cP	0.1125
Thermal Conduct.	W/m°C	0.177151
Surface Tension	dyn/cm	9.1121

Stream Id		PROD
*** LIQUID 2/W	***	
Flow rate	kmol/h	79.414
	kg/h	1431.049
Wt. fraction		0.009869
Mol. weight		18.0200
Std. Volume rate	m3/h	1.429576
Act. Volume rate	m3/h	1.4424
Enthalpy	MJ/h	-3345.195341
Spec. enthalpy	kJ/kmol	-42130.899
	kJ/kg	-2338.007
Spec. Heat cap.	kJ/kmol °C	75.007042
	kJ/kg °C	4.162432
Spec. Entropy	kJ/kmol °C	47.4807
	kJ/kg °C	2.6349
Density	kg/m3	992.1344
Sp. Grav. 60/60		1.0010
Viscosity	cP	0.5553
Thermal Conduct.	W/m°C	0.632675
Surface Tension	dyn/cm	68.1824

- Calculation time 1.49 sec

- Simulation no. 4 - Ended at 15.46.33 on SEP 01, 2008 -